

# Victorian Centre for Climate Change Adaptation Research

## Project: Governance models for natural disaster risk management: legal, regulatory, institutional and financial risk mechanisms

### Technical Paper 3: Governance Models for Adaptation: Planning Law and Related Measures

#### 1 Introduction

Adaptation poses significant challenges for communities, businesses and government within Victoria. The legal system and governance arrangements at state level are an important component of actions to manage climate change impacts such as increased risk of natural hazards, and to enhance community resilience.<sup>1</sup> Private sector adaptation also is influenced by laws and legal instruments. One of the most widely-used models is spatial planning laws.

Spatial planning is widely recognised as a critical tool for climate change adaptation. By shaping the nature and distribution of land use and development activities, planning measures can be used to reduce the exposure and vulnerability of settlements and infrastructure to the range of natural hazards likely to intensify as a result of climate change. Spatial planning models also can operate in conjunction with a range of legal instruments that provide a suite of measures to facilitate adaptation. There has been attention directed to the general role of spatial planning for climate change adaptation to date.<sup>2</sup> The specific function of legal and regulatory models and governance arrangements within planning systems as a means to enhance the capacity for adaptation has not been canvassed in as much detail. An important step is to consider how generic climate change adaptation tools for hazard management can be given express implementation through legal and regulatory mechanisms. Mechanisms that allow for community participation in the planning process are another important factor.

Spatial planning measures have long been used in Victoria to manage risks associated with natural hazards such as fire, flood and coastal erosion. Following a series of extreme events over recent years, Victorian planning regimes have been the subject of much attention and reform; including the introduction of requirements to consider and plan for potential climate change impacts and hazards. The need for integration of spatial planning with areas, such as emergency management systems has received increasing attention.

In this context, the report explores a range of adaptation planning and associated measures that can potentially play a role in supporting the adaptation of Victorian settlements to climate change impacts; as well as the legal and institutional arrangements for their implementation. It highlights that current practice relies on a core set of predominantly regulatory planning measures which focus on controlling new development and shaping future land use. Planning law and measures which

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<sup>1</sup> Productivity Commission, *Barriers to Effective Climate Change Adaptation* 2013.

<sup>2</sup> *Ibid*, ch 9.

address adaptation challenges for existing settlements are comparatively little used and under-developed. There is scope to further the development of, and to support experimentation with, this range of planning measures for both new and existing settlements in Victoria. There is a need to consider how adaptation measures to manage natural hazards can be incorporated into planning systems in a coherent and integrated manner.<sup>3</sup> Re-visioning legal and institutional arrangements for planning and associated measures to adapt effectively is central to this challenge.

**Part 2** provides important context for this discussion of legal models for spatial planning, including the role of planning, and an overview of the current legal and institutional arrangements for planning in Victoria.

**Part 3** outlines the type of natural hazards which are predicted to intensify as a result of climate change in Victoria: coastal inundation and erosion, storm surge; fluvial flooding; bushfire and heatwave, and briefly discusses the planning challenges posed by these hazards.

**Part 4** reviews recent spatial planning literature to identify the broad range of available spatial planning measures that can play a role in supporting the adaptation of Victorian settlements to these climate hazards. It examines other legal models for adaptation that can work in conjunction or as alternative models to spatial planning.

**Part 5** considers how these planning measures are currently employed in a Victorian context to manage climate hazard risks. This discussion highlights that while there is extensive use of formal land-use planning measures; there is scope to design and implement these measures so as to better support climate change adaptation objectives. It also suggests that there remains a broad range of additional planning and associated legal measures which are currently little used, but which have the potential to support the adaptation of existing Victorian settlements to climate hazards over time. This part briefly discusses how the legal arrangements for spatial planning interact with other related areas of law and policy. Building an integrated approach to adaptation is one of the core challenges for institutional arrangements.

**Part 6** provides a summary and a series of recommendations for the further development of spatial planning as a climate change adaptation tool in Victoria.

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<sup>3</sup> Ibid 177.

## 2. Context

### 2.1 Planning as a Process of Transition

Adaptation to climate impacts requires adjustments to the physical and technical systems designed to respond to increased risks of natural hazards, as well as broader processes of societal change, including land use and activity transitions. With adaptation, due to many uncertainties and increased risks, actors face the challenge not only of developing and implementing these transitions, but also of increasing the adaptive capacity of society.<sup>4</sup> Regulation and law are part of the wider governance arrangements that guide and structure the behaviour and decision-making of actors.<sup>5</sup> A governance complex can steer society toward greater resilience in the face of extreme hazards and climate change impacts although community input on acceptable levels of risk will be important considerations.<sup>6</sup> In considering how spatial planning and associated measures can foster adaptation, therefore it is important to situate planning within a wider framework that comprises:

- **Legal and regulatory frameworks** such as legislation, statutory rules, delegated legislation (regulations), case law, planning and policy documents
- **Legal and financial mechanisms** such as contract, civil liability, insurance, rating structures
- **Institutional structures** which includes: state and local government departments and agencies, statutory authorities, private sector organisations, such as industry associations, and non-government organisations.

In this sense, the concept of law and governance is wider than just the formal legal system. Other relevant elements of any governance complex are the policy, political and institutional settings and social structures that, together with law and regulation, implement collective societal objectives.<sup>7</sup> This complex of elements is very apparent for planning systems, which must serve a range of functions and objectives. Further, in a federal system with three layers of government, where climate change impacts such as natural hazards are largely localised, there is an expectation that local and state governments will be the primary level of government involved in implementing adaptation responses. Planning, resource management, and disaster responses historically have been held to fall primarily within the legislative competence of state governments.

The Productivity Commission in 2013 stated:

State, territory and local governments should incorporate consideration of the impacts of climate change in land-use planning decisions. Land-use planning regulation should:

- facilitate a risk management approach that promotes planning decisions that are robust across a range of climate change outcomes and are proportionate to the risks involved
- moderate activities which retard adaptation by the community

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<sup>4</sup> Termeer et al, 'The regional governance of climate adaptation: A framework for developing legitimate, effective, and resilient governance arrangements' (2011) 2 *Climate Law* 159,159.

<sup>5</sup> See John Braithwaite, Cary Coglianese and David Levi-Faur, 'Can Regulation and Governance Make a Difference?' (2007) 1(1) *Regulation & Governance* 1, 3.

<sup>6</sup> Productivity Commission above n 1, 178.

<sup>7</sup> Lee Godden and Jacqueline Peel, *Environmental Law: Scientific, Policy and Regulatory Dimensions* (Oxford University Press, 2010) 61.

- facilitate the provision of public goods.<sup>8</sup>

A major task of the public sector in managing natural hazards is seen as instituting strategic and spatial planning, and the provision of information around risks: with responses to risks clearly also involving individuals and the private sector. However, there is not a rigid demarcation between private adaptation actions and government regulation in managing climate risks. A more complex interface occurs between the public and private spheres in building adaptation. Thus while spatial planning draws predominantly on statutory and regulatory frameworks, it necessarily encompasses private sector responses, given spatial planning operates over privately-held land. A planning system does not operate in a blanket way over private land. In any location, there exists a diversity of interests in land and resources that may be affected by increased risk of natural hazards; including areas of publically-held lands. Accordingly, this report covers Crown land and relevant public sector activities, such as public land management in hazard affected areas as well as some forms of ‘soft’ infrastructure provision.<sup>9</sup> An important objective in examining legal and institutional structures for adaptation is to consider how the legal system can adopt a forward-looking orientation given that many legal models developed to provide legal redress after an injury or harm has occurred. In concert, there is a need for, ‘transforming planning systems from passive to proactive’.<sup>10</sup>

## 2.2 Role of Planning as an Adaptation Tool

Spatial planning plays a critical role in climate change adaptation; particularly in relation to the exposure and vulnerability of settlements and infrastructure to climate hazards.<sup>11</sup> By shaping the nature and location of land use and development; planning measures can be used to reduce the likelihood of natural hazards impacting on settlements and infrastructure, and to reduce the potential consequences should these events occur. As the Victorian Adaptation Plan acknowledges, ‘[i]nformed decision-making requires research tailored to Victorian settings and needs; accessible information for government and private sector adaptation planning; and tools for dealing with uncertainty and optimising adaptation investment.’<sup>12</sup>

**Planning definition:** The report adopts a definition of planning as a form of strategic organization across public and private sectors encompassing land uses, various spectrums of rights and interests, economic and social management, and collaborative and community-based measures.<sup>13</sup>

Thus consistent with recent Australian research,<sup>14</sup> and studies in comparable jurisdictions,<sup>15</sup> the term refers to the broad range of measures that can be used to shape the distribution and

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<sup>8</sup> *Productivity Commission* 2013, 171.

<sup>9</sup> A separate technical paper covers climate adaptation and infrastructure in more depth. Soft infrastructure covers facilities such as coastal trails.

<sup>10</sup> A. Hurlimann and A. March, ‘The role of spatial planning in adapting to climate change’ *WIREs: Climate Change*; Sep/Oct2012, Vol. 3 Issue 5, p. 477-488.

<sup>11</sup> *Productivity Commission, Barriers to effective Climate Change Adaptation – Final Report* (Commonwealth of Australia, 2013); Hurlimann, A., March, A., 2012. The role of spatial planning in adapting to climate change. *WIREs Climate Change*, 3, 477-488; Measham T, Preston B, Smith T et al, “Adapting to climate change through local municipal planning: barriers and challenges” (2011) 16(8) *Mitigation and Adaptation Strategies for Global Change* 889; McDonald J, “The role of law in adapting to climate change” (2011) 2 *Wiley Interdisciplinary Reviews: Climate Change* 283.

<sup>12</sup> Victorian Government Victorian Climate Change Adaptation Plan

<http://www.climatechange.vic.gov.au/adapting-to-climate-change/Victorian-Climate-Change-Adaptation-Plan>

<sup>13</sup> See Wilson E and Piper J, *Spatial planning and climate change* (Routledge, 2010); p. 14

characteristics of land use and development. Spatial planning, although having its origins in UK land use and town planning laws from mid-twentieth century, now covers a range of statutory, regulatory, market and voluntary measures.<sup>16</sup> One of the core challenges remains the development of legal models and related measures that can facilitate adaptation in areas of existing land use, particularly densely-settled urban areas, as well as in 'greenfield' development sites.

The other major addition to the definition of spatial planning adopted here is to emphasise the inclusion of Crown land and other forms of publically-held land. Most adaptation planning models have not drawn a distinction between public and private land. However different legal principles and rules can apply to each type of land, so it is important to recognise such distinctions. Special parts of Crown land, such as the foreshore for example, may figure prominently when spatial planning for adaptation is examined. Moreover, a particular feature of Victoria (and much of Australia) is the extent of Crown lands which provide important public open spaces that are held to be integral to Australian culture and lifestyle. Heritage places, both indigenous and non-indigenous are other interests that fall within the ambit of the planning system.

### 2.3 What is Spatial Adaptation Planning

Spatial planning includes what can be thought of as *formal* land-use planning law measures, which are largely implemented through statutory land-use planning regimes. Land-use planning has two inter-related sub-disciplines: strategic and statutory planning. Strategic planning sets broad parameters guiding, land development environmental protection and resource management, while development control primarily focuses on individual proposals, the processes for approval of such activities and, if approved, any conditions for their implementation.<sup>17</sup> Traditionally, strategic planning is understood as involving the development of policies for achieving land use and development objectives.<sup>18</sup> The concept of strategic planning has broadened to include ideas around strategic impact assessment and regional planning models. For example, in 2009 the Victorian Government and the Commonwealth Government, under section 146 of the *Environment Protection and Biodiversity Conservation Act 1999*, conducted a strategic assessment of the Program 'Delivering Melbourne's newest sustainable communities'.<sup>19</sup> More recently, Plan Melbourne has been developed as a major metropolitan planning strategy, and various Regional Growth plans have been developed.

Statutory planning involves the implementation of strategic policies through laws governing the use and development of land (sometimes known as development control).<sup>20</sup> The core measures of formal land-use planning regimes are regulatory. Statutory planning frameworks set legally enforceable constraints controlling the distribution, type and character of land use, and how

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<sup>14</sup> See for example, Macintosh A, Foerster A and McDonald J, *Spatial planning Instruments for Climate Change Adaptation* (National Climate Change Adaptation Research Facility, 2012). See also: Wilson E and Piper J, *Spatial planning and climate change* (Routledge, 2010); European Commission, *The EU Compendium of Spatial planning Systems and Policies* (1997); Davoudi S, Crawford J and Mehmood A (eds), *Planning for Climate Change: Strategies for Mitigation and Adaptation for Spatial Planners* (Earthscan, 2009).

<sup>15</sup> Hurlimann and March

<sup>16</sup> Wilson and Piper p. 15.

<sup>17</sup> Ibid.

<sup>18</sup> Des Eccles and Tannetje Bryant *Statutory Planning in Victoria* 4th edition 2011 page 1.

<sup>19</sup> DEPI [http://www.depi.vic.gov.au/\\_\\_data/assets/pdf\\_file/0019/204328/ProgramReport\\_PtA.pdf](http://www.depi.vic.gov.au/__data/assets/pdf_file/0019/204328/ProgramReport_PtA.pdf)

<sup>20</sup> Des Eccles and Tannetje Bryant *Statutory Planning in Victoria* 3<sup>rd</sup> edition 2006 page 15

development is to occur.<sup>21</sup> The basic model is that someone seeking to use or develop land in certain ways must have permission to do so. Various forms of development consent and approvals lie at the centre of the process with impact and/or risk assessment typically being undertaken as a preliminary to making a decision as to whether the project is approved. For example, in relation to natural hazards, hazard prone areas can be identified via zoning and overlays which specify permitted land uses and activities. Certain land uses may be prohibited; while other uses may be conditional. These instruments can be used to ensure vulnerable land uses such as residential, hospitals and schools are not located in hazard prone areas. Zones and overlays correspond to guidelines, rules and standards to govern decision-making on development applications and approvals. These rules and standards are generally hazard specific and seek to accommodate risks and minimise the impacts of hazard events, for example via siting, design and construction standards. Building design and standards typically will be found in other laws and regulations than the main planning laws, but work in conjunction with them.

#### 2.4 Planning and Associated Measures

While formal land-use planning sits at the core of planning for adaptation, there are a range of other policy and legal instruments that can be used to shape land use and development as part of responses to adaptation. As measures to work in conjunction with land-use planning systems, Macintosh et al (2013) include:

- *information instruments*, such as planning certificates provided at the point of sale or notations on land title conveying information on potential exposure to climate hazards;
- *voluntary measures* such as financial incentives to undertake house retro-fit or other hazard mitigation activities;
- *compulsory acquisition* of hazard prone land; or
- the imposition of *taxes and charges*, such as elevated council rates imposed on particular land uses in high risk areas or specific levies to recoup the costs of protective or damage remediation measures provided to particular landholders or communities.<sup>22</sup>

While many of these measures may operate conjointly with, or be partially implemented through statutory land-use planning regimes; they generally rely on alternative sources of law and governance structures for their implementation. For example, land registration relies on the *Land Transfer Act 1958*, (external to the P & E Act), but typically operates in conjunction with land use planning at a practical level.

However, moves to provide integrated legal and regulatory frameworks for strategic planning; development control and hazard assessment to develop effective adaptation measures often confront the problem that such integration will need to cross legal, administrative and jurisdictional boundaries. Potential barriers to integration point to the challenge of working across legal frameworks and institutional responsibilities involving different levels of coordination and integration with planning laws. Within the Victorian Adaptation Plan the need for integrated decision-making is emphasised.<sup>23</sup>

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<sup>21</sup> Des Eccles and Tannetje Bryant *Statutory Planning in Victoria* 3<sup>rd</sup> edition 2006 page 41

<sup>22</sup> Macintosh et al above n 2.

<sup>23</sup> *ibid* 10.

Legal and regulatory measures need to link with the Adaptation Plan. The plan sets out six key strategies informing the framework for adaptation planning across the Victorian Government:

- Managing risks to public assets and services
- Managing risks to natural assets and natural resource-based industries
- Building disaster resilience and integrated emergency management
- Improving access to research and information for decision making
- Supporting private sector adaptation
- Strengthening partnerships with local government and communities.<sup>24</sup>

The following sets out a non-exhaustive listing of potential tools and models that can contribute to adaptation planning.

