Framing Adaptation in the Victorian Context

Case Study Report
City of Melbourne

Hartmut Fünfgeld, Sophie Millin and Darryn McEvoy

June 2013

Contents

Executive Summary

The purpose of this report is to present a summary of findings of qualitative research into institutional barriers and opportunities of climate change adaptation, conducted by the Victorian Centre for Climate Change Adaptation Research (VCCCAR) in collaboration with the City of Melbourne (CoM). In 2011/12, the CoM was a case study partner in the VCCCAR project 'Framing multi-level and multi-actor adaptation responses in the Victorian context'. This report is a research output of that project.

The CoM municipal area covers the central business district of Melbourne, the state capital of Victoria. Its major features include the Port of Melbourne, sporting, leisure and arts complexes, parks and gardens, as well as universities and hospitals. The CoM has addressed climate change adaptation through a range of strategic planning and implementation processes, including the development of a Climate Change Adaptation Strategy.

In this report, we present key topics and discussion points raised during six focus groups to provide feedback to the CoM on the research participants' view on its adaptation process to date. This information can help guide the CoM's further adaptation activities.

The research was conducted over a period of seven months, using a collaborative and qualitative approach. CoM staff from different business areas took part in the research, which was facilitated by the Sustainability Branch. The research methods used were focus groups and informal key informant interviews.

It is important to note that the research findings contained in this report represent only the discussion among the individuals involved in the research. They are not representative of the diversity of opinions across the CoM, nor do they represent the views of the CoM as an organisation.

The study identified a number of framings of climate change adaptation in the CoM, which pointed to a range of adaptation barriers and opportunities. These are perceptions of the individuals involved in the study.

The following framings and adaptation barriers and opportunities were identified:

Meanings of climate change adaptation (section 3.1)

➔ Adaptation is considered an issue with multiple goals, which go beyond responding to the effects of climate change. In the CoM, adaptation has been tied to multiple organisational frameworks, such as business continuity, sustainability, strategic planning, and organisational transformation.

Adaptation framing using theoretical concepts (3.2)

➔ 'Climate risk' was considered a very suitable theoretical concept for framing adaptation within the organisation, while 'resilience' was seen as particularly relevant for communicating the CoM's adaptation efforts to an external audience. A common view was that it was not desirable for the organisation to draw on too many different theoretical concepts at the same time to frame adaptation. This would blur the communication message both within and outside the organisation.

Adaptation framing for effective communication and engagement (3.3)

➔ It is important for the CoM to continue to build a communication and engagement strategy for climate change adaptation that is able to provide a clear and coherent story of the organisation's planned adaptation measures, including why these are important. Fostering engagement is considered important within the organisation and with external stakeholders.

Climate risk management as a mechanism for implementing adaptation (3.4)

➔ The CoM has put significant effort into integrating climate change adaptation with existing organisational risk management systems. As part of this process, a number of potential systemic challenges have been discovered, such as mismatches between the short and medium time frames involved in typical risk management tasks and those required for long-term adaptation planning.

Multi-level policy making for adaptation (3.5)

➔ It is important to further increase multi-level collaboration on adaptation across different levels of government and with other organisations. This includes access to stable and on-going funding sources for adaptation. The CoM has already been involved in dialogue and concrete projects on climate change adaptation with other local governments and other levels of government.

Adaptation data and information needs (3.6).

➔ Adaptation decision-making can be challenging in a policy environment largely driven by the need for a robust evidence base. Adaptation decisions are limited by various levels of uncertainty, and flexibility and openness to alternatives are important aspects of adaptation. For the CoM, and likely all other local governments, additional information is required to assess the costs, benefits and decision thresholds for adaptation. The CoM has pioneered adaptation action to produce additional information on climate change impacts at the local scale.

1 Introduction

From May 2011 to February 2012, the City of Melbourne (CoM) participated in the research project 'Framing multi-level and multi-actor adaptation responses in the Victorian context' (Framing Adaptation in the following), funded by the Victorian State Government through the Victorian Centre for Climate Change Adaptation Research (VCCCAR). The CoM was one of three local government partners that collaborated with VCCCAR researchers on the project.

