

SUPPORTING PARTNERSHIPS WITH LOCAL GOVERNMENT AND THE COMMUNITY

Discussion Paper for the VCCCAR Strategic Think Tank:
Adaptation Research Beyond 2014



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Summary

As part of the ongoing need to strengthen the research-policy relationship, this paper has been prepared to help frame discussions for a VCCCAR-led *Think Tank* focusing on ‘supporting partnerships with local government and the community’, which is a priority theme identified in the Victorian Climate Change Adaptation Plan (VCCAP). The paper reviews research and evidence of practices around adaptation planning in local government and communities in Victoria, and identifies key knowledge gaps and research needs against the key climate change impacts that Victorian communities are facing.

The VCCAP states that ‘Victoria’s local governments have an important role to play in climate adaptation’ and that ‘partnerships between the Victorian Government and the local government sector are a critically important mechanism for adaptation planning across Victoria’ (p.38), in particular because such partnerships can encourage community adaptation and adaptation planning at the local and regional scale. The VCCAP specifically recognises the importance of local knowledge and experience in adaptation planning and outlines shared responsibilities between state and local governments.

A key principle of the VCCAP and the Climate Change Act 2010 is to have regard for the impacts of climate change when making decisions, which is to be supported by research tailored to Victorian settings and needs. It can be argued that, to date, VCCCAR has been the leading single mechanism by which such research support has been facilitated in Victoria.

According to Victorian Government reports, there are five key risks associated with climate change projections for Victoria: bushfires, heatwaves, floods, drought and sea-level rise and coastal impacts. The potential impacts of climate change on local governments and communities depend on local geographic, socio-economic and institutional contexts, and are still relatively poorly understood.

Local, community-level adaptation involves strengthening community understanding and cohesion and building capacity to support those individuals and groups in a community that are least able to prepare themselves for the impacts of climate related events.

From a community strengthening perspective, local adaptation is less about formal risk management processes (although this is an important aspect of the client-based work of community service organisations and other groups) and more about developing and supporting practical ways in which communities can increase their capacity to prepare for and respond to climate change events and the impacts of gradual climatic change.

Recent research highlights an ongoing lack of systematic and rigorous adaptation planning in Australia. The need to improve problem framing was identified, along with a requirement to better integrate local adaptation into social, urban and regional planning, and into emergency management and sustainable development efforts. Research also underlines the importance of developing strong partnerships between local governments and communities in adaptation planning allowing both expert and local knowledge to be brought to bear in decision-making and to help strengthen community support for implementing adaptation plans.

The following table provides an overview of areas that, based on the authors' reading of the literature, constitute knowledge gaps and should be considered for further research.

Summary table: Knowledge gaps and research needs to assist adaptation planning and implementation

Key knowledge gaps	Research needs
1. Information and guidance for local adaptation	<ul style="list-style-type: none"> • Customising existing adaptation guidelines for local needs • Develop processes for storing and regularly updating locally specific data sources to inform decision making • Selecting, modifying and implementing existing adaptation support tools
2. Governance and leadership of local adaptation	<ul style="list-style-type: none"> • Clarifying roles and responsibilities for adaptation across all levels of government • Participatory forms of governance that directly involve communities in adaptation planning and decision-making • Deliberative democracy approaches for adaptation goal-setting • Typologies of adaptation roles and responsibilities within local governments • Effective use of land use planning for achieving adaptation outcomes • Developing and communicating effective business cases for organisational adaptation • Community-based adaptation processes and effective engagement measures
3. Resourcing, capacity and competing priorities	<ul style="list-style-type: none"> • Core individual skills and competencies needed for effectively undertaking local adaptation • Developing best practice organisational approaches for adaptation, for different kinds of organisations • Gaining an understanding of what are innovative and successful funding models for specific adaptation initiatives • Market-based financing options for costly adaptation options • Improving cost-benefit analysis and other economic tools to appreciate the complexity and uncertainty of possible adaptation outcomes
4. Implementation and mainstreaming of adaptation	<ul style="list-style-type: none"> • Practical approaches for moving from adaptation planning to integrated adaptation action • Incentives for adaptation mainstreaming across the local government and community sectors • Risk management as a means for mainstreaming adaptation into organisational planning and decision-making • The role of individual and collective leadership in integrating adaptation into an organisation (see 'Governance and leadership' above). • Models of organisational governance that help mainstream adaptation
5. Monitoring and evaluation of adaptation initiatives	<ul style="list-style-type: none"> • Developing robust local indicators for tracking adaptation progress against defined objectives • Practical principles of adaptation monitoring and adaptation in the local government sector / in the community services sector • Valuing and evaluating adaptation options and actions • Methods for defining realistic adaptation outputs and outcomes • Methods for adaptation progress review, drawing on experiences in other areas of M&E • Practical challenges with adaptation monitoring within complex organisations

1. Introduction

Victoria's Climate Change Adaptation Plan (VCCAP; March 2013) sets out a whole of government approach for developing a more climate resilient Victoria. As part of the government's ongoing commitment to delivering climate change adaptation policy, the VCCAP identified the need to strengthen engagement between research and policy making to help develop coordinated approaches for providing information to Victorian councils and the Victorian community, to support their adaptation planning and risk management.

The Victorian Centre for Climate Change Adaptation Research's (VCCCAR) primary role has been to address this need by identifying and funding research to support government policy making and adaptation planning. As part of the ongoing need to strengthen the research-policy relationship, VCCCAR is funding a series of 'Think Tanks' focusing on four priority themes identified in the VCCAP.

1. Managing risks to public assets and services
2. Managing risks to natural assets and natural resource based industries
3. Supporting private sector adaptation
4. Supporting partnerships with local government and the community

This paper has been developed to provide some background for the Think Tank focused on the fourth theme. The Think Tank aims to:

- Identify priority research needs to support adaptation to climate change by local governments and the community based on the policy objectives of the Adaptation Plan
- Improve investment decisions by government and other decision makers in adaptation
- Build the value proposition to government for further research effort in this area.

