REGIONAL COUNCILS
CLIMATE ADAPTATION PROJECT

KENTISH

Kentish Council

Corporate Climate Change Adaptation Plan

Project Sponsor

Cradle Coast Authority

Funding Partners

ClimateConnect

SUPPORTED BY
Tasmanian Government

Project Partners

Southern Tasmanian
COUNCILS AUTHORITY

Project Associates

Australian Government
Department of Regional Australia,
Local Government, Arts and Sport

HOBART
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Local Government Association Tasmania

Acknowledgements

The development of this Corporate Climate Change Adaptation Plan was partly funded through a ClimateConnect Grant from the Tasmanian Climate Change Office, Department of Premier and Cabinet.

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Citing this Adaptation plan

Please cite this Adaptation Plan as follows**:**

Heyward, Oliver; Graham, Katrina; Green, Graham (2013). Kentish Council Corporate Climate Change Adaptation Plan. Southern Tasmanian Council's Authority.

Climate Change Snapshot for Kentish Council

Tasmania is fortunate to have had the highest resolution climate modelling conducted in Australia. The Climate Futures for Tasmania Project which was completed in 2011 provides detailed climate modelling down to the municipal scale out to 2100. This modelling provides a sound knowledge base for identifying climate related risks at a local level and subsequently in informing appropriate decisions to manage climate change related risks such as increasing temperatures, changing rainfall patterns and extreme events (torrential rain, flooding, storm surge and bushfire). Climate Futures for Tasmania prepared a detailed report specifically for the Kentish municipal area, this report is included in the package of supporting documents provided to Council with this plan. The material provided below is a summary of key points from the report.

Current climate and recent trends

- The Kentish municipality experiences a mainly temperate, maritime climate and relatively small seasonal variations (e.g. Sheffield has an average daily maximum temperature of around 22 °C in January, 11 °C in July). The areas further inland and at higher altitude have a cooler climate with highland snows (e.g. Cradle Valley has an average daily maximum temperature of 17 °C in February, 4.6 °C in July).
- Average temperatures for Kentish have risen in the decades since the 1950s, at a rate similar to the rest of Tasmania (up to 0.15 °C per decade). Daily minimum temperatures have risen slightly more than daily maximum temperatures.
- The average annual rainfall in the east of the municipality is around 1000 mm per year with a strong seasonal cycle (e.g. Railton receives 1046 mm, minimum of 48 mm in January and a maximum of 142 mm in July). Rainfall is much higher in the highland areas (Cradle Valley receives over 2500 mm).
- There has been a decline in average rainfall and a lack of very wet years in the Kentish municipality since the mid-1970s, and this decline has been strongest in autumn.

Projected change in conditions by 2100 (A2 emissions scenario)

	Change	Relative change
Temperature (annual average)	+2.6 to 3.3°C	
Summer days (>25°C)	+20 days	+200%
Warm spells (days)	10 days longer	+167%
Temperature of very hot days	+4°C	
Frost risk days/year	-50 days (highlands)	-75%
Rainfall (annual average)	Increase in the highlands Decrease in the lowlands	0 to 5% 0 to -10%
Rainfall (wettest day of the year)		+20%
Rainfall extreme (ARI-200)	+35 mm	+35%
Evaporation		+19%
Runoff	Similar to current in the lowlands; Reduced in the highlands.	
Average River flows		Mersey River -1% Forth River -8% Don River 0%

Extreme events

The changes in climate that are most likely to impact upon council's infrastructure, roads, and the local community and environment is a magnification in intensity of extreme events. Some of the specific impacts on Kentish council are as follows:

- Short duration rain events are projected to become more intense. Catchments with a critical duration of less than 72 hours will experience high flood levels and faster response times. For example, the Mersey and Forth Rivers have a critical duration of less than 72 hours, so the peak flow rates and flood levels are projected to increase significantly through the 21st Century.[1]
- The temperature of very hot days is projected to increase more than the change in average temperature, by 3 to 4°C in some locations in some seasons.

[1] Entura Consulting, 2010, *Climate Futures for Tasmania Flood inundation mapping, Entura Consulting Technical report*, 23 Dec 2010

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1. Introduction

1.1 Project Background

Preparation of this adaptation plan for Kentish Council has been funded by a Tasmanian Government Climate Connect grant, 'The Cradle Coast Councils Adaptation Project' (the Project). The purpose of the Project was for the extension of the Regional Councils Climate Adaptation Program (RCCAP), originally undertaken for the Councils of Southern Tasmania, to the councils of the Cradle Coast. The Project reviewed and updated priority climate change risks identified by Cradle Coast councils through the Local Adaptation Pathways Program (LAPP) in 2009. It also worked with Council staff to develop adaptation actions for the risks. Delivered to the 9 councils of the Cradle Coast it importantly provides the foundation for consistent and collaborative adaptation planning at the council and inter council level, regionally and state-wide.

The Project extends the RCCAP, which was developed by councils for councils, with the aim of increasing capacity to identify and manage the risks and opportunities associated with climate change. The 'pilot' phase of RCCAP was conducted with the councils of Southern Tasmania in 2011-12 and was delivered by the Southern Tasmanian Councils Authority (STCA) in partnership with the Tasmanian Climate Change Office (TCCO) and the Local Government Association of Tasmania (LGAT). The program's key outputs were:

- Council (corporate) Climate Change Adaptation Plans for each of the 12 southern councils;
- a Regional Climate Change Adaptation Strategy covering themes common to all councils;
- establishment of a local government climate change web-portal (to be hosted on the TCCO's website) for adaptation planning tools and resources; and
- extension to the Northern Councils[2].

RCCAP was funded by the Australian Government's Local Government Reform Fund (LGRF), administered by the Department of Regional Australia, Local Government, Arts and Sport. The Hobart City Council also provided a financial contribution of 20% of the overall program funds.

[2] The RCCAP was extended to councils of the 'Northern Region' in May 2012 and involved risk management and adaptation action planning workshops with West Tamar Council, Launceston City Council, Dorset Council and Break O Day Council.

1.2 Project Context

There is an expansive and growing body of scientific evidence that the global climate is changing and that extreme weather events and sea level rise will increase in the 21st century[3]. It is now recognised that there are a range of potential future climate scenarios dependent upon the scale of effort achieved in reducing greenhouse gas emissions. Even if the composition of today's atmosphere was fixed (which would imply a dramatic reduction in current emissions), surface air temperatures would continue to warm by up to 0.9 ºC[4]. Under a 'best case scenario' where significant reductions in greenhouse gas emissions are achieved it is still pertinent to initiate an adaptation response in order to minimise climate change impacts associated with the warming climate on infrastructure, economy, community and the environment.

