

# Corporate Climate Change Adaptation Planning for Councils

# 2

## Module 2 Risk Assessment



### I. MODULE OVERVIEW

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This module outlines the *risk assessment* phase of corporate adaptation planning for your council, and will step you through the process of identifying, analysing and prioritising risks, and developing risk statements to inform adaptation planning.

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## OBJECTIVES

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- Identify and understand potential climate risks to council assets and service areas.
- Analyse and prioritise risks with the Adaptation Working Group.
- Develop a list of priority risk statements for endorsement by senior management.
- Begin to introduce climate change adaptation planning into council's wider risk processes and procedures.



## ACTIVITIES

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- Hold a workshop with the Adaptation Working Group to analyse and evaluate climate risks for your council.



## OUTPUTS

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The outputs will be:

- draft risk statements highlighting climate change risks and impacts for review by the Adaptation Working Group
- finalised priority risk statements for senior management to inform adaptation planning.

## 2. RISK ASSESSMENT

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As part of this process you will facilitate the Adaptation Working Group to identify and analyse the risks posed by climate change to your council assets and services and across the municipal area. This process should consider the strategic goals and objectives of your council with the aim to integrate the climate risk process into broader council systems and processes.

Throughout this process, you should keep a copy of your climate snapshot and/or more detailed Local Government Area Profile from the the *Tasmanian Climate Change Office* website at hand to inform your analysis of council risks. [www.dpac.tas.gov.au/divisions/climatechange/adapting/climate\\_futures/local\\_government\\_area\\_climate\\_profiles](http://www.dpac.tas.gov.au/divisions/climatechange/adapting/climate_futures/local_government_area_climate_profiles)

The risk assessment involves a four-step approach:

- a. **Establish the context**
- b. **Identify the risks and develop detailed risk statements**
- c. **Analyse the risks**
- d. **Evaluate the risks**

A fifth step relating to treating the risks is covered in Module 3: Developing Adaptation Options.

## **A. ESTABLISH THE CONTEXT**

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In order to understand your climate risks you need to be clear about the internal and external context in which your council is operating. To determine your council's risk context, consider existing risk policies and procedures, relevant legislation and regulation controls, the internal environment within which you are operating, and the needs and expectations of your stakeholders (e.g. council senior management, interest groups, community members). Some questions that might assist you to establish the context might be:

- What laws, regulations, rules or standards apply to your council?
- What are your council's core activities?
- What are the strategic priorities of your council?
- Who are your council's key external stakeholders?
- What is your council's role and responsibility in terms of managing climate change risks?

Once the context has been established, you can begin the risk identification process.

## B. IDENTIFY THE RISKS AND DEVELOP DETAILED RISK STATEMENTS

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Risks which could affect your council's business units must be identified. Preliminary risks can be categorised, with possible categories including communications, environmental, finance, health and safety, legal, political, social, reputation, and technological, among others.

The first step is to develop a series of draft risk statements for each of the council's business units (e.g. community development, asset management). In this context a risk statement is a 'cause and effect' statement that concisely describes the likely effects on services and assets. The next step is to test them to ensure that they are detailed enough, using the risk evaluation framework below.

Examples of risk statements may include:

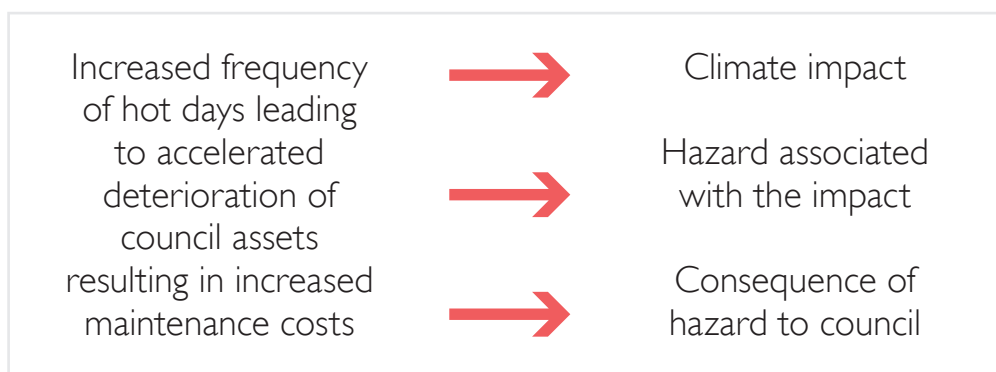
*"Flooding of coastal roads will lead to damaged infrastructure resulting in reduced asset life cycle."*

*"Increased storm surges will damage council's coastal infrastructure causing public safety issues."*

The following recommendations are provided for developing detailed risk statements:

1. Aim to include the climate impact, the hazard associated with that impact and the consequence of that hazard to council objectives (success criteria).
2. Check whether the risk statement is able to be assessed using the likelihood and consequence scales. Below are examples of an adequate risk statement and one which may not be detailed enough for assessment.

