The development of coastal flooding policy in Victoria

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ABSTRACT

This paper explores policy framework, challenges and opportunities floodplain managers and policy makers face in relation to coastal flooding.

Much has been achieved since the release of the third Victorian Coastal Strategy in 2008, which provided the Victorian Government's high level policy framework for planning for climate change along the coast. Since then a number of policy documents provide opportunities for various government departments and authorities, local councils, developers, and individuals to respond positively in the decades ahead. They are described in the first part of the paper.

The second part of the paper looks at some of the challenges:

- How do we allow communities in coastal areas to develop in a manner that deals with, not only the current risk, but also the future risk associated with sea level rise?
- How should the various coastal processes (sea level rise, tidal effects, storm surge and erosion) be considered?
- What further guidance should be provided?

In the third part of the paper, opportunities are presented. They include:

- learning from four pilot local hazard assessments and revising guidance material
- Improving flood controls in planning schemes
- developing better flood mapping methodologies
- fostering innovation
- monitoring and reviewing material as technology and the accuracy of predictions improve.

Much has been done to provide information to assess our coastal flooding risks. Planning for coastal flooding in Victoria is now better organised than at any stage in the past. While, there still are concerns over the quantity and quality of available data and information, as well as uncertainty over what processes should be applied and under what circumstances, the policy framework will allow for improvements over time.

Continued significant effort from all stakeholders, government, business, communities and individuals, will be needed to ensure that risks associated with coastal flooding and sea level rise are managed effectively.

KEY WORDS
coastal flooding, coastal hazards, flood studies, planning, benchmarks

Introduction

The best available science (data and modelling) predicts coastal flooding will increase due to higher average sea levels and an increase in coastal storm surges. These changes may be categorised in two ways, either as immediate and obvious risks (such as episodic storm and flood events), or as gradual and subtle changes (such as seasonal shifts, and incremental sea level rise).

All levels of government, business, and communities, should plan for both of these possibilities. However, making decisions about the magnitude, timing and distribution of coastal climate change impacts in a context of uncertainty is a significant challenge.

This paper will explore the evolution of coastal flooding policy in Victoria, the challenges faced by decision makers and the opportunities that exist to address these challenges. Sea level rise is an important consideration, but this issue is not looked at in isolation.

The reader should note that this paper draws upon the draft Victoria Floodplain Management Strategy which, when finalised, will set the policy direction for floodplain management in Victoria. The draft strategy was released in June 2014 for public comment. A further round of consultation is planned in 2015, and this may result in changes to the Strategy.

Evolution of coastal climate change policy

Ideas, concepts and guidance on how to plan for potential climate change risks in coastal areas have gradually evolved over recent decades.

Based on projections from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report, released in 2007, the 2008 Victorian Coastal Strategy set the planning benchmark for sea level rise in Victoria; that a policy of planning for sea level rise of not less than 0.8 m by 2100 should be implemented (VCC 2008, p.13).

Since then, a fourth Victorian Coastal Strategy (VCS2014) and the following relevant documents have also been developed. Future policy developments should seek to be consistent with the considerations already defined in them.

a) Council of Australian Governments (COAG) Roles and Responsibilities for Climate Change Adaptation in Australia (COAG, 2012a), which sets out principles for the management of climate change risks. The basic principles are that private parties should be responsible for managing risks to private assets (supported by well-functioning markets and regulatory processes), while governments should be responsible for managing risks to public goods and assets, and for creating the right conditions and incentives for private parties to manage their risks.

b) COAG National Adaptation Priorities (COAG, 2012b), which identifies water resources, coasts, infrastructure, natural ecosystems, agriculture, emergency management, and vulnerable communities as priorities for adaptation. These assessments were based on the economic, social and environmental magnitude of potential impacts, the likely timing of potential impacts, and the importance of early action to manage risks.

c) Victorian Climate Change Act, 2010, which came into effect on 1 July 2011. Key features of the Act include:

- a requirement for decision makers to take climate change into account when making specified decisions under other specified acts including the *Coastal Management Act 1995;*
- a requirement for the Victorian Government to prepare a Climate Change Adaptation Plan every four years to outline the potential impacts and risks of climate change in Victoria, the government's priorities in response and a synthesis of the relevant climate change science;
- definitions of informed decision-making, integrated decision-making, risk management, complementarity, equity, and community engagement, as the guiding principles in planning for climate change adaptation.

d) Victorian Climate Change Adaptation Plan (Victorian Government 2013), the first of which was released in March 2013, as required under the *Victorian Climate Change Act 2010.* The plan sets out an overarching strategic priority to coordinate and mainstream responses to climate risk into standard Victorian Government management practices, plus six key strategies to build Victoria's climate resilience:

- manage risks to public assets and services managed by the Victorian Government
- manage risks to natural assets and natural resource-based industries
- build disaster resilience and integrated emergency management
- improve access to research and information for decision making
- support private sector adaptation
- strengthen partnerships with local government and communities (particularly through targeted funding which has facilitated adaptation planning in the local government sector).

2013-14 revision of the Victorian Coastal Strategy

The Coastal Management Act 1995 establishes the legislative framework for planning and managing the coast of Victoria. The Act requires the Victorian Coastal Council (VCC) to review the Victorian Coastal Strategy every five years.

The fourth Victorian Coastal Strategy (VCS) was released in September 2014. It applies to both public and private land along the Coast, which is broadly defined to encompass coastal, estuarine and marine environments.

The VCS identifies five key issues relevant to the coast, including "adapting to a changing climate" (VCS p.17).

The VCS maintains the Hierarchy of Principles approach used in previous iterations (to guide planning and decision-making on the coast, which is to:

- ensure protection of significant environmental and cultural values
- undertake integrated planning and provide clear direction for the future
- ensure the sustainable use of natural coastal resources; and when the above principles have been considered and addressed, to
- ensure development on the coast is located within existing, modified and resilient environments where the demand for development is evident and any impacts can be managed sustainably (VCC 2014, p.8).

The VCS 2014 also sets the revised planning benchmarks for sea level rise in Victoria (VCS 2014, p.21). The benchmarks were informed by the work completed by Hunter in 2013 and 2014. Hunter's 2014 work used the IPCC Fifth Assessment Report.

The purpose of the 2014 VCS is defined to:

- provide guidance for agencies and statutory decision-making along the coast and in marine and estuarine environments
- provide a framework for related Regional Coastal Plans, Regional Growth Plans, Regional Catchment Strategies, Local Planning Schemes, and Management Plans for coastal Crown land
- engage the community to continue to value the coast and marine environments and to participate in its planning and management (VCC 2014, p.6).

It is also intended to provide guidance for planning and management frameworks where these exist outside the Coastal Management Act. For instance the relevant policies for decision-making are embedded in the State Planning Policy Framework in all municipal planning schemes and the VCS is a reference document, which means that it is required to be considered in land use planning and development decisions. Where decisions are made outside the framework of the Coastal Management Act, decision makers are to take into account the Hierarchy of Principles and the policies set out in the VCS.

The policies for decision-making in coastal areas related to planning for and managing coastal hazards and processes are summarised in Table 1.

These policies are reinforced by the five desired outcomes which help link these policies to the long term vision for the coast set in the VCS. They are:

1. Sea level rise and storm surge planning policy benchmarks and tools are updated in light of emerging scientific evidence
2. Development within sand dunes and in low lying coastal areas is avoided
3. Areas vulnerable to coastal hazards, as a consequence of changing climate, are better understood
4. Natural coastal processes are adopted as the preferred form of defence against possible impacts of a changing climate
5. New development, reuse and redevelopment avoids areas subject to coastal hazards, does not interfere with natural coastal processes, and accommodates biodiversity connectivity and adaptation (VCC 2014, p.49).