A report from the Think Tank will be circulated for wider input and consultation. The output will provide a clear indication of the potential benefits from investment in research in reducing risk and reducing the future costs of dealing with potential climate impacts. In the longer term, the outcome of this research will be improved decision making by government and other decision makers to support the local government and community sectors in a changing climate.

By way of providing some 'food for thought', this paper raises the following issues for further discussion:

- Framing the discussion under the theme of 'local adaptation'
- Reviewing the roles and responsibilities for climate adaptation in the current Victorian policy context;
- Reviewing climate change impacts and the implications for adaptation at local government and community level;
- Discussing current practice and research in adaptation planning and progress across Victorian local governments and communities;
- Identifying key knowledge gaps and research needs to support local governments and the community sector in building climate resilient communities.

It is intended that this paper be used to help guide and frame Think Tank discussions, involving key policy makers from state and local governments, community sector stakeholders, and academics.

2. What is local adaptation?

Climate change adaptation at the local (and regional) scale is a bundle of strategies and actions for **managing the risks of climate change and strengthening the adaptive capacity and resilience of communities**.

From the perspective of **local governments** and their statutory roles and responsibilities, the notion of managing current and future climate-related risks is the most common starting point and driver for adaptation. The emerging standard practice for adaptation is a cyclical process of goal setting (which is often omitted or only touched upon), risk assessment, planning, implementation and evaluation and review¹.

In the context of climate change adaptation, **goal setting** defines what decision-makers want to achieve in their geographical or administrative area and how progression towards achieving stated goals can be measured. **Climate change risk assessment** focuses on identifying the key risks to achieving these goals, such as the implications of climate risks for public assets and infrastructure, for the natural and built environment, and for households and communities. **Adaptation planning** involves developing options for how best to manage these risks and to minimise negative consequences within a context of uncertainty. **Adaptation implementation** is the process of choosing action from identified adaptation options and realising these in a given local situation. To ensure effectiveness and efficacy of adaptation processes, **monitoring, evaluation and review** need to be integral parts of adaptation planning and implementation, although the evidence of current adaptation practice suggests that this remains the most underdeveloped aspect of local adaptation, for reasons discussed below.

From a **community perspective**, local adaptation is less about formal risk management processes (although this is an important aspect of the client-based work of **community service organisations** and other groups) and more about developing feasible and practical ways in which communities can increase their capacity to prepare for and respond to climate change events and the impacts of gradual climatic change.

It is generally assumed that developed countries such as Australia have high levels of adaptive capacity in their communities. Recent experiences with major bushfires and floods suggest that this is not always the case. Geographically-defined communities differ vastly with varying degrees of internal social cohesion, and each community consists of segments or groups that are more exposed, more sensitive, or less able to adapt to certain types of climate impacts than others. Such intra-community differences make some people – even in the most resilient community – more vulnerable to suffering serious adverse consequences of climate change. **Local community level adaptation** involves strengthening community understanding and cohesion and building capacity to

¹ See, for example Preston et al. 2010; UKCIP 2010; Fünfgeld 2012; Gurran et al. 2011.

support those individuals and groups in a community that are least able to prepare themselves for the impacts of climate related events.

This can be achieved through building awareness of current and future climate risks, preparedness and response options, and by developing local capacity to implement these options, for example through improving access to support services. To facilitate community level adaptation, community groups may also engage in adaptation planning processes similar to those described for local governments.

3. The Victorian policy context: roles and responsibilities for adaptation

The Climate Change Act 2010 requires the Victorian Government to prepare a state-wide climate change adaptation plan every four years². The first Victorian Climate Change Adaptation Plan (VCCAP), published in March 2013, states that ‘Victoria’s local governments have an important role to play in climate adaptation’ and that ‘partnerships between the Victorian Government and the local government sector are a critically important mechanism for adaptation planning across Victoria’³, in particular because such partnerships can encourage community adaptation and adaptation planning at the local and regional scale. The VCCAP specifically recognises the importance of local knowledge and experience in adaptation planning and outlines shared responsibilities between state and local governments.

The VCCAP recognises that local councils and their communities will be exposed in different ways to the impacts of climate change and that they will have varying capacities and resources to respond effectively to those impacts. It acknowledges that regional and local adaptation plans are best developed and implemented by those with local knowledge and risk management responsibilities⁴. The Victorian Government has committed to working in partnership with local government to support the sector in its adaptation processes, for example through its *Victorian Adaptation and Sustainability Partnership* (VASP) grants and programs such as the *Local Coastal Hazard Assessments*. A key principle of the VCCAP and the Climate Change Act 2010 is to have regard for the impacts of climate change when making decisions, which is to be supported by research tailored to Victorian settings and needs⁵ (Victorian Government 2013:p.8). It can be argued that, to date, VCCAR has been the leading single mechanism by which such research support has been facilitated in Victoria.

The evolving role of local government

In line with the above VCCAP statements, the Council of Australian Government’s Select Council on Climate Change highlighted the critical role that local governments are playing ‘on the frontline’ in responding to climate change impacts⁶. The Government states that local governments must ensure

² Victorian Government 2010: s16

³ Victorian Government 2013b: 38

⁴ Victorian Government 2013b: 38

⁵ Victorian Government 2013b: 8

⁶ Council of Australian Governments 2012

that ‘particular local circumstances are adequately considered in the overall adaptation response and in involving the local community directly in efforts to facilitate effective change’. Furthermore, the point is made that ‘local governments are strongly positioned to inform state and Commonwealth governments about the on-the-ground needs of local and regional communities, to communicate directly with communities, and to respond appropriately and in a timely manner to local changes’⁷.

In Victoria, the VCCAP reaffirms the importance of local governments in developing regional and local scale adaptation strategies. The Victorian Government has adopted a *Statement of Common Understanding* based on this document, which is intended to provide guidance on allocating management of climate change risks among the three levels of government as well as the private sector. Within this framework the national, state and local government roles are outlined recognising that these will evolve and adapt over time (see Table 1).