In Australia, it is recognised by all tiers of government that it is appropriate and effective to manage climate change at a 'local' scale. The Australian Government recognises that Local Governments will be key actors in adapting to the local impacts of climate change and their engagement will be a critical part of any national reform agenda[5]. It has produced publications aimed at assisting local government manage climate change risk[6] and implement adaptation actions[7]. The Tasmanian Climate Change Office also works in a collaborative manner to support local government in climate change adaptation projects.

The Council of Australian Government's (COAG) Select Committee on Climate Change, in September 2012, released the Paper 'Roles and Responsibilities for Climate Change in Australia'[8]. The Paper stated that local government will:

- Administer relevant state and territory and / or Commonwealth legislation to promote adaptation as required including the application of relevant codes, such as the Building Code of Australia;
- Manage risks and impacts to public assets owned and managed by local governments;
- Manage risks and impacts to local government service delivery;
- Collaborate across councils and with State and Territory Governments to manage risks of regional climate change impacts;
- Ensure policies and regulations under their jurisdiction, including local planning and development regulations, incorporate climate change considerations and are consistent with State and Commonwealth Government adaptation approaches;

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[3] IPCC, 2011: Summary for Policymakers. In: Intergovernmental Panel on Climate Change Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation [Field, C. B., Barros, V., Stocker, T.F., Qin, D., Dokken, D., Ebi, K.L., Mastrandrea, M. D., Mach, K. J., Plattner, G.-K., Allen, S., Tignor, M. and P. M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

[4] IPCC, 2007: Climate Change, 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning (eds.)].

[5] Department of Climate Change, 2010: Adapting to climate change in Australia, an Australian Government Position Paper

[6] Australian Greenhouse Office, 2006: Climate Change Impacts and Risk Management – a Guide for Business and Government.

[7] Department of Climate Change, 2009: Climate Change Adaptation Actions for Local Government.

[8] http://climatechange.gov.au/roles-and-responsibilities-climate-change-australia

- Facilitate building resilience and adaptive capacity in the local community, including through providing information about relevant climate change risks;
- Work in partnership with the community, locally-based and relevant NGOs, business and other key stakeholders to manage the risks and impacts associated with climate change; and
- Contribute appropriate resources to prepare, prevent, respond and recover from detrimental climatic impacts

Local government's roles and responsibilities in responding to climate change, is reinforced by the *Local Government Act* (Tas) 1993, which requires councils to provide for the health, safety and welfare of the community; as well as represent and promote the interests of the community; and provide for the peace, order and good government of its municipal area.[9]

In managing and preparing for the impacts of climate change, Local Government is well positioned to work with communities due to it's:

- core function to directly support and assist local communities;
- local knowledge and experience;
- understanding of community needs and vulnerabilities;
- key role in responding to emergencies;
- role in infrastructure design, construction and maintenance;
- role in review and update of planning schemes (in relation to identified local impacts and threats); and
- ability to effectively disseminate information and provide support to the community.

Pioneering work undertaken by Clarence City Council with its community identified local government as the most trusted tier of government with regards to information on climate change[10].

Local experience, in combination with relevant scientific data and technical expertise, provides the key inputs for undertaking a well-informed 'risk management' approach to climate change. Moreover, effective adaptation requires a portfolio of actions, ranging from fortifying infrastructure, building capacity (individual and institutional) to advocacy and collaboration. There is also an appreciation that managing current and future risks in relation to climate change can have benefits (such as improving human well-being and protecting biodiversity) regardless of the magnitude of climate change that occurs. It is in this context that the RCCAP is based.

[9] *Local Government Act* (Tas) 1993.Section 20 Function and Powers.

[10] SGS Economics and Planning, July 2007: Socioeconomic Assessment and Response for the climate change impacts on Clarence's Foreshore, for the Clarence City Council

1.3 Purpose and scope

This adaptation plan aims to improve the capability of Kentish Council to manage several of the identified top priority corporate risks associated with climate change.

The development of this plan was based upon council-specific, climate projection data provided by the Antarctic Climate and Ecosystems Cooperative Research Centre (ACE CRC) 'Climate Futures for Tasmania' program. The plan identifies priority climate change risks within the context of currently available climate change data. Scientific research and modelling of climate change is continually evolving. Therefore, there is a potential that future climate change projection data may require reassessment of the risks, actions and timeframes identified in this plan.

Specific outputs from the modelled climate scenario for Kentish Council, such as future rainfall patterns, extreme events and bushfire likelihood formed the basis of 'risk management' and 'adaptation action' workshops held with council staff in development of this plan. Workshops were conducted in a manner consistent with the International Organisation for Standardisation (ISO) 31000:2009 Standard for Risk Management as well as the Australian Government publication *Climate Change Impacts and Risk Management: A Guide for Business and Government*. Full details of the project methodology are included in the package of supporting documents provided to Council with this Plan.

Outputs of the workshops conducted with council staff underlie the content of this plan. The plan is structured so that the prioritised adaptation actions have been allocated to specific business units within Council. Each priority action has associated roles, responsibilities and timeframes.

The plan also presents adaptation actions to manage risks that are within council's sphere of influence, but are the responsibility, to some degree, of other organisations (such as State Government Agencies, Community Groups and Private Corporations). Included as an appendix to this plan is 'Stakeholder Involvement & Collaboration'. The intention of this is to provide clear understanding of roles and responsibilities; clarity as to where partner organisations are at in managing climate change risk; and to identification of collaborative opportunities for managing risks that are relevant to local communities.

This adaptation plan incorporates an 'implementation plan' to ensure there is:

- a consistent process for plan endorsement by all councils of the region/State;
- a logical way for incorporation of key local risks and adaptation actions into council documents and processes such as risk registers, strategic plans, annual plans or asset management plans;
- an appropriate mechanism to implement sub-regional and regional adaptation actions either through advocacy or collaboration; and
- a mechanism for plan review and updating.

2. Corporate Climate Change Risks & Actions

This Section presents Kentish Council's priority climate change risks and adaptation actions in relation to the climate change impact areas of - Extreme rainfall/flooding, Heat and Bushfire. Risks relating to other climate change impacts have also been included under the heading 'Other'.

Climate change risks to Kentish Council's corporate business activities are presented as 'Risk Statements' and these were developed based upon a review and update of risks identified previously through the Local Adaptation Pathways Project. 'Priority risks' – those rated as 'extreme' or 'high' - were workshopped to determine appropriate adaptation actions for each. It is these priority risks and actions that form the core of this adaptation plan.