**Table 1 Adaptation Planning Models and Instruments**

Type of Measure	Legal and related models	Example
Strategic Planning	Strategic policy setting within legal frameworks Strategic impact assessment and regional planning.	Victorian Adaptation Plan  Plan Melbourne: Metropolitan Planning Strategy 2013 Regional Growth Plans
Statutory planning	Planning schemes and development control	<i>Planning and Environment Act 1987 (Environmental Effects Act 1978 for major project development)</i>
Courts and Tribunals	Victorian Civil and Administrative Tribunal (VCAT)	Case law on coastal adaptation
Institutional roles and responsibilities	Victorian and federal courts (Common law actions)	Statutory duties, tort laws (Negligence) Statutory 'shield' mechanisms
Information, land registration	Property purchase disclosure requirements Notifications of land title	Section 32 <i>Sale of Land Act 1962</i> (note: amendment to Act in regard to the vendor statement for land for sale in a bushfire-prone area).
Regulations, standard setting and codes	Building regulations and building codes; industry codes	Reg. 6.2 of the Building Regulations Victoria (minimum floor level)
Land acquisition and purchase	Statutory based acquisition of rights and interests in land for public purposes	<i>Land Acquisition and Compensation Act 1986</i> S 173 Agreements: <i>Planning and Environment Act 1987</i>
Property/ market-based instruments	Easements and covenants  Usufructs, licences and resource 'rights'	Rolling Easements  Offset credits
Public land management	Crown land and associated	Crown land reservations

<sup>24</sup> Victorian Government <http://www.climatechange.vic.gov.au/adapting-to-climate-change/Victorian-Climate-Change-Adaptation-Plan>

	agency responsibilities.	National parks
Public 'rights' and 'interests'	Access to public areas incl. Crown lands Heritage 'interests'  Aboriginal cultural heritage protection	public beach and riverbank access  P & E Act Heritage overlays and permit requirements <i>Aboriginal Heritage Act 2006</i>
Financial and incentive-based (Voluntary)	Taxes and levies Pricing regimes  Insurance (private sector	Fire Services Levy Differential charges for land affected by hazards. Differential Insurance premiums in hazard areas
Collaborative and agreement-based measures	Contract and agreement	Community partnerships on climate adaptation

Taking a broader approach to framing *spatial planning* in a range of adaptation tools enables consideration of planning measures that address climate hazard risks for both new *and* existing development and for public and private lands. It is also important to plan for a range of rights and interests associated with land.<sup>25</sup> Many see the statutory land-use planning regimes in Australia as largely oriented to controlling *new* development and shaping *future* land use, although planning controls do operate over existing development. Indeed, planning laws have a range of objectives; social, cultural and economic.<sup>26</sup>

However, given the democratic and market-based economic systems in which planning laws are embedded, it is not surprising that such laws also give effect to private property rights and existing land uses and activities. For example, existing use provisions in the planning laws of all Australian states and territories recognise entitlements to continue to use land for a particular purpose that was lawful prior to the introduction of new planning restrictions affecting that use.<sup>27</sup> This situation poses challenges for incorporating principles of adaptive management and flexibility into planning systems.<sup>28</sup>

In terms of adaptive management, if a government wants to subsequently alter or remove that particular existing use to achieve a particular policy objective (such as reduced climate hazard exposure), they may be required to compensate affected landholders. These requirements provide certainty to our communities and economies, but also represent challenges and opportunities in the use of formal land-use planning measures to advance adaptation objectives in existing settlements throughout Australia.

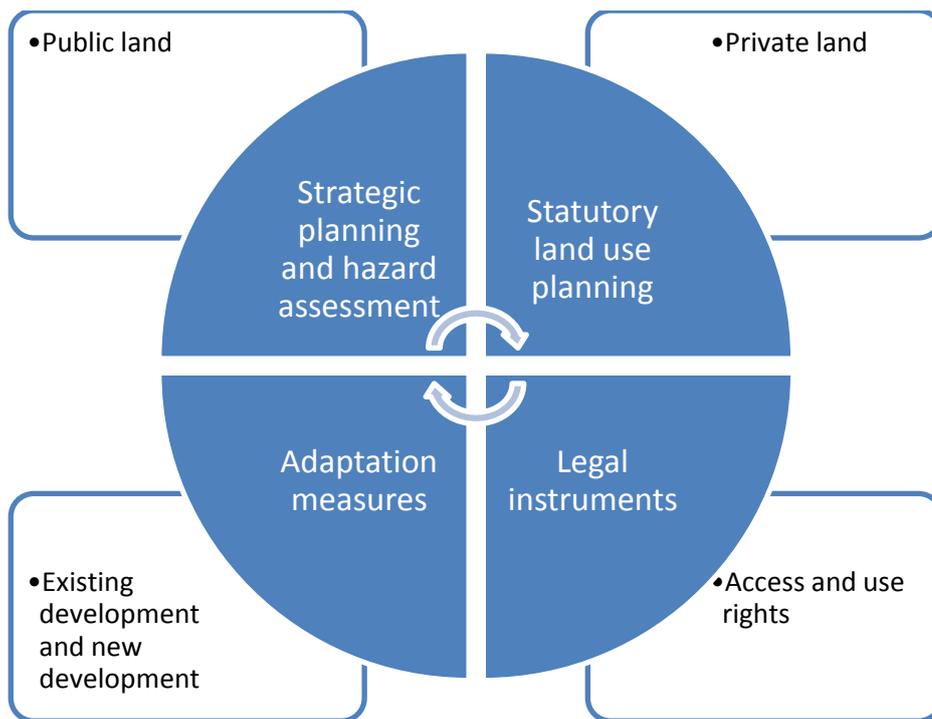
**Figure 1: Interrelationships between adaptation and legal models**

<sup>25</sup> For a discussion see Jan McDonald 'Objectives and Context' presented at 'Legal Tools for Promoting Adaptation Through Land-Use Planning' NCCARF Project Workshop, 25 October 2012, Melbourne.

<sup>26</sup> Des Eccles and Tannetje Bryant *Statutory Planning in Victoria* 3<sup>rd</sup> edition 2006 ,page 6.

<sup>27</sup> See Clause 63, *Victoria Planning Provisions*, made under the *Planning and Environment Act 1987* (Vic).

<sup>28</sup> Productivity Commission above n 1, p.178.



## 2.5 Spatial planning in Victoria – law and governance

### *Land-Use Planning*

Land use planning models can be understood from a range of perspectives, although a rational model of planning has predominated. Under this view, science and research form the foundation for the planning system. This approach is now augmented by an acknowledgment of the need for more collaborative approaches that recognise that planning occurs in a ‘negotiated space’. Moreover, Leitch et al argue that, ‘the institutional apparatus of urban and regional planning in Australia needs substantial renewal if it is to attend to climate change adaptation’.<sup>29</sup> In Australia, land-use planning is largely the responsibility of state and territory governments. State governments have, in turn, delegated responsibility for many planning functions to local government. The principal legislation governing land-use planning in Victoria is the *Planning and Environment Act 1987* (Vic) [P&E Act].

There are two major steps in the planning law process – first the making of schemes and secondly the control over the actual activity to occur in light of the planning process. The legislation requires planning policies and controls to be contained in local level planning instruments at the municipal scale, known as municipal planning schemes. These schemes are operationalized through spatial maps. The content of municipal planning schemes is standardised across the state via the use of standard planning provisions. As such, all planning schemes follow a prescribed format containing both ‘state standard provisions’ and ‘local provisions’. The state standard provisions are taken from the *Victoria Planning Provisions*, which include the *State Planning Policy Framework*, standard zones and overlay controls. The local provisions include a Municipal Strategic Statement (land use and

<sup>29</sup> Anne Leitch, Ben Harman and Marcus Lane, ‘From Blueprint to Footprint: Climate Change and the Challenge for Planning’ in Tim Bonyhady et al, (eds) *Adaptation to Climate Change: Law and Policy*, 2010, ch 3 p. 65.

development objectives, policies and strategies for achieving them) and specific provisions governing use and development within the municipality.

Local councils develop planning schemes (together with state government and within the scope of the standardised format noted above) and in many cases, act as the consent authority for development applications. The state planning minister has the final decision on the making or amendment of planning schemes.<sup>30</sup> The Minister also sets the *Victorian Planning Provisions* that must be included in all schemes;<sup>31</sup> can amend any planning scheme at will;<sup>32</sup> and can take the power to decide particular permit applications from councils.<sup>33</sup> State agencies or Ministers also often play a role in decision-making as a referral authority, either providing advice or direction to local governments on the determination of development applications; including in relation to natural hazard management requirements. A referral authority is classified as either ‘determining’ (meaning they have the power to determine the application) or ‘recommending’ (meaning they have the power to make recommendations to the consent authority on the determination of the application).

### *Incorporating natural hazard and adaptation objectives into land-use planning*

Naturally, there is a wide range of policy objectives reflected in planning instruments to guide the future use and development of land, and these have long included the management of risks associated with natural hazards. Under the P&E Act and the *Victorian Planning Provisions* a number of different types of statutory tools are provided to manage risks associated with bushfire, flood, coastal inundation and erosion. Many of these tools are also relevant for considering adaptation to increased incidence of other extreme events. These include:

- statements of policy objectives and strategic priorities to be taken into account in strategic and statutory planning functions;
- standardised spatial tools such as zones and overlays to delineate hazard prone areas and outline permitted land-uses and development controls;
- rules and standards prescribing considerations and requirements for decision-makers when assessing and determining development applications; and
- requirements to refer development applications to specialised referral authorities with hazard management expertise.

In addition to the more formal regulatory measures above, the Victorian Government has developed a range of further tools such as guidelines, practice notes and hazard mapping to support decision-making on natural hazards within the land-use planning regime.

### *Integrated statutory frameworks*

Like other state jurisdictions, the principal planning legislation in Victoria - the P & E Act - works in conjunction with a range of related, often subject-specific legislation, including in relation to natural hazard management and emergency management. This integration is important: the subject specific legislation provides mechanisms to develop targeted strategic plans and regulatory measures which are then implemented often in large part through statutory land-use planning regimes.

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<sup>30</sup> *Planning and Environment Act 1987* (Vic), s 8.

<sup>31</sup> *Planning and Environment Act 1987* (Vic), s 4A.

<sup>32</sup> *Planning and Environment Act 1987* (Vic), s 8.

<sup>33</sup> *Planning and Environment Act 1987*, s 97B.

In relation to spatial planning, there are two particularly important statutory regimes which introduce natural hazard and climate change adaptation considerations into the land-use planning regime: coastal management and floodplain management. While both of these regimes integrate with land-use planning to control new development in hazard prone areas; they are not limited to controlling future land-use, but broad enough in scope to also cover climate hazard risks for existing settlements and infrastructure. As such, they provide an important potential conduit for the development of broader climate change adaptation policies for existing communities.

Pursuant to the *Climate Change Act 2010* decision makers are required to take climate change into account when making specified decisions under the *Catchment and Land Protection Act 1994*, *Coastal Management Act 1995*, *Environment Protection Act 1970*, *Flora and Fauna Guarantee Act 1988*, *Public Health and Wellbeing Act 2008* and *Water Act 1989*.

**Coastal Management:** Victoria has specific coastal management legislation - *Coastal Management Act 1995* (Vic) [CM Act]. Similar to coastal management regimes in some other state jurisdictions, such as NSW and QLD, the CM Act provides a basis for the development of specific coastal management policy and planning instruments that are integrated into the land-use planning framework and implemented in large part via planning provisions. This includes the overarching *Victorian Coastal Strategy 2008* (a 2013 draft replacement strategy is currently out for public comment); regional *Coastal Action Plans* (the key statutory mechanism for implementing the overarching strategy), and *Local Coastal Management Plans*. All of these mechanisms include some provision on coastal climate hazards. For example, in relation to coastal climate change, the 2008 VCS provided the following policy directions:

- Plan for sea level rise of not less than 0.8 m by 2100, and allow for the combined effects of tides, storm surges, coastal processes and local conditions when assessing risks and impacts.
- Apply the precautionary principle to planning and management decision-making when considering the risks associated with climate change.
- Prioritise the planning and management responses and adaptation strategies to vulnerable areas, such as protect, redesign, rebuild, elevate, relocate and retreat.
- Ensure that new development is located and designed so that it can be appropriately protected from climate change's risks and impacts and coastal hazards.
- Avoid development within primary sand dunes and in low-lying coastal areas.
- Encourage the revegetation of land abutting coastal Crown land using local provenance indigenous species to build the resilience of the coastal environment and to maintain biodiversity.
- New development that may be at risk from future sea level rise and storm surge events will not be protected by the expenditure of public funds.
- Ensure that climate change should not be a barrier to investment in minor coastal public infrastructure provided the design-life is within the timeframe of potential impact.
- Ensure planning and management frameworks are prepared for changes in local conditions as a result of climate change and can respond quickly to the best available current and emerging science.

- Ensure all plans prepared under the *Coastal Management Act 1995* and strategies relating to the coast, including Coastal Action Plans and management plans, consider the most recent scientific information on the impacts of climate change.<sup>34</sup>

The CM Act also establishes governance structures for coastal management, including Regional Coastal Boards which oversee the development and implementation of coastal action plans. In recent years, the Coastal Boards have been particularly important drivers of climate adaptation policy in Victoria.<sup>35</sup>

Examination of the appropriate institutional ‘locations’ for adaptation planning is often a neglected dimension of identifying the relevant legal and regulatory tools that can exist in tandem with formal land use planning structures. Institutions which can adopt a regional or strategic framing perspective, such as regional NRM or location specific boards may offer the capacity for a coordinated, longer term approach to climate adaptation.

### *Waterway and Floodplain Management:*

Governance arrangements for waterway and floodplain management range over several pieces of legislation and agency responsibilities. The arrangements intersect at particular points with the P & E Act and with associated legislation such as the *Building Act 1993* and *Subdivision Act 1988*. Floods are a natural part of Victorian river systems. Periodic flooding provides fundamental ecological functions that support agricultural productivity and community benefits, as well as posing risks to life and property. Accordingly, overarching floodplain management needs to balance a range of objectives. However, following major floods in Victoria in 2010, 2011 and 2012 a number of initiatives were adopted to build resilience to extreme flood events and to provide enhanced flood risk assessment, flood warning systems and flood emergency response.

The main provisions for waterway and floodplain management are largely contained in the *Water Act 1989 (Vic)* [the Water Act].<sup>36</sup> An exposure draft of revised water legislation has been released.

The Water Act provides for the nomination of Waterway Managers and Floodplain Management Authorities and prescribes a range of statutory functions for these bodies. In non-metropolitan areas, these roles are played by Catchment Management Authorities. Melbourne Water performs these functions for the Melbourne Metropolitan area, the Werribee and Upper Maribyrnong catchments and catchments which flow into Western Port Bay.

Floodplain Management Authorities currently have a number of important statutory functions in relation to managing flood risk, which integrate with land-use planning regimes and also involve broader planning and advisory functions. These include:

<sup>34</sup> *Victorian Coastal Strategy 2008*, Part 2.1 A revised draft strategy has been released.

<sup>35</sup> For example, the Gippsland Coastal Board has been involved in landmark litigation on taking climate change considerations into account in planning decisions. For example, *Gippsland Coastal Board v South Gippsland SC and Ors* (No 2) [2008] VCAT 1545.

<sup>36</sup> Part 10, Division 2 provides for the designation of waterway management districts and the control of works in and around waterways which, inter alia, prevent or obstruct flow or interfere with flood behaviour. Part 10, Division 4 provides for the development of regional floodplain management strategies, which include flood risk mapping. The *Catchment Management and Land Protection Act 1994 (Vic)* is also relevant.

- finding out how far floodwaters are likely to extend and how high they are likely to rise;
- declaring flood levels and flood fringe area and building lines;
- controlling developments that have occurred or that may be proposed for land adjoining waterways;
- developing and implementing plans and take any action necessary to minimise flooding and flood damage; and
- providing advice about flooding and controls on development to local councils, the Secretary to the Department and the community.<sup>37</sup>

Of particular relevance is their role in assisting municipal councils to incorporate flood mapping and development controls into their planning schemes to manage and reduce future growth of flood risk, including through the preparation of local floodplain development plans that can be incorporated into planning schemes to provide localised rules and standards to govern development decision-making. Currently, floodplain authorities respond to land-use, development, and planning scheme amendment applications referred by municipal councils under the P&E Act. There are amendments proposed. In Part 7.5 of the draft Water Bill the relevant authorities under s 283 will be required to:

- to develop and implement plans and take any action necessary to minimise flooding and flood damage;
- to control developments, or proposed developments, on land adjoining waterways
- that may be subject to flooding; and
- to provide advice about flooding and related controls on development.

The authorities are to be given express powers to control developments on flood prone land. A power to control would suggest a robust referral power and development approval functions.

In addition to the floodplain management functions, there are two flood committees - The State Flood Policy Committee which reports directly to the Office of the Emergency Services Commissioner. The Committee oversees the development and implementation of the Victorian Flood Management Strategy and its annual review. The second committee, The Victorian Flood Warning Consultative Committee is convened by the Bureau of Meteorology.

Given the wide sweep of matters caught under waterway and floodplain management, the range of public agencies involved is diverse. There are significant intersections also with the private sector insurance industry. The insurance industry sets premiums for given areas, while individual insurance contracts between industry and consumer set the nature and scope of the coverage. The articulation between land use planning, flood infrastructure such as levees; and insurance is an important influence is shaping how communities adapt to enhanced flood risk.<sup>38</sup> The linking between floodway settings and overarching planning controls is complex, but this linking has long been one of the major instruments used to mitigate flood risk. To what extent a range of other measures may assist in addressing increased flood risk under climate change is the subject of much current research and experimentation in Australia and in comparative countries. The potential utility of these measures is discussed below, especially in regard to existing settlements.

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<sup>37</sup> *Water Act 1989 (Vic)*, s 202.

<sup>38</sup> See discussion in Caroline Wegner, Karen Hussey and Jamie Pittock, 'Living with floods: Key lessons from Australia and abroad', NCCARF Synthesis and Integrative Research Final report 2013, 196.