1.1 Purpose and structure of this report

This report summarises the research findings on adaptation framing in the context of the CoM's process for adapting to climate change, with a view to:

- Provide feedback to case study research on adaptation framing conducted with the CoM
- Assist the CoM in implementing its climate change adaptation process
- Share key research results and the CoM approach to adaptation with a wider audience of interested stakeholders.

The report presents some background on the Framing Adaptation project (section 1.2) and a summary of the methodology (section 1.3). Section 2 provides an overview of the CoM's approach to adaptation and its adaptation planning process to date. Section 3 presents the research findings on institutional barriers and opportunities. Key points are then discussed in section 4. Section 5 provides some concluding remarks. A full overview of the CoM's adaptation activities to date is provided in the appendix.

1.2 Background on the project

Framing Adaptation was an 18-month collaborative research project, which aimed to examine the framing of climate change adaptation at the operational level in local governments in Victoria. A second aim was to develop a framework for local government adaptation planning in Victoria.

The project was structured according to four discrete work packages (WPs):

- WP1 – conceptual research towards developing an operational framework for adaptation,
- WP2 – preliminary economic analysis of natural disasters and climate change impacts,
- **WP3 – field research to support the development of an operational framework in selected case studies,**
- WP4 – social research to explore local narratives of climate change adaptation in selected case studies.

This report summarises research conducted as part of WP3 and contributed to project milestone 3.1: '*Individual reports for each of the case studies*'. Research for WP3 drew significantly on conceptual research findings that emerged from WP1. The research team for WP3 comprised:

- Professor Darryn McEvoy – chief investigator

- Dr Hartmut Fuenfgeld – primary researcher

- Sophie Millin – research assistant (since December 2011).

1.3 Methodology

This section briefly outlines the research methods used for the CoM case study. The research approach was qualitative and collaborative in nature. Project researchers visited the CoM to conduct focus groups on various topics. Through informal discussions with CoM staff and desktop study of CoM documents, they became familiar with the CoM's ongoing adaptation planning process. This collaborative approach provided a framework for examining adaptation framing and processes across directorates within the CoM. The CoM Sustainability Branch was the key liaison unit for this project.

Focus groups

Six focus groups were held involving participants from across the CoM. Focus group participants were selected in consultation with the CoM liaison for the project, with a view to include diverse perspective on the topics of adaptation, from different business units and different levels of the organisation. Each focus group had a dedicated discussion topic (see Appendix 1 for a list of topics) that was explored in the following way: First, the researchers provided an overview of the topic.,followed by several rounds of discussions in response to pre-defined trigger questions posed by the researchers. All focus groups were audio recorded with the permission of the participants. Recordings were transcribed, coded and analysed. Each focus group was attended by four to seven staff from the CoM and one or two researchers.

Informal key informant interviews

The researchers participated in iterative informal discussions with three CoM staff directly involved in the organisational climate change adaptation process. The key informants also participated in at least one of the focus groups. These key informant interviews elicited further knowledge on the framing of adaptation within the organisation. They also provided an opportunity for dialogue on institutional adaptation barriers and opportunities.