RAINFALL & FLOODING

at a Glance

Climate Change Projections

(A2 emission scenario from Climate Futures Tasmania)

By 2100 in Kentish Municipal area:

- Average runoff is projected to stay similar to current levels in all seasons in the lowlands, but reduce in the highlands.
- An increase in the maximum instantaneous rainfall rate of over 25% in some seasons, around 20% more rainfall on the wettest day of the year.
- Rainfall volume in a 200-year average recurrence interval (ARI) event will increase by up to 35%. Other ARI events (ARI-10, ARI-50) are projected to increase by a similar proportion.
- The Mersey and Forth Rivers have a critical duration of less than 72 hours, so the peak flow rates and flood levels are projected to increase significantly through the 21st Century.

(From Local Climate Profile Kentish - Climate Futures Tasmania)

Key Vulnerabilities

Increased extreme rainfall events in Kentish may result in:

- Periodic flooding of infrastructure and property.
- Increased damage to infrastructure e.g. roads and bridges. Therefore increased maintenance costs and more frequent renewals.
- Over-loading of on-site wastewater treatment systems.
- Impact on emergency services capacity.
- Greater agricultural vulnerability to drought due to seasonal rainfall changes.
- Impact on the regional economy due to agricultural impacts such as soil erosion and crop damage.
- Pressure on vegetation & wildlife due to rainfall change.

2.1 Rainfall & Flooding – Priority Risks & Actions

Rainfall events and flooding of a magnitude & frequency not experienced before have the potential to be damaging for infrastructure, agriculture, public safety and the regional economy.

The identified 'priority' risks and actions for Kentish Municipal area are presented below.

Risk Code	Risk Statement	Success criteria	Likelihood	Consequence	Risk Level
R-4	**Increased frequency and intensity of extreme rain events leading to under capacity stormwater infrastructure and therefore more frequent and severe flooding and thus reduced public safety**	**Public Safety**	**Almost Certain**	**Minor**	**High**

Action Code	Adaptation Actions	Responsibility	Relevant Council document	Timeline for delivery	Treated Likelihood	Treated Consequence	Treated risk level
R-4 Public Safety							
A-16	**Maintain appropriate budget considerations that take into account increased renewals based on increased extreme rainfall events (ARI events +35%)**	Works Manager, Assets Manager	Asset Management Plans, capital works program	Within a year	Possible	Minor	Moderate

Risk Code	Risk Statement	Success criteria	Likelihood	Consequence	Risk Level
R-5	Increased frequency and intensity of extreme rain events leading to under capacity stormwater infrastructure and therefore more frequent and severe flooding, leading to increased financial impost on Council for the clean-up and recovery effort	Financial	Almost certain	Major	Extreme

Action Code	Adaptation Actions	Responsibility	Relevant Council document	Timeline for delivery	Treated Likelihood	Treated Consequence	Treated risk level
	R-5 Financial						
A-21	For all new and renewal stormwater pipes ensure that capacity is provided for future increase of flows, particularly for high priority areas	Works manager; planning staff (for subdivisions)	Asset management plans (stormwater and roads); planning scheme	Within a year	Possible	Moderate	Moderate
A-22	Confirm with Council's finance staff that there is sufficient money in the reserve to manage clean up events and if this is lacking, begin discussions with elected council on the potential for a contingency budget	Emergency management committee	Flood studies, Emergency Risk Register, Emergency management plan; risk register	Within a year	Almost Certain	Major	Extreme
A-23	Advocate to federal government for continuation of emergency recovery funding into the future. This may occur through LGAT or the regional authority	Emergency management committee	Emergency management plan; risk register	Within a year	Almost certain	Major	Extreme

HEAT

at a Glance

Climate Change Projections

(A2 emission scenario)

By 2100 across Kentish municipal area:

- Average annual temperatures are projected to increase by 2.6 to 3.3°C.
- The number of days over 25°C is expected to increase by 200% or 20 days.
- The temperature of very hot days to increase by up to 4°C.
- Warm spells (days in a row where temperatures are in their top 5%) will increase by up to 10 days.
- Extended heat waves and more extreme temperatures are likely to enhance the occurrence and intensity of bushfires.
- Frosts risk days will become rare and reduce from over 75 to less than 25 in the highlands.

(From Local Climate Profile Kentish - Climate Futures Tasmania)

Key Vulnerabilities

Increased heat in Kentish may result in:

- Increase in vector borne disease as their ranges increase.
- An increase in heat related mortality particularly in vulnerable demographics such as the elderly, very young and chronically ill.
- Greater frequency and intensity of bushfires.
- New invasive weed and pathogen species leading to loss of agricultural production and natural habitats.
- Higher temperatures and reduced 'chill hours' will create both benefits & setbacks for agricultural enterprises

2.2 Heat – Priority Risks & Actions

Rising average temperatures and more frequent extreme temperatures have the potential to contribute to a variety of impacts including heat related illness and mortality, particularly in vulnerable demographics such as the elderly. Impacts may also be incurred on council's infrastructure and property, on agricultural industries that are important to the region's economy, as well as on the environment.

Heat related risks identified by the project were evaluated as low priority. They are therefore not considered here. Please refer to Kentish Council's risk register spread sheet.

2.3 Bushfire – Priority Risks & Actions

Climate change may result in increased bushfire risk in Kentish Municipal area although at this stage there is no conclusive data for this impact. Whilst projected increases to peak temperatures and the length of heat waves is a factor that may have significant impact on the likelihood of bushfire ignition, changes to the seasonality of rainfall could be a counterbalancing factor in some years. There are however other factors that may contribute to an increase in likelihood and severity of bushfire, for example:

- changes to land-use could lead to changes in fuel density and distribution as well as a change to the vulnerability of particular vegetation communities; and
- potential increase in vegetation growth as a result of increases in rainfall, temperature and atmospheric CO_2.

The key perceived risk in relation to bushfire for Kentish Municipal area is presented below along with a table of identified actions.