### *Broader Adaptation planning*

In addition to the formal statutory-based planning regimes discussed above, there have been a number of strategic planning processes undertaken around Australia, particularly in a coastal context. Some projects have proceeded without specific statutory direction or mandate.<sup>39</sup> Many of these processes seek to articulate a broad adaptation pathway (e.g. protect, accommodate, retreat) and coordinate spatial planning measures (for both existing *and* new development) for a particular region or local government area. As such, they are deliberately broader in scope than formal land-use planning. They have typically involved alliances of municipal councils and the involvement of local stakeholders in developing and applying decision-support tools to explore the range of adaptation options for local communities. A number of such projects have been undertaken, or are currently underway, in Victoria.

For example, the *Port Phillip Bay Coastal Adaptation Pathways Project* was initiated in 2011 by the Municipal Association of Victoria, the Central Coastal Board and the Association of Bayside Municipalities with funding from the Federal Department of Climate Change and Energy Efficiency and the Victorian Department of Planning and Community Development. It involved four urbanised coastal municipalities. The project has developed a decision making framework which can be used by land managers to help identify and assess adaptation pathways for urbanised coastal areas.<sup>40</sup>

Similar regional approaches to adaptation planning have been developed in other Australian jurisdictions and in overseas countries. Broader approaches that incorporate a project or 'learning by doing' focus have been important drivers of adaptation. Many cities for example have played a leading role in adaptation planning processes.<sup>41</sup> Macintosh et al argued that:

'there is a clear need for an overarching, integrated process (parallel and complementary to the land use planning process) to establish the preferred adaptation pathway for a region and coordinate the full range of spatial planning measures required to realise these outcomes.'<sup>42</sup>

They stress the importance of developing a state-wide policy framework for spatial planning including basic underlying policy principles on cost-sharing and roles and responsibilities; clear direction on the most appropriate scale for these planning initiatives (regional, local, or based on geophysical compartments), and options for integrating plans across scales. They also explore potential benefits of a statutory basis for adaptation planning processes and local adaptation plans in order to formalise roles and responsibilities and provide greater certainty about implementation.<sup>43</sup> These are particularly important considerations when thinking about how to strategically operationalise the full range of adaptation planning measures, including those that fall outside the central ambit of existing formal land-use planning regimes.

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<sup>39</sup> Many of these broader spatial planning processes have been undertaken under the federal government's Local Adaptation Pathways program; which funded local governments to prepare climate risk assessments and develop action plans addressing likely local climate change impacts.

<http://www.climatechange.gov.au/climate-change/adapting-climate-change/climate-change-adaptation-program/local-adaptation-pathways>

<sup>40</sup> <http://abm.org.au/adaptationproject/>

<sup>41</sup> D. Kennedy, L. Stocker and G. Burke, 'Australian local government action on climate change adaptation: some critical reflections to assist decision-making' (2010) 15 *Local Environment* 805–816, 806.

<sup>42</sup> Macintosh et al, 2013 above n x, 117.

<sup>43</sup> *Ibid.*

Despite the potential for many areas of law and regulation to be relevant in responding to climate change impacts, many of the specific laws promoting and mandating climate and hazard risk management operate at a generic level. Under this model, typically the state, rather than managing the risks to non-state actors directly prescribes processes and systems which the regulated actors must follow to manage their risks. The state ‘regulates at a distance’ and seeks to ensure compliance by the private sector and government agencies where relevant.<sup>44</sup>

Victoria is one of the few Australian states with specific climate change legislation, including provision for the development and subsequent review of a state adaptation plan;<sup>45</sup> the first of which was tabled in 2013. While the *Victorian Climate Change Adaptation Plan* address strategic issues for adaptation planning, such as integration of roles and responsibilities under a whole of government approach, it is a high-level policy document that provides general directions and principles rather than discrete measures for implementation. Currently, the Climate Change Act does not provide an explicit statutory basis for spatial planning for adaptation at different scales or in different sectors. The Act does direct a prescribed list of decision-makers to have regard to climate change, (the P & E Act is not included). It adopts principles of integrated decision-making and risk assessment, pertinent to planning decisions.<sup>46</sup>

### 2.3 Courts and Tribunals

Courts and tribunals, either in their original jurisdiction, or as an appeal and review body, are an important forum for articulating the scope of public and private responsibilities in adaptation contexts.<sup>47</sup> Yet the role of courts and tribunals in setting legal rules and principles for adaptation in planning systems has received relatively limited attention in general examinations of climate change adaptation. Courts and tribunals interpret and apply relevant statutes. Legislation typically sets broad general rules and prescribes roles and responsibilities for statutory and other bodies. In respect of statutory responsibilities, in some instances, legislation can set immunities in relation to certain areas of law governing hazard response and management in given circumstances. These instruments are sometimes referred to as ‘liability shields’ or ‘indemnity statements’.<sup>48</sup> Such labels need to be treated with caution as there are many factors relevant to their implementation in any given circumstance – including how a court may interpret and apply them to a factual situation.

Courts and Tribunals can play a role too in setting proactive rules and principles for dealing with the risks of climate change in the absence of set legislative adaptation principles,<sup>49</sup> or clarify the

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<sup>44</sup> Braithwaite, *The New Regulatory State*, 224–6.

<sup>45</sup> *Climate Change Act (Vic)*, s 16. South Australia also has specific climate change legislation - *Climate Change and Greenhouse Emissions Reduction Act 2007 (SA)*. While its focus is predominantly on climate change mitigation, the Act references adaptation in its objectives (s3(1)(h)). It also commits the Minister to develop policies that will assist in “promoting or implementing measures to facilitate adaptation to circumstances that will inevitably be caused by climate change” (s14(1)(a)(ii)). Under the umbrella of the Act, the SA Government has released a Climate Change Adaptation Framework, under which both regional and sectoral approaches to climate change spatial planning are being developed.

<sup>46</sup> *Climate Change Act 2010* ss 9 and 10.

<sup>47</sup> Jacqueline Peel, ‘The Role of Climate Change Litigation in Australia’s Response to Global Warming’ (2007) 24 *Environmental and Planning Law Journal* 90, 91.

<sup>48</sup> Productivity Commission above n 1, p. 181.

<sup>49</sup> Brian Preston, ‘Climate Change Litigation’ (Parts 1 and 2) Part 1: (2011) 5(1) *Carbon and Climate Law Review* 3; Part 2: (2011) 5(2) *Carbon and Climate Law Review* 244.

application of specific rules and principles in factual circumstances.<sup>50</sup> In the absence of clear statutory direction on adaptation though, there is the potential for an ad hoc approach to adaptation planning to develop through case law.

### 3. Climate Hazards in Victoria

The Victorian Climate Change Adaptation Plan identifies five critical climate hazards in Victoria:

- Bushfires
- Heatwaves
- Floods and storms
- Sea level rise and coastal inundation
- Drought

The 2013 Climate Change Adaptation Plan considered the implications of these risks for Victoria's community, including for critical public assets and services provided by the Victorian Government.<sup>51</sup> One indicator of the impacts of natural hazards on Victoria's community is the estimate by the Department of Treasury and Finance that the Victorian Government has spent over \$4 billion over the past 10 years on response and recovery to climate-related events such as bushfire, flood and drought. Research estimates considerable additional expenditure in the future.<sup>52</sup> Clearly, as well as economic impacts there are substantial cultural and social effects as well.

Further consideration of specific natural hazards is not provided here given the examination of hazards and risks contained in the Victorian Adaptation Plan, and analysis of the impacts of increased risks of natural hazards arising from climate change in a range of recent literature.<sup>53</sup> Further, this report does not deal with drought hazard in detail. The report recognises that the risks of prolonged drought are predicted to increase under climate change, but given the specialised nature of adaptation to drought and water scarcity, as well as extensive research to date<sup>54</sup> these issues are not canvassed in depth. It is noted though that spatial planning has the potential to play an important role in adaptation in the water sector, for example in relation to implementation of water sensitive cities<sup>55</sup> and in utilisation of innovative water supply sources, such as stormwater recycling.<sup>56</sup>

Several points relevant to legal and regulatory models for adaptation planning can be noted:

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<sup>50</sup> See, e.g., *Taip v East Gippsland Shire Council* [2010] 177 LGERA 236.

<sup>51</sup> Victorian Government, *Victorian Climate Change Adaptation Plan 2013* p. 6, Accessed 19 April 2014 <http://www.climatechange.vic.gov.au/adapting-to-climate-change/Victorian-Climate-Change-Adaptation-Plan>

<sup>52</sup> Ibid.

<sup>53</sup> S. Boulter et al. *Natural Disasters and Adaptation to Climate Change*, Cambridge 2013.

<sup>54</sup> Poh-Lin Tan, 'Adaptation Measures for Water Security in a Changing Climate: Policy, Planning and Law' in Tim Bonyhady, Andrew Macintosh and Jan McDonald (eds) *Adaptation to Climate Change: Law and Policy* (Federation Press, 2010) 135.

<sup>55</sup> R. Brown and T. Wong 'Transitioning to Water Sensitive Cities: Ensuring Resilience through a new Hydro-Social Contract', 11th International Conference on Urban Drainage, Edinburgh, Scotland, UK, 2008. [http://web.sbe.hw.ac.uk/staffprofiles/bdgsa/11th\\_International\\_Conference\\_on\\_Urban\\_Drainage\\_CD/ICUD08/pdfs/638.pdf](http://web.sbe.hw.ac.uk/staffprofiles/bdgsa/11th_International_Conference_on_Urban_Drainage_CD/ICUD08/pdfs/638.pdf)

<sup>56</sup> Office for Living Victoria, *Water Cycle Planning* <http://www.livingvictoria.vic.gov.au/planning>

- Climate-related risks will be experienced to different degrees across Victoria – but climate risk assessment and management are important for all parts of the state.
- Climate risk assessment and responses must consider immediate and obvious risks, such as bushfires, floods or heatwaves, and likely gradual and subtle changes, such as seasonal shifts and changes in average temperatures or coastal erosion.<sup>57</sup>

Further, particular climatic hazards will require consideration of idiosyncratic uncertainties and time frames – for example whether the risks impact slowly and incrementally or are episodic in nature. These factors will influence the planning response, together with consideration of the magnitude and probability of the potential risks to life and property. In certain instances a risk assessment and best practice guide has been developed for dealing with specific hazards at a generic level. For example, the Victorian coastal hazard guide outlines a five-stage coastal hazard risk management framework based on best practice.<sup>58</sup> The implications of climate change on coastal hazards and the variability of impact is identified:

*Climate change is unlikely to create any new coastal hazards, but at many locations it will make existing hazards worse. This could result in increased rates of coastal erosion, more extensive and frequent coastal flooding, increasing intrusion of seawater into estuaries and coastal aquifers, changing water quality, groundwater characteristics and sedimentation, and increasing seawater temperature that may affect ecosystems. The effect of coastal hazards and the consequential exacerbating influence of climate change will affect the coastal margins around the Victorian coastline. However, the impact will depend upon both the coastal hazard and the shoreline type or landform.<sup>59</sup>*

There is a need to consider local place variations in terms of climate risk and spatial planning. 'Particular regions, locations, sites and communities are likely to be affected differently by various climate risks such as bushfire, flood and sea level rise... Appropriate land management and planning and building measures can ensure that there is consideration of risks to settlements and infrastructure from climate-related hazards and of protection for heritage and environmental values.'<sup>60</sup>

## 4. Tools for Adaptation Planning

### 4.1 Framing Adaptation Responses

In the adaptation and risk management literature, general classifications of adaptation strategies have been developed that can guide the development of legal and regulatory models. Fünfgeld identifies a range of 'interventions' including:

- Legislation and regulation – laws and regulation designed to set standards that guide, restrain or reward actions of others

<sup>57</sup> The State of Victoria Department of Sustainability and Environment 2012, Victorian Coastal Hazard Guide 2012. [http://www.climatechange.vic.gov.au/\\_\\_data/assets/pdf\\_file/0020/139241/Victorian-Coastal-Hazard-Guide.pdf](http://www.climatechange.vic.gov.au/__data/assets/pdf_file/0020/139241/Victorian-Coastal-Hazard-Guide.pdf)

<sup>58</sup> The State of Victoria Department of Sustainability and Environment 2012, Victorian Coastal Hazard Guide 2012. [http://www.climatechange.vic.gov.au/\\_\\_data/assets/pdf\\_file/0020/139241/Victorian-Coastal-Hazard-Guide.pdf](http://www.climatechange.vic.gov.au/__data/assets/pdf_file/0020/139241/Victorian-Coastal-Hazard-Guide.pdf)

<sup>59</sup> Ibid page 39.

<sup>60</sup> Victorian Adaptation Plan 2013 page 34.

- Capital works and infrastructure – new infrastructural projects such as a sea wall, or modification of existing structures such as roads or railways
- Economic instruments – taxes, charges, subsidies, grants tradeable permits, government loans, fiscal sector changes
- Governance – reforming the way formal or informal organisations make decisions within themselves or with others
- Research and innovation – investment in research to develop new innovative solutions to emerging policy challenges and opportunities
- Capacity development – processes through which individuals, organizations, and societies obtain, strengthen, and maintain the capabilities to set and achieve their own objectives over time
- Information and communications – dissemination of targeted or large scale information or communication campaigns
- Education – using the formal education system for the delivery of particular policy objectives.<sup>61</sup>

While Fungeld separates legal and regulatory ‘interventions’ the analysis here sees a strong complementarity between these structures. Moreover, in many jurisdictions, Australia included, adaptation usually has not developed in a purpose-built legal framework that employs discrete regulatory instruments. Adaptation measures typically have utilised policy, incentive and risk assessment models<sup>62</sup> or developed measures through existing legal forms, such as planning laws.<sup>63</sup> In addition, there are social learning strategies<sup>64</sup> to assist local government to develop an adaptive approach to climate change. For example, a toolkit designed by the International Council for Local Environmental Initiatives (ICLEI) Cities for Climate Protection adaptation initiative.<sup>65</sup> A number of local councils in Queensland, NSW and Victoria have participated in programs trialling these concepts. Regional vulnerability assessments, implemented through local governments have also featured in the suite of Climate Change Adaptation Programs sponsored by the federal government.<sup>66</sup>

Feenstra et al (1998) used a framework of eight broad categories of adaptation response:

- bear losses; research; educate and inform; modify the threat; prevent effects; change use; change location; and share losses.<sup>67</sup>

<sup>61</sup> H. Fungeld ‘Local climate change adaptation planning: A guide for government policy and decision makers in Victoria’, VCCCAR project: *Framing Adaptation in the Victorian Context* RMIT University, 2012.

<sup>62</sup> Hans-Martin Füssel, ‘Adaptation Planning for Climate Change: Concepts, Assessment Approaches and Key Lessons, Sustainability Science’ (2007) 2(2) *Sustainability Science* 265.

<sup>63</sup> Leitch et al, above n 3, 64.

<sup>64</sup> TF Smith and NS Lazarow, ‘Social Learning and the Adaptive Management Framework’ (2006) *Journal of Coastal Research* SI 39, 952.

<sup>65</sup> ICLEI-Oceania, *Cities for Climate Protection Integrated Action (CCP-Adapt)* (2010) International Council for Local Environmental Initiatives <<http://www.iclei.org/index.php?id=11344>> accessed 20 October 2011.

<sup>66</sup> BL Preston, T Smith, C Brooke, R Gorddard, and T Measham, G Withycombe, K McInnes, D Abbs, B Beveridge and C Morrison, C. *Mapping Climate Change Vulnerability in the Sydney Coastal Councils Group*. (Prepared for the Sydney Coastal Councils Group by the CSIRO Climate Adaptation Flagship, Canberra, 2008).

<sup>67</sup> Feenstra J et al (eds), *Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies* UNEP and Institute for Environmental Studies, (1998).

In addition, there are opportunities presented by adaptation, for example, the opportunity to adopt more efficient and sustainable land uses and activities when land use change occurs.

Adaptation principles have been adopted for managing specific climate hazard risks.

**Coastal** - The hierarchy for managing risk under the Victorian Coastal Hazard Guide is: avoidance, reduction, sharing, transfer, with best practice using a combination of all four.<sup>68</sup>

**Flood**- Hallegatte assessed a range of flood risk strategies.<sup>69</sup> They include:

- No-regrets strategies: beneficial even without additional climate change risks;
- Flexible: for example, measures that are easily reversible, or modified;
- Low cost: including structure / technology designs that enable low-cost modifications;
- Soft strategies: such as information, capacity, institutional or policy, and ecosystem-based adaptation like floodplain restoration;
- Avoiding long-term commitment: as uncertainties increase further into the future; and
- Synergies: that engage positive and negative externalities for other sectors and stakeholders

**A central role for legal and regulatory frameworks is to translate general response concepts into specific legal and regulatory mechanisms particularly in the planning law context.**

Such approaches provide a useful conceptual basis for thinking about the role played by adaptation planning measures in addressing climate hazards. The table below relates the broad categories of adaptation response developed in the adaptation literature to applicable legal and regulatory /planning measures.