**Example of an adequate risk statement:**



### Example of a risk statement that might not be detailed enough:



It is possible for a number of hazards to be associated with a single climate impact, just as it is possible for a number of consequences to arise from the one hazard. In these instances, separate risk statements may be developed for each of the consequences as described below.

#### Consolidated risk statement:

Increased frequency of hot days, leading to accelerated deterioration of council assets resulting in increased maintenance costs and increased liability due to decreased public safety.

#### Separated risk statement:

1. Increased frequency of hot days, leading to accelerated deterioration of council assets resulting in increased maintenance costs.
2. Increased frequency of hot days, leading to accelerated deterioration of council assets resulting in increased liability due to decreased public safety.

*Source: Hyder 2012*

Separating risk statements increases the ease of analysis and improves the quality of the adaptation actions developed in the subsequent modules.

## C. ANALYSE THE RISKS

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Individual risk statements are further analysed by determining the likelihood and consequence of the impact occurring. The methods used are consistent with the ISO 31000 standard. The Australian Government's *Climate Change Impact and Risk Management – A Guide for Business and Government* recommends using an organisation's existing risk management framework (if available) to ensure that

outputs of climate risk analysis are consistent with others that have already been developed. If council does not have an existing framework, then the one outlined in the guide is recommended. [www.climatechange.gov.au/climate-change/adapting-climate-change/climate-change-adaptation-program/climate-change-impact-and](http://www.climatechange.gov.au/climate-change/adapting-climate-change/climate-change-adaptation-program/climate-change-impact-and)

The likelihood of each risk statement can be illustrated using the following matrix from the guide.

Likelihood rating	Recurrent risks	Single events
<b>ALMOST CERTAIN</b>	May occur in most circumstances, say a number of times a month	>90% chance of occurring
<b>LIKELY</b>	May occur in most circumstances, say about once a year	50–90% chance of occurring
<b>POSSIBLE</b>	May occur once every 2–5 years	20–50% chance of occurring
<b>UNLIKELY</b>	The event may not yet have occurred, but could occur at some time, say once in 10 years	1–20% chance of occurring
<b>RARE</b>	May occur in exceptional circumstances	<1% change of occurring

Source: Climate Change Impact and Risk Management – A Guide for Business and Government, Australian Government 2006–07

Determining the consequences of risk statements can be more complex than determining their likelihood. Risk consequences vary depending on how the risks might impact council assets and specific service level objectives (success criteria) set by the council.

The following table is an example of a risk-consequence matrix and success criteria used for previous risk assessments of this nature.



## SUCCESS CRITERIA

	Financial	Public safety	Reputation	Community and lifestyle	Environmental	Strategy	Service delivery to customer
<b>CATASTROPHIC</b>	Impact >20% of organisational annual budget expenditure	Large numbers of serious injuries or loss of lives	Government enquiries and on-going attention, numerous complaints	Region seen as very unattractive and unable to support its community	Long term environmental harm, permanent irreparable damage caused to the environment	Many major components of strategic plan/ objectives not met or complied with	Organisation-wide cessation of operation of one or multiple sites of operation. Inability to meet customer expectations
<b>MAJOR</b>	Impact 10–20% of organisational annual budget expenditure	Isolated numbers of serious injuries or loss of lives	Government enquiries and or significant media attention, numerous complaints	Severe and widespread decline in services and quality of life within the community	Significant environmental damage with widespread impacts, damage may be permanent	Many components of the strategic plan/ objectives not met or complied with	Cessation of operations at a local level. Some areas unable to meet customer expectations
<b>MODERATE</b>	Impact 5–10% of organisational annual budget expenditure	Small numbers of injuries	Government attention and/or media attention, some customer complaints	Appreciable decline in services	Moderate violation of regulation or guideline with moderate damage to the environment and significant clean up cost	Sections of strategic plan or objectives not met	Disruption of a number of aspects of operations at a local level. Some impact on meeting customer expectations
<b>MINOR</b>	Impact 1–5% of organisational annual budget expenditure	Serious near misses or minor injuries	Limited Government and media attention, some complaints	Isolated but noticeable decline in services	Minor violation of regulation or guideline with minimal damage to the environment and small clean up, immediately contained on site	Minor parts of strategies or objectives not met	Some disruption to operations at a local level. Little impact on meeting customer expectations
<b>INSIGNIFICANT</b>	Impact <1% of organisational annual budget expenditure	Appearance of a threat but no actual harm	Limited media attention, limited complaints	Minor areas where region is unable to maintain its current services	Negligible release or damage that is contained on-site and is non-reportable, the damage is fully recoverable with no permanent effect on the environment	Little or no effect on strategies or objectives	Little or no interruption to operations at local level. Nil impact on meeting customer expectations