BUSHFIRE

at a Glance

Climate Change Projections

(A2 emission scenario)

- An increase in projected bushfire likelihood and intensity across Tasmania

(BRAM; Antarctic Climate Ecosystems 2011)

Key Vulnerabilities

Changes to bushfire likelihood & behaviour in Kentish may result in:

- An increase in maintenance and replacement costs of Council and community infrastructure.
- Significant community disruption leading to a range of public health and safety issues.
- Major impacts on the Municipal area's natural environment with subsequent decline in visitor numbers

Risk Code	Risk Statement	Success criteria	Likelihood	Consequence	Risk Level
R-2	Increased likelihood and severity of bushfire placing Council assets at increased risk (buildings/road verge/parks and reserves), leading to reduced public safety	Public Safety	Likely	Catastrophic	Extreme

Action Code	Adaptation Actions	Responsibility	Relevant Council document	Timeline for delivery	Treated Likelihood	Treated Consequence	Treated risk level
R-2 Public Safety							
A-6	Ensure there is active communication lines with TFS in managing bushfire preparedness throughout Council managed assets	Fire abatement officer; emergency management committee	Emergency management plans; risk register	Within a year	Likely	Catastrophic	Extreme
A-7	Lobby the regional authority for localised modelling of b/fire risk/vulnerability to identify areas that are high bushfire risk	GM; mayor	Emergency management plans; risk register	Within a year	Likely	Catastrophic	Extreme
A-8	Consider climate change within all TFS bushfire management plans in order to prioritise works and actions (e.g. vegetation management)	Fire abatement officer; emergency management committee	Emergency management plans; risk register	Within 5 years	Possible	Major	High
A-9	Identify and prioritise council owned and managed roads and roadside reserves, that are a high fire risk, to prioritise expenditure on roadside vegetation management to reduce bushfire hazard, increase public safety and emergency response (i.e. roadside clearing, replace timber bridges with concrete; improved signage)	Emergency management committee. May flow on to works manager	Emergency management plans; risk register	Long term	Likely	Moderate	High

2.4 Other – Priority Risks & Actions

Further to the key climate change impact areas discussed above, Kentish Council, through its original Local Adaptation Pathways Program (LAPP) plan in 2009 and the workshop associated with this project, identified a number of other risk areas. As is the case with Bushfire, there is no conclusive data for these impacts however given the risk level they have been included here.

Risk Code	Risk Statement	Success criteria	Likelihood	Consequence	Risk Level
R-6	Increased frequency and severity of extreme weather events leading to more frequent fallen trees and dangerous debris, resulting in closure or roads and reduced access to services	Service Delivery	Possible	Moderate	Moderate

Action Code	Adaptation Actions	Responsibility	Relevant Council document	Timeline for delivery	Treated Likelihood	Treated Consequence	Treated risk level
R-6 Service Delivery							
A-26	Raise this issue with the emergency management committee to identify suitable responses for community education and awareness	Emergency management committee	Emergency management plan; risk register	Within a year	Possible	Moderate	Moderate

Risk Code	Risk Statement	Success criteria	Likelihood	Consequence	Risk Level
R-8	Increased intensity of rainfall leading to exacerbated land slip likelihood having implications for planning decisions relating to new developments on vulnerable land	Strategy	Possible	Major	High

Action Code	Adaptation Actions	Responsibility	Relevant Council document	Timeline for delivery	Treated Likelihood	Treated Consequence	Treated risk level
R-6 Service Delivery							
A-36	Advocate, through the regional authority, to state government, to undertake detailed modelling and mapping of areas vulnerable to land-slip and subsequent amendment to planning scheme	Planners	Planning scheme, MRT mapping	Long term	Possible	Moderate	Moderate

2.5 Multi-criteria analysis

A 'multi-criteria analysis' (MCA) is a useful approach to begin the process of prioritising the implementation of defined actions. The actions listed in the previous sections have been analysed using an MCA according to the following criteria:

- Cost - the potential cost of implementing the action relative to the other actions (high, medium, low);
- Political feasibility - how feasible the action is politically. This is dependent on Council views (supportive, neutral, unsupportive)
- Community acceptance - the acceptance of the action by Councils rate payers (popular, indifferent, controversial);
- Level of Influence – how much control does council have over the implementation of an action. Does council play a lead role, influence another organisation to undertake a role based upon advocacy or does council collaborate on an action - (leader, collaborator, influencer); and
- Concurrent effects - whether the action has associated benefits or costs associated with its implementation (positive, neutral, negative).

Each criterion is designed to align with a Council strategic objective and is given a weighting out of 100%.

Rating each action against each of these weighted criteria provides a total score which can be used to assess its ease of implementation. Total scores can then be ordered to assess which actions might be simpler to implement than others.

It is important to note that all actions have been developed to address priority risks and should therefore be considered significant and worthwhile implementing.

The table o shows the MCA with evaluated actions.

Action Code			Multi Criteria Analysis					
	Weightings:		*30%*	*25%*	*25%*	*10%*	*10%*	*100%*
	Adaptation Action	**Risks treated**	**Cost**	**Political feasibility**	**Community acceptance**	**Influence level**	**Concurrent effects**	**Total Score**
A-8	Consider climate change within all TFS bushfire management plans in order to prioritise works and actions (e.g. vegetation management)	R2	Medium	Supportive	Popular	Leader	Potential positive effects	**4.4**
A-22	Confirm with Council's finance staff that there is sufficient money in the reserve to manage clean up events and if this is lacking, begin discussions with elected council on the potential for a contingency budget	R5	Low	Supportive	Indifferent	Leader	Neutral	**4.3**
A-26	Raise this issue with the emergency management committee to identify suitable responses for community education and awareness	R6	Low	Supportive	Indifferent	Leader	Neutral	**4.3**
A-21	For all new and renewal stormwater pipes ensure that capacity is provided for future increase of flows, particularly for high priority areas.	R5	Medium	Supportive	Popular	Leader	Neutral	**4.2**
A-6	Ensure there is active communication lines with TFS in managing bushfire preparedness throughout Council managed assets	R2	Low	Supportive	Indifferent	Collaborator	Neutral	**4.1**
A-7	Lobby the regional authority for localised modelling of b/fire risk/vulnerability to identify areas that are high bushfire risk	R2	Low	Supportive	Indifferent	Collaborator	Neutral	**4.1**

A-23	Advocate to federal government for continuation of emergency recovery funding into the future. This may occur through LGAT or the regional authority	R5	Low	Supportive	Indifferent	Influencer	Neutral	**3.9**
A-36	Advocate, through the regional authority, to state government, to undertake detailed modelling and mapping of areas vulnerable to land-slip and subsequent amendment to planning scheme	R8	Low	Supportive	Indifferent	Influencer	Neutral	**3.9**
A-9	Identify and prioritise council owned and managed roads and roadside reserves, that are a high fire risk, to prioritise expenditure on roadside vegetation management to reduce bushfire hazard, increase public safety and emergency response (i.e. roadside clearing, replace timber bridges with concrete; improved signage)	R2	High	Neutral	Popular	Leader	Potential positive effects	**3.3**

3. Strategic Corporate Actions

Further to the actions identified through the project, there are broad level climate change adaptation actions which do not specifically address a particular area or risk and fall across numerous Council service areas. These are key overarching corporate functions that should be considered in order to minimise Council's risk in the face of extreme events posed by climate change. Potential overarching corporate actions for Kentish Council to pursue are provided in the table below.