**Table 1. Relating adaptation strategies for climate hazards to adaptation planning measures**

Adaptation Strategy	Application to climate hazards	Legal and Regulatory Measures
<p><b>Avoid hazard risk</b></p>	<p>Site or relocate vulnerable land-uses (e.g. residential, schools and hospitals) away from hazard prone areas.</p> <p>Adopt a precautionary approach to new residential or infrastructure development, to avoid coastal hazards.</p>	<p>Identification of hazard prone areas via zones, overlays or incorporated hazard mapping in strategic planning with cognate planning policies (preferably at state/ regional level)</p> <p>Statutory planning - prohibitions and/or restrictions on vulnerable land-uses in hazard prone areas or where high risk from a coastal hazard.)</p> <p><i>Appropriate for new land-use and existing development where transition is possible</i></p>

<sup>68</sup> The State of Victoria Department of Sustainability and Environment 2012, Victorian Coastal Hazard Guide 2012. [http://www.climatechange.vic.gov.au/\\_data/assets/pdf\\_file/0020/139241/Victorian-Coastal-Hazard-Guide.pdf](http://www.climatechange.vic.gov.au/_data/assets/pdf_file/0020/139241/Victorian-Coastal-Hazard-Guide.pdf) page 69

<sup>69</sup> S. Hallegatte "Strategies to adapt to an uncertain climate change." (2009) 19 *Global Environmental Change* 240-247.

<p><b>Prevent or reduce the effects of climate hazards</b></p> <p>Often associated with an <i>accommodate</i> strategy for continued use and development in hazard prone areas.</p> <p>Often associated with a defend strategy.</p>	<p>Siting, design and other risk-reduction measures that reduce or eliminate the harmful effects of climate-related threats</p> <p>Contingent development approval models</p>	<p><i>For new development:</i> Development controls -siting and design requirements (e.g. coastal and flood set-backs; defensible space for bushfire)</p> <p>Corresponding construction standards (e.g. fire level rating; flood floor levels and elevated buildings,)</p> <p>Subdivisional and other design controls for emergency access</p> <p><i>For existing development:</i></p> <p>Encourage or require retro-fit of houses or other risk-reduction measures (e.g. creation of wider floodway/ storm surge space around dwellings, green infrastructure to reduce heat stress etc)</p> <p>Modification of dwelling standards e.g. at point of sale to reduce heat stress</p> <p><i>Applies to existing development.</i></p>
<p><b>Change use or change location</b></p> <p>Often associated with a <i>retreat</i> strategy.</p>	<p>Move vulnerable land-uses from hazard prone areas.</p> <p>Convert hazard prone land to non-vulnerable uses such as recreational reserves or open space zones.</p>	<p>Rezoning of land to move vulnerable uses away from hazard prone areas.</p> <p>Prohibitions or restrictions on use and/or development in hazard prone areas.</p> <p>Imposition of differential rates and levies to prompt land use change to less vulnerable uses.</p> <p>Acquisition of land for buffers and reserves. Adoption of easements and covenants for areas of private land where buildings retained but surrounding perimeter at risk (may be interim)</p> <p>Land swaps, buy backs, transferable development rights.</p> <p><i>Applies to existing development.</i></p>
<p><b>Inform of potential hazard exposure</b></p>	<p>Disseminate hazard information to relevant stakeholders to facilitate private adaptation.</p> <p>Require hazard self-assessment</p>	<p>Mandatory disclosure of hazard information in planning certificates or via land title registrations.</p> <p>Publicly available hazard mapping to identify hazard prone areas.</p> <p><i>Applies to new and existing development.</i></p>

<b>Develop flexible approaches</b>	Seek to match the timeframe or incidence of the natural hazard/ climate risk to planning measures	Set period development approvals or trigger event development conditions of approvals
<b>Share Costs and Transitions</b>	Facilitate the sharing of costs associated with preparing for and responding to climate hazards across the community.	Regulate insurance for certain land-uses in hazard prone areas.  Hazard-targeted taxes, charges and levies.  <i>Applies to new and existing development.</i>

Several other studies have further classified spatial planning tools according to their function in addressing different climate hazard scenarios and have explored the social, economic, institutional and political barriers to their use. These range from a specific focus on a particular climate hazard<sup>70</sup> to a general typology that analyses five common planning ‘tool types’ : vision/mission statement, strategy planning, agenda/project based planning, policy/regulation/code, and design as part of available adaptation planning instruments.<sup>71</sup>

In this report, we draw particularly on a comprehensive Australian study of this nature, by Macintosh et al (2013), which proposed a typology of spatial planning instruments to support climate change adaptation in coastal and bushfire prone areas in Australia.<sup>72</sup> This study proposed seven broad categories of instrument and explored their current and potential use to support climate change adaptation in Australian settlements. A summary of the instruments types is reproduced below (see Box 1).

**Box 1: Spatial planning Instruments for Adaptation (extract from Macintosh et al 2013)**

- 1. Framing instruments**, such as the objectives, principles and strategy clauses in state, regional and local planning policies, articulate over-arching policy goals and objectives and outline how different regulatory and non-regulatory instruments can be used to achieve these objectives.
- 2. Information instruments** are used to communicate information, including climate hazard risks, to current and future property owners and more broadly. Instruments such as planning certificates do not regulate land use or development; their functions are purely communicative. Other information instruments, such as zones, overlays and agreements on title, have a dual purpose; they can be used to transmit information and to regulate land use and development.

<sup>70</sup> For example, Cheong, S (2011) ‘Policy solutions in the US’ 106 *Climatic Change*, 57-70.; which reviewed planning instruments available to protect coastal settlements from coastal climate hazards in the United States, which employed four broad categories: relocation (forced and voluntary), retreat (setbacks and rolling easements), zoning and building standards, and financial protection (insurance and subsidies). See also: Turbott, C, (2006) *Managed Retreat from Coastal Hazards: Options for Implementation* (Hamilton East: Environment Waikato), which provides a survey of instruments to implement a managed coastal retreat strategy in New Zealand, including information, regulation and financial instruments.

<sup>71</sup> For example, see Hurlimann, A., March, A (2012) ‘The role of spatial planning in adapting to climate change’ 3 *WIRES Climate Change* 477-488; which analyses five common planning ‘tool types’.

<sup>72</sup> Macintosh et al above n 14. See also Macintosh A, Foerster A, McDonald J ‘Policy Design, Spatial Planning and Climate Change Adaptation: a case study from Australia’ *Journal of Environmental Planning and Management* (currently under review).

**3. Regulatory instruments** are legally enforceable restrictions placed on land use activities that dictate where, what and how use and development occurs. They are employed to prevent or reduce the severity of climate hazards, eliminate or reduce the harmful effects of climate hazards, or reduce exposure to climate hazards. In this analysis, regulatory instruments have been categorised as either fixed or flexible.

**Fixed regulatory instruments** (such as zones and overlays; hazard mapping and management plans; non-spatial regulatory restrictions; permit requirements and approval conditions; codes and guidelines; compulsory insurance) are based on the assumption that once lawfully commenced, an existing land use will be beyond the reach of the planning system and can continue indefinitely unless intensified, expanded or abandoned.

**Flexible regulatory instruments** (such as those that confer qualified development or use rights or involve a modification of existing lawful uses) specifically provide governments with powers to control land use and development, even after it has lawfully commenced, and therefore can be used to facilitate changes in land use and development in response to changing hazard threats. This allows a more responsive approach in light of the uncertainties surrounding the distribution, timing and magnitude of climate change impacts.

**4. Compulsory acquisition instruments**, including property purchase and the designation of acquisition land, can be used for a broad range of public purposes, including the resumption of hazard-prone land. Compulsory acquisition can be combined with certain voluntary instruments, such as lease-back or covenant schemes, to lower costs to government and allow continued use of land until hazards materialise.

**5. Voluntary instruments**, involve the use of positive incentives to control or influence where, what and how land use and development occurs in order to reduce sensitivity or exposure to climate hazards, but do not compel compliance or participation. Examples include financial inducements to undertake hazard mitigation activities, voluntary buy-back schemes, land swaps and transferable development rights.

**6. Taxes and charges:** Taxes, such as elevated council rates imposed on particular land uses in high risk areas, can be used as a spatial planning instrument to provide incentives to alter land use and development in response to climate hazards. Taxes can also be used to raise funds to assist in preparing for, or responding to, climate hazards. Charges can be used to recoup costs from landholders that benefit from protective measures provided by government agencies, and to recoup the cost of damage remediation measures provided to particular landholders or communities.

**7. Liability shield instruments** provide a partial or full exemption from legal liability to specified entities if they take a particular action, or fail to act in a particular way, in relation to climate hazards. As such, these instruments can prevent the risk (or perception of risk) of legal liability operating as a barrier to adaptation decision-making. The two main approaches are statutory immunities from liability and developer indemnity agreements.

In their review of the use of these seven broad instrument types around Australia, Macintosh et al identified a number of dominant patterns of instrument design and implementation, which are important to bear in mind when considering spatial adaptation planning in Victoria:<sup>73</sup>

- While *policy framing instruments* were widely used to provide climate hazard management and adaptation policy objectives, these often lacked detail and specificity in terms of providing clear and unequivocal guidance for decision-makers on how to apply the range of

<sup>73</sup> Ibid. See also Foerster A, Macintosh A and McDonald J, (2013) 'Transferable Lessons for Climate Change Adaptation Planning?: Managing bushfire and coastal climate hazards in Australia' 30 *EPLJ* 469.

available spatial planning instruments in different hazards contexts.<sup>74</sup> This was attributed in part to the contested nature of climate change policy, particularly in a coastal context; however it was also noted as a major barrier to the consistent and effective application of available planning instruments to address climate hazards.

- While there was a strong reliance on *fixed regulatory* measures (particularly managing hazard risks via conditions on development approvals); the research identified considerable resistance to the use of more *flexible regulatory* measures (such as event-dependent approvals or expanding the regulation of existing uses) to manage the uncertainties and long time frames associated with climate change impacts. The authors argued that these measures have a particular role to play in a new development context as ‘they allow current use and enjoyment of land until such time as the hazard materialises.’<sup>75</sup>
- Further, despite high level policy endorsement of the need to use *information instruments* to support private adaptation; this research also identified considerable resistance to the use of information instruments in practice, particularly those instruments which specified property-specific hazard information, given concerns about impacts on private property values.<sup>76</sup>
- Finally, the report showed that many of the broader spatial planning instruments more suited to managing risks in existing settlements (such as *acquisition, voluntary instruments* and *taxes and charges*) have been used only sparingly to date, often in response to major natural disasters, such as the 2009 Black Saturday bushfires in Victoria or the 2011 Queensland floods.

The next section considers findings from this study, as well drawing on other research such as decision-making support<sup>77</sup> to develop a tool box of measures for potential use within adaptation planning. The following analysis evaluates the planning tools and instruments for implementation in Victoria.

## 5. Implementation of Adaptation Planning Measures in Victoria

### 5.1 Planning and Institutional Context

Discussion of spatial planning in Victoria focuses on three adaptation planning contexts:

- New development;
- Existing settlements; and
- Public land.

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<sup>74</sup> For further discussion, see Macintosh A, ‘Coastal climate hazards and urban planning: how planning responses can lead to maladaptation’ (2012) *Mitigation & Adaptation Strategies for Global Change* DOI 10.1007/s11027-012-9406-2.

<sup>75</sup> Macintosh et al, above n 2, 77.

<sup>76</sup> See also, Govind P, ‘Managing the relationship between adaptation and coastal land use development through the use of s 149 certificates’ (2011) (1) *Macquarie Journal of International and Comparative Environmental Law* 94; England, P, ‘Too much too soon? On the rise and fall of Australia’s coastal climate Change law’ (2013) *Environmental & Planning Law Journal*, 390-402.

<sup>77</sup> H. Funfgeld and D. McEvoy Framing climate Adaptation in Policy and Practice Framing Project Working Paper 2011,

The above categorisation is an oversimplification as land use and activities covered by planning systems are much more fine-grained. Further, the social and demographic fabric of areas plays a major role in determining community resilience and vulnerability to climate change impacts. Similarly, Institutional arrangements play a significant role for example, the adaptation plan for Australia, argues that local governments have particular responsibilities to incorporate the risks associated with sea-level rise, erosion, cyclone, inundation, flood, or bushfire risks into land use planning in local municipalities.<sup>78</sup>

Discussion of the new development context focuses principally on planning measures which are implemented through formal statute-based land-use planning regimes. *New development* refers to both greenfield development (new urban residential areas) and infill development, involving re-development. Existing settlement refers to areas that have been intensively used for a long period of time and where there are extensive areas of existing use. It does include areas where there may be change of land use and activities without broad-scale redevelopment. Discussion of the existing settlement context requires consideration of an extended range of available planning measures together with legal and institutional arrangements for their introduction and implementation. Public land focusses on Crown land that facilitates a range of public uses and public access. Crown land is normally included within the scope of proposed spatial planning but specific measures for Crown land are considered here due to the crucial role it plays in matters such as transport and service provision. Crown lands such as reserves also have importance in that its spatial proximity to privately-held land means that mitigation measures for reducing hazard risks may traverse both private and public land.

## 5.2 Adaptation Planning Measures for New Development

### *Strategic Framing Instruments*

The foundation of land use planning is the articulation of planning policy and objectives in strategic planning instruments and their implementation via the regulation of land-use and development. Both *strategic frameworks* and *regulatory instruments* are widely used in Victoria, under the land-use planning regime established by the P&E Act, to address risks associated with natural hazards. The core strategic framing instrument within the Victorian land-use planning regime is the *State Planning Policy Framework* [SPPF]. The State Planning Policy Framework operates across the State and there are regional and local planning policy frameworks. Currently there is a major review aimed at the integration of these policy frameworks,<sup>79</sup> with state and regional policies to be embedded in Victorian Planning Provisions.

The primary driver of strategic approaches in a general sense is the complex of Victorian Planning Policies (VPP). All planning schemes in Victoria are made in accordance with the VPP, which binds '[a]ll people and corporations', including '[e]very State Minister, government department, public authority and municipal council'. However, the VPP only mention climate change adaptation briefly, and only in the context of regional development.<sup>80</sup> However, given the trend toward integration of

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<sup>78</sup> Australian Government, *Climate Change Adaptation Actions for Local Government*, above n 42, 12.

<sup>79</sup> Advisory Committee Review Planning Policy Framework, Integration version March 2014 accessed 2 May 2014

<sup>80</sup> *Victoria Planning Provisions* (23 September 2011) Department of Planning and Community Development, Victoria <<http://planningschemes.dpcd.vic.gov.au/vpps/index.html>> cl 11.05-4.

strategic frameworks and the incorporation of Plan Melbourne and Regional Growth plans it would appear opportune to consider how planning for climate change adaptation might be integrated across these frameworks as a strategic consideration. A stronger integration of adaptation considerations across the integrated planning policy framework could be considered. Certain Regional Growth Plans in their strategic planning strategies already include reference to climate change adaptation. The Great South Coast Regional Growth Plan, for example, identifies the need for researching and developing a climate change adaptation plan and for associated coastal hazard assessments.<sup>81</sup> Routine inclusion of strategic considerations around climate change adaptation and hazard mitigation in Growth Plans could assist in developing a coherent approach across Victoria.

The set of overarching State planning policies includes specific policy objectives and strategies for managing coastal climate hazards, flooding and bushfire:

- *Clause 13.01 – Climate Change and Coastal Inundation*
- *Clause 13.02 Floodplain Management*
- *Clause 13.05 Bushfire Planning Strategies and Principles*

For coastal hazards and floodplain management, these planning policies are complemented by the policy developed under specific statutory frameworks for coastal and floodplain management: for example, the *Victorian Coastal Strategy*, which is specifically referenced as a consideration for decision-makers in various clauses of the SPPF.<sup>82</sup>

The exposure draft of the integration of SPPF includes several clauses of relevance to coastal areas and adaptation to enhanced risk of hazards. For example, the draft clause 6 refers to regional landscape quality and the policy for coastal areas. It adopts strategies including:

- 1.1 Protect landscape quality of coastal areas and their foreshores.
- 1.2 Protect significant natural and cultural landscapes.
- 1.4 Maintain safe, equitable public access and improves public benefit.
- 1.5 Support sensitively sited and designed development that respects the character of coastal settlements.
- 1.6 Require activities and development on privately owned foreshore to be consistent with the adjoining public land.
- 1.7 Avoid development on ridgelines, primary coastal dune systems and low lying coastal areas.

<sup>81</sup> State of Victoria Planning Policy Framework Integration Version March 2014 p. 17.

<sup>82</sup> For example, Clause 11.05-5 – Coastal Settlement; Clause 12.02-1 Protection of Coastal Areas; Clause 12.02-2 – Appropriate Development of Coastal Areas; Clause 13.01-1 – Coastal Inundation and Climate Change.

Working in conjunction, such strategies provide a useful approach to adaptation, even though not expressly directed to climate change matters. The approach could be strengthened by express reference to climate change adaptation. Accordingly, an express strategy directed to climate change adaptation at the level of regional policies might be considered. Other policies in relation to housing could incorporate specific adaptation measures for siting and design of housing.

In addition to specific policy positions above, there are a number of ministerial directions which direct decision-makers to consider particular hazard management policy objectives in certain planning decisions:

- *Ministerial Direction n 13 – Managing Coastal Hazards and the Coastal Impacts of Climate Change* (made under s 12(2)(a) of the P&E Act) requires the consideration of climate change policies when considering a planning scheme amendment which would have the effect of allowing non-urban land to be used for an urban use and development.
- *Ministerial Direction no.11 – Strategic Assessment of Amendments*, (made under s 12(2)(a) of the P&E Act) provides that in preparing an amendment to a planning scheme, special consideration must be given to how the amendment addresses any relevant bushfire risk (Clause 3.1).