2 The City of Melbourne and climate change adaptation

2.1 Background on the City of Melbourne[1]

Located to the north of Port Phillip Bay, Melbourne is Victoria's capital city and the business, administrative, cultural and recreational hub of the state. The entire Melbourne metropolitan area covers 7,694 square kilometres and has a population of around 4.1 million (as of 2010). The City of Melbourne is made up of the city centre and eleven inner-city suburbs, including Carlton, Docklands and parts of Port Melbourne and South Yarra (Figure 1). The City of Melbourne's city centre covers 37.6sq km and has a residential population of around 96,500 (as of 2010). On an average day, around 788,000 people use the city, and Melbourne hosts over a million international visitors each year. The local government area covers the commercial, retail and transport hub of the Greater Melbourne metropolitan area. Its major features include the Central Business District, Port of Melbourne, sporting, leisure and arts complexes, parks and gardens, as well as universities, other research facilities, and hospitals. A risk assessment on climate change impacts, conducted in 2008, identified the following key climate change risks for the City of Melbourn: Less rainfall and more evaporation, extreme heatwaves, intense rainfall, hail and wind storms, and sea level rise.
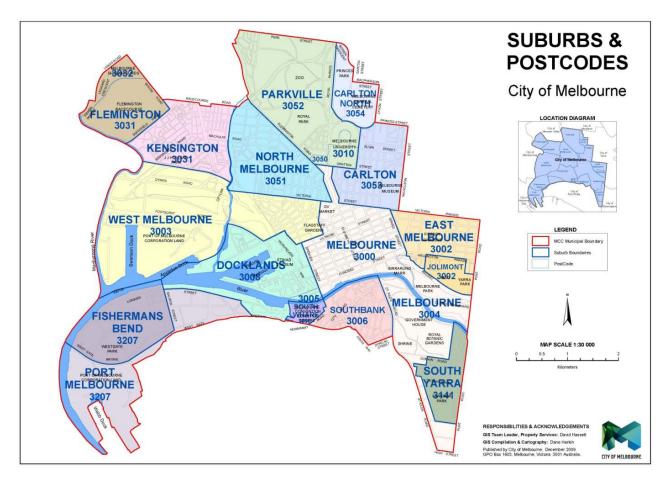

Figure 1: City of Melbourne local government area

---

[1] Sources: Department of Planning and Community Development, http://www.dpcd.vic.gov.au/localgovernment/find-your-local-council/melbourne; City of Melbourne, Melbourne Profile, http://www.melbourne.vic.gov.au/AboutMelbourne/MelbourneProfile/Pages/MelbourneProfile.aspx

2.2 The City of Melbourne's activities on climate change adaptation

The *Melbourne City Council Plan 2009-2013 (Revised 2011)* mentions 'impacts of climate change' as one of the 'external issues that might impact the City of Melbourne over the next four years' (p.13). The Council Plan also commits the CoM to developing a Climate Change Adaptation Strategy, which was completed in 2009.

Climate change adaptation features prominently as part of Council Plan Goal 5 (An eco-city). One of two expected outcomes states that 'Melbourne is better adapted to climate change', with the following five objectives in support of the outcome (p.37):

5.2.1 Influence the municipality to adapt to climate change
5.2.2 Influence the municipality to use less potable (drinking) water
5.2.3 Educate the community about environmental issues
5.2.4 Aim to become a centre for excellence in sustainable design and management
5.2.5 Become recognised as a world leader in climate change adaptation through innovative solutions

These objectives provide a framework for developing and implementing a pathway for adapting to climate change. With the Sustainability Branch taking the lead, the organisation has developed an approach towards adaptation that can be described as follows:

- A focus on addressing climate change risks and increasing community resilience to the projected impacts of climate change;

- The City of Melbourne Climate Change Adaptation Strategy and an associated implementation plan establish a long term response to the key climate change risks for the city;

- Responsibility for various adaptation actions is devolved to different organisational branches using the corporate risk register;

- A number of high visibility activities support the implementation of the climate change adaptation strategy in various branches, such as modelling sea level rise and coastal inundation, and developing an Urban Forest Strategy.

Appendix 2 provides a detailed list of the CoM's climate change adaptation activities up until the publication of this report. It also lists identified next actions.

3 Research findings: Adaptation framing in the City of Melbourne

This section summarises different dimensions of adaptation framing that emerged during the focus groups and informal discussions.

Qualitative information about the framing of adaptation has been clustered according to key topics. The points made by participants are presented in bullet-point style, to encourage further reflection and discussion within the CoM and beyond, followed by a short interpretive summary for each topic. The summaries point to a range of barriers and opportunities for climate change adaptation planning and implementation.

It should be noted that, as explained in section 1.3, the researchers prompted the participants with themes for discussion, which were then explored in detail in the focus groups. It is important to understand that this discussion-based research approach constitutes a bias in terms of the topics that were opened up for discussion. It can be assumed that the topics covered by this research do not reflect issues that participants deem most important in the context of climate change adaptation.

Another limitation of the study was that only a small cross-section of CoM staff participated in the discussions. **It is therefore important to note that the research findings contained in this report represent the discussion among the individuals involved in the research. They are not representative of the diversity of opinions across the CoM**, **nor do they represent the views of the organisation.** They findings provide an interesting snapshot of the diversity of views held across different directorates and divisions that may warrant further exploration.