Table 1: Adaptation roles and responsibilities across three tiers of government

<i>National priorities</i>	<i>State priorities/strategies</i>	<i>Local priorities/strategies</i>
<ul style="list-style-type: none"> • Providing national science and information • Managing risks to Commonwealth assets and programs • Providing guidance on national adaptation reform • Maintaining a strong, flexible economy and well-targeted social safety net 	<ul style="list-style-type: none"> • Managing risks to public assets and services managed by the Victorian Government • Managing risks to Victoria’s 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 • Partnering with local government and communities 	<ul style="list-style-type: none"> • Managing risks and impacts to public assets owned and managed by local government and to local government service delivery • Supporting measures to build adaptive capacity and climate resilience in local communities • Collaborating across councils • Working in partnership • Implementing relevant legislation to promote adaptation • Contributing appropriate resources

Source: Victorian Government (2013), p. 6.

How can communities be supported to adapt to climate change?

Although local government provides key government services to communities, many services that are important for the functioning of communities are delivered by community organisations, voluntary groups and *ad hoc* local support networks. The Victorian Government plays an important role in this setting, by providing grants to community service organisations, by delivering community development programs, and by protecting cultural heritage and other assets under their management or control⁸ (VCCAP 2013: p. 62). The ‘community sector’ is traditionally heterogeneous and made up of a range of governmental and non-government organisations, private actors (including volunteers) and ad-hoc initiatives that form to serve particular local needs or events. This

⁷ Council of Australian Governments 2012

⁸ Victorian Government 2013b: 62

poses a challenge for devising and implementing effective adaptation strategies. Improved coordination across levels of government and across different types of entities involved in community development and service delivery is a key requirement for enabling effective adaptation.

The VCCAP identifies several areas for the Victorian Government to support adaptation in communities⁹:

- Disaster resilience
- Public health planning
- Targeted community capacity-building
- Supporting resilient community assets
- Protecting cultural heritage and
- Using indigenous knowledge to manage climate risks.

4. Climate change impacts on local governments and communities

The policy framework outlined above establishes a clear agenda for further investment in adaptation research in Victoria. To better understand future needs for research and knowledge transfer for adaptation in the local government and community sector, it is useful to consider which climate change impacts may most significantly affect Victorian local governments and the communities they serve.

Victorian Government reports acknowledge five key risks associated with climate change projections for Victoria (Table 2): bushfires, heatwaves, floods, drought, and sea-level rise and coastal impacts. These five risks will have varying impacts across geographic areas in Victoria, their local governments and communities. The current and projected future impacts influence the types of place-based risk management strategies that need to be employed.

Table 2: Climate change projections and associated risks and management strategies for Victoria

<i>Climate change projections</i>	<i>Associated risks</i>	<i>Placed-based risk management strategies*</i>
<ul style="list-style-type: none"> • More days over 35 degrees • Higher annual mean temperature • Reduced average rainfall and stream flows • Fewer and heavier rainfall days • Reduced snow cover • Sea-level rise and storm surges 	<ul style="list-style-type: none"> • Bushfires • Heatwaves • Floods • Drought • Sea level rise and coastal impacts 	<ul style="list-style-type: none"> • New approaches to managing bushfire hazard • Land-use planning and flood risks • Improving certainty for coastal developments • National building codes

Source: Adapted from Victorian Government (March 2012) and *Victorian Government (2013).

A recent synthesis report¹⁰, published by the National Climate Change Adaptation Research Facility (NCCARF), highlighted climate change impacts for Victoria, including impacts on health and

⁹ Victorian Government 2013b: 62f.

wellbeing, primary production, the natural environment, infrastructure and settlements, and tourism (Table 3).

Table 3: Climate change impacts for Victoria

<i>Current and future climate in Victoria</i>
<ul style="list-style-type: none">• <i>Victoria's mild climate is already being impacted by increases in average and extreme temperature by changes in the intensity and frequency of extreme weather events.</i>• <i>The state has experienced both severe drought and flooding in the last decade, both of which are expected to increase in frequency with further climate change.</i>• <i>The 'Black Saturday' bushfires that occurred in February 2009 in Victoria caused devastation to the areas to the north of Melbourne. They were driven by low rainfall over a long period, record high temperatures, low humidity and high wind speeds.</i>
<i>Climate change impacts</i>
<ul style="list-style-type: none">• <i>Health and wellbeing impacts include physical injury due to bushfire, extreme weather and heat-related illness. Impacts on the health services sector are expected to increase due to increased demand, resource constraints and damage to supporting infrastructure.</i>• <i>Primary productivity is expected to be impacted by reduced rainfall, increased temperatures and physical damage to assets and infrastructure.</i>• <i>The natural environment in Victoria is vulnerable to climate change impacts, particularly in coastal, alpine and forest areas, and where existing ecosystem fragmentation has occurred.</i>• <i>Infrastructure and settlements will be impacted by increases in extreme weather including flooding, as well as sea level rise and bushfire activity.</i>• <i>Tourism in alpine and coastal areas is likely to be impacted by climate change.</i>

Source: AECOM (2013): 4.

As this high-level overview of climate change impacts suggests, the potential impacts of climate change on local governments and communities are difficult to predict. They depend on local geographic, socio-economic and institutional context. In the context of the theme of this *Think Tank*, it is important to distinguish between climate change impacts that affect local governments as organisations, i.e. their operations and service delivery, and those that are likely to affect communities. These two categories are not mutually exclusive and many climate change related events, such as bushfires will directly affect local government operations as well as the communities they serve. However, climate change will also lead to specific impacts, e.g. financial impacts that have significant direct consequences for local governments and therefore need to be addressed as part of an organisation's financial risk management.

Though not claiming to be comprehensive, Appendix 1 provides a useful overview of how climate change impacts may affect different local government service areas. Appendix 2 lists common community level impacts of climate change, based on a recent extensive study of the community service sector in Australia¹¹.