Ensure legal liability issues are addressed The advice established for Tasmanian Councils is covered in Section 4.
Update Council's risk register Integrate climate change risk management into Council's existing risk assessment framework.
Emergency management planning in relation to climate hazards Ensure that the projected impacts of climate change are properly considered in Council's emergency management planning. Emergency response plans should be investigated, developed and implemented considering the best available climate change projections. Up to date emergency response procedures can minimise consequences when extreme events occur.
Implement communication strategy Develop and implement a climate change communication and education plan for Council staff. Increased staff capacity and awareness will assist in incorporating climate change scenarios and impacts into policy and decision making processes.
Incorporate identified actions into other Council plans & strategies Consideration of climate change risks and impacts in other Council strategies, policies and plans (Strategic & Annual Plan). The climate change impacts and risk process outlined throughout this Adaptation Plan should be considered in the development of future plans, policies and strategies. This will also ensure there are a range of potential internal mechanisms for important actions to be implemented.
Annual reporting Consider developing climate change related performance Indicators which could be reported on through Council's annual report.

Success of the strategic actions is dependent on senior management support. Implementation of strategic actions will provide Council with a solid framework in climate change adaptation and will build an internal culture that supports the implementation of the adaptation actions specific to Council business areas described in subsequent sections.

4. Legal Implications of Climate Change Action

Councils are at the forefront of responding to climate change impacts and increasingly local communities are looking to their councils to provide solutions to adapt to, manage, transfer or share the risks associated with climate change impacts.[11] A key consideration for councils in the face of climate change is potential liability that they are exposed to through their various statutory roles, powers and functions. A particular concern is the potential liability that councils are exposed to through their adopted action or inaction in particular circumstances.

Baker and McKenzie (BMK), in a report to the Australian Local Governments Authority on the risk of councils' climate change liability, outline a number of actions that councils may follow to reduce liability.[12] These include:

- **exercising reasonable care when making planning decisions**, which involves taking care to ensure all relevant facts are known and understood, that relevant law is identified and understood, and that reasons for decisions are expressed in clear and accurate terms;
- **keeping up to date with general climate change science and information**, particularly in relation to potential risks from natural hazards, relevant to their local government area;
- **developing clear and certain criteria for decision making** to increase public confidence that decisions are made on the basis of the best available scientific evidence;
- **increasing public consultation**, as this may improve transparency around decision-making processes and limit administrative review following a decision; and
- facilitating the **provision of information to property owners** on potential risks to property.

BMK also noted that there are a number legislative and policy frameworks that create barriers to effective climate change adaptation by councils. These included: lack of decision-making power, lack of consistency, and lack of clear guidance, materials, expertise and funding.[13] They particularly advocated for a nationally consistent approach to managing climate change impacts on the coastal zone.

RCCAP engaged Shaun McElwaine + Associates (SMA)[14] to provide advice on the legal context within which the impacts of climate change reside and how they relate to Tasmanian councils as a whole.[15] SMA's advice is provided as an accompanying report to this plan. The advice, dated 18 December 2011, established that overall councils are not liable for existing use or development, nor will they incur liability for 'no action' in response to climate impacts; however, should they take action they could be liable should that action cause harm or damage. It also considered

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[11] Baker and McKenzie; 22 July 2011. 'Local Council Risk of Liability in the Face of Climate Change – Resolving uncertainties', a report for the Australian Local Government Association.

[12] *Ibid* pp 82 – 83.

[13] *Ibid* pp 75- 81

[14] A copy of the legal advice can be obtained by contacting the STCA

[15] This legal advice was considered alongside two similar reports:

- 'Legal issues for Local Government in addressing coastal erosion risks, a research report for Clarence City Council', Dr. McDonald, 18 March 2011
- 'Local Councils Risk of Liability in the Face of Climate Change Resolving Uncertainties', a report for the Australian Local Government Association', Baker and McKenzie, 22 July 2011.

Overall SMA's advice is consistent with the legal comments provided in these two reports.

that councils may be found liable for operational advice such as the assessment of planning applications and new developments.

The advice also noted that while the development and adoption of a 'climate risk plan and/or climate change adaptation action(s)' was positive it would also set the standard for the discharge of the duty of care. Thus if a council did not take the climate risk plan and or action(s) into consideration when making operational decisions it may become liable for the consequences of the operational decision.[16]

The advice contained three actions that could be undertaken by the State Government to reduce Tasmanian council's exposure and potential liability.

1. Amendment to the *Local Government Act (Tas) 1996* by the State Government to insert an equivalent section to that of the s733 *Local Government Act (NSW)* that exempts local governments from civil liability for the impacts of climate change where statutory powers, planning scheme provisions and assessment of development applications are undertaken in good faith and in accordance with manual(s) prepared by the State Government.
2. Review of the State Coastal Policy 1996 by the State Government so as to provide clarity on what is required to satisfy its requirements, i.e.
   - how planning schemes must deal with the impacts of climate change
   - provide specific recommendations and guidelines to manage climate change impacts
   - set prescribed levels for sea level rise in developed coastal regions throughout the State.
3. Formulation of a state-wide code to deal with climate change impacts (with the outcome to achieve a uniform set of provisions across the State) that:
   - is measureable, i.e. contains specific development controls
   - removes decision making from planning authorities
   - does not require risk analysis
   - sets prescribed levels for seal level rise in developed coastal regions throughout the State.

It is considered that the SMA's recommendations whilst reasonable and sound are unlikely to be successful or progressed in time efficient manner. Therefore reflecting on SMA's full advice, and to address the barriers to effective climate change adaptation identified by BMK, it is prudent and sagacious for the Council, through the regional authority or as an individual council, to advocate for the Tasmanian Government to:

- play a more active role in the provision of information and guidance in relation to climate change and natural hazards, particularly in coastal areas; and
- consider exempting local governments from civil liability for the impacts of climate change where statutory powers, planning scheme provisions and assessment of development applications are undertaken in good faith and in accordance with manual(s) prepared by the Tasmanian Government.

[16] **McElwaine, 2011, p. 24.**

Disclaimer

The purpose of this advice is for the Council generally and the Council should not rely upon it. No liability is accepted for the content of the advice, or for the consequences of any actions taken on the basis of the information provided. If the Council wishes to rely upon the advice it is recommended that they seek their own advice prior to doing so.