Different framings for climate change adaptation are presented below, following no particular priority order. The points made are summaries of opinions expressed by individuals during the research process, compiled by the authors based on their interpretations of what was said.

3.1 Meanings of climate change adaptation

Participants shared their views on what they considered to be the meaning of climate change adaptation and how they perceive adaptation to be understood within the CoM:

- Adaptation is about responding to the impacts of climate change by planning for the future.
- Adaptation means changing the way we think at the CoM.
- Climate change has many risks for the CoM but also opportunities for creating a better future.
- Adaptation to climate change is about the organisation's ability to thrive and continue to exist under changing conditions.
- Adaptation should be considered using the precautionary principle, taking the lifespan of decisions made at the CoM into account.

- Adapting to changing conditions, to some extent, is common sense and something that has been part of society.
- There is an overwhelming amount of complexity attached to climate change adaptation and the information required to make decisions.

Among the participants, adaptation was considered an issue with multiple goals, which go beyond a narrow framing of responding to the effects of climate change. Adaptation was seen to be tied to multiple organisational frameworks, such as business continuity, sustainability, strategic planning, and organisational transformation. This may reflect various 'entry points' for adaptation, which are tied to individual organisational responsibilities, existing knowledge and personal interpretations.

3.2 Adaptation framing using theoretical concepts

Some of the discussion focused on the relevance of scientific concepts frequently used to frame and explain adaptation. When prompted with the concepts of climate risk, vulnerability, climate impact and resilience, participants expressed a range of views about their usefulness and applicability to the CoM context:

- Climate impact:
    - The terms 'climate risk' and 'climate hazard' evoke negative connotations, whereas talking about 'climate impacts' appears to be more neutral.

- Climate risk:
    - Risk thinking is very well embedded throughout large parts of the organisation.
    - Within the CoM's climate change adaptation work, the risk concept is the main driver for integrating adaptation into organisational thinking.

- Vulnerability:
    - Although used in community development, vulnerability is not a term widely used in the CoM.
    - The vulnerability concept is often implicit in the CoM's work on climate change, e.g. in social research on perceptions of climate change.
    - While vulnerability is not often used explicitly to frame climate change, the term 'exposure' is a common term in risk management.

- Resilience:
    - Resilience is considered a positive concept that signifies that the CoM is taking positive action and able to plan for a better future.
    - Resilience is a term that can be used to frame adaptation, to assure the community that current adaptation actions are implemented for a particular purpose, and to explain what this purpose is from an organisational point of view.
    - Resilience suggests that, since there are going to be impacts resulting from climate change, the goal is to be better able to deal with these impacts (as opposed to 'future proofing' for example, which assumes that impacts can be prevented and avoided).

As this summary shows, 'climate risk' was considered the most suitable theoretical concept for framing adaptation within the organisation, while 'resilience' was deemed particularly relevant for communicating the CoM's adaptation efforts and their rationale to an external audience. A common view was that it is not desirable for the organisation to draw on too many different concepts at the same time to frame adaptation, because this would blur the communication message both within and outside the organisation and lead to confusion.

3.3   Adaptation framing for effective communication and engagement

Throughout the discussions, questions emerged regarding communicating climate change adaptation within the organisation and to external stakeholders emerged. The discussion touched on how climate change adaptation can/should be framed to enable effective communication. Participants expressed the following views:

- Framing adaptation in communication:
  - Adaptation to climate change is a complex process that needs a simple, clear message.
  - Adaptation isn't necessarily well understood as a term in the community and often gets confused with climate change mitigation.
  - It is important to acknowledge that not everyone in the organisation or the community is willing to engage with climate change issues.
  - Communication needs to be streamlined across local governments; otherwise residents may confused by different messages from different local governments, such as neighbouring councils.
  - Most parts of the community are relatively positive about adaptation, because it is about doing things rather than about what not to do (as is the case with mitigation).
  - It is best to communicate about responding to climate change, instead of starting a high-level discourse about the differences between climate change adaptation and mitigation.
  - The CoM's communication should focus on *why* the organisation is doing particular activities with respect to adaptation.

