



NTARC

NORTHERN TASMANIAN ALLIANCE
FOR RESILIENT COUNCILS



BREAK O'DAY COUNCIL

Corporate Climate Change
Adaptation Plan 2024



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Break O’Day Council Climate Change Adaptation Plan
NTARC 2024

November 2024

Authors: Dr. Graham Green, Southern Midlands Council and Katrina Graham, Northern Tasmanian Alliance for Resilient Councils

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Summary

Overview

The Break O’Day Council Climate Change Adaptation Plan (the Adaptation Plan) aims to improve the capability of the Break O Day Council to manage and adapt to the risks associated with the changing climate across its infrastructure, services, and programs. It provides a framework to introduce organisational change and embed climate risks into its decision-making.

Climate change adaptation is defined as *action taken to prepare for actual or expected changes in the climate in order to minimise harm and to cope with consequences.*

This Adaptation Plan has been prepared by the Northern Tasmanian Alliance for Resilient Councils. NTARC is an initiative of eight north eastern councils to develop evidence-based foundations for understanding their climate risk and exposure; increasing their capacity and capability to respond, share knowledge; ensure efficient resource use and scale action.

The Adaptation Plan identified 19 climate-related risks, associated with rainfall and flooding, bushfire, coastal and combined hazards, for the Council: three were rated as high, 10 medium, and six low. No extreme risks were identified, and risk statements for the highest rated risks, together with existing controls and proposed additional treatments were developed, alongside processes to increase organisational climate governance.

Break O Day Council and the changing climate

Break O’Day Council has always been vulnerable to significant flooding, particularly in the Georges River catchment which can directly impact the largest population centre and isolate other communities when major access roads are cut. The scale of flooding and the ensuing impact on infrastructure and community wellbeing is escalating due to climate change. Short-duration intense rainfall is also occurring more often, and this can have a day-to-day effect on the municipal area, particularly due to its effect on road assets and stormwater systems.

Climate change is increasing the Council’s costs associated with the repair of assets, maintenance of service levels, and support for the community during extreme events which includes flooding, extreme wind, bushfire and heatwave. The unpredictability in the scale and timing of natural disasters presents challenges for the Council’s long term financial planning, concerns as to the adequacy of financial contingencies, and increased reliance on external funds to assist with recovery. Unpredictability also challenges how to best allocate resources for building resilience into the Council’s operations.

Increasingly local government insurers are advising that councils implement measures to demonstrate that the climate risks are understood, and efforts are the underway to reduce the exposure to impacts across council owned assets and services, and in their decision making. Additionally, communities are expecting councils to develop responses to increasing natural hazards and the changing climate.

This Adaptation Plan builds upon an extensive body of work already undertaken by Break O’Day Council and aims to improve the capability of the Council to manage the risks associated with climate change across its infrastructure and services. It addresses climate related risks across the Council’s business areas, overarching corporate considerations, and the role of governance. Future modelled climate data, specific to the Break O’Day municipal area, was used to frame specific climate risks drawing upon the on-ground expertise and knowledge of council staff. Importantly it establishes a baseline and platform to enable the council to monitor and strategically manage climate risks and responses and scale across the northeastern councils.

Key climate change vulnerabilities identified for Break O' Day Council :

The key climate change vulnerabilities, the likelihood that exposed assets, services and communities will be adversely impacted, identified for the Break O Day Council are:

- Heavier rainfall, flooding and erosion by runoff, resulting in increased cost burden to council for repair and maintenance of damaged roads and associated infrastructure, with flood damage particularly along Ansons Bay Rd, Reids Road, Upper Scamander Road, and St Columba Falls Road.
- Heavier rainfall events resulting in increasing likelihood that stormwater infrastructure will be under-capacity resulting in increased overland flow, localised flooding, and costs to council for cleanup, repairs and potential upgrades to maintain expected service levels.
- Heavier rainfall exacerbating the likelihood of landslip and potential for damage to Council assets or disruption to services e.g. Falls Road, St Helens Point Road.
- Increasing frequency and intensity of bushfires resulting in increasing likelihood of damage to infrastructure and assets, particularly road surfaces and bridges, and extensive additional resources for clean-up, having consequences for budgets.
- Increasing frequency and intensity of bushfires exacerbating the potential for evacuation and access issues on roads to vulnerable localities, having implications for council's emergency preparedness, e.g. Powers Rd, Pyengana and Stieglitz.
- Increased inundation from storm tide events resulting in the loss of or damage to Council assets requiring increased maintenance and capital expenditure and potentially reduced service levels.
- Changes in sea level and the frequency of coastal/estuarine inundation events placing pressure on council to protect private assets, manage expectations, and find acceptable solutions.
- During flood events, Georges River flood flows combined with high stormwater flows, storm surge and sea level rise, result in inundation and flooding around Georges Bay and in St Helens. This is occurring to higher levels more often, increasing emergency management, infrastructure and planning demands on Council.
- Increasing exposure of developments to climate-related hazards requiring developers to engage consultants to address regulatory requirements resulting in reliance by Councils without the specialist and technical expertise to assess consultant's reports, and if challenged Council's incurring additional costs to defend or engage technical expertise.

Key drivers of Break O Day Council's climate adaptation planning:

The key drivers of the Break O Day Council's climate adaptation planning , to mitigate climate impacts and increase resilience include:

- observed impacts to council infrastructure and disruptions to services from extreme events, and emerging conditions that have not been experienced before
- managing the financial consequences of escalating extreme events
- meeting expectations of Council's insurers in mitigating climate impacts
- managing legal liability in relation to development decisions and asset performance
- meeting community expectations.

Top Rated Identified Risks & Actions

The risk management approach used in this Adaptation Plan was undertaken in accordance with the Risk Management Standard ISO 31 000. Future modelled climate data, specific to the Break O’Day municipal area, was used to frame specific climate risks drawing upon the on-ground expertise and knowledge of council staff. Nineteen risks were identified. Three of these risks were rated as high, ten medium, and six rated as a low risk. The highest rated risks for Break O’Day Council are associated with damage to infrastructure and community disruption from heavy rainfall, flooding and bushfire. The risk statements, existing controls and proposed additional treatments are as follows:

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
<p>Flood Damage to Infrastructure Heavier rainfall events resulting in increased cost burden to council for repair of flood damaged roads and associated infrastructure.</p>	Works & Infrastructure	Almost certain	Moderate	High	<p>Gradual infrastructure improvements and upgrades at the end of asset lifecycles - prioritised according