5. Implementation

The implementation of this Plan requires a co-ordinated approach, both across council business, in partnership with other councils, the regional authority and with external stakeholders. Key components of implementation include:

- a consistent process for plan endorsement by all councils of the region;
- a logical way for incorporation of key local risks and adaptation actions into council documents and processes such as risk registers, strategic plans, annual plans or asset management plans;
- an appropriate mechanism to implement sub-regional and regional adaptation actions either through advocacy or collaboration; and
- a mechanism for plan review and updating.

Implementation of the adaptation actions in this plan will provide Kentish Council with an initial response to the challenges posed by climate change. Effective implementation does not mean 're-inventing the wheel', to the contrary many of Council's current activities/operational practices can be modified to assist in managing future climate variability. To this end, it will be important that outcomes from the risk assessment process, used to support the development of this plan, are integrated with other Kentish Council strategic risk management and planning activities. It is recommended that a climate change 'champion' is appointed to oversee implementation of the actions included in this plan. Senior management will also provide a key role in plan implementation by remaining engaged with this process and through assuming responsibility for maintaining the risk assessment and implementing adaptation actions.

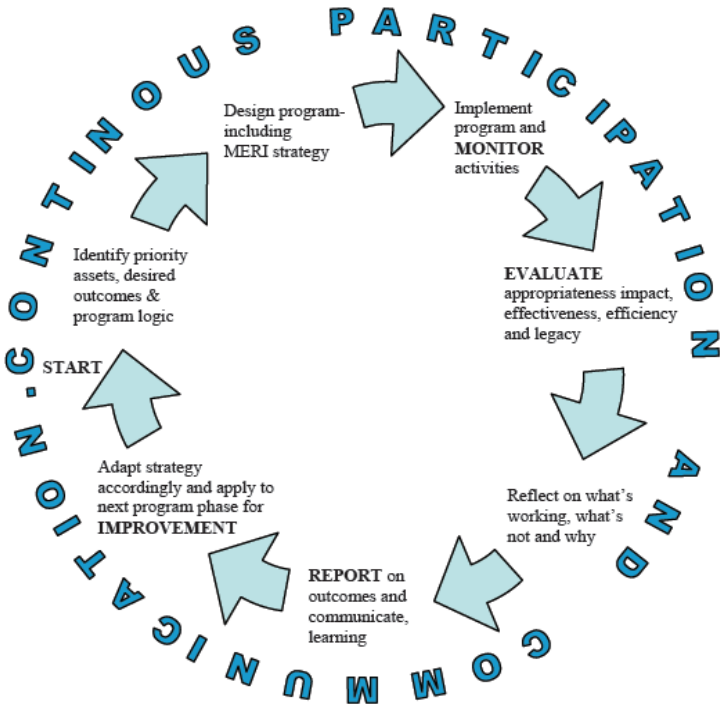
5.1 Financial and resource requirements

Financial and resource availability are critical factors for enabling implementation of adaptation actions. The adaptation options identified in this plan will come at varying degrees of cost and resource requirement. It is likely that Kentish Council will initially support implementation of those adaptation actions which are cost effective and align with current resource capacity and availability, this has been discussed in the 'multi-criteria assessment' section of this plan. Implementation of these actions i.e. 'low hanging fruit' will enable Council to gain some initial momentum in responding to impacts posed by climate change.

It is important to recognise that not all climate change action within Council will require its own funding, but will become embedded in the operational business of Council through appropriate governance arrangements, planning and policy. Notwithstanding this some of the more complex adaptation options may require substantial financial support and resources. For these actions, pursuing grant funding and establishing partnerships for collaborative or common actions can be effective in reducing the overall cost of action for Council, enabling the full cost of action to be offset.

5.2 Monitoring and Evaluation

Monitoring and evaluating the implementation of actions contained within this plan will be critical in tracking progress with regard to the appropriateness and effectiveness of actions. Monitoring, evaluation and reporting (MER) is a systematic and objective review of either (or a combination of) the appropriateness, efficiency, effectiveness and impact of a set of actions. An example of the key aspects of the climate monitoring, evaluation, review and improvement cycle are highlighted in diagram below.



Tracking progress against actions in this Plan is important to determine:

- Whether actions need to be reviewed; and
- Whether actions are being implemented via operational plans.

Ongoing monitoring of this Plan should include the following:

- Reporting of implementation of adaptation actions;
- Reviewing progress for each council business area;
- Testing whether actions are still relevant;
- Consideration of barriers and barriers to implementing this plan; and
- Consulting with external stakeholders to determine progress with regard to implementation of actions of a collaborative nature.

Annual monitoring of this plan should be reported in Council's annual report.

As discussed in the previous sections, this plan focuses on the treatment or priority climate change risks. Although non-priority risks are not addressed in this plan they should not be ignored. Council should maintain a 'watching brief' on non-priority risks rated as 'moderate' or 'low' as part of the plan review process. This would include:

- Reviewing the ratings of non-priority risks should new information become available; and
- Upgrading risks to priority risks and developing adaptation actions where appropriate.

It should also be noted that due to funding limitations this project has only been able to consider several of the priority risks which were identified through the Local Adaptation Pathways Program (LAPP). It is strongly recommended that Council review its climate change risk register and repeat this process in order to develop adaptation actions for all of its vulnerabilities.

The 'Toolkit' developed as part of the Regional Climate Change Adaptation Project will guide Council staff in revisiting the risk assessment and adaptation action processes used in the development of this plan. The Toolkit, as of June 2013, is being finalised prior to be hosted on the TCCO website.

5.3 Review

This plan should be reviewed every three years or earlier if circumstances require. Plan review will be required in context of:

- progress on initial actions;
- updated information on climate science and its relevance at the municipal scale;
- progress in regional and state-wide planning instruments, particularly in relation to codes that guide development in areas likely to be impacted by climate change e.g. the coastal zone;
- developments in State policy in relation to climate change and the coastal zone;
- changes to the legal framework in relation to council's liability in relation to managing climate change risk and implementing actions;

Appendix 1. Stakeholder Involvement & Collaboration

Climate change projections are likely to impact either directly or indirectly on all aspects of council function. Further to this, impacts are liable to be felt throughout the community and within many other organisations that council has direct involvement with. A collaborative adaptation response between all stakeholders is therefore essential for council to maintain its high service levels in a changing climate.

There is also a significant body of work currently being undertaken within other organisations throughout the community that contribute to meeting climate change adaptation objectives for Northern Tasmania, and that act to assist council in meeting its own objectives. It is therefore important that these linkages are identified; that complimentary processes value-add to one another and duplication of efforts is avoided wherever possible.