Table 1. Policy for decision-making

1. Plan for possible 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.
2. 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).
3. For new greenfield development outside of town boundaries, plan for not less than 0.8 metre sea level rise by 2100.
4. Consider the risks associated with climate change in planning and management decision-making processes.
5. Ensure that development or protective works seeking to respond to coastal hazard risks avoids detrimental impacts on coastal processes.
6. Avoid development in sand dunes, in low lying coastal areas and in identified coastal hazard areas susceptible to inundation (both river and coastal), erosion, landslip/ landslide, coastal acid sulfate soils, bushfire and geotechnical risk.
7. Structures to protect private property are not located on coastal Crown land unless private land is not physically capable of supporting the structure (e.g. cliff) and the use of the Crown land demonstrates significant public benefit (e.g. protection of environmental and cultural features of the coast).
8. Works to lessen the effect of coastal processes on public and private land are avoided, particularly along the open ocean coastline.
9. As a general principle, use of the coast and the location and planned life-span of public and private assets respects natural coastal processes.
10. Coastal planners and managers support community-based adaptation planning and consider a range of coastal risk factors and vulnerabilities to reduce those risks
11. The Crown does not have an obligation to reduce the impacts of coastal hazards, sea level rise and other natural processes on private property.
12. Avoid detrimental impacts on indigenous flora and fauna, coastal processes or neighbouring property or assets
13. Where coastal accretion occurs any resulting increase in beach or foreshore is considered for incorporation into the coastal Crown land estate to ensure benefit for all Victorians
14. Regional and local adaptation plans are used to inform the strategic planning and management of coastal hazards to private and public property
15. Investment in new and existing coastal infrastructure is based on a life cycle planning approach that takes account of:
    a. projected future erosion and inundation patterns – this planning incorporates scope for the removal and replacement of structures as may be necessary and the use of trigger points to initiate adaptation responses (including an assessment of acceptable level of risk and behaviour change)
    b. cost benefit analysis that takes into account social, environmental and economic values
    c. future operating and maintenance costs and accountabilities
    d. any statutory requirements to maintain coastal infrastructure

(VCC 2014, p.52).

The 2014 VCS also outlines new actions that will provide information or guidance for future policy development and decision-making, including:

- review and update sea level rise planning benchmarks in line with the best available science
- share the findings and learning from the 4 local coastal hazard assessment pilot projects undertaken (final reporting not yet completed for all) and identify further areas across Victoria where this work can be applied
- identify areas of coastal land at risk of loss from erosion and inundation in Regional Coastal Plans (RCPs) and consider adaptation responses
- develop a State Coastal Risk Plan to strategically and consistently identify and prioritise coastal hazard and manage risks to key state coastal assets. (VCC 2014, p.53).

Therefore, the 2014 VCS provides more definitive guidance for coastal planning and development. It:

- places increased responsibility on coastal asset owners to respect natural processes
- has built in flexibility allowing for various adaptation options to be applied at the regional or local level
- provides for a review of the benchmarks and policies as better information became available
- continues to support a long planning horizon designed to minimise the exposure of communities to coastal impacts in the future.

The 2014 VCS sets a statewide direction which is interpreted at a regional level for Regional Coastal Plans. The three plans (2015-2020) are in the process of being finalised and serve as a link between statewide, regional and local planning (see Figure 1).They provide a regional framework for planning and decision-making on both public and freehold land at the local level. They also provide a focus for all agencies with responsibility for coastal management to act together (Central Coastal Board 2015, p.5). The three tiered system is also established through the Coastal Management Act.