Source: Climate Change Impact and Risk Management – A Guide for Business and Government, Australian Government 2006-07

It is possible for a number of hazards to be associated with a single climate impact, just as it is possible for a number of consequences to arise from the one hazard. In these instances, separate risk statements may be developed for each of the consequences as described below.

Level of risk = likelihood of an occurrence x consequence of that occurrence

LIKELIHOOD	CONSEQUENCE				
		INSIGNIFICANT	MINOR	MODERATE	MAJOR
ALMOST CERTAIN	Moderate Risk	High Risk	Extreme Risk	Extreme Risk	Extreme Risk
LIKELY	Moderate Risk	Moderate Risk	High Risk	Extreme Risk	Extreme Risk
POSSIBLE	Low Risk	Moderate Risk	Moderate Risk	High Risk	Extreme Risk
UNLIKELY	Low Risk	Low Risk	Moderate Risk	Moderate Risk	High Risk
RARE	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk

Source: Climate Change Impact and Risk Management – A Guide for Business and Government Australian Greenhouse Office 2006–07



## D. EVALUATE THE RISKS

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The priority levels of each risk statement can be interpreted as follows:

- High – These risks require urgent attention at the most senior level of council management and cannot be accepted as part of routine operations without executive sanction.
- Significant – The most severe risks that can be accepted as a part of routine operations without executive sanction. Significant risks will be the responsibility of the most senior operational management and reported on at the most executive level.
- Moderate – These risks may form a part of routine operations, but should be explicitly assigned to relevant managers for action, maintained under review and reported on at senior management level.
- Low – These risks will be maintained under review, but it is expected that existing controls will be sufficient and no further action will be required to treat them unless they become more severe.

The main aim of the risk evaluation process is to ensure that priority ratings are consistent. The final step in the workshop will involve reviewing and adjusting the risk assessment to ensure the final evaluation accurately reflects the relative risks of different climate impacts, before taking action on those risks.

### 3. RISK WORKSHOP WITH ADAPTATION WORKING GROUP

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Convene the Adaptation Working Group to review and agree on the risk statements for your council.



#### BEFORE THE WORKSHOP

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- Finalise and distribute a briefing paper summarising the key points for the group to consider in the workshop. The '*Risk Assessment Workshop Briefing Paper*' can be used as a starting point. [www.dpac.tas.gov.au/divisions/climatechange/adapting/local\\_government/corporate\\_adaptation\\_planning/risk\\_assessment/](http://www.dpac.tas.gov.au/divisions/climatechange/adapting/local_government/corporate_adaptation_planning/risk_assessment/)
- Prepare your council's chosen risk evaluation framework.
- Distribute draft risk statements developed during the previous process to stimulate thinking.
- Familiarise yourself with the *Risk Assessment Tool*. [www.dpac.tas.gov.au/divisions/climatechange/adapting/local\\_government/corporate\\_adaptation\\_planning/risk\\_assessment/](http://www.dpac.tas.gov.au/divisions/climatechange/adapting/local_government/corporate_adaptation_planning/risk_assessment/)



#### DURING THE WORKSHOP

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Present the risk evaluation framework.

- Present background information on the overall risk assessment framework and the method for developing adequate risk statements.
- Present and explain the agreed risk evaluation framework (success criteria, likelihood and consequence scales).
- Assist in developing detailed risk statements.

**Facilitate workshop participants to brainstorm climate change risk statements**

- Introduce the Risk Assessment Tool.
- Divide the Adaptation Working Group into smaller breakout groups of 3–5 people if necessary.

- Encourage participants to work systematically through climate impacts, rather than randomly developing risk statements.
- Avoid debate over whether a risk is a climate change risk or not – when in doubt, let the risk remain in the process and give it additional thought after the workshop.
- Ensure that risks are associated with a service area/success criterion, which can be done using butchers paper or entered directly into the Risk Assessment Tool.
- Examine the risk statements to ensure they are detailed enough to analyse and evaluate in terms of success criteria, likelihood and consequence – where risk statements lack detail, they should be further developed in consultation with the relevant individual.