In order for there to be clear understanding of roles and responsibilities in relation to management of the identified climate change risks, together with recognition of opportunities to develop or strengthen existing collaborations, the Regional Climate Change Adaptation Project engaged with a number of key stakeholders. The following sections summarise the responses from these stakeholders

1. Aurora Energy

Aurora manages the local electricity distribution network around Tasmania and is the electricity provider for the majority of Tasmania's electricity usage. Many of council's services are dependent on the proper operation of Aurora's assets.

The Tasmanian Electricity Code governs Aurora, requiring it to maintain its infrastructure to minimise risks associated with the failure or reduced performance of assets. Thus, if the operating environment changes in a way that increases the risk of asset failure, as a result of climate change, then Aurora has an obligation to manage that change.

Aurora has not identified climate change as a key business risk, however the Distribution Business Division (responsible for managing Aurora's network) has identified climate change broadly as one of 19 divisional risks.

A key area of concern for Aurora is the lack of consultation during assessment of development applications in vulnerable areas. When new developments are approved by councils, Aurora is required under law to provide power to site. Aurora is not included in the planning assessment process and where proposals may be vulnerable to the projected impacts of climate change, delivery of this requirement may in the future become difficult. Collaboration in the planning approval stage could better manage these situations.

2. Dept. of Health and Human Services (DHHS)

The Department of Health and Human Services (DHHS) is responsible for delivery of integrated services that maintain and improve the health and wellbeing of individual Tasmanians and the Tasmanian community.

A national process, coordinated by the Department of Health and Aging, which is developing a national human health climate change adaptation plan, drives climate action for DHHS. The internal draft climate change plan is to be developed by the Australian Health Protection Committee's Environmental Health Committee, however there is no clear timeframe for its completion. It is not expected that climate impacts will be as significant as that experienced by other States.

In lieu of the national plan the DHHS does not currently have any documents for the management of climate change risks.

3. Dept. of Infrastructure Energy and Resources (DIER)

DIER provides infrastructure and related services for the social and economic development of Tasmania. DIER reports to the Minister for Infrastructure, Hon David O'Byrne MP; the Minister for Energy and Resources and the Minister for Racing, Hon Bryan Green MP; and the Minister for Sustainable Transport, Hon Nick McKim MP. By providing a strategic approach to the provision of both physical infrastructure and regulatory frameworks, DIER aims to (amongst other unrelated factors):

- Enhance infrastructure decision-making across Government;
- Facilitate a safe, sustainable and efficient transport system that enhances economic and social development, in the context of the challenges of climate change, and
- Promote reliable, efficient, safe and sustainable energy systems.

The state road network is approximately 3700km in length and includes approximately 800 bridge structures and 500 culverts. The network is divided in to three regional networks; each network has its own Network Manager (NM) and three Network Supervisors (NS). This structure sees each NS responsible for the management of approximately 400km of road. Not surprisingly, these staff have an in-depth knowledge of their 'turf' and the direct/indirect effects of extreme weather events. Therefore it is fair to state that DIER staff have inadvertently been documenting and managing the effects of a changing climate for some time now and are thus well positioned to manage the road network in to the future. DIER acknowledges that climate change per se has not featured prominently in past decision-making; however, this is not to say that DIER is unaware of the impacts of a changing climate. Climate change is but one element of the 'risk assessment' (RA) process. DIER acknowledges the significance/weighting of climate change within the RA process is increasing in-line with DIER's continually improving awareness and understanding.

DIER acknowledges that the impacts of a changing climate are highly varied, but notes there are impacts more likely to affect the serviceability of the state road network. From a DIER perspective, the key threatening climate change related impacts are:

- Increased intensity of rainfall events (and the effects of);
- Sea level rise, and
- Storm surge.

DIER has chosen not to independently fund climate change research; instead, opting for a collaborative approach that has to date, proven quite successful. Given that DIER has limited financial resources (at present and into future) with particular reference to climate change type investments; DIER will continue to support and sponsor collaborative research and the development of tools and applications that have the capacity to make DIER a 'more informed' client. In terms of projects, DIER has co-funded/sponsored three climate change related projects in the past 18 months; these include:

- Climate Futures Tasmania – Infrastructure (CFT-I);
- Greenhouse Gas Assessment Workbook for Road Projects – Transport Authorities Greenhouse Group (TAGG), and
- 'Carbon Gauge – Calculating the Greenhouse Footprint of Roads'.

DIER is considering a whole-of-asset risk assessment to identify those sections of the road network more at risk from the effects of climate change over the next 20-40 years for road infrastructure, and 100 years for bridges. Outputs from this project would then assist development of DIER's work plan for the next 5-10 years. Anecdotally, DIER considers that in the absence of major construction projects, managing the road asset for the effects of climate change should in fact be affordable under historical road transport funding levels.

4. Dept. Primary Industries, Parks, Water & Environment (DPIPWE)

DPIPWE have three key programs in relation to climate change adaptation:

- Natural Systems Resilient to Climate Change Project;
- Climate Change and Coastal Vulnerability Program; and
- Climate Change Impact Monitoring Program for the World Heritage Area (WHA)

Key elements of the Natural Systems Resilient to Climate Change Project are the unpublished report: [DPIPWE (2010) Vulnerability of Tasmania's Natural Environment to Climate Change: An Overview], and a series of relevant spatial resources:

- spatial layer predicting spread/occurrence of WONS (weeds of national significance) in the future;
1. spatial layer predicting areas that are not vulnerable to the root-rot fungus (*Phytophthora cinnamomi*);
2. spatial layer as a predictor of biosecurity and disease issues related to the natural environment;
3. spatial layer identifying fire 'refugia' i.e. areas in the landscape with low vulnerability to wildfire; and

4. spatial layer highlighting past glacial 'refugia', i.e. where vegetation communities have contracted to in the past during changing climate.

In combination, the spatial layers may be used to refine or compliment the 'refugia' analysis conducted by NRM South. Once defined, 'refugia' have the potential to be protected through the planning scheme as special areas. Additionally, each individual spatial layer may be used to inform development decisions and would be useful additions to the GIS data libraries of Councils.

Components of the *Climate Change and Coastal Vulnerability Program* include:

- the Climate Change and Coastal Risk Assessment Project which has tools and resources to assist with risk-based management and planning for various assets and values in the coastal zone; and
- The 'Sharples' Report – Indicative Mapping of Tasmanian Coastal Vulnerability to Climate Change and Sea Level Rise.