¹⁰ AECOM 2013

¹¹ Mallon et al. 2013

5. Current progress: adaptation planning and implementation in local government and communities

‘...the lack of formalized practice for adaptation planning and the inconsistent use of existing adaptation guidance means that many institutions are largely ‘muddling through’ the planning process.’

Preston et al. 2010: 427.

Recent research indicates that of the 560 local governments in Australia, approximately 150 have been involved in various federal government funded initiatives and state and territory initiatives¹². At least one third and perhaps more local governments have engaged in some form of adaptation risk or planning. These mostly include assessments and awareness-raising, with far fewer examples of local governments moving to significant adaptation responses and actions. Those that have progressed further are generally coastal local governments, or those that have done so as part of regional groupings of councils.

This is consistent with earlier findings¹³ that most local government adaptation initiatives were focused on the level of risk analysis and the development of strategic frameworks for adaptation. Less than a fifth of the local governments involved in a study by Gurran et al. (2011) had changed their planning controls, yet more than half of them were in the process of doing so, suggesting that a ‘continuum of climate change adaptation responses’ was emerging at the local level.

Adaptation planning in Victorian local governments

In 2011 the Municipal Association of Victoria (MAV) carried out a stocktake of local government climate change adaptation planning, as part of its *Supporting Victorian Local Government in Climate Change Adaptation Planning* project¹⁴. It found that the majority (three quarters) of Victoria’s 79 local governments had undertaken some form of adaptation planning. However, over two thirds of those had focused on single issues such as rising sea-levels, heatwaves or water use. At the time of the study in 2011, over one quarter of Victorian local governments had not undertaken any adaptation planning initiatives at all (see Table 4 below).

Evidence from the past three years seems to confirm this trend that an increasing number of local governments in Victoria are moving from risk analysis to identifying adaptation options and (gradually) implementing these. However, a large gap remains between few leading councils and many, typically rural and less well-resourced local governments, which are struggling to make progress with adaptation¹⁵.

¹² Webb & Beh 2013

¹³ Gurran et al. 2011

¹⁴ Municipal Association of Victoria 2011a; Municipal Association of Victoria 2011b

¹⁵ Authors’ own observations based on ongoing research in the Victorian local government sector.

Table 4: Status of local government adaptation planning in Victoria, 2011

<i>Status</i>	<i>Rural</i>	<i>Urban</i>	<i>Total</i>
No planning (28% local governments)	14	8	22
Individual impact planning (48% local governments)	26	12	38
Whole-of-business planning (25% local governments)	8	11	19

Source: Municipal Association of Victoria 2011a: 19.

As part of a 'stocktake' of adaptation planning, the MAV identified four key principles of best practice adaptation planning and used these to assess those local governments who had undertaken whole-of-business planning. The four principles were¹⁶:

1. Climate change adaptation planning should reflect good practice strategic planning
2. The planning process should include ways to deal with uncertainty
3. Risk identification and assessment should consider a breadth of information about community or organisation
4. Climate risk and adaptation planning should be embedded as much as possible into existing frameworks and council plans.

The study found that for those 19 local governments who had undertaken whole-of-business planning, all had adopted good strategic planning practices and had used the Australian Greenhouse Office's climate risk management approach, first published in 2006¹⁷. These organisations were found to use a range of information in their assessments¹⁸. The study showed, however, that few local governments had been successful in embedding adaptation into strategic plans, which was identified as a significant hurdle for making progress with adaptation. Some reasons suggested for this difficulty was a lack of support from the organisations' executives and inadequate ongoing funding for implementation.

Evidence of adaptation planning in Victorian communities and the community sector

It is difficult to estimate how many communities are actively involved in some form of climate change adaptation planning, outside of the activities led by local governments, as described above. A current VCCCAR research project¹⁹ is investigating if and to what extent community sector organisations have engaged with adaptation. The study, conducted among 43 community sector organisations, showed that many had processes in place for climate-related emergencies such as bushfires and heatwaves, but they had done little in terms of long-term and more proactive planning for adaptation. Many participants in the study stated that it was challenging to motivate adaptation planning and action because it remained difficult to link extreme weather events to climate change,

¹⁶ Municipal Association of Victoria 2010: 14f.

¹⁷ Australian Government 2006

¹⁸ Municipal Association of Victoria 2011: 24

¹⁹ Project title: 'Implementing tools to increase the adaptive capacity of the community and natural resource management sectors'. Project website: <http://www.vcccar.org.au/implementing-tools-to-increase-adaptive-capacity-in-community-and-natural-resource-management>

and because climate change issues were seen too far removed from their organisation's core business²⁰.

Given these findings and the general lack of funding and resources in the community sector and acknowledging the fact that many community organisations are largely volunteer-based, it is unlikely that much adaptation planning will be undertaken by community groups and community service organisations in Victoria, unless specific support is available to engage in adaptation.

The most notable exceptions to this are communities that have lived through recent bushfire and flooding disasters. To communities such as Kinglake, funding was made available as part of the Victorian Bushfire Appeal Fund²¹. Some of these initiatives focused not only on recovery but also on prevention and could therefore be classified as a form of adaptation planning. However, the extent to which these project-based activities have translated into broader community-based adaptation planning and, more importantly, implementation of long-term adaptation options, is difficult to assess.

6. Recent key areas for adaptation research

Adaptation research has developed rapidly over the last five to ten years. In Australia, research funding bodies and institutions such as the National Climate Change Adaptation Research Facility (NCCARF), VCCCAR, the CSIRO, and various state environment departments have invested in improving the knowledge base for adaptation to climate change through targeted adaptation research.

VCCCAR alone has funded six research projects that either directly worked with local government or community organisations or that had a strong focus on local adaptation (see Appendix 3). NCCARF's portfolio of funded projects with relevance to local government includes 21 projects out of a total of 140, while 16 focused on gaining a better understanding on vulnerable communities²². Beyond these Australian sources, a rapidly growing body of international research on local government and community adaptation exists, which cannot be adequately summarised in this discussion paper. Also, some local governments and most state environment departments have commissioned their own research into adaptation approaches and options.