- Facilitating engagement within the organisation:
  - Internal communication is just as important as external communication – one can't assume that CoM staff are more aware or knowledgeable on Council's role in climate change than the community.
  - It is challenging to create buy-in into adaptation across the organisation. In some business units there is a close affinity to climate change (e.g. in Urban Landscapes and Sustainability), but this isn't the case across all units.
  - Identifying adaptation champions in each business unit may be a useful strategy to generate buy-in and broader engagement with adaptation.

- Facilitating community engagement:
  - Need to consider what framing to use for community engagement – the term 'adaptation' may not work well and more tangible concepts such as sea-level rise may be more suitable.

- A key challenge is how to bring the community along on the journey of adapting to climate change.
- It can be expected that some community members may not support costly adaptation measures.
- It is important to create adaptive responses that people can see and experience themselves – but not all adaptive measures allow for that.
- The community needs to be brought on board with understanding the specific climate change impacts for the CoM local government area, because some of the risks rest with residents and business owners, not the CoM (e.g. the impacts of potential inundation on property prices).

These points highlight why it is important for the CoM's to continue to build a communication and engagement strategy for climate change adaptation that is able to tell a clear and coherent story of the organisation's planned adaptation measures, including why these are important. Fostering engagement is important within the organisation as well as with external stakeholders.

3.4 Climate risk management as a tool for implementing adaptation

The topic of risk management was discussed in detail as a mechanism for framing and implementing climate change adaptation within the organisation. Participants made the following observations:

- It is important to reconsider the risk management controls the CoM has to deal with climate impacts and make any necessary adjustments to the controls.

- A challenge with climate risk management is the long time frame associated with climate change impacts, which means that the actual effects of adaptation cannot be evaluated for some time.

- At an operational risk management level, it is challenging to incorporate long-term adaptation as an on-going responsibility into organisational risk frameworks, which require short and specific time frames and due dates.

- There are limitations associated with the application of likelihood/consequence matrices to climate change impacts, e.g. most climate change risks result in 'high likelihood' and 'catastrophic consequences' ratings under worst case scenarios.

- Concrete action plans may be more appropriate for addressing specific climate change risks that need urgent attention, rather than relying on the risk management system handling all climate change impacts.

These points are reflective of the organisation's on-going effort towards integrating climate change adaptation with existing organisational risk management systems. The limitations of risk management for adaptation that have been uncovered are common problems in local government that require innovative new organisational processes.

3.5 Multi-level policy making for adaptation

Collaborating on climate change adaptation across levels of government and in partnership with other organisations emerged as a topic during a number of focus groups. The key points made by discussion participants on this topic were:

- Multi-level policy making:
  - The current policy environment for adaptation is challenging, with local government leading on implementing adaptation actions over state and federal governments.
  - It is not feasible to look at adaptation in isolation, i.e. from a 'just-our-council' point of view.
  - Working with neighbouring local councils presents significant opportunities, but can also be a barrier to effective adaptation because the local government structure is not necessarily set up to deal with place-based adaptation across administrative boundaries.
  - Regional and interagency collaboration is necessary, which adds to the institutional complexity of adaptation processes.
  - There is a need for more guidance and sharing on what adaptation measures other local governments have implemented, with what outcomes.
  - Short political cycles and changing priorities are a key barrier to adaptation across levels of government and administrative boundaries.

- Funding of adaptation:
  - The CoM and other local governments will need to continue to draw on external funding sources to be able to provide on-going financing of the costs of adaptation.
  - Joint funding for adaptation initiatives from across all three levels of government is necessary to share the burden of adaptation, avoid duplication and increase efficiency.
  - At a national scale, massive investment will be needed to compensate for the social impacts of climate change.

These observations illustrate that, while the CoM has engaged significantly with higher levels of government and neighbouring councils, much is yet to be done by all levels of government to enable better multi-level collaboration on adaptation across different levels of government and other organisations. This applies in particular to providing stable and on-going funding sources for adaptation.

3.6 Adaptation data and information needs

Participants discussed the data and information management needs for facilitating effective adaptation in the CoM. The following observations were made by participants:

- It is difficult to know when there is enough information. For example, it is not easy to judge how much time and effort the CoM should spend on assessing climate change risk, impacts and vulnerabilities, versus investing in adaptation measures.