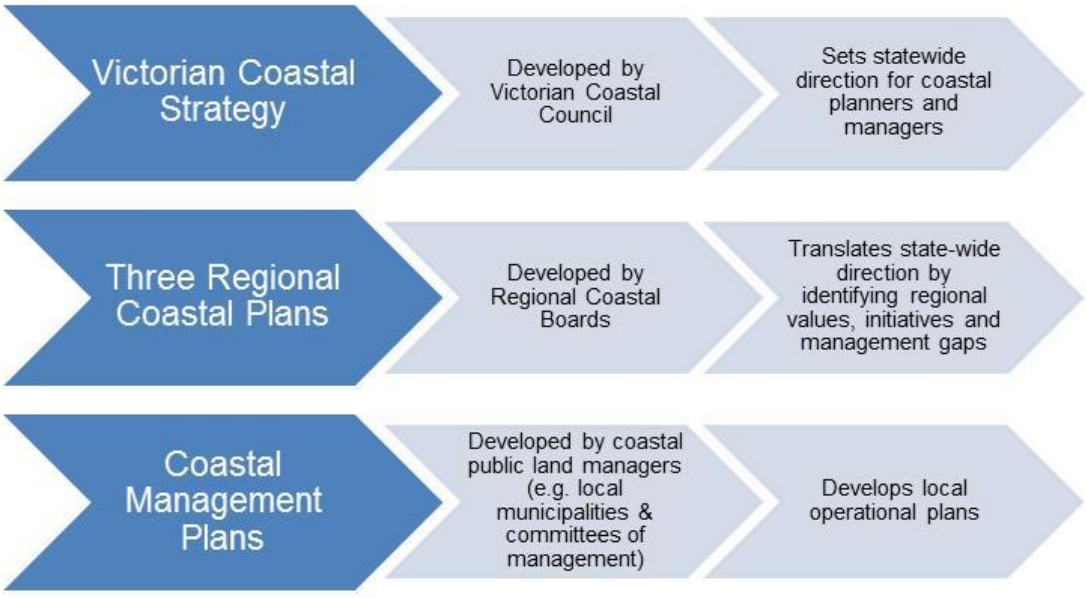

Figure 1: Role of the Regional Coastal Plans (CCB, 2015, p.5).

2014 revision of Victorian Floodplain Management Strategy

The draft Victorian Floodplain Management Strategy (VFMS) provides an opportunity for community input to the actions, policies and accountabilities that will set the direction for floodplain management in Victoria over the next decade. It will help ensure that flood risks are evaluated and communicated in ways that provide individuals, communities, government agencies and other organisations to manage flood risks.

The draft VFMS is divided into four key parts:

- *assessing flood risks and sharing information*, which sets the framework for assessing and prioritising management linked to the level of flood risks;
- *avoiding or minimising future risks*, which sets the proposals and accountabilities to avoid making matters worse;
- *reducing existing risks*, which clarifies the institutional arrangements for both structural and non-structural measures to mitigate the risk and consequence of floods.
- *managing residual risks*, which focuses on how access to better information can reduce the consequence of flood events for individuals and emergency managers in responding to emergencies (DEPI 2014b, p.6).

The strategy focusses on all types of flooding, including coastal flooding. It acknowledges that it is difficult to separate coastal flooding (inundation) from other coastal processes (shoreline erosion and recession). Erosion and recession may be caused by inundation, wind action or wave action. Conversely, erosion can lead to the inundation of low-lying areas.

According to the draft VFMS, flood studies are used to assess flood hazard and evaluate flood risk. Where coastal flooding from the sea interacts with riverine or stormwater flooding flood modelling tools need to consider the joint probabilities of both events occurring.

The draft 2014 VFMS proposes that the VCS has primacy when it comes to coastal issues, and that the policies and actions defined in the draft VFMS would support this. For example, the strategy proposes that floodplain managers in the Department of Environment, Land, Water and Planning (DELWP), Catchment Management Authorities (CMAs) and Melbourne Water will work with coastal managers and land use planners, and other stakeholders to:

- provide support to councils wishing to strengthen their community's capacity to adapt to the effects of coastal flooding;
- provide policy and guidelines on coastal land use planning issues, coastal flooding issues and public land use;
- maintain guidelines on how to apply those clauses of the State Planning Policy Framework that relate to projected rises in sea level;
- support the development of RCPs to inform coastal adaptation plans in ways that will, among other things, identify areas of coastal land at risk from inundation and erosion, and consider adaptation responses;
- develop regional coastal risk assessments to strategically and consistently identify and prioritise coastal hazards and manage risks to key state coastal assets; (DEPI 2014b, Chapter 11).