Other hazards are not directly caught under the SPPF. The SPPF does not specifically address heatwave as an environmental hazard; but it does contain a number of policy positions relevant to managing risks associated with heatwave in Victorian settlements. These include policy in relation to open space, the provision for street trees and the design of streets, roads and subdivisions.

The *Victorian Planning Provisions* also provide a range of specific *legal models and instruments* which are used to control land-use and development in hazard prone areas:

- Standardised spatial tools such as zones and overlays to delineate hazard prone areas and prescribe permitted land-uses and development controls.
  - E.g. *Victoria Planning Provisions* - Clause 37.03 Urban Floodway Zone; Clause 44.30 Floodway Overlay; Clause 44.04 Land Subject to Inundation Overlay; Clause 44.05 Special Building Overlay; Clause 44.06 Bushfire Management Overlay.
  - Note: although there are no specific standard zones or overlays to manage coastal hazards, Clause 13.01 introduces Sea Level Rise Planning Benchmarks; which provide a potential basis for spatial identification of hazard prone areas.
- Rules and standards prescribing considerations and requirements for decision-makers when assessing and determining development applications.
  - E.g. *Victoria Planning Provisions* – Clause 52.47 & 52.48 Bushfire Protection: Planning Requirements and Exemptions
- Provision for the development of localised hazard management plans to be incorporated into municipal planning schemes.

- E.g. Under the various flood overlays, a local floodplain development plan may be prepared and incorporated into municipal planning scheme. These plans contain a set of requirements and guidelines for development in a particular area.
- Requirements to refer development applications to specialised referral authorities with hazard management expertise
  - E.g. *Victoria Planning Provisions* - Clause 66.03 details required referrals to the relevant Floodplain Management Authority (Melbourne Water for the metropolitan area or regional Catchment Management Authorities outside the metropolitan area) under the Urban Floodway Zone; Floodway Overlay; Land subject to Inundation Overlays and Special Building Overlay. Only in metropolitan areas do these authorities have the power to determine a development application. Outside the metropolitan area; their powers are limited to recommendations.
  - E.g. *Victoria Planning Provisions* - Clause 66.03 also provides for referrals to the relevant Fire Authority under the Bushfire Management Overlay, in which case the fire authority has the power to determine the permit application.

In addition to the more formal regulatory measures above, the Victorian Government has developed a range of guidelines, practice notes and hazard mapping to support decision-making on natural hazards within the land-use planning regime. For example:

- In a coastal context, these include inundation maps (Victorian coastal inundation dataset), *General Practice note 53: Managing Coastal Hazards and the Impacts of Climate Change* (2012) and the *Victorian Coastal Hazard Guide* (2012).
- In a flood context, these include: *General Practice Note 12: Applying the Flood Provisions in Planning Schemes* (2012); and *General Practice Note 11: Applying for a planning permit under the flood provisions: a guide for councils, referral authorities and applicants* (2000).

While practice notes and guidelines provide important support for decision-makers and will help to promote a consistent approach to these climate hazards around Victoria; they do not however have the same legal status and certainty which is provided by inclusion of rules and standards within the more formal instruments noted above.

### ***Clear direction provided through framing instruments***

Framing instruments that set strategic directions play an important role within planning regimes, in providing policy positions and implementation guidance for decision-makers to support consistent planning decisions.<sup>83</sup> Given the broad delegation of planning functions to local government and the differing access to resources and expertise at the local level; it is particularly important that state planning policy is clear and promotes consistent decision-making at the local level. Concerns have been expressed by local government decision-makers in a range of Australian jurisdictions, including Victoria, about the lack of detailed guidance currently provided via high-level framing instruments or

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<sup>83</sup> Macintosh A, Foerster A and McDonald J, *Spatial Planning Instruments for Climate Change Adaptation* (National Climate Change Adaptation Research Facility, 2012)p. 63-64. H Funfgeld 2012.

associated regulatory instruments, particularly in the context of coastal climate hazards.<sup>84</sup> This concern related particularly to guidance on the situations in which development should be avoided or substantially restricted in areas prone to natural hazards and potential climate change impacts.

In a new development context in Victoria, the policy directions contained in the *Victorian Planning Provisions*, in particular the SPPF, are the central framing instrument. These are supplemented, as appropriate, with the subject-specific policy developed under integrated statutory regimes, such as the Coastal Management Act.

The relevant natural hazard clauses in the SPPF (cl 13.01, 13.02, 13.05), tend to differ quite significantly in the level of detail, strength and clarity of policy positions.

For example, in relation to avoiding vulnerable land-uses in hazard prone areas, all policy directions contain a general strategy of this kind; for example:

- Clause 13.01 provides ‘Avoid development in identified coastal hazard areas susceptible to inundation (both river and coastal), erosion, landslip/landslide, acid sulfate soils, bushfire and geotechnical risk;’ and
- Clause 13.02 provides ‘Avoid intensifying the impacts of flooding through inappropriately located uses and developments.’

Yet Clause 13.05 relating to bushfire provides the strongest and most detailed policy direction to take a precautionary approach and avoid locating vulnerable land-uses in hazard prone areas. This clause specifically directs the use of planning schemes to identify areas where the bushfire hazard requires that “development should not proceed unless the risk to life and property from bushfire can be reduced to an acceptable level.”

Further, only Clause 13.01 specifically addresses climate change impacts, despite the broad acknowledgement that climate change will impact the severity and frequency of a range of natural hazards, including flood and fire. Because Clause 13 of the SPPF specifically addresses environmental hazards, it may be appropriate to review the overall policy direction provided through this clause and consider including specific policy on how climate change projections are relevant to planning decisions and how various issues such as time frames and uncertainties should be treated in planning decisions. There is scope to broaden the clause to also include provision for hazards such as drought and heatwave, which clearly pose an ongoing threat to Victorian settlements and for which there are a range of available planning measures to address this threat which are not currently deal with in any detail within the SPPF.

### *Effective Use of Zones and Overlays*

Statements of policy objectives and strategies are important guides for decision-makers, but they must be supported by corresponding regulatory tools to implement and operationalise these strategies. These regulatory tools should incorporate effective risk assessment and impact assessment procedures that can respond to the particular demands of climate risk such as

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<sup>84</sup> Productivity Commission above n 1, 2013, p. 183. See also, Macintosh A, ‘Coastal climate hazards and urban planning: how planning responses can lead to maladaptation’ (2012) *Mitigation & Adaptation Strategies for Global Change* DOI 10.1007/s11027-012-9406-2.

cumulative impacts and data that transcends the historical record. Victoria has a number of statutes including the P & E Act that incorporate impact and risk assessment.

Further, the impact assessment (and information produced as part of that process) need to support spatially-based regulations such as development control which reference zones and overlays. As noted by Macintosh et al (2013):

‘the use of spatial instruments, such as zones and overlays, as the basis for development controls ensures that there is a clear, unambiguous trigger for development assessment processes; and targets effort at the most hazard-prone areas.’<sup>85</sup>

Zones are typically used to specify permitted land-uses and prohibit or restrict vulnerable land-uses. Overlays are more commonly used where development is treated as a discretionary activity; and where hazard exposure and vulnerability can be effectively managed via permit conditions. These are both core regulatory instruments for managing natural hazards within the Victorian planning regime. Indeed the P&E Act clearly authorises the use of prohibitions and other regulatory restrictions in hazard prone areas – section 6(e) provides that a planning scheme can ‘regulate or prohibit any use or development in hazardous areas or in areas which are likely to become hazardous areas.’

As noted above, the *Victorian Planning Provisions* contain a number of standard zones and overlays which can be used to identify areas prone to natural hazards and provide corresponding restrictions on land use and development. There is only one zone – the Urban Floodway Zone – which actually prohibits vulnerable land-uses, such as residential, in hazard areas. In practice, there has been considerable resistance to the use of this zone because of its blanket prohibitions.<sup>86</sup>

Prohibitions may be more or less appropriate depending on the particular hazard context. For example the high levels of uncertainty about where and when a bushfire ignites and the direction and scope of its spread, suggests that it will be difficult to use prohibitions based on mapped hazard prone areas. Yet for hazards like coastal inundation, erosion and fluvial flooding, where the spatial extent of the hazard is easier to quantify and there are fewer available hazard mitigation options, stronger regulatory measures may have greater relevance. Indeed, the Commission of Inquiry into the 2011 Qld Floods specifically recommended greater use of the ‘limited development (constrained land)’ zone, which imposes ‘severe restrictions on the ability of the land to be developed for urban purposes’ for areas which are susceptible to severe and frequent floods.<sup>87</sup>

The reluctance to impose outright prohibitions on land-uses in hazard prone areas in Victoria is consistent with current practice in other Australian jurisdictions.<sup>88</sup> The dominant practice in all states and territories, including Victoria, is to rely on overlays triggered by certain development actions. These instruments offer a more discretionary and flexible approach than zones and rely on development assessment processes to ensure hazard mitigation standards are met and to impose

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<sup>85</sup> Macintosh et al, above n 14, iv.

<sup>86</sup> Teague B, McLeod R and Pascoe S, *2009 Victorian Bushfires Royal Commission: Final Report* (Victorian Government, 2010) 228; Victorian Dept. of Planning and Community Development, *General Practice Note 12: Applying the Flood Provisions in Planning Schemes* (2012), 6.

<sup>87</sup> Qld Floods Commission of Inquiry, *Final Report* (2012), 107-108.

<sup>88</sup> Qld Department of Environment and Resource Management, *Queensland Coastal Plan – State Planning Policy 3/11: Coastal Protection* (2012) 44, cl 2.1-2.3. See discussion in Macintosh et al above n 2, 74.

related conditions on approval. While they do not offer the certainty associated with outright prohibitions and restrictions imposed through hazard zoning, overlays can be used to introduce stringent hazard management requirements, which have the effect of avoiding inappropriate development in hazard prone areas. The regulatory provisions triggered by the Bushfire Management Overlay, discussed further below are a good example.

### *Relying on development assessment and approval processes*

The dominant approach in Victoria and other state jurisdictions is to manage climate hazard risks through development assessment and approval requirements, generally triggered by an overlay, or some other spatial identification of hazard prone areas, such as mapping of sea level rise planning benchmarks. This approach largely assumes that land-use and development will continue provided that the effects of climate hazards can be eliminated or minimised via siting, design and construction standards. The approach relies on robust risk assessment models to determine ‘acceptable’ levels of risk, and informed by other methods, such as cost benefit analysis.<sup>89</sup>

Following their recent reform after the 2009 Black Saturday Fires, the regulatory provisions governing bushfire planning in Victoria provide an example of a detailed, comprehensive approach to managing natural hazard risks via development approval processes. The key elements of this approach are outlined in Box 2 below.

#### **Box 2. New Victorian Bushfire Planning Provisions**

***Embedding spatial hazard data as the basis for development controls:*** One of the findings of the Royal Commission into the 2009 Fires was that the previous Wildfire Management Overlay was poorly and inconsistently implemented across the state, and indeed had not been applied to many of the areas that were badly burnt in 2009.<sup>90</sup> This poor implementation was attributed to a lack of state agency leadership for introducing the overlay into local planning schemes and monitoring its application; and the fact that local governments were required to undertake a slow, costly and complex process of amending planning schemes to introduce or amend the overlay.<sup>91</sup> As such, the Commission recommended a coordinated, state-led program of hazard mapping.<sup>92</sup> As a result, new, comprehensive bushfire hazard mapping has been undertaken and is being directly incorporated into planning schemes via the Bushfire Management Overlay, as such bypassing the need for local governments to go through a planning scheme amendment process to implement bushfire development controls. Where the Bushfire Management Overlay applies, a planning permit is required for the subdivision of land, construction of a building or carrying out works associated with a wide range of uses (focusing on buildings used for accommodation purposes).<sup>93</sup>

***Clear, prescriptive rules and conditions for development approval:*** The revised *Victorian Planning Provisions* (cl 52.47-5 – 52.47-8) contain detailed and prescriptive rules, standards and decision guidelines to govern development decision-making in areas covered by the new Bushfire

<sup>89</sup> Funfgeld above n and Productivity Commission above n 1.

<sup>90</sup> Teague et al (2012) above n 35, 219.

<sup>91</sup> Ibid, 232-3.

<sup>92</sup> Ibid, 217-224. See particularly Recommendation 37.

<sup>93</sup> Victorian Planning Provisions, Cl 44.06-1. *Exemptions from the need to obtain a permit apply for an alteration or extension to an existing building that does not increase the floor area by more than 50%; or if a local schedule to the overlay specifies that no permit is required.*

Management Overlay. These cover substantive requirements, such as the provision of defensible space around dwellings and associated construction standards; access for emergency vehicles and evacuation routes; and water supply for fire-fighting purposes; and require that a permit application must be accompanied by a locality and site description and a bushfire management statement, which details compliance with these requirements.<sup>94</sup> If these requirements cannot be achieved, the implication is that the risk to life and property is unacceptable, and the proposed development should not proceed. A planning permit for buildings and works under the BMO must include a condition requiring the maintenance of these bushfire mitigation measures 'to the satisfaction of the responsible authority and the relevant fire authority on a continuing basis.'<sup>95</sup> The development of more prescriptive standards and conditions has been driven by the perceived failure of the previous regulatory framework (which was characterised by broad discretionary guidelines) to prevent development in high risk bushfire areas.<sup>96</sup>

**Referral to specialised hazard management agency to determine application:** The Bushfire Management Overlay also requires permit applications to be referred to the relevant fire authority, which has a determining role in relation to permit applications. This provides an important avenue to ensure specialised hazard management expertise is used to assess permit applications; and critical support for local government consent authorities that may not otherwise have access to this expertise. Despite the advantages, a balance must be struck between ensuring sufficient oversight and expert involvement and managing workloads and resources efficiently. In a bushfire context, recent reforms that have increased the involvement of fire authorities in development assessment decision-making may contribute to delay in the time taken to assess development applications.<sup>97</sup> This underscores the importance of adequate resources if referral authorities with specific expertise in hazard mitigation are to take a lead role in development assessment.

Compared to the comprehensive bushfire planning provisions with their emphasis on embedding hazard data as the basis for planning controls and standardised application of quite prescriptive rules and standards; the regulatory provisions used to govern coastal hazards and flood risk in Victoria currently are less detailed and prescriptive; with varying approaches to the use of planning tools.

For coastal hazards and flooding, much of the detail is contained in non-statutory guidelines and practice notes; or relies on further local council development and implementation of local planning controls (e.g. through local floodplain development plans). There is also comparatively more emphasis placed on managing hazard exposure through building regulations, particularly in a flood context, which again assumes that development will proceed and hazard risks adequately managed via technical construction solutions (see part 5). Compared to the new bushfire planning provisions, this approach to coastal hazards and flood may represent an under-use of the available planning tools. It has the potential to contribute to inconsistent application of planning policy in different municipalities; particularly given the complexities and uncertainties associated with climate change information in both hazard contexts. Two particular concerns with the current planning approach to coastal and flood risk are noted below:

<sup>94</sup> Victorian Planning Provisions, Cl 44.06-2.

<sup>95</sup> Victorian Planning Provisions, Cl 44.06-4.

<sup>96</sup> Victorian Bushfires Royal Commission, *Final Report, Volume II, Fire Preparation, Response and Recovery* (2010), See particularly Ch 6, Planning and Building.

<sup>97</sup> Macintosh et al above n 2, 114.

**Lack of specific coastal hazard overlay:** For coastal hazards, there is currently no standard zone or overlay instrument used to delineate areas prone to coastal hazards in Victoria and provide standardised planning controls. While the flood overlays can be (and are) used to a certain extent in a coastal context; they do not provide a clear and certain mechanism to spatially represent the sea level risk planning benchmarks contained in Clause 13.01 of the SPPF; nor to identify areas vulnerable to coastal erosion. Further, the types of planning controls attached to the existing flood overlays will not always be appropriate to coastal hazard issues. There is currently a state government program of coastal inundation mapping which has modelled sea level rise and storm surge at 2009, 2040, 2070 and 2100 using IPCC climate change scenarios;<sup>98</sup> however this is not intended to be used to inform decisions at the scale of individual properties. There are also a range of more detailed local coastal hazard assessments underway at several priority locations along the coast, including Port Fairy, Bellarine Peninsula-Corio Bay, Western Port and Gippsland Lakes-90 Mile Beach which will analyse the impacts of sea level rise as well as provide practical information for planners and land and infrastructure managers to make decisions at a local scale. This could potentially be used as a basis for overlay controls in the future.

**Representing climate risk in flood zones and overlays and ensuring their full implementation:** In a flood context, there are a range of available zones and overlays, which contain detailed rules and standards governing permit requirements and approval considerations and conditions. The four different instruments address different levels of flood risk in different contexts, and planning controls vary accordingly:

- Urban Floodway Zone: applies to mainstream flooding in urban areas where the potential flood risk is high due to the presence of existing development or to pressures for new or more intensive development. The intent of the zone is to restrict the use of such land, as the flood risk renders it unsuitable for any further intensification of use or development.
- Floodway Overlay: applies to mainstream flooding in both rural and urban areas, with a lesser flood risk. The overlay is designed for areas where there is less need for control over land use, and the focus is more on control of development.
- Land Subject to Inundation Overlay: applies to mainstream flooding in both rural and urban areas, which generally have a lower flood risk than the above areas, and therefore less restrictive planning controls.
- Special Buildings Overlay: applies to stormwater flooding in urban areas only, primarily intended for overland flow paths within Metropolitan Melbourne. The zone is intended to manage re-development of existing urban areas and the proposed development of new areas within overland flow-path areas.