- A greater evidence base is needed to support the case for more costly adaptation measures, e.g. amendments to the planning scheme, than for less substantial measures, e.g. raising awareness and community education.

- Because of the uncertain nature of climate change impacts, it is important to remain flexible with adaptation actions and avoid getting locked in to decisions too early in the process.

- A challenge is to obtain better data on when alternative adaptation options become economically viable.

- Additional data is needed about community expectations in regard to climate change adaptation.

On the one hand, these points highlight that participants recognise an information deficit with regard to assessing the costs, benefits and decision thresholds for adaptation. They show that adaptation decision-making can be challenging in a policy environment largely driven by the need for robust evidence bases. On the other hand, the observations underline that flexibility and openness to alternatives are key aspects of effective and efficient adaptation processes.

References

City of Melbourne - http://www.melbourne.vic.gov.au

City of Melbourne, Adapting to Climate Change -
http://www.melbourne.vic.gov.au/Sustainability/CouncilActions/Pages/AdaptingClimateChange.aspx

City of Melbourne Climate Change Adaptation Strategy -
http://www.melbourne.vic.gov.au/AboutCouncil/PlansandPublications/strategies/Documents/climate_change_adaptation_strategy.PDF

Cool Roofs: City of Melbourne Research Report, published by the University of Melbourne -
http://www.melbourne.vic.gov.au/Sustainability/CouncilActions/Pages/Coolroofs.aspx

Cool Roofs: a City of Melbourne Guide -
http://www.melbourne.vic.gov.au/Sustainability/CouncilActions/Documents/Cool_Roofs_Guide.pdf

Draft Urban Forest Strategy 2012-32: Making a Great City Greener -
http://www.melbourne.vic.gov.au/Sustainability/UrbanForest/Pages/About.aspx

Appendices

Appendix 1: Dates and topics of focus group discussions

15 August 2011	Meaning of climate change adaptation
24 October 2011	Concepts and approaches for climate change adaptation
4 November 2011	Climate change assessment methods
9 November 2011	Contextual data and information for adaptation planning
29 November 2011	Setting adaptation goals and identifying adaptation options
17 February 2012	Flexible adaptation guidance: The Adaptation Navigator web-based application

Appendix 2: City of Melbourne climate change adaptation pathway

Municipality profile

Local authority name	City of Melbourne
Municipality profile	The City of Melbourne's city centre covers 37.6 sq km and has a residential population of around 96,500 (as of 2010). On an average day, around 788,000 people use the city, and Melbourne hosts over a million international visitors each year. The entire Melbourne metropolitan area covers 7,694 sq km and has a population of around 4.1 million. Melbourne's population is made up of many groups of people of all ages and from many different cultures. City residents include young professionals, international students and older couples.
	The municipality of the City of Melbourne contains eleven suburbs, including Carlton, Docklands and parts of Port Melbourne and South Yarra. The City of Melbourne, as a council, oversees Melbourne's city centre and several inner suburbs. As a capital-city council, it also speaks on behalf of Melbourne in local, national and international forums. It is the commercial, retail and transport focus of the metropolitan area. Its major features include the Port of Melbourne, sporting, leisure and arts complexes, parks and gardens, as well as universities and hospitals.
	(Sources: Department of Planning and Community Development, http://www.dpcd.vic.gov.au/localgovernment/find-your-local-council/melbourne; City of Melbourne, http://www.melbourne.vic.gov.au/AboutMelbourne/MelbourneProfile/Pages/CityofMelbourneprofile.aspx)
Population	96,500 (2010)
Area in km²	37.6
Key areas addressed in adaptation to date	- Collaboration with External Partners - Climate Risk Assessment - Identifying and Prioritising Options - External Engagement - Localising Adaptation Objectives - The Monitoring and Evaluation Process - Integrated Assessments - Capturing Monitoring and Evaluating Results - Decision Support Tools - Decision Making under Uncertainty - Deciding and Implementing Measures - Understanding Your Audience - Linkages with Broader Planning and Goals - External Engagement
Summary of approach taken	- The City of Melbourne (CoM) has embarked on adapting the municipality to climate change. Its approach to adaptation focuses on addressing the risks and increasing the community's resilience to the impacts expected from a changing climate. - By 2030 Melbourne is expected to be increasingly affected by warmer temperatures and heatwaves, lower rainfall, intense storm events and flash flooding. To minimise the effect of these impending impacts, effective and prompt adaptation is imperative. The City of Melbourne Adaptation Strategy (the Strategy), released in 2009, and the associated action plan establishes a long term response to the key risks for the city.