Applying the policy

As mentioned above, the VCS has primacy when it comes to planning for coastal issues. It defines principles to be followed, identifies the need to clarify sea level rise predictions for use in local council planning decisions, and envisages that regional and local management/adaptation plans will be produced to enable the strategic management of coastal hazards to public and private property into the future. In essence, it is encourages decision-makers to avoid new development in low lying coastal areas and in identified coastal hazard areas susceptible to inundation (both riverine and coastal).

Included in the 2014 VCS are action statements grouped around a number of key issues and themes. In relation to coastal flooding the following actions are relevant:

- review and update planning benchmarks for sea level rise every five years
- identify high value coastal wetlands and estuaries that are vulnerable to sea level rise and quantify risks and opportunities for adaptation
- investigate removal of levee banks and other artificial structure that inhibit wetland migration / retreat
- compile and share the findings and learnings from the Local Coastal Hazard Assessment pilot projects, and other relevant work, to identify further areas across Victoria where this work can be used
- develop regional coastal risk assessments to strategically and consistently identify and prioritise coastal hazards: include information about natural and built assets at risk of loss from erosion, inundation and cliff hazards in Regional Coastal Plans and consider adaptation responses
- develop an implementation plan, including where business cases for particular actions may be needed.

The three draft Regional Coastal Plans include key actions relating to flooding and erosion:

- develop a systematic approach to identify regional priorities for adaptation plans
- work with councils in priority areas to continue, or undertake new adaptation planning and implementation
- refine methodologies for conducting flood studies and erosion studies in coastal areas
- determine the nature of the desirable outputs of flood and erosion studies (such as land use planning, municipal emergency plans, flood mitigation options (if viable) and long term options for retreat (if viable). (CCB 2015, GCB 2015, WCB, 2015).

The action statements assign lead and partner agencies and are intended to be delivered within the five year lifespan of the VCS.

Some of the challenges associated with this work include:

- ensuring that stakeholders work collaboratively rather than combatively in adaptation planning and response
- mounting the necessary business cases to attract funding for relevant actions
- ensuring guidance and supporting tools are adopted in a manner appropriate to the flood risk: as a general principle development should not occur in high hazard areas and government is not responsible for protecting private assets from coastal flooding
- providing greater clarity on long term planning for sea level rise, particularly in relation to a land use planning requirement to plan for sea level rise by 2100, and

to provide for a possible sea level rise increase of 0.2 metres over current 1 in 100 year flood levels by 2040 for new development in close proximity to existing development
- avoiding excessive red tape and encouraging innovation
- providing flexibility in the timing of adaptation responses, having regard for uncertainty in the timing of se level rise projections
- ensuring that municipal planning schemes consider the effects of erosion as well as flooding in land use planning and development
- ensuring that land use planning is informed by the best available advice in respect of coastal flooding (and also erosion)
- ensuring adaptation planning and response adequately considers the protection of significant environmental and cultural values.

Bass Coast Shire is currently undertaking a planning scheme amendment to provide flood controls that take into account sea level rise. Council will consider the results of a pilot local coastal hazard assessment (see below) before seeking approval from the Planning Minister.

Challenges for long-term planning

Our understanding of the probabilities associated with floods and storm surges of various magnitudes will change over time. This changed understanding will need to be translated into recalibrated assessments of the level of protection offered by existing flood mitigation measures. It will also need to be translated into continuous improvements to municipal planning schemes and climate change adaptation plans.

This creates challenges around how to plan for long-term developments. Guidance will be required for deciding on planning permit applications for land that might not be affected by flooding for decades yet, for renewing urban infrastructure, (roads, water mains, etc.) and for upgrading protective structures, such as sea walls, as well as for when other adaptation planning process (such as rebuild, elevate, relocate, retreat) should be applied.

One way to address this is to ensure sensitivity analysis for various climate scenarios and timeframes is included in future coastal flood studies and evaluations. Another way is to periodically revise coastal flood studies to take into account incremental changes in storm surge, tidal effects and sea level rise. This will enable decision-making to be based on the best available information, rather than long-term predictions decades out. It will also allow for consideration for changes to the environment that may have occurred that could influence flood behaviour, such as urban intensification.