There are concerns about how well climate change information is incorporated into flood mapping as the basis for these planning regulations. The *Water Act* specifies a default standard 100 year ARI (average recurrence interval) as the design flood event for mapping flood risk for relevant planning functions (determining flood levels, flood fringes and building lines); unless the relevant floodplain management authority designates an alternative standard.<sup>99</sup> The *Victorian Planning Provisions* also

<sup>98</sup> <http://www.climatechange.vic.gov.au/adapting-to-climate-change/future-coasts/victorian-coastal-inundation-dataset>

<sup>99</sup> Note the Design Flood Event is a flood event of known magnitude or average recurrence interval, or a historic event which is selected for land use planning, emergency planning and engineering design purposes.

defines 'land affected by flooding' as 'land inundated by 1 in 100 year flood events, or as determined by the floodplain management authority'.<sup>100</sup> Yet, if it is climate data no longer can be referenced to past trends, then the widespread use of the 1 in 100 year datum may need to be revised, since what in the past may have been a 1 in 100 year flood may now occur more frequently as a result of climate change.<sup>101</sup> A more proactive stance in relation to mapping flood prone areas may be required. This could dovetail with the formulation of the powers and responsibilities of floodplain authorities under the Water Bill exposure draft.

Indeed the Commission of Inquiry into the 2011 Qld Floods, which focused considerable attention on spatial planning measures, argued that:

'This focus on the Q100 and one defined flood event should not continue. Q100 represents only one possible flood. Reliance on a single defined flood event contains this limitation: there are only two areas by reference to which planning controls relevant to flood can be set – the area inside, and the area outside the line depicting the extent of the flood. Restricting development within the extent of the 1% AEP flood will manage a portion of the risk, but it does not deal with the risk of floods that are less frequent, but more severe, or those that will occur more often, but with less damaging consequences. Instead, the various areas to which planning controls apply should be selected having regard to the likelihood, behaviour and consequences of the full range of possible floods, up to and including the probable maximum flood.'<sup>102</sup>

The Commission recommended more sophisticated flood mapping which addresses various flood likelihoods (not just the 100 ARI) and flood behaviour; and the translation of this mapping to three distinct levels of flood hazard which can be used as the basis for planning controls. The Qld Inquiry also highlighted significant gaps in the inclusion of flood mapping into Qld planning schemes.<sup>103</sup> Also significant was the time and expense associated with the preparation and approval of planning scheme amendments to implement new flood mapping and associated planning controls. The inquiry into the 2011 Victorian floods did not make specific recommendations on the use of planning measures to manage flood risk.<sup>104</sup> However there have been targeted programs, led by State government, to develop high quality flood mapping to support land-use planning in 25 communities that were affected by the recent floods.<sup>105</sup>

### **Roles and responsibilities of planning authorities**

There have been a series of initiatives around Australia, and in Victoria, designed to more clearly identify roles and responsibilities of various government agencies in relation to managing hazards and the increased risks posed by climate change. The identification of responsibilities of planning authorities and in particular local government authorities is an evolving process. One driver for more

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See generally, Melbourne Water, Guidelines for Development in Flood Prone Areas  
<http://www.melbournewater.com.au/Planning-and-building/Forms-guidelines-and-standard-drawings/Documents/Flood-prone-area-development-guidelines.pdf>

<sup>100</sup> Victorian Planning Provisions, Clause 13.02.

<sup>101</sup> L. Godden and A. Kung, 'Water Law and Planning Frameworks under Climate Change Variability: Managing Flood Risk' (2011) 25 *Water Resources Management*.

<sup>102</sup> Queensland Floods Commission of Inquiry, 2011, 63.

<sup>103</sup> *Ibid*, 61.

<sup>104</sup> The Victorian Inquiry focused more on flood mitigation infrastructure; early warnings and emergency response. See Environment and Natural Resource Committee, *Inquiry into Flood Mitigation Infrastructure in Victoria* (2012) and Comrie N, *Review of the 2010, 2011 Flood Warnings and Response: Final Report* (2012).

<sup>105</sup> <http://www.depi.vic.gov.au/water/Floods-and-floodplains/government-flood-initiatives/floodzoom>

clarity around roles and responsibilities has been the perception that liability in tortious claims such as negligence may attach to local governments, if the authorities fail to effectively address adaptation to climate change. This view needs to recognise that any potential liability will be very fact and circumstance dependent. Further, relevant negligence law has seen some redefinition in the scope of responsibilities (and thus any potential liabilities) ascribed to public authorities in relevant High Court case law.<sup>106</sup> Nonetheless, consideration of the utility of instituting instruments that address potential liabilities for planning authorities may be beneficial. Such measures may operate in conjunction with greater precision in defining roles and responsibilities of planning authorities in managing climate risks may be beneficial. The adoption of any statutory or contractual instruments that may affect potential liability, such as statutory immunities needs careful evaluation. A long established model for statutory immunities for local governments can be found in section 733 of the Local Government Act 1993 (NSW). Several Australian jurisdictions have experimented with these types of instruments, particularly in respect of flooding and coastal inundation.<sup>107</sup> It is arguable that alternatives, such as a more proactive approach to planning that seeks to identify and plan for climate-related risks may be preferable.

### *A more flexible response?*

The approaches outlined primarily rely on the core components of strategic and statutory planning law with some adjustment in focus and process. To develop more flexible legal and regulatory approaches for addressing climate risk it is useful to examine the intersection of these broad planning models with intersecting adaptation measures – particularly those that can assist in facilitating adaptation in areas of existing urban development.<sup>108</sup>

In a new development context, the most likely application of increased flexibility is through initiating and applying new forms of development controls. Examples include using time limited approvals or event-dependent conditions on approvals which relate to the materialisation of hazards. For example, in an area prone to coastal erosion and storm surge permanent inundation within a 50-100 year time frame, approval may be given to develop, on the condition that the development is removed at a certain point in time or when hazard conditions materialise to an identified extent.

These types of instruments are best suited to areas e.g. prone to permanent coastal inundation, where the hazards are likely to develop incrementally over an extended period of time and the changes are likely to be largely irreversible. In contrast, they are less suitable in a bushfire or flood context, where the hazard is an extreme event, the timing and extent of which depends on numerous variables, and which is difficult to accurately predict occurrences.<sup>109</sup>

There is currently no specific provision within relevant Victorian policy framing instruments or regulatory provisions governing land use and development in hazard prone areas for the use of time specific instruments, such as event-dependant approvals, to manage climate risks for new development, including in a coastal context.<sup>110</sup>

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<sup>106</sup> N. Durrant, *Legal Responses to Climate Change* Federation Press, 2010 269–272.

<sup>107</sup> See for example, discussion in Queensland Floods Commission of Inquiry Final Report 2012, p128.

<sup>108</sup> Macintosh et al above n 14, 48.

<sup>109</sup> See discussion in Foerster et al, above n 26.

<sup>110</sup> This contrasts with the explicit provision in the *NSW Coastal Planning Guideline* for the use of flexible measures, including time-limited and/or event-dependent development controls, instead of prohibitions on

Like other state jurisdictions however, there are isolated examples of using conditions on development approvals to institutionalise a more flexible and responsive approach to the future materialisation of climate hazards. For example, the Glenelg Planning Scheme was amended in 2011 by the Planning Minister to allow residential development in an area between Portland and Narrawong on the condition the “dwelling is designed to enable relocation in the event future coastal processes threaten the safety of the land and appurtenant dwelling”. Further amendments in October 2012,<sup>111</sup> provided for the making and registration on title of a section 173 agreement (under the P&E Act) to require the future removal or relocation of buildings should this be required due to coastal erosion.<sup>112</sup>

Some unresolved issues remain about whether flexible approvals and innovative conditions on development, such as time- limited consents for residential land uses in areas of coastal erosion, will be widely adopted. Such mechanisms could be found to be inherently too uncertain by appeal courts and tribunals. Use of these mechanisms may be supported however by inclusion of stronger strategic planning principles for adaptation in overarching strategic planning.

In summary, there has been a general move to introduce climate change adaptation principles at a level of generality into strategic planning frameworks for new developments. In tandem more discrete hazard specific zones and overlays have been developed for areas perceived to be ‘at risk’ that work in conjunction with limited experimentation with innovative modes of approvals forms and conditions at a site specific level. In this manner, climate change adaptation measures for new developments have moved little from the fundamentals of well recognised spatial planning approaches – albeit with an intensified focus on more expansive risk assessments and strong enhancement of emergency preparedness.

## 5.2 Adaptation Planning Measures for Existing Development

The approaches adopted in planning for adaptation in areas of existing development encounter challenges not found in new developments. Potentially, these areas have the benefit of the social capital that has been built up in well-established settlements that can promote collaborative and participative planning approaches. Accordingly, Kennedy et al, argue for a systemic approach to localised climate change governance to build resilience in legal frameworks, and to support transition management. Craig proposes a ‘shift in legal objectives from preservation and restoration towards legal frameworks that embody ‘principled flexibility’.<sup>113</sup> To apply this approach to planning laws and institutions such as local government requires reorientation in governing paradigms for strategic and statutory planning. Local government, and in particular cities, have proven to be successful in initiating ‘learning by doing’ and in developing adaptive responses to climate change.<sup>114</sup> To date though most legal responses to adaptation planning in Australia have involved changes to

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infill and redevelopment, in the context of considering options to reduce intensity in urban areas at risk. NSW Department of Planning and Infrastructure, *NSW Coastal Planning Guideline: Adapting to Sea Level Rise* (2010) 9-10.

<sup>111</sup> Victorian DPCD, *Glenelg Planning Scheme: Amendment C93* (2012).

<sup>112</sup> Victorian DPCD, *Glenelg Planning Scheme, Incorporated Document, Lot 1 Ocean View Drive East, Narrawong (PS518204W), September 2012* (2012) 3. See also *Newton and anor v Great Lakes Council* [2013] NSWLEC 1248 in respect of a time limited consent for a residential dwelling.

<sup>113</sup> Robin Kundis Craig, “‘Stationarity is dead’ – long live transformation: five principles for climate change adaptation law’ (2010) 34 *Harvard Environmental Law Review* 9, 18.

<sup>114</sup> Craig, above n 85, 17

fairly conventional ‘front-end’ decision methods.<sup>115</sup> On the other hand, a careful delineation of the powers of authorities to pursue flexible measures, where the discretion of local decision-makers is balanced with broader state regulatory objectives, may assist a coherent and targeted approach to emerge in relation to a climate adaptation for existing development. The Productivity Commission advocates that local government requires more flexibility in planning frameworks in order to more effectively manage climate risks within the planning system.<sup>116</sup>

### Local Government planning in areas of existing development

Indeed, the report, ‘Climate change adaptation actions for local government’ argued that local governments enjoy ‘general competence powers’ under their respective Local Government Acts, giving them ‘flexibility... to respond more comprehensively to local needs’.<sup>117</sup> While Local Government statutes typically provide local councils with general powers to make local laws to fulfil their functions,<sup>118</sup> but the authorities are subject to many other legislative and institutional limitations on those powers. These factors constrain the extent to which local governments have the capacity, and indeed the legislative mandate, to put into effect adaptive measures.

In Victoria, the primary objective of councils under the governing legislation is ‘to endeavour to achieve the best outcomes for the local community having regard to the long term and cumulative effects of decisions’. There are a number of ‘facilitating objectives’, including the promotion of environmental viability and sustainability, the improvement of quality of life in the community, and the accessible and equitable provision of council services.<sup>119</sup> There are few specific obligations that directly relate to climate change adaptation, although councils can take general steps towards adaptation in areas of existing development, as well as fulfilling roles within the planning system.

### Planning System Measures

In areas of existing development, the planning system is expected to continue as the central legal model governing adaptation to natural hazards exacerbated by climate change. In Victoria, similar to other Australian jurisdictions, there has been long standing use of spatial planning instruments to deal with climate hazards in existing settlements. For example, the use of floodway measures to prescribe floodway setbacks, site design and construction standards, has occurred for many years in most land use planning contexts. In respect of adaptation, the general pattern includes:

- reliance on formal land-use planning regimes primarily to implement adaptation policy;
- the limited scope of broader adaptation planning for existing settlements in Australia; and
- a range of political, social and economic barriers to the deployment of instruments to promote adaptation in existing settlements; especially where the objective is to change location or change uses in hazard prone areas.

Against this background, the following surveys possible measures available to support adaptation for existing settlements and their potential application in Victoria.

### Adaptive responses for existing settlements and communities to climate change:

<sup>115</sup> Durrant, above n 106, 250.

<sup>116</sup> Productivity Commission above n 1 p.183.

<sup>117</sup> Australian Government, *Climate Change Adaptation Actions for Local Government*, above n X 42.

<sup>118</sup> *Local Government Act 1989* (Vic) s 111.

<sup>119</sup> *Local Government Act 1989* (Vic) s 3C.

- Preventing the materialisation of climate hazard or modifying the threats posed by these hazards;
- Changing the nature of land-use in hazard prone areas or relocating sensitive land-uses away from these areas;
- Minimising the effects of climate hazards where land use and development continues in hazard prone areas;
- Protecting local special values and places such as heritage areas
- Informing residents and other stakeholders of potential hazard exposure so as to support private adaptation measures; and
- Sharing the costs of preparing for and recovering from climate hazards equitably between affected stakeholders and the broader community (e.g. where there are vulnerable communities).

### Information on climate hazards

The Victorian Government has adopted the Statement of Common Understanding on the *Roles and Responsibilities for Climate Change Adaptation in Australia*, developed by all Australian governments and the Australian Local Government Association.<sup>120</sup> The general approach is stated in the Victorian Climate Change Adaptation Plan:

‘The Victorian Government is committed to *creating the right conditions and incentives for private parties to manage their climate risks*, recognising that risk management is generally best undertaken by those who are directly affected, and who are in a position to manage the risks [emphasis added].’<sup>121</sup>

General measures designed to enhance the availability of information can encourage private parties to undertake adaptation measures. These include broad community education programs and publicly available hazard mapping – with a number of these maps and guides already in place. Combining more targeted hazard information with a regulatory requirement for information provision offers a potentially more effective mechanism to influence private decision-making and encourage private adaptation. Such targeted information instruments may assist to manage legal risks by demonstrating that landholders and community members have been adequately notified of the potential hazard and therefore have had opportunity to undertake risk mitigation activities.<sup>122</sup> Alternatively, with many hazards exacerbated by climate change it will be difficult to determine the vulnerability at precise local levels. Further there is a need to ensure currency of hazard information provided, especially as climate risk projections are revised. This means that information measures may need to be supplemented.

A critical point in seeking to encourage the transformation of existing uses to more adaptive strategies is where land-holding changes ownership. In Victoria, statutory regimes for the sale of land and land title registration provide two points of ‘intervention’ for such purpose:

<sup>120</sup> Council of Australian Governments Select Committee on Climate Change, *Roles and Responsibilities for Climate Change Adaptation in Australia* (Commonwealth of Australia, undated)

<sup>121</sup> *Victorian Climate Change Adaptation Plan*, 9.

<sup>122</sup> See discussion in England P, ‘Heating up: Climate change law and the evolving responsibilities of local government’ (2008) 13 *Local Government Law Journal* 209.

- Vendor's Statements issued at the point of sale under s 32 of the *Sale of Land Act 1962* (Vic); and
- Notations on land title under the Victorian system of land title registration (principally regulated by the *Transfer of Lands Act 1958* (Vic)).

The first of these measures is currently being used in a bushfire context. Following recommendations of the Royal Commission into the 2009 Fires, a vendor's statement issued under the *Sale of Land Act 1962* (Vic) is now required to state whether the land being sold falls within a designated bushfire prone area (within the meaning of the regulations made under the *Building Act 1993*). This measure provides a general indication to potential purchasers of possible hazard exposure. However, it does not fully implement the recommendations of the Royal Commission, which argued for more comprehensive use of information instruments as a direct incentive to encourage residents to undertake hazard mitigation measures. Specifically the Commission recommended including information on the standard (if any) to which the dwelling was constructed, the bushfire attack level assessment at the time of construction (where relevant) and a current bushfire attack level assessment of the site of the dwelling.<sup>123</sup>

In contrast, there is currently no specific requirement to include information on coastal hazard or flooding in a s 32 Vendor's statement, aside from general requirements to include information on applicable zoning applying to the land in question.<sup>124</sup> Given there is only one standard zone – Urban Floodway Zone - within the Victorian Planning Provisions addressing flood risk this mechanism currently provides no detailed information to potential purchasers on coastal or flood risk pertaining to the land unless further specific inquiries are made on the part of the purchaser. However

In light of the importance of information instruments in supporting the general adaptation policy directions of the Victorian Government; further attention could be given to expanding the use of these instruments to other climate hazards, including coastal and flood. This would need to be addressed in conjunction with reviewing the use of zones and overlays for coastal and flood risks; as these tools could provide a trigger for the inclusion of hazard information in planning certificates.<sup>125</sup> It is important to examine how these measures interact with the provision of insurance in the private sector.