Relevant research projects that have been addressed in past and current research cover topics such as:

- Developing and using adaptation tools for local governments and community organisations
- Decision making for climate change adaptation
- Scenarios of future settlements and communities
- Local legal and institutional frameworks for adaptation
- Community perceptions

²⁰ Fünfgeld et al. 2013

²¹ Victorian Government 2013a

²² Some of these projects and their research aims are listed in Appendix 3. For a full list of projects, see NCCARF 2013a; NCCARF 2013b.

- Institutional barriers to local adaptation
- Adaptation in urban areas
- Coastal adaptation
- Adaptation and water supply
- Climate change and vector-borne diseases
- Communities, housing and the workplace
- Climate change and disadvantaged groups
- Health of indigenous communities
- Infrastructure performance under climate change

Appendix 3 provides an overview of the titles and stated research aims of recent research projects funded by VCCCAR and NCCARF with a strong reference to local government and community adaptation. The following section synthesises research findings, focusing on knowledge gaps and suggesting further research required to assist adaptation planning and implementation.

7. Knowledge gaps and research needs to assist adaptation planning and implementation

Along with the above research, there have been a number of recent reports and papers examining the key challenges, gaps and needs facing local governments and communities in adaptation planning and implementation in Australia²³. The key gaps in adaptation planning that these studies have highlighted can be summarised under five themes:

1. **Information and guidance for local adaptation**
2. **Governance and leadership of local adaptation**
3. **Resourcing, capacity and competing priorities**
4. **Implementation and mainstreaming of adaptation**
5. **Monitoring and evaluation of adaptation initiatives**

In the following, we address each theme briefly and propose areas for further research for further discussion (see blue text boxes).

Information and guidance for local adaptation

Several studies point to ‘a lack of useful, credible and relevant information about the nature of climate risk’²⁴, despite much of the Australian Government’s early investment into local climate change adaptation having been almost exclusively in funding scientific and technical assessments²⁵. On the other hand, others studies suggest that *access* to useful information and not a lack of

²³ E.g. Gurran et al. 2011; Measham et al. 2011; Pillora 2010; Webb & Beh 2013; Fünfgeld & McEvoy 2011.

²⁴ Measham et al. 2011: 902

²⁵ Preston & Kay 2010

information is the main challenge for local government staff, and that the volume of information relevant to climate change adaptation was ‘daunting’²⁶.

The analysis of adaptation planning in the Victorian local government sector by the MAV showed that local governments that hadn’t undertaken any form of whole-of-organisation adaptation planning had a number of concerns related to information and guidance including:

1. Knowing what organisational process was best for adaptation;
2. Knowing which tools were best to use for the adaptation planning process; and
3. A lack of detailed knowledge of their particular situation, resulting in uncertainty about what to ask of consultants engaged for adaptation planning²⁷.

Concerning this last point, the MAV study found there was a need for additional information and data regarding projected changes in climate that was of sufficient detail to be integrated into local government’s asset management and business continuity plans. The study also highlighted that once local governments had completed a climate change risk assessment and developed an adaptation plan, there was little guidance available on how to progress beyond that point.

Information and guidance – *future research could focus on:*

- *Customising existing adaptation guidelines for local needs*
- *Develop processes for storing and regularly updating locally specific data sources to inform decision making*
- *Selecting, modifying and implementing existing adaptation support tools*

Governance and leadership of local adaptation

Many recent studies emphasised a need for an integrated and internally consistent policy framework for adaptation, stemming from the national level²⁸. Currently, inconsistencies across climate change policy and law at different levels of government are considered impediments to effective adaptation planning and implementation²⁹ (MAV 2011b; Gurran 2011).

A significant hurdle for local governments that have carried out whole-of-business adaptation planning was gaining executive support and buy-in to drive the embedding of adaptation plans and recommendations into strategic plans. Studies identified a lack of understanding at senior management level as a barrier for adaptation planning and implementation. Involving staff outside the environment or sustainability departments as leaders in the planning process was one important approach to addressing the lack of buy-in from across the organisation.

²⁶ Municipal Association of Victoria 2011: 9

²⁷ Municipal Association of Victoria 2011

²⁸ E.g. Gurran et al. 2011

²⁹ Municipal Association of Victoria 2011; Gurran et al. 2011

Developing more consistent and systematic approaches to drive change across organisations and communities is necessary and would help to ensure buy-in and commitment. For example, better guidance at state and federal level is required to drive changes in the planning system that can be consistently applied across local government³⁰. Stronger leadership and policy consistency would help local councils prioritise actions and expenditure, across all government departments.

Governance and leadership - future research could focus on:

- *Clarifying roles and responsibilities for adaptation across all levels of government*
- *Participatory forms of governance that directly involve communities in adaptation planning and decision-making*
- *Deliberative democracy approaches for adaptation goal-setting*
- *Typologies of adaptation roles and responsibilities within local governments*
- *Effective use of land use planning for achieving adaptation outcomes*
- *Developing and communicating effective business cases for organisational adaptation*
- *Community-based adaptation processes and effective engagement measures*

Resourcing, capacity and competing priorities

A significant hurdle for local government in developing and implementing adaptation plans is a lack of ongoing and sufficient funding. The MAV found that most local governments did not have the funds for projects and to provide for dedicated staff who could carry out assessments, research and engage with all areas of the organisation and other relevant stakeholders. Likewise, the community services sector and community based organisations are chronically underfunded, or funding is limited to delivering a small array of core services. Without adequate budgetary resourcing and dedicated staff, adaptation plans, where they existed, were not being implemented. Short term grants from state government, while important, were difficult to get and not sufficient to ensure ongoing progress in adaptation planning and implementation. It was recognised that building the internal capacity of council staff was important as opposed to continually buying in expertise. Improving the resourcing for ongoing adaptation in councils would significantly address the issue of competing priorities and adaptation being considered less important than other core areas of council operations.