The Climate Change Impact Monitoring Program (WHA) includes:

- Vegetation community monitoring, particularly endemic conifers.
- Efforts to improve understanding of the effect of sea level changes on coastal geodiversity and biodiversity and identification of opportunities for adaptive management. There is alignment here with the NRM South saltmarsh inundation mapping project.
- A recently released report [Climate Change and Geodiversity in the World Heritage Area] which highlights how climate change may impact upon Tasmania's geological, geomorphological and soil features (and processes).

5. MAV Insurance Liability Mutual Insurance (LMI)

MAV Insurance Liability Mutual Insurance (LMI) is the primary insurer for all of the councils in Southern Tasmania. Many of the Councils have identified LMI as their most critical risk management framework that should be considered in climate change risk management and adaptation planning.

LMI does not have a statutory obligation to manage climate risks. They do however have a general commitment to assist member councils in effectively managing their risks with a focus on continuous improvement. LMI has developed a broad range of manuals and guidance documents for its members, although not specific and limited to climate change. These documents and support materials may be made available on request.

LMI conducts a biennial audit on all its members, part of which is an Organisational Risk Management section. As part of this section we examine the comprehensiveness of risk assessments for 4 risk areas of council in some detail, one of which is climate change.

LMI also has an internal risk register that includes risks to the scheme from a key claims driver view as well as unusual, new and emerging risks. Climate Change is one of the risks, and is being monitored by the Risk Committee. LMI is unable to provide this risk register to Councils, as it is an internal document only.

LMI does not dictate to members about how they manage their risks. Recommendations and suggestions for improvements may be made, however they have neither the power nor the inclination to 'demand' changes.

6. State Emergency Services (SES)

The State Emergency Services is the statutory authority that coordinates emergency management responses Tasmania-wide. It is a division of the Department of Police and Emergency Management and is comprised of both paid staff and volunteers. It has four core functions that are set out in the Emergency Management Act (Tas) 2006 s.26 as follows:

- The provision of advice and services relating to emergency management in accordance with emergency management plans or as otherwise authorised by the State Controller or Minister in writing provided to the Director SES, other than the provision of a service provided by another statutory service.
- The provision of services relating to rescue and retrieval operations as authorised by the Minister or State Controller.
- The provision of administrative services for the State Committee and each Regional Committee, including support in the preparation and review of emergency management plans as required by the State Committee and Regional Committees.
- The recruitment, training and support of volunteer members of the State Emergency Service.

Local Government is an important stakeholder in the delivery of emergency management responses and planning. It is identified in key SES documents and plans that set out the key roles and responsibilities of stakeholders. Pursuant to section 34 of the EMA each Council must: prepare an Emergency Management Plan: review the EMP every 2 years; appoint an emergency management coordinator and establish and maintain voluntary units.

The SES's response to climate change, through the 'Natural Disaster Resilience Program and other funding programs, has been to fund and engage in research initiatives that identify and seek to quantify key climate risks as they apply across Tasmania, including:

- Climate Futures Tasmania – Bushfire.
- Climate Futures Tasmania - Extreme Events.
- Clarence City Council study into the effect of sea level rise – this was the precursor to the current work that CCC has undertaken.
- Tasmanian Extreme Wind Hazards Stand-alone Tool (TEWHST).
- State Framework for natural hazards and Land Use Planning Project.

The SES is the custodian of a significant body of climate change data as a result of its involvement in the Climate Futures Tasmania project and collaboration with Geoscience Australia (Extreme Wind Hazard Project). Opportunities exist for the utilisation of this data to inform local, regional and state emergency management planning.

7. Tasmania Fire Service (TFS)

Tasmania Fire Service (TFS) is involved with multiple forums dealing with the impacts of climate change and the potential risks associated with the onset of climate change. Through the bushfire cooperative research council (BCRC) and the Australasian Fire & Emergency Service Council (AFAC), TFS is participating in research and modelling for bushfire. The research being conducted includes, looking at current bushfire risks and assessing current prediction tools to determine modelling for the future. This research will have a bearing on issues such as:

- resource to risk modelling;
- community protection planning;
- bushfire prediction tools;
- bushfire weather modelling;
- prescribed burning modelling; and
- fire management planning.

TFS has also participated in the Climate Futures for Tasmania Project, especially the 'Extreme Events' component. TFS will use this to map a pathway forward for future strategic planning.

Currently, TFS is reviewing the State Fire Protection Plan in which the above issues are called up. Additionally, as part of another review process, TFS is incorporating these developed strategies into its operational corporate plan.

From TFS's perspective the relationship with local government will be important, if not critical for future directions in climate change. Through the State Fire Management Council (SFMC), where LGAT is represented, TFS will engage with local government to ensure they are consulted regarding climate change and bushfire risk into the future. SFMC is currently lobbying State Government for funding to assist with additional programs to develop strategies for vegetation management for the mitigation of bushfires. This also includes legislative changes. Although currently in its infancy, this program will include climate change contingencies as part of the planning process. LGAT are an identified key stakeholder in this program and will be consulted throughout the development of this strategy.

SFMC provides a forum for local government to work with TFS and other land management agencies in relation to climate change and bushfire mitigation. At a 'coal face' level TFS will need to work closely with local government for the development of fire management planning, prescribed burning programs and development planning, especially in bushfire prone areas.

8. Tasmanian Planning Commission (TPC)

The TPC has formed a Coastal Planning Advisory Committee comprising two Commissioners, John Ramsay and Roger Howlett, the head of the Tasmanian Climate Change Office, Wendy Spencer, and the Deputy Secretary of DPIPWE, John Whittington, to:

- prepare a Coastal Planning Framework for consideration by Cabinet (The TPC has been requested by the Premier to prepare the framework following the Premier's decision to accept the TPC's recommendation to reject the revised draft State Coastal Policy);
- peer review and conduct community and stakeholder consultation on a draft 'coastal hazards' code prepared by the TPC's Policy Division; and
- coordinate the state-wide 'coastal hazards' code review with the formal assessment and determination of a state-wide 'flooding' code.

The Advisory Committee has commenced its review of a draft Coastal Planning Framework prepared by the TPC's Policy Division and is due to report to the Commission in the first half of 2012. It is anticipated that the draft 'coastal hazards' code will be released for informal comment in the first half of 2012 and submitted to the Minister for approval as a draft Planning Directive for formal advertising for representations and formal assessment and determination in the second half of 2012.

In terms of other natural hazards and risks, the TPC formed an Assessment Panel in the second half of 2011 to formally assess draft state-wide planning codes prepared by the TPC's Policy Division covering bushfire prone areas, flooding and landslide. These draft codes have been formally advertised and public hearings have been held involving local government representatives.