Opportunities

The challenges associated with applying the coastal flooding policy also provide opportunities like those below.

Using existing tools

Both the VCS and the draft VFMS refer to tools developed under the government's Future Coasts program to provide an understanding of coastal risks under existing climatic conditions, and future scenarios. These tools included a high-resolution coastal digital elevation model, coastal inundation mapping, the Coastal Hazard Guide, and four pilot local coastal h0azard assessments.

The high resolution coastal digital elevation model is a versatile and advanced piece of spatial information, and can be used for a variety of specialised uses. They include environmental management projects and residential or commercial development projects.

The digital elevation model has been used in conjunction with detailed estimates of coastal flood levels to provide an accurate representation of the land along the coast for which to project potential inundation extent onto. This “bath tub” model is not suitable for detailed assessment at the local level. The mapping does however identify areas that may be affected by flooding in the future. This information is useful for prioritizing areas for future investigation as part of local adaptation planning in conjunction with regional-scale maps that show areas of coastal instability.

The Coastal Hazard Guide provides an overview of hazard types, and how risk management and adaptation planning can be applied. It provides good general information to assist coastal adaptation planning (DSE 2012c).

To date, four pilot local coastal hazard assessments have been completed or are being completed for Port Fairy, the Bellarine Peninsula, Western Port and the Gippsland Lakes. Methodologies, project governance and scale and location have been varied, allowing for comparison to inform future hazard assessments. The Department of Environment, Land, Water and Planning, and project partners are undertaking a learnings project to identify key information to share with coastal agencies across Victoria, drawing upon the various lessons learnt and technical approaches used for the pilot assessments (VCC 2014, p. 50). This will be a useful resource for both coastal management and coastal planning for selecting where and how future coastal hazard assessments are undertaken.

Through the Coastal Compartments Project, Geoscience Australia has also mapped Australia’s coastline based on landforms and patterns of sediment movement. There are three levels of compartments (primary, secondary and tertiary), each suitable for different types of decision making (GSA, 2015).

Land Use Planning

At the local level, Victoria’s land use planning system operates through municipality based Planning Schemes, which are subordinate legislation under the Planning and Environment Act 1987. Planning Schemes set out policies and provisions for the use, development and protection of land. They are legal documents prepared by local councils and approved by the Minister for Planning.

Planning Schemes must be prepared using the Victoria Planning Provisions (VPPs) which can be regarded as a template containing compulsory state and local policies and strategies, as well as a common set of zones and overlays, which are used locally. Adherence to the VPPs helps ensure that planning schemes are prepared in a consistent way (DEPI 2014b, p.27).

The VPPs require councils to consider flood risks when preparing Planning Schemes (strategic planning), and in making land use planning decisions (statutory planning). They also require councils to consider the sea level rise planning benchmarks, the Hierarchy of Principles and other relevant coastal policies. The VPPs include one zone (urban floodway) and three overlays (floodway, special building and land subject to inundation) which are used to delineate varying levels of flood risk and provide guidance on the assessment of applications.

To date flood controls have been applied primarily to riverine and stormwater floods. The emergence of coastal flooding as a significant planning issue, and the added complexity of the flood hazard for some areas increasing over time as a consequence of climate change, provides an opportunity to revise the flood controls in planning schemes. Where councils amend their Planning Schemes to show land subject to inundation by seawater, the CMAs and Melbourne Water will act as referral authorities for recommendations on land use planning.

Development of further guidance for coastal flooding

Since the release of the 2008 VCS, the Department of Environment, Land, Water and Planning (DELWP) and Melbourne Water have both produced guidelines to ensure that the VCS sea level rise benchmarks can be consistently applied when assessing development applications referred to them through the flood controls in Municipal Planning Schemes. The guidelines assist existing coastal communities to remain viable by allowing most forms of redevelopment, subject to increased floor level requirements, while having more stringent controls for new development, in order to avoid future legacy issues associated with infrastructure.

These guidelines will be revised periodically, allowing for future adjustments to be made as certainty on the degree of sea level rise improves.