In NSW a Section 149 certificate is a zoning certificate produced by the local council, which is specific to the property in question. It includes information such as the land zone, as well as whether it is affected by Bushfire, Flooding, etc. It also states which State Government policies apply to the site. All contracts for the sale of land in NSW need to include a Section 149 Certificate.

There is also scope to investigate using notations on land title as an alternative to planning certificates in Victoria; which may offer a more consistent and widely accessible form of information provision. Notations on title are used in the Northern Territory as a form of climate hazard information instrument: if a property falls within a mapped storm surge hazard area (mapped against sea level rise projections), this information must be included on the registered title, which is

<sup>123</sup> Teague et al above n 35, 266, see recommendation 53.

<sup>124</sup> *Sale of Land Act 1962* (Vic), s 32(2)(c)(iii).

<sup>125</sup> See NSW s 149

publicly accessible via a land title search.<sup>126</sup> While notations on title have the benefit of transparency and public accessibility (although fee structures and public familiarity with title searching would need consideration) the process would increase the level of administration associated with land conveyance. Issues around updating and reviewing information, once noted on title, also require careful consideration.

The other point is that while such measures are aimed at enhancing the availability of information they cannot guarantee that such information will be acted upon in decisions about for example home location in a flood prone area. Other factors, such as affordability of housing may be more strongly determinative of such decisions. This also points to the need to carefully consider the questions of equity and vulnerability in respect of those persons to whom such information will be made available.

### *Standard-setting for Adaptation in Existing Development*

The difficulties of changing and modifying land use in areas of established development have long been recognised. Under existing statutory planning regimes throughout Australia generally speaking, lawfully commenced land uses (existing uses) can continue indefinitely unless intensified, expanded or abandoned. There will be cycles of change in many areas driven by factors such as demographic trends and social mobility, but driving major transformation in land use and activities is a significant endeavour. While established modes, such as rezoning under planning schemes can be utilised to initiate change in land use, these are often complex and time consuming. Accordingly, there is scope to examine how other legal and regulatory models might also facilitate adaptation in established areas that are at risk of particular hazards.

Scope exists for adoption of tighter building and design codes in areas where housing stock may be replaced or refurbished. However retrofit is often costly and cost/ benefit assessment may suggest other measures are preferable. Further adopting design standards to deal with one hazard such as flood may conflict with other policy objectives such as the provision of social housing or pose other physical risks.<sup>127</sup> Similarly there is scope to upgrade standards for public infrastructure and it is recognised that planning laws (often designated as 'soft' adaptation measures) work in conjunction with technical and structural measures. Given the significant technical literature on this topic, there is no further analysis here, although the synergies and externalities of the adoption of particular construction and design standards designed to mitigate hazards in existing areas need careful evaluation.

As noted above, the most likely potential application of regulatory instruments in an existing settlement context is to retrospectively impose modern design standards so as to eliminate and minimise the effects of climate hazards where land use and development continues in hazard prone areas (i.e. accommodate risks).

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<sup>126</sup> *Land Title Act (NT)*, s 38 provides for the maintenance of both a register of administrative interests and a formal land register. The record of administrative interests provides details on the rights, obligations and restrictions pertaining to a particular property, including in relation to planning zones, planning applications and determinations.

<sup>127</sup> Caroline Wegner, Karen Hussey and Jamie Pittock, 'Living with floods: Key lessons from Australia and abroad', NCCARF Synthesis and Integrative Research Final report 2013, 237.

Such measures may be more or less suitable depending on the particular hazard context; the expense and disruption associated with retro-fitting dwellings or other hazard mitigation measures; and the timing of the introduction of these requirements.

For example, it may be uneconomic to require large numbers of dwellings to raise floor levels in flood prone areas; however requiring landholders to remove or manage vegetation in close proximity to dwellings may be more achievable (although this also raises difficult trade-offs with environmental protection objectives). Currently, bushfire hazard reduction clearing around dwellings is exempt from permit requirements;<sup>128</sup> which provides a low level incentive to undertake such activities. Another application of regulatory instruments is a requirement for the installation of wall and ceiling insulation as a measure to reduce impacts associated with heatwave. This has corresponding benefits in terms of reduced energy usage and climate change mitigation. Generally speaking, it may also be easier to introduce retrospective regulatory requirements following the experience of an extreme event, or in areas which have suffered some property damage as a result of such an event. There are also a number of factors such as whether buildings are leased that may provide disincentives (split incentive problem) for uptake of enhanced standards. Alternatively, such factors may limit scope for financial instruments such as taxation and rating measures.

### ***Institutional Structures in Planning Systems***

Another key structure to consider is how adaptation within existing settlements is shaped by reference to courts and tribunals.<sup>129</sup> The appeal and review functions of forums such as VCAT can play a pivotal role in resolving conflicts over how local areas should transition, although the influence is indirect rather than via an express mandate to facilitate adaptation.<sup>130</sup> Judicial review and merits review functions are key components of most planning systems. In particular the capacity of VCAT to ‘stand in the shoes of the original decision maker’ in merits review matters provides a particular standpoint from which to guide local decision-making about issues such as acceptability of setbacks and proposed conditions on development.

From another perspective, concern over potential liability at common law may deter local governments from actively using planning measures in vulnerable existing areas.<sup>131</sup> Similar to the situation with new development, consideration should be given to whether local governments should have the benefit of legislative provisions which exclude or limit liability. As noted, in New South Wales, local authorities are immune from liability if they have acted ‘in good faith’ in respect of a range of coastal and flooding hazards.<sup>132</sup>

### **Land acquisition and property measures for public purposes**

A full spectrum of adaptation planning measures needs to be considered for regulating existing land-uses in existing settlements due to the entrenched challenges. Such measures could involve using forms of acquisition of land and interests in land, as well as other models where agencies may place specific restrictions on land such as a covenant. There is no constitutional restriction on the powers

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<sup>128</sup> *Victoria Planning Provisions* cl 52.48-1.

<sup>129</sup> Jan McDonald, ‘A Risky Climate for Decision-Making: The Liability of Development Authorities for Climate Change Impacts’ (2007) 24 *Environment and Planning Law Journal* 405.

<sup>130</sup> B. Preston, ‘The Role of Courts in Relation to Adaptation to Climate Change’ in T. Bonyhady A. Macintosh and J. McDonald (eds), *Adaptation to Climate Change: Law and Policy* The Federation Press, 2010, 157,157.

<sup>131</sup> McDonald, above n 129.

<sup>132</sup> Local Government Act 1993 (NSW) s 733.

of state governments and state government agencies (including local councils) to regulate existing uses not involving actual acquisition of the property interest.<sup>133</sup> By contrast, all states in Australia have statutes that guarantee the provision of compensation when interests in land are directly acquired by government agencies,<sup>134</sup> (and obviously when they are purchased under a willing seller situation). In seeking to acquire land and other interests in land, governments are constrained by a public purpose requirement and must follow strict procedures.<sup>135</sup> Acquisition of land as a response to redressing climate change hazard risks is likely to be appropriate in a limited number of circumstances characterised by high levels of risk to people and property. Yet in many other circumstances in our society, governments routinely do acquire land or interests in land, such as easements for many public purposes. In a hazard risk context, strategic and statutory planning provides a vehicle for identifying where such acquisitions could be most effective.

### **A flexible but equitable approach to land use change**

Nonetheless, it is recognised that some controversial adaptation strategies for existing settlements are those involving a change of land-use in hazard prone areas or the relocation of sensitive land-uses away from these areas. Available spatial planning instruments range from a direct regulatory approach (e.g. rezoning land with new prohibitions and restrictions; compulsorily acquiring hazard prone land for buffers and reserves) to measures such as voluntary buy-backs or land swaps; purchase of easements to provide public access or the more indirect use of financial instruments to prompt land-use change (e.g. differential rates and levies or compulsory insurance to incentivise transitional land uses); all of which can be designed and combined in various ways.

Retreat or relocation strategies will not necessarily be similarly applicable to bushfire, flood, coastal and drought scenarios. Due to the more unpredictable nature of the bushfire threat and the availability of relatively effective hazard mitigation strategies, strategic retreat of existing settlements in bushfire prone areas may not be appropriate except in extreme risk situations (e.g. possibly in settlements in bushfire prone areas with difficult access for emergency management and evacuation). Yet the more predictable nature and ability to spatially represent hazard prone areas in a coastal and flooding context, means that strategic retreat policy may be more applicable. Indeed the permanent impacts likely as a result of coastal climate hazards (permanent inundation and retreating shorelines) combined with the lack of viable, cost-effective hazard mitigation measures over the long term means that retreat may well be the only remaining option into the future for some locations.

In such situations, a managed retreat policy may be the best way to protect important public values such as beach amenity as well as public access and coastal ecosystems. There are good reasons to consider an anticipatory policy that is strategic and equitable. Indeed some argue that some redefinition of the interface between public and private land in the coastal areas may be required to balance public rights with those of individual land owners. This suggests a need for a long term strategic approach rather than adjustment at the level of individual sites. The adoption of climate

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<sup>133</sup> This is discussed more fully by Macintosh et al, above n 14 at 50-51. See also *Newcrest Mining (WA) Ltd v Commonwealth* [1997] HCA 38; *Commonwealth v WMC Resources Ltd* [1998] HCA 8; *Durham Holdings Pty Ltd v New South Wales* [2001] HCA 7.

<sup>134</sup> For example, ss98-113 of the *Planning and Environment Act 1987* (Vic) provide for compensation where land is reserved for a public purpose.

<sup>135</sup> Land Acquisition and Compensation Act 1986 ss 30-39.

change as a strategic consideration within the SPFF could assist in developing an equitable and coherent approach.

Victoria has a number of exiting legal models that could be adapted to achieve a balance between private interest and public values in areas of enhanced climate risk. For example, s 173 of the P & E Act provides for agreements to be reached between government and landholders that acts as a form of statutory covenant. The Trust for Nature concept secures conservation covenants over private land.<sup>136</sup> A similar type of covenant is a mechanism that might be utilized to adapt to climate-enhanced hazard risk in areas where for example land is subject to periodic hazards. It might also be used where only selected parts of a landholding are subject to floods or coastal inundation. However careful evaluation of how such covenants are to be monitored and managed in the long term is an important consideration in gauging their effectiveness.

### Property and Market Based Measures (Rolling easements)

Innovative planning mechanisms that go beyond ad hoc and project-specific controls are required to ensure that in practice the protection of public land such as beach access and amenity is appropriately prioritised and balanced against private property rights. The implementation of a system of rolling easements is considered as one possible mechanism for achieving this balance. Although operating on a more contingent basis, such easements have many existing parallels in a wide variety of statutory easements that exist for public purposes. For example, there are statutory easements covering: sewage and other utility access generally implemented at the point of subdivision. However later access to private land can be secured by easements, such as telecommunications and internet access.

In the United States, there has been considerable experimentation with measures to implement a retreat strategy in a coastal context via 'rolling easements'.<sup>137</sup> These measures have the dual purpose of managing hazard impacts on coastal property owners in a consistent and fair manner and supporting the gradual migration of beaches and coastal habitats, such as wetlands and tidal marshes as sea levels rise. Because they allow the land to be used in the short- to medium-term; they are consistent with a more flexible approach to spatial adaptation planning.

A 'rolling easement' can be implemented via a combination of regulatory and property law and contractual mechanisms that have been combined with cost-sharing measures to address equity concerns.<sup>138</sup> The choice of mechanism would depend on the legal and regulatory context within the particular jurisdiction and policy settings.

Further specific investigation of the types of measures which could be combined to implement this approach in Victoria requires more detailed investigation. Generally speaking however, mechanisms might include:

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<sup>136</sup> See *Victorian Conservation Trust Act 1972*

<sup>137</sup> Titus J, 'Rising seas, coastal erosion, and the takings clause: How to save wetlands and beaches without hurting property owners' (1998) 57(4) *Maryland Law Review* 1279; Titus J, *Rolling Easements* (US EPA, 2011) available at <<http://water.epa.gov/type/oceb/cre/upload/rollingeasementsprimer.pdf>> (accessed 30/09/2012); Caldwell M, and Segall C, 2007, "No day at the beach: Sea Level Rise, Ecosystem Loss and Public Access along the Californian Coast" *Ecology Law Quarterly* **34** 533–578; Kittinger JN, and Ayers AL, 2010, "Shoreline Armouring, Risk Management, and Coastal Resilience under Rising Seas" *Coastal Management* **38** 634–653.

<sup>138</sup> Macintosh et al above n2, 49-50

- regulations prohibiting shoreline protection and requiring the removal of structures in certain defined circumstances, made under specific coastal management legislation, such as the Coastal Management Act;
- development permit conditions that require continued access to a dry beach introduced retrospectively as a qualification of existing use rights; and
- a targeted scheme of transferable development rights that require relocation of dwellings in hazard prone areas.
- easements registered on land title, granting public access to a dry beach even if the beach migrates inland;
- restrictive covenants registered on land title, binding parties to avoid shore protection and permit ongoing beach access.

An important component of these measures is some level of public investment to recognize the protection of important public interest values associated with beach access and coastal habitats.<sup>139</sup> However, these concepts developed in the USA where often there is less public land abutting foreshores and waterways than in Victoria. While the possibilities of using rolling easements to secure public access to foreshores and waterways needs to be considered, the retention of public lands securing public access to foreshores and coastal reserves would be a more effective mechanism. The interplay between public and private land in the context of sea-level rise is a complex legal issue that remains to be fully resolved.<sup>140</sup>

### Financial and Voluntary measures

In existing settlements private sector adaptation to hazards can be encourage through a range of financial and voluntary measures. Thus regulatory measures may be combined with financial incentive payments which provide the financial assistance required to implement the new hazard mitigation measures; or be linked to taxes and charges designed to incentivise behaviour change. Where such incentives prove ineffective, a regulatory response may still be required to ensure more comprehensive implementation.

### 5.3 Public land and public access

In Victoria, retention and management of public land and public open space comprise significant communal values that are to be secured through the planning system. These areas, as well as having intrinsic value, also have the potential to provide valuable functions in relation to climate change adaptation. The planning system currently seeks to secure public land values at several levels including values associated with indigenous and non-indigenous heritage.

Clause 11 of the exposure draft of the Planning Policy Framework Integrated Version deals with public open space. Several aspects of the policy objectives in that framework have relevance for adaptation planning for public access and public 'rights'. Clause 11, Strategy 1.3 provides:

c) Incorporate, where practicable, links between major parks and activity areas, along waterways and natural drainage corridors, connecting places of natural and cultural interest, as well as maintaining public accessibility on public land immediately adjoining waterways and coasts.

<sup>139</sup> Tayanah O'Donnell and Louise Gates 'Getting the balance right: A renewed need for the public interest test in addressing coastal climate change and sea level rise' (2013) 30 *Environmental and Planning Law Journal* 220.

<sup>140</sup> See Bruce Thom, 'Who owns the beach when the sea is rising?' *The Conversation* 29 April 2014.

Objective 2 is pertinent in that it provides strategies to retain public access along waterways and foreshores and requires land alongside foreshores and waterways to remain in public ownership.<sup>141</sup>

The role of open space in acting as a safety net for ‘absorbing’ impacts from increased risks of hazards under climate change is underexplored in a planning context. Further, adopting a proactive approach to securing and managing open space as a form of adaptation planning may merit examination. This could be supported by the development of relevant principles and strategies at a regional or state planning policy level. For example, the review of planning controls along the Maribyrnong and Yarra River corridors as part of reforms to the State Planning Policy Framework could offer an opportunity to evaluate this potential.

Another mechanism for consideration is the use of ‘offsets’ as conditions on development approval in areas that are subject to increased risks such as flood and sea level rise. Offsets are defined as:

Measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and/or rehabilitated or restored, in order to achieve ‘no-net-loss’ or a ‘net-gain’ of biodiversity. Offsets can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation or averted risk, protecting areas where there is imminent or projected loss of biodiversity.<sup>142</sup>

Thus offsets are a market mechanism used to offset or compensate for the loss of public values such as biodiversity in the course of private development. Developers are required to offset the loss by securing equivalent biodiversity protection at another location. One of the significant areas where loss of biodiversity may be accelerated through climate change is in coastal and riverine ecosystems, e.g., loss of wetlands through sea level rise on coastal lands. Provision of more extensive offsets areas subject to seasonal or periodic hazards may serve twin goals of biodiversity protection and hazard mitigation. However offsets should be an option of last resort in terms of biodiversity protection and these mechanisms must operate in conjunction with strong environmental protections to preserve overall biodiversity levels.

### Public Rights of Access

Within Australia there is a perception that there are public ‘rights’ of access to areas of Crown land such as the foreshore and coastal areas and that these ‘rights’ are secured by the legal system. The underpinning legal position in respect of coasts and land titles is variable and complex, especially in areas where there may be extensive existing areas of development along the coastline.