Climate change adaptation process to date

Description of activities to date	Activities	Time frame	Adaptation Navigator nodes
	• The City of Melbourne's Sustainability Branch undertakes extensive consultation on climate change adaptation with external stakeholders responsible for aspects of city management and functions, including representatives from the following sectors: water, transport and mobility, buildings and property, social health and community, business and industry, energy and communications and emergency services.	2007	Collaboration with External Partners
	• Maunsell Australia Pty Ltd consultants undertake a risk identification process for the City of Melbourne (CoM). Risks were identified at all levels of the organisation, using a top down and bottom up assessment process, and risk mitigation options were identified. The process was closely aligned with the CoM's risk management framework and benefited from the input of the COM's risk management team. Key questions were run through stakeholders, research and expert analysis to develop a range of possible outcomes and event scenarios for Melbourne. After the analysis, key risks were provided a reference number and entered into the corporate risk register in 2011.	2007-2008	Climate Risk Assessment
	• Four key climate change risks were identified from the risk assessment and projects were formed within each of these areas. The four key risk areas include • less rainfall and more evaporation, • extreme heatwaves, • intense rainfall, hail and wind storms • and sea level rise • Examples of approaches to address these risks are thorough revision of land use planning and upgrade of drainage schemes.	2008	Identifying and Prioritising Options
	• CoM undertakes a series of community consultations to engage and empower the community on climate change issues.	2009	External Engagement
	• Maunsell Australia Pty Ltd compiles the CoM's draft Climate Change Adaptation Strategy, incorporating the risk identification results. The Strategy uses the climate risk assessment to describe the likely climate change risks, the associated physical impacts that can be expected, an assessment of the severity of these impacts, and	Jun 2009	Localising Adaptation Objectives

recommended adaptation actions that should be taken to adapt to this future.		
• CSIRO is commissioned to do an external peer review of the draft Adaptation Strategy.	2009	Collaboration with External Partners
• CoM undertakes an in-house audit of the recommended actions in the Adaptation Strategy.	Nov 2009 - Feb 2010	The Monitoring and Evaluating Process
• CoM examines and undertakes an economic analysis for certain climate change impact areas.	2010	Integrated Assessments
• The Sustainability Branch develops a Climate Change Adaptation Action Plan in consultation with branches.	May – Oct 2010	Identifying and Prioritising Options
• Climate Change Actions to address risks are taken on by a variety of branches, which include the actions into their corporate planning. Key actions in the Climate Change Action Plan are embedded into the corporate risk register requiring branches to annually report on their actions to minimise the risks.	Dec 2010 onwards	Capturing Monitoring and Evaluation Results
• The Climate Change Action Plan is presented to Council, which endorses the plan.	Dec 2010 onwards	Identifying and Prioritising Options
• A GIS consultant develops a state-of-the art inundation visualisation tool for the CoM, to model the likely sea-level rise, integrated with runoff models from extreme rainfall.	Dec 2010 onwards	Decision Support Tools
• The CoM conducts scenario building to prepare for and adapt to the likely impacts of inundation.	2010	Decision Making under Uncertainty
• The CoM implements a Heat Wave Response Plan and action plan to minimise the risk of serious heat related illnesses.	2010	Deciding and Implementing Measures
• CoM implements '1200 Buildings', a retrofit program to make commercial buildings in the municipality climate resilient, as well as mitigating carbon emissions. Includes providing information on retrofitting and the program via a comprehensive website, fact sheets, and case studies.	2010 onwards	Deciding and Implementing Measures