Resourcing, capacity and competing priorities – future research could focus on:

- *Core individual skills and competencies needed for effectively undertaking local adaptation*
- *Developing best practice organisational approaches for adaptation, for different kinds of organisations*
- *Gaining an understanding of what are innovative and successful funding models for specific adaptation initiatives*
- *Market-based financing options for costly adaptation options*
- *Improving cost-benefit analysis and other economic tools to appreciate the complexity and uncertainty of possible adaptation outcomes*

³⁰ Pillora 2010

Implementing and mainstreaming adaptation

The literature and anecdotal evidence shows that many local governments struggle to move beyond climate change risk assessment and adaptation planning into implementing adaptation measures across the organisation. In many community sector organisations, adaptation is not considered a pressing issue because climate change impacts have not been linked with the organisations' core business. The challenge is to integrate climate change adaptation considerations with all aspects of an organisation's or a community's activities and link adaptation goals directly with key strategic objectives and the purpose of an organisation. This process of 'mainstreaming adaptation' is much talked about in the published literature, yet the evidence and guidance available for how to practically achieve such integration in the most effective and resource-efficient way is still scarce.

Implementing and mainstreaming adaptation – future research could focus on:

- *Practical approaches for moving from adaptation planning to integrated adaptation action*
- *Incentives for adaptation mainstreaming across the local government and community sectors*
- *Risk management as a means for mainstreaming adaptation into organisational planning and decision-making*
- *The role of individual and collective leadership in integrating adaptation into an organisation (see 'Governance and leadership' above).*
- *Models of organisational governance that help mainstream adaptation*

Monitoring and evaluation of adaptation initiatives

While an increasing number of local governments are engaging in some form of whole-of-organisation adaptation, as discussed above, many unresolved methodological and practical issues remain around the question of tracking progress with adaptation and evaluating the outcomes of adaptation efforts. Monitoring and evaluation is still mostly treated as an afterthought, as with many project management approaches that have not yet been developed to their full maturity. The challenge of incorporating monitoring and evaluation at the design stage of adaptation planning processes is considerable because many adaptation benefits, by definition, lie in the future, are difficult to observe (e.g. 'avoided harm'), or represent broader outcomes of social adaptation (e.g. changing behaviours) that are difficult to trace back to particular interventions. In a policy environment dominated by evidence-based decision-making and the need for demonstrating value-for-money, questions of how adaptation efforts can be monitored and evaluated is a pressing one.

Monitoring and evaluation of adaptation initiatives – future research could focus on:

- *Developing robust local indicators for tracking adaptation progress against defined objectives*
- *Practical principles of adaptation monitoring and adaptation in the local government sector / in the community services sector*

- *Valuing and evaluating adaptation options and actions*
- *Methods for defining realistic adaptation outputs and outcomes*
- *Methods for adaptation progress review, drawing on experiences in other areas of M&E*
- *Practical challenges with adaptation monitoring within complex organisations*

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Appendix 1: Impacts of climate change on local government services

Key service areas	Likely impacts of climate change on services provided by local government
<i>Planning policy and development assessment</i>	<ul style="list-style-type: none"> • Inappropriate location of urban expansion areas • Increased uncertainty in long-term land-use planning and infrastructure design, i.e. location of future developments, suitability of infrastructure designs to cope with changing climate, etc. • Loss of private property and community assets • Increase in insurance costs and public liability claims • Increased pressure on disaster management and response resources • Early retirement of capital infrastructure • Cost of retrofitting of systems
<i>Litigation</i>	<ul style="list-style-type: none"> • Potential legal challenges if it is argued that councils have unreasonably failed to take into account the likely effects of climate change in exercising a wide range of their service, planning and development activities • Potential OHS and public liability claims
<i>Coastal infrastructure</i>	<ul style="list-style-type: none"> • Increased coastal erosion and inundation • Increased frequency, or permanent inundation of, coastal infrastructure and utilities e.g. water, sewerage, gas, telecommunications, electricity, transportation • Destruction, damage and disturbance to council-managed marinas and boat ramps • Increased erosion and/or exceedance of seawalls, jetties and other coastal defences
<i>Economic development and tourism</i>	<ul style="list-style-type: none"> • Impacts on viability of industries • Pressure on tourism activities (especially those relying on natural resources) • Impacts on tourism/recreation activities along the coast • Increased costs associated with operation and maintenance costs of public amenities/recreational sites due to climate variation
<i>Social and community planning</i>	<ul style="list-style-type: none"> • Rural decline and climate impacts on the rural and regional sectors • Increased population pressure on temperate zones • Internal migration and accommodation of new migrants and climate change refugees
<i>Provision and use of recreational facilities</i>	<ul style="list-style-type: none"> • Impacts on coastal recreational infrastructure • Loss of existing public space in coastal areas • Impacts on tourism/recreation activities along the coast • Increased costs associated with operation and maintenance costs of public amenities/recreational sites due to storm damage • Variation in landscaping design and plant species • Needing to provide additional climate protective infrastructure for the young and elderly
<i>Maintenance of recreational facilities</i>	<ul style="list-style-type: none"> • Reduced water quality and quantity resulting in less watering/irrigation of open space and sports grounds and closure of ovals • Limited water for swimming pools, etc. • Beach and inland lake closures, e.g. due to E. coli levels after storms • Limited water for swimming pools • Need for more open space shelters
<i>Health services; community/work place health</i>	<ul style="list-style-type: none"> • Milder winters improving communities' comfort levels • Increase in geographical range and seasonality of vector-borne diseases and the possibility for an expansion of infect zones (e.g. Ross River fever) • Potential increased role in community immunisation