DELWP's guidelines for dealing with sea level rise apply unless a council has an adaptation plan that makes specific alternative arrangements. Adaptation plans will provide the medium through which communities can plan for the complexities of coastal change – both for infill development in existing settlements and for a change from rural to urban land uses.

Coastal flood study methodology

Climate change adds additional complexities to the modelling required to identify the flood risk. While river estuaries can be mapped using conventional floodplain modelling approaches, there are opportunities to establish processes for setting appropriate boundary conditions at the coastline. This guidance is expected to come from Australian Rainfall & Runoff (ARR) in 2015 or later, but interim guidance is desirable to ensure a level of consistency.

Sea level rise and storm surge will inundate some coastal foreshores and cause some coastlines to retreat. Modelling for erosion is different to modelling for flooding, and both need to occur to inform long-term adaptation planning. The work undertaken by Geoscience Australia through the Coastal Compartments Project may help to develop links between climate change related coastal inundation and erosion (GSA 2015).

Additionally, the effects of climate change are contributing to a progressive permanent increase in sea level that will increase the extent and duration of storm-induced coastal inundation.

In the past, flood studies have been based on a consideration of the historical record. Future coastal flood studies will need to apply a consistent methodology to take into account progressive incremental climate change in the future and climate change related impacts (to ensure information is comparable, reliable and defendable). Coastal CMAs are currently working together to develop this methodology.

This methodology will also need to factor in that coastal flood studies will need to be regularly reviewed in the future to acknowledge actual (as opposed to predicted) changes

in storm surge, tidal effects and sea level rise. The methodology will also need to have in-built adaptability for reviewing the best available science and/or provision for sensitivity testing to take into account uncertainties in predicting impacts.

Depending on the vulnerability of the coastline to coastal erosion or accretion the methodology may also consider the potential for wind and storm tide to alter the shape of the coastline.

Fostering innovation

Local councils are at the coal face when considering long term settlement patterns. As can be seen from the above discussion regulatory frameworks and proposed actions provide a process for long term adaptation without being overly prescriptive of possible solutions. This therefore provides opportunities for developers and councils to propose innovative solutions, based on market forces for the former, and community acceptance for the latter. Some of the challenges (and therefore opportunities) include:

- limiting linear development along the coast in preference to development slightly more inland
- providing incentives or disincentives for relocation in areas of high risk
- affordable measures to mitigate the impacts of flooding (e.g. sea walls, land fill)
- modifications to roads, water sewage and gas services and other infrastructure, as part of renewal planning
- thinking outside the square in terms of conventional solutions (e.g. houses on pontoons, moveable houses, flexible water / gas / electricity connections, off-grid systems such as water tanks and composting toilets, or floating houses)
- ensuring adaptation planning and response adequately considers the protection of significant environmental and cultural values.

Monitoring and reviews

The predictions for the severity of sea level rise and coastal flooding will change over time depending on what actions can be undertaken to reduce CO2 emissions, as well as improvements to the methods used for prediction. There will be opportunities to regularly review policies, plans and practices, and to amend them when required.

Conclusions

Since the release of the 2008 VCS, there has been much heated debate and fine tuning of sea level rise policy guidance and best practice development to address some of the gaps. The 2014 VCS has continued the broader policy approach and sought to clarify some outstanding issues and provide more definitive guidance where possible at this still early stage of climate change adaptation policy development. The draft VFMS has sought to support the policies and actions outlined in the VCS.

Much has been done to provide information to assess our coastal flooding risks. Planning for coastal flooding in Victoria is now better organised than ever before, but there are opportunities to clarify roles and responsibilities further and to resolve how coastal adaptation is funded. While there still are concerns over the quantity and quality of available data and information, as well as uncertainty over what processes should be applied and under what circumstances, the policy framework will allow for improvements over time.

Much has been done and much remains to be done. Fortunately, on the whole, we have time to act.

Continued significant effort from all stakeholders, government, business, communities and individuals, will be needed to ensure that risks associated with coastal flooding and sea level rise are managed effectively.

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