• Annual monitoring and review of Climate Change Action Plan.	2011 onwards	The Monitoring and Evaluation Process
• CoM holds four focus groups with residents and businesses to understand community values, beliefs, and perceived risks of climate change. The information is used to decide how best to communicate and engage with the community. Further data collection on the local narratives of climate change.	2011	Understanding Your Audience
• CoM commissions research into 'Cool Roofs' to provide direction to consumers about the use of "Cool" or "White" roof paints that have a significant higher reflectivity and emissivity when compared with normal roof materials and coatings.	Sep 2011	Collaboration with External Partners
• CoM explores how the planning scheme can be utilised for climate adaptive measures.	2011	Identifying and Prioritising Options
• Developing a Draft Urban Forest Strategy 2012-2032, to manage change to the municipality's tree population in the face of climate change and urban growth and protect against future vulnerability by providing a robust strategic framework for the evolution and longevity of Melbourne's urban forest.	Mar – Nov 2011	Linkages with Broader Planning and Goals
• Conducting a public consultation on the Draft Urban Forest Strategy 2012-2032, including setting up an online forum for discussion: http://melbourneurbanforest.com.au/	Nov 2011	External Engagement
• Becoming involved with research partners through the VCCCAR research project 'Framing Adaptation in the Victorian Context', to develop an adaptation model for local government and explore the process of adaptation.	May 2011 – Apr 2012	Collaboration with External Partners
• Partner in the VCCCAR research project: 'Responding to the urban heat island: optimising the implementation of green infrastructure	Jun 2011 onwards	Collaboration with External Partners
• Involvement in the Coastal Adaptation Pathways Project, funded by the Department of Climate Change and Energy Efficiency, to conduct an economic analysis of the impacts of inundation for the Southbank and Arden Macaulay precincts.	Sep 2010 to June 2011 onwards	Collaboration with External Partners
• Development of a Municipal Emergency Management Plan: http://bit.ly/N8aNSZ	2004	Deciding and Implementing

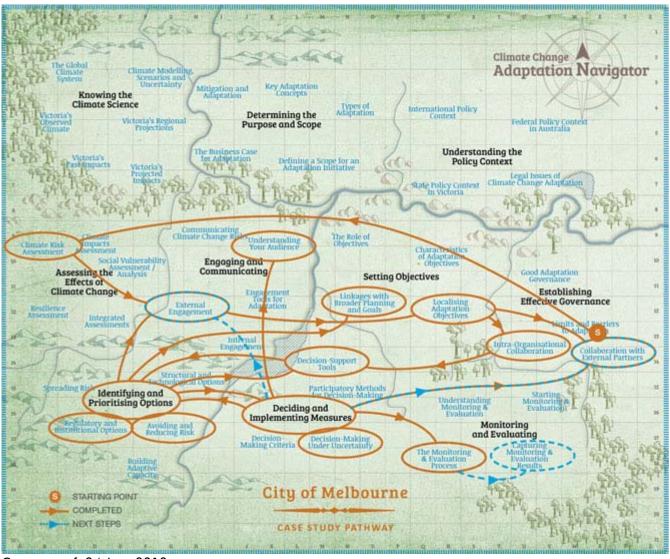|		Measures

Lessons learned

Main successes to date	• Development and release of a Climate Change Adaptation Strategy • Undertaking research into risks to better understand their impact in the Melbourne context, including flooding and extreme heat waves • Embedding adaptation actions and risk management into Council operations • Working to better understand community expectations
Main challenges and strategies for overcoming these	• Understanding how much research the CoM needs to undertake to allow it to effectively manage the risk. • Future climate impacts are uncertain and this is challenging for planning and decision-making, in particular at the local scale.

Next steps

Description of planned activities	Planned activities	Time frame	Adaptation Navigator nodes
	• Developing a Community Engagement Strategy		Developing an Engagement Strategy
	• Setting up a Climate Change Adaptation Network (for key stakeholders)		Collaboration with External Partners
	• Further economic research into the impacts of heat waves and the Urban Heat Island effect in Melbourne		Collaboration with External Partners
	• Review and update action plan		Monitoring and Evaluating

Appendix 3: Graphical representation of the City of Melbourne's case study pathway

Current as of: 24 June 2012