	<ul style="list-style-type: none"> • High temperatures increasing incidence of food and water-borne diseases • Risk of increased cryptosporidium infections during open water swimming in summer • Health impacts due to exposure to extreme weather, e.g., heat waves • Extreme rainfall events transporting contaminants into waterways and drinking water supplies • Increased pressure on drinking water supplies • An increase in injuries due to increased intensity of extreme events
Emergency/bushfire management	<ul style="list-style-type: none"> • Increased emergency response and recovery operations • Risks to public safety and tourism and longer term impacts on regional economies • Responding to flooding, drought, bushfire, cyclones/major storms, coastal inundation, heat wave, landslides, erosion • Reduction in water availability for irrigation • Changes in pest management
Agriculture/biossecurity	<ul style="list-style-type: none"> • Changes in the type and viability of primary industries • Loss of farming properties • Reduction in water availability for irrigation • Changes in pest management
Natural resource management/coastal management	<ul style="list-style-type: none"> • Increased coastal erosion and inundation • Loss of private property/community assets • Loss of beach width Changes to wetlands due to sea level rise, shoreline erosion and saltwater intrusion
Weed/pest management	<ul style="list-style-type: none"> • Changes in distribution of invasive species due to changes in climate and associated loss of biodiversity and changes to bushfire intensity
Biodiversity protection	<ul style="list-style-type: none"> • Shifts in distributions of plant and animal species • Increased risk of population and species extinctions • Reduced ecosystem resilience to stress • Increased ecosystem and species heat stress • Increased pressure on dual systems • Changes to mangrove habitats due to salt water intrusion • Increases in ecological disturbances
Water and sewerage services	<ul style="list-style-type: none"> • Inundation of storm water and sewerage systems • Reduced security of water supply (depending on source) • Environmental and supply contamination • Increased peak flows • Increased potential for erosion • Changes in groundwater levels • Changes in flood plains • Reduced dry weather sewerage flows • Reduced/unreliability of power supply for sewage pumping and treatment if existing electricity suppliers cannot maintain pace with long term changes in climate
Stormwater and drainage	<ul style="list-style-type: none"> • More intense rainfall resulting in inflow and infiltration into wastewater networks • Exceedance of existing flood defences • Exceedance of drainage capacity • Reduction in drainage capacity due to sea level rise and storm surge • Changes in mean and peak stream and river flows • Lower levels of rainfall, reducing pressure on storm water systems
Wastewater	<ul style="list-style-type: none"> • Changes in intensity of rainfall events impacting inflow and infiltration to wastewater network • Potential for blockages and dry weather overflows during dry spells • Potential for blockages etc.

Water supply

- Changes in mean and peak stream and river flows
- Uncertain water availability
- Insufficient water supply in some areas
- Increased potential for water contamination
- Salination of surface and groundwater supplies
- Changes in availability of groundwater available for irrigation

Source: Australian Local Government Association (ALGA), cited in Pillora (2010): p.9ff.

Appendix 2: Examples of climate change impacts on the community sector

Key service areas	Likely impacts of climate change on communities and the community sector
<i>Client and community (front line services)</i>	
<i>Client health & resilience</i>	Injury/ill-health Stress/mental health Social isolation Homelessness Domestic violence
<i>Community health & resilience</i>	Loss of food security Disease outbreaks Change in community character Increased demand for services
<i>Financial resilience</i>	Impacts to industries providing employment leads to increased unemployment, decreased incomes etc.
<i>Policy / advocacy</i>	
<i>Client & community service provision</i>	Increased demand Volunteer service strain Social service provision strain Strain to wider community service provision – e.g. health system
<i>Sector development</i>	Disruption to inter-organisation collaboration & support (peaks) Disruption to professional development Loss of sense of shared purpose
<i>Consumer advocacy</i>	Disruption to information provision and advocacy – e.g. for people with an intellectual disability
<i>Policy advocacy</i>	Disruption to advocacy to governments Risk of legislative change with adverse consequences for clients
<i>Service continuity & administration</i>	
<i>Premises/service centres</i>	Lack of access for clients, staff, suppliers WHS risks Evacuation risks
<i>Energy supply</i>	Loss of e-records, communications, Loss of heating/cooling, refrigeration Unable to process pay, invoices
<i>Communications systems</i>	Loss of access to clients Unable to coordinate service delivery Loss of crisis support lines
<i>Roads and transport</i>	Unable to provide outreach services Isolation of entire communities, esp. remote communities
<i>Water supply</i>	WHS risks (sanitation), particularly for accommodation/ residential services
<i>Governance & finance</i>	
<i>Assets</i>	Loss of specialist assets e.g. transport for people with a disability, medical equipment, personal care hoists, crisis accommodation facilities
<i>Financial management</i>	Cost of adaptation/preparedness not reflected in funding agreements Lack of or inadequate insurance
<i>Governance</i>	Relationships with govt./ funders Regulation/red tape

	Increased responsibility Increased expectations
Legal liability	Exposure to litigation due to lack of preparedness or WHS failures
Staff and volunteers	Loss of staff and volunteers due to direct impacts Physical, emotional distress WHS obligations

Source: Modified from Mallon et al. (2013): 71

Appendix 3: Overview of relevant Australian research and its aims

The table below provides an overview of current and recent research projects funded by VCCCAR and NCCARF with direct relevance to local adaptation at the local government and community scale. This is not a comprehensive list but serves as a good indication of existing focal areas for research.

Additional information on the NCCARF funded projects is available from their website:

www.nccarf.edu.au

Research project title	Research aim
Projects funded by VCCCAR	
Framing multi-level and multi-actor adaptation responses in the Victorian context http://www.vcccar.org.au/research-projects#sthash.GYuORhPQ.dpuf	The major goal of the project was to better understand the conceptual underpinnings of adaptation and then to translate this academic knowledge into ‘accessible’ content that could be more effectively used by those responsible for local adaptation planning
Implementing tools to increase adaptive capacity in the community and natural resource management sectors http://www.vcccar.org.au/research-projects#sthash.5EIZMfJo.dpuf	The main goal of this research project was to gain a better understanding of the adaptation capabilities and needs of three types of government service providers and funded agencies (community service organisations - CSOs, catchment management authorities - CMAs, and primary care partnerships - PCPs).
Resilient urban systems: a socio-technical study of community scale climate change adaptation initiatives http://www.vcccar.org.au/research-projects#sthash.As91BHoa.dpuf	The aim of the project was to improve understanding of motivations to develop new systems of energy and water provision, opportunities and barriers to implementation and changes in practice resulting from these new systems. - See more at: http://www.vcccar.org.au/research-projects#sthash.As91BHoa.dpuf
Responding to the urban heat island: optimising the implementation of green infrastructure http://www.vcccar.org.au/research-projects#sthash.lp9YFZqR.dpuf	The aim of this project was to assess the effectiveness of different green infrastructure systems for urban cooling and develop decision-making guidance for urban land managers to optimise the selection and implementation of green infrastructure options.
Design-led decision support for regional climate change http://www.vcccar.org.au/research-projects#sthash.iY9X2ppq.dpuf	This project took a new approach to climate change adaptation at the local government scale, addressing the question “What could a ‘climate-proof’ future look like?” using a design process to address problems of future uncertainty and risk.
Learning from Indigenous and traditional community knowledge http://www.vcccar.org.au/research-projects#sthash.LbA2Mll9.dpuf	This project addresses the question: how research based on the deep knowledge of country can inform an understanding of the competing demands on finite and diminishing water resources to satisfy social, economic, legal, environmental and cultural outcomes in the Murray-Darling?
Projects funded by NCCARF	
What would a climate-adapted settlement look like in 2030? A case study of Inverloch and Sandy Point	The issue considered by this research report revolves around the broad themes or questions such as: what are we adapting to?; who or what adapts?; and, how does adaptation occur? The challenge that these questions create is that the concept of an adapted settlement encompasses both ‘visual’ and ‘process’ dimensions. Therefore, there is a need to understand how the settlement will decide what it wants to look like in a climate adapted world, and how the settlement is going to achieve this

	successful adaptation response by (and beyond) 2030.
Displaced twice? Investigating the impact of Queensland floods on the wellbeing and settlement of a cohort of men from refugee backgrounds living in Brisbane and Toowoomba	This project will compare the recent pre-disaster measures of health and settlement and offer a rare opportunity to investigate the impact of an environmental disaster on a resettled refugee population. The study will generate new knowledge of elements and resources that best support resettled refugee men and their families to adapt successfully to environmental disasters.
Changing heat: direct impacts of temperature on health and productivity - current risks and climate change projections	We know that heat waves kill people. Some 50,000 died in the 2003 European heatwave, but little is known of the details. This project will discover three important dimensions of those details: who is at risk and where do they live; how are people at risk, for example from kidney failure; and just what is it about heat that is most dangerous? Mathematical models will be developed of the future risks, and explore what public health measures will best protect Australians in a warming climate.
Climate change and the community welfare sector – Risks and adaptation of Australia’s vulnerable and marginalised	This project will research the sectors in society most vulnerable and least able to adapt to climate change in urban, regional and remote settlements, the nature of these vulnerabilities, the underlying causes of vulnerability and the measures that can be taken to increase adaptive capacity and manage climate change related risks of infrastructure failure.
Development of tools that allow local governments to translate climate change impacts on assets into strategic and operational financial and asset management plans	This project aims to identify key council assets vulnerable to climate change; determine the likely impacts of climate change on council assets; undertake an extensive financial risk modelling exercise including full life-cycle economic analysis of options for councils to reduce climate change asset risk, and develop the necessary modifications to asset management and financial sustainability tools so councils may evaluate climate change action scenarios at the management planning level.
Extreme heat and climate change: adaptation in culturally and linguistically diverse (CALD) communities	Do cultural, socio-economic and language factors affect a person’s vulnerability to climate change? This project will study culturally diverse communities in three Australian cities: Adelaide, Melbourne and Sydney to identify factors that may affect people’s vulnerability to climate change, and particularly hot weather. It will identify groups of people that may be more vulnerable, explore the behaviour they use to adapt to extreme heat, and their perceptions of climate change and recommend ways to increase their capacity to adapt, such as cross-cultural information materials.
Heat-ready: Adapting aged care facilities to prevent premature death in elderly Australians	The project will investigate the capacity of aged care facilities to adapt to increasing periods of extreme heat. It will examine policies, procedures, knowledge and environmental factors such as building design and cooling equipment used in aged care facilities in three Australian states and recommend ways they can adapt to prevent premature death from extreme heat in elderly residents.
Impact of climate change on disadvantaged groups: Issues and interventions	There is growing international concern that the negative impacts of climate change will be disproportionately experienced by the most socially and economically disadvantaged people in society. This project will investigate links between disadvantage and the potential effects of climate change, and what can be done to counteract these impacts. It will focus on three South Australian cities, Port Adelaide (urban coastal), Renmark (rural Riverland) and Wallaroo (rural coastal), which have disadvantaged communities and are expected to experience significant climate change in the next half century.

<p>Social networks analysis: bridging degrees of separation to enhance climate change adaptation</p>	<p>This project aims to maximise climate change adaptation in the water sector, particularly through more effective infrastructure management. It will collaborate with local and state government and industry bodies to collect qualitative and quantitative data on adaptive responses to increased climatic variability, through examples of responses to flooding caused by extreme rainfall events and managing supply/demand pressures on municipal water supplies due to changes in flows. It will analyse the transmission of this information within and between organisations and use the findings to inform regional, state and national policy development, stakeholder interactions, and institutional/governance structures in water supply, infrastructure, disaster response and land use planning.</p>
<p>What about me? Factors affecting individual adaptive coping capacity across different population groups.</p>	<p>As the scientific evidence for climate change becomes more convincing, the public appears to show a paradoxical decline in interest and recognition of the problem. Little research has examined how people adapt to climate change information and initiatives. The project will examine how individual values, beliefs and goals affect adaptive coping goals and behaviours. It will examine positive climate change adaptation behaviour and those that may have other negative impacts.</p>
<p>Web based tools for adaptation in Australia – an international and Australian review.</p>	<p>This project will test the usefulness for Australian decision makers of a range of adaptation tools available on international websites. It will assess the strengths and weaknesses of each tool for Australian situations, determine what is required to make tools more applicable and recommend the best approach for delivering suitable tools for Australian users.</p>