### **Facilitate analysis of each risk statement**

Ask the group to analyse the risk statements identified in the previous task. Pay particular attention to:

- success criteria and how they relate to council objectives
- the consequence and likelihood scales
- the risk analysis matrix
- explaining the risk analysis process.

It is important that council's current controls are considered when determining the likelihood and consequence of each risk statement (risk analysis). Only measures that are already in place or committed and require no further action to be implemented can be claimed as controls. Measures that might be taken to treat risks in the future cannot be assumed to be in place.

## Examples of risk controls

### Controls on degradation of infrastructure

- routine monitoring and repair systems
- inherent robustness in the design and construction
- the existence of alternatives that can be used if the main infrastructure system fails

### Controls on flooding due to storms and high tides

- the existing elevation of homes and other buildings above sea level
- the design and construction of assets that may be affected by flooding
- existing barrages, levees and other flood control mechanisms

### Controls on outbreaks of plant, animal and human diseases

- early-warning monitoring systems
- prophylactic treatments already in place
- naturally occurring mechanisms that compete with or counter the disease and will develop at the same time as the conditions that promote the disease

### Controls on movements of population

- economic barriers to relocation
- existing distribution of health, transport and other infrastructure
- established government programs that provide incentives to remain in place
- growth of business opportunities associated with climate change that offer fresh employment in existing centres of population

Source: Hyder 2012

You will then need to assist the group to rate the likelihood and consequence of each risk statement and calculate a risk level according to the risk analysis matrix. It is vital that the entire risk statement is analysed, rather than only the climate impact or the hazard (see the examples over the page). Risk analysis is completed using the Risk Assessment Tool.

## Analysing risk statements

### 1. Analysing the hazard only – INCORRECT

*“Increased frequency of hot days, leading to accelerated deterioration of council assets resulting in increased maintenance costs.”*

The likelihood of an increased frequency of hot days leading to the accelerated deterioration of council assets is almost always the case. Consequently, analysing the hazard only does not give an accurate analysis of the overall risk.

### 2. Analysing the whole risk statement – CORRECT

When the entire risk statement is analysed “Increased frequency of hot days, leading to accelerated deterioration of council assets resulting in increased maintenance costs”, rating the likelihood and consequence should become more straightforward. Determining the likelihood of more hot days, leading to increased costs due to more rapid deterioration of council assets is easier. And as the consequence is financial, it can be rated according to the scales determined in the risk assessment framework.

*Source: Hyder 2012*

Facilitate risk evaluation to finalise a prioritised list of risk statements

Finalising a prioritised list of risk statements ensures that priority ratings are consistent with one another and that there is consensus among participants that ratings are consistent within the context of each service area. This task may be completed as part of the workshop, or undertaken after the workshop by the project coordinator.

The project coordinator then:

- presents the analysed risk statements with the risk rating to the workshop;
- facilitates discussion around risk ratings and adjust any risks previously found to be over or under rated and agree a priority rating that the working group feels is appropriate.



## AFTER THE WORKSHOP

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- Undertake a review of all risk statements and modify risks where analysis is unclear or incomplete.
- Confirm the finalised risk statements with the Adaptation Working Group.
- Disseminate findings to senior management and seek their endorsement.



## 4. MODULE CHECKLIST

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- Researched climate change risks in the context of your municipal area
- Developed detailed risk statements
- Convened the Adaptation Working Group to evaluate and redevelop risk statements
- Finalised risk statements for inclusion in the adaptation plan
- Obtained endorsement of the finalised risk statements from senior management



## 5. RESOURCES

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Australian Greenhouse Office, 2007 Climate Change Impacts and Risk Management – A Guide for Business and Government, [www.climatechange.gov.au/climate-change/adapting-climate-change/climate-change-adaptation-program/climate-change-impact-and](http://www.climatechange.gov.au/climate-change/adapting-climate-change/climate-change-adaptation-program/climate-change-impact-and)

International Organisation for Standardization, ISO 31000 International Standard for Risk Management, [www.iso.org/iso/home/standards/iso31000.htm](http://www.iso.org/iso/home/standards/iso31000.htm)

Australian Centre for Excellence in Local Government, 2014 Climate Adaptation Manual for Local Government: Embedding Resilience to Climate Change, [www.acelg.org.au/news/local-resilience-climate-change](http://www.acelg.org.au/news/local-resilience-climate-change)



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