As Thom notes in regard to NSW:

*In the absence of a comprehensive statutory scheme for the provision of public foreshore access, government buyback schemes, such as the former Coastal Lands Protection Scheme, have traditionally been utilised to ensure certain foreshore land remains in public ownership. However, the procedures required are costly, and as a result such opportunities are not frequently pursued. Though incremental efforts may continue, a strategic approach is required to respond to sea level rise, in order to avoid continued confusion, frustration and conflict that arise in balancing private property rights and public access to the coastline.*<sup>143</sup>

<sup>141</sup> Cl 11, Objective 2, Strategy 2.2, 2.3 Victorian Planning Policies Integrated version March 2014.

<sup>142</sup> For example see, European Union, *Guidance on Integrating Climate Change and Biodiversity into Strategic Environmental Assessment* (European Commission 2013), 6.

<<http://ec.europa.eu/environment/eia/pdf/SEA%20Guidance.pdf>> accessed 12/4/14.

<sup>143</sup> B Thom, *The Conversation* May 2014

This statement points to the need for the development of a strategic approach to balancing private and public rights in respect of coastlines and other areas of Crown lands, such as national parks, that may be impacted by increased climate change impacts.<sup>144</sup> Typically there has been substantial public investment in ‘soft’ infrastructure in many of these areas such as bike and coastal walking trails and other recreational facilities. Access to them is secured through various public reservation and roadways. Long term strategic planning around how such public ‘rights of access’ can be secured in areas subject to increased climate change risks including coastal inundation and erosion would be beneficial. Attention should be directed also to examining how access for particular groups such as the disabled may be facilitated.

### **Cost-sharing Measures**

Financial instruments, such as taxes, charges and levies could play a significant role in encouraging behaviour change and/or raising revenue to fund adaptation initiatives and post-disaster responses. Again the ramifications for private sector insurance require consideration. For state and local governments in Victoria, the main mechanism available is the power to vary property rates and impose specific charges under the *Local Government Act 1989* (Vic). For example, as recommended by the Victorian Coastal Climate Change Advisory Committee, property rates for owners undertaking climate change adaptation measures could be reduced; and rates could be increased for properties in particular hazard locations to contribute to funding climate change adaptation measures (such as house retro-fit programs etc).<sup>145</sup> Both of these measures are within the powers conferred under the *Local Government Act 1989*.<sup>146</sup> Differential pricing regimes similar to models instituted for water pricing (a reverse rising block tariff concept) could provide an incentive for reductions in usage in relation to charges for services in areas affected by hazards.

### **Collaborative and Agreement-based Measures**

One of the significant trends in spatial planning over the two decades has been stronger engagement with the community and the facilitation of community participation in planning. This is often referred to as involving some form of collaborative governance – often characterised by partnerships and agreements between government and various stakeholders in the community and business sectors. This approach is evident in many aspects of Victoria’s planning system and in wider models of public participation. While these models are utilised already by many local government and state agencies involved in adaptation planning at an informal level, there may be merit in considering a more formalised platform. Existing models such as the Planning Panels process under the P & E Act may be an appropriate forum, particularly given its established role in the planning system.

The complex and diverse set of interacting legal and institutional arrangements pertaining to planning for existing settlements suggests that there may be a need for a dedicated planning forum or adoption of existing forums such as the Planning panels process for the strategic integration of

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<sup>144</sup> Kay, R., Haines, A., Rosenzweig, C., Steffen, W., Thom, B. (2013). Conversations on adaptation effectiveness. In Jean Palutikof, Sarah L. Boulter, Andrew J. Ash, Mark Stafford Smith, et al (Eds.), *Climate Adaptation Futures*, (pp. 75-86).

<sup>145</sup> Coastal Climate Change Advisory Committee, *Coastal Climate Change Advisory Committee: Final Report* (Victorian Government, 2010) 32.

<sup>146</sup> See particularly Part 8 which deals with rates and charges; and includes provision for special rates and charges (s163) and differential rates (s 161).

adaptation measures for new and existing development at different scales. Thus a model that facilitates stronger integration of planning laws with other mechanisms for adaptation planning may be beneficial.

### *A planning forum for integration of adaptation measures*

The survey of adaptation planning measures above which could be used to reduce exposure and vulnerability to climate hazards in Victoria highlights how these instruments rely on diverse legal authority; involve different levels of government; and spread roles and responsibilities for climate change adaptation between public and private parties raising difficult questions of cost and risk-sharing. Yet there are also a number of potential synergies between the various instruments; particularly the potential to combine regulatory instruments with cost-sharing and voluntary measures to lower costs for government and support private adaptation initiatives.

Macintosh et al reviewed two recent coastal planning processes in Tasmania and Queensland, and identified the following transferable lessons for the design and conduct of similar processes in other settings:

- 'A state-wide policy framework for spatial planning including basic underlying policy principles on cost-sharing and roles and responsibilities as a basis for planning is critical to support a consistent and effective approach to local spatial planning;
- Governments should consider creating a statutory basis for spatial planning processes and local adaptation plans in order to formalise roles and responsibilities and provide greater certainty about implementation;
- Stakeholder involvement is important but care should be exercised in determining the extent, nature and timing of consultation;
- Careful consideration should be given to the most appropriate scale for these planning initiatives (regional, local, or based on geophysical compartments), and options for integrating plans across scales; and
- Spatial planning processes require a significant commitment of resources.'<sup>147</sup>

In Victoria, there appear to be several available options to institute broader planning processes under an existing statutory framework:

- Under the Climate Change Act 2010

Although Victoria does have specific climate change legislation with provision for broad state-level climate change spatial planning, this occurs at a very high policy level, providing overarching strategic direction and a coordinating mechanism for the large range of different sectoral and

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<sup>147</sup> Ibid. The two projects reviewed were the *Tasmanian Coastal Adaptation Pathways Project* (a collaboration between the Local Government Association of Tasmania, the State Government's Climate Change Office and the local councils of Clarence, Kingborough, Latrobe and Break O'Day) and the *Townsville Coastal Hazard Adaptation Strategy*, undertaken as a pilot project under the Queensland State Planning Policy for Coastal Protection 3/11 (2012), which required all coastal local government authorities to prepare a Coastal Hazard Adaptation Strategy to cover urban localities that are projected to be within a high coastal hazard area between the commencement of the state planning policy and the year 2100. See: SGS Economics and Planning, *Tasmanian Coastal Adaptation Pathways Project Documentation of Methodology*, (Local Government Association of Tasmania, 2012); and <http://www.townsville.qld.gov.au/council/projects/Pages/TownsvilleCoastalHazardAdaptationStrategyPilotProject.aspx>

regional adaptation measures. There is currently no specific statutory basis in the *Climate Change Act* to enable and support area – and /or subject- based adaptation plans; and the current Climate Change Adaptation Plan does not anticipate formal spatial planning of this nature. However, the legislation could be amended to this effect.

- Under subject-specific integrated legislation

There are a range of subject specific planning processes already established under Victorian legislation, which also have the potential to be further developed to provide a basis for integrated spatial planning. For example, Coastal Action Plans and Coastal Management Plans under the *Coastal Management Act* could provide a basis for identifying current and potential exposure to coastal climate hazards; articulating adaptation strategies for particular areas; and coordinating the wide range of available spatial planning and other policy instruments available to address these issues. A comprehensive review of existing Coastal Action Plans and Coastal Management Plans under the CM Act (many of which are currently under review) was beyond the scope of this report; however our brief investigation suggested that while they do address climate change adaptation issues to some degree, there is considerable scope to expand the use of these mechanisms to support climate adaptation of coastal settlements, in much the same way as the NSW Coastal Zone Management Plans under the *Coastal Protection Act 1979* (NSW). This would require targeted amendment of governing legislation and policy.

Floodplain management planning under the Water Act could be used in a similar way. There is also the potential for broader use of the Integrated Fire Management Planning framework to support a more integrated consideration of adaptation measures for new and existing settlements in bushfire prone areas.

- Strategic Planning

Strategic planning remains a key means for securing integrated and inclusive measures. Thus another potential site of integration is augmentation of the strategic planning process that is currently being developed under the SPFF. The framework recognises the need for stronger integration across various scales and it already incorporates some principles for considering climate change adaptation at various levels. The integrated strategic focus could work in conjunction with powers given to e.g. the Planning Panels forum to facilitate collaborative community engagement on these aspects.

## 6. Summary and Recommendations

### Summary

Effective adaptation planning in response to increased risks of natural hazards precipitated by climate change requires the consideration and evaluation of a spectrum of measures although the central focus remains the planning system. Adaptation planning is in transition – much research to date has articulated broad approaches related to themes of resilience and vulnerability. Typically, these have generated generic categories of response, such as avoid, defend or retreat and have emphasised capacity building around resilience. In tandem, existing processes based upon risk assessment have been extended to encompass increasing climate risk and hazard levels. Attention is turning now to how generic categories of adaptation response and risk assessment can be translated

into explicit mechanisms for implementation that include legal, regulatory, institutional and financial dimensions.

The report has drawn on generic adaptation approaches and investigated how they can be translated into legal and regulatory models. In turn, it has examined institutional questions around the roles of responsibilities of agencies, such as local government, within the adaptation planning context. Legal, regulatory and institutional changes of varying degrees are required; including to strategic and statutory planning processes, in order to better accommodate adaptation to natural hazards under climate risk. Core suggestions focus on responses developed through the planning law process – the P & E Act 1987. Associated laws such as the *Environmental Effects Act 1978* have a role to play, especially in respect of major infrastructure developments. The central recommendations indicate a stronger role for integrated strategic planning to guide the incorporation of climate risk considerations across the planning framework. In addition, it advocates wider use of strategic measures such as planning schemes and overlays to identify areas of transitions and where development controls need to respond directly to natural hazard risks.

**A spectrum of adaptation measures:** In addition to planning laws, this report has surveyed an extended range of potential legal, regulatory and financial measures to be evaluated for adoption within Victoria to address natural hazard risks exacerbated by climate change. It has argued for a need to transcend the traditional planning law schema to incorporate examination of a wider range of interests in the planning process than that of private land holding. Nonetheless, it is recognised that the main focus of planning law is private land and the regulation of those land-use will remain significant. In these areas it is important to foster a range of regulatory measures but also those that facilitate private adaptation- as well as providing strategic policy directions. The report identified three categories of areas for which those more flexible legal and regulatory approaches could be evaluated.

### Recommendations

**Recommendation:** Spatial planning is likely to remain the central legal and regulatory frameworks for adaptation to natural hazards exacerbated by climate change. Given the fundamental importance of planning as an adaptation tool, the *Climate Change Act* should specifically reference decisions made under the P&E Act as comprising those where the decision-maker is required to take into consideration climate change risks. This matter could be examined via scheduled review of the *Climate Change Act* in 2015.

**Recommendation:** A significant point for integration of the climate risk assessment and planning frameworks is for an explicit inclusion of natural hazard adaptation into existing impact and risk assessment processes. The existing legislation arguably is drafted widely enough to allow for consideration of adaptation to increasing natural hazards due to climate change, as part of general environmental and social impact matters. However, more targeted identification of increased risks of natural hazards as matters to be taken into account by decision-makers would ensure these factors were directly incorporated into impact assessment frameworks.

**Appendix 1 provides a suggested model for incorporating climate change adaptation for natural hazards into decision-making and impact assessment.**

### ***New development:***

In respect of new development, including infill, there appears heavy reliance on the core process of development assessment and approval processes for adaptation and natural hazard management (i.e. permit requirements – hazard risks managed principally through conditions on approvals). There are advantages to using such legal and regulatory frameworks including:

- Familiarity with procedures and compatibility with existing processes;
- Conditions on development approval ‘run with the land’ giving legal enforceability;
- Institutional capacity for review of decisions through VCAT; and
- Avenues for public participation through existing channels.

There are some challenges:

- The dependence on high quality, locally-scaled and current hazard data necessitates review and update of information; (consideration of how information costs are distributed)
- Various levels of discretion exist around decision making–(may be constrained with more prescriptive rules and standards, as for bushfire or guided by state and regional planning policy frameworks).
- Need for greater transparency of policy guidance and information provision through overlays and planning schemes (incl. possibility of more timely amendment mechanisms);
- Compliance and monitoring – if there is reliance on development conditions to achieve an acceptable level of risk, there must be adequate systems to ensure compliance (major resource constraints of local government in this area).

### **Recommendations: Precautionary Legal and Regulatory Models**

There could be a more precautionary approach in certain contexts. This could involve:

- Adjusting the strategic planning process to identify areas in advance of development processes that are particularly hazardous– i.e. to develop AND APPLY zonings which do not permit vulnerable land-uses in high risk areas or where development occurs only on the basis of pre-set conditions.
- In such instances, there could be opportunities to identify alternative land uses such as open space or recreational spaces that can ‘absorb’ periodic hazards e.g. extended floodway areas.
- Wider use of innovative development approval types could occur in certain hazard contexts (i.e. coastal where approvals could be limited in time or where certain land uses, e.g. residential, change on the happening of given circumstances).
- Broader consideration of how emergency management requirements are integrated into statutory planning processes at a strategic level, as well as the development control stage. This process could extend to treatment of all hazards, (and possibly expanded to cover heatwave and drought).

### ***For existing development***

The planning system is likely to remain the major legal and regulatory framework for adaptation responses to natural hazard risks under climate change existing development although scope exists for a gradual transition of land use over time initiated through strategic and statutory planning measures. This framework can be augmented by progressive introduction of tighter design and siting standards or financial incentives to foster transition, although a cost benefit analysis of retrofitting building stock in hazard prone areas would be advantageous.

The report canvassed a range of instruments that could work in conjunction with, or in addition to, spatial planning. These measures face *economic, social, political barriers* to their adoption.

As the planning system regulates land use then information-based instruments operating in associated legal regimes, such as land transfer and registration and contract, (e.g. disclosure requirements for sale of land) can perform a general facilitative function in promoting private adaptation. There are administrative and cost considerations and capacity constraints. Further, these approaches, while prescriptive of behaviour around provision of information cannot circumscribe later actions i.e. do not prevent purchase of land in areas of potential coastal inundation.

**Recommendation:** To be most effective, information- based measures would need to be embedded in or otherwise aligned with spatial planning processes that provide broader land use controls.

A second group of approaches are grounded in property and market-based mechanisms that involve some exchange of rights or purchase of 'at risk' land or parts of land. At one end of the spectrum is acquisition of land at the other models that 'layer' various levels of land use such as easements, covenants and s173 agreements (P& E Act). These mechanisms are well established and legally secure but are politically and socially sensitive, as well as resource intensive. These models may work in conjunction with or replace technological and physical infrastructure approaches such flood levees or shoreline protections. Relative cost/ benefit considerations of options should be conducted.

**Recommendation:** Use of the acquisition and property models is likely to be limited to areas of where hazard risks are most severe or where there are no feasible alternatives. Strategic planning can assist in identifying at risk areas. Property based and market measures may offer feasible alternatives to large scale infrastructure responses to natural hazards where flexibility is required.

A third group of measures utilises financial and incentive-based approaches. These approaches are potentially most useful in areas where they can facilitate progressive land use and activity changes as responses to increased natural hazard risk.

**Recommendation:** These models are under-utilised and could be more widely deployed in a targeted way to assist in situations where change can be initiated over a longer time frame. Strategic planning can assist in identifying target areas.

### ***Public Land Access and Management***

Crown land plays an important role in securing a range of benefits for the Victorian community, including access to places of social and cultural value such, beaches and waterways, and in

preservation of heritage and cultural heritage. Stronger incorporation of legal and regulatory models for adaptation into the planning system would enhance coordination.

**Recommendation:** The planning system, especially at a strategic level, already engages in identifying areas of particular amenity value, such as public open space and in assessing how areas may be impacted by hazards. Further investigation is needed as to how the planning system can be more effectively utilised for securing public interest values and public access in situations of accelerated natural hazard risk.

Examination of alternative uses can offer opportunities to build community resilience to climate risks.

**Recommendation:** Further research and experimentation around discrete mechanisms to protect and manage public land and secure public access, such as rolling easements, needs to be instigated. There is potential for specific statutory regimes to protect and manage at risk areas – for example in the UK legislation imposes a duty upon a Minister to secure coastal walking trails.

### **Integrated Approaches**

There is a need to integrate consideration of climate risk adaptation planning for natural hazard mitigation across the Victorian planning system.

**Recommendation:** A dedicated planning forum that promotes the targeted and integrated consideration of adaptation measures for new and existing development is lacking. Existing statutory regimes could be utilised for this purpose (e.g. P & E Act, Planning Panels, Climate Change Act), or through specialist regimes for regional or integrated approaches (e.g. through Coastal Management Act).

### **Institutional Models**

Planning for adaptation to climate change that seeks to address natural hazard risks and to build community resilience has depended principally on existing legal and regulatory models based in the planning system. Integration of emergency responses and planning systems has been developed progressively, typically building on recommendations arising from major inquiries following natural disasters of significant proportions such as the 2009 black Saturday fires. Currently the Climate Change Act provides some coordination for adaptation planning but many institutional agencies and structures are not formally engaged in the adaptation planning process on a statutory basis. There is scope however to examine how institutional structures might be more effectively aligned to promote adaptation to natural hazards; including the possibility of expert bodies that were utilised in the climate change mitigation sphere.

**Recommendation:** Examination is needed of potential institutional models and responsibilities for coordinating the implementation of legal, regulatory and financial measures for adaptation to climate risk and exacerbated natural hazards.

**Appendix 1: A suggested model for decision-making that incorporates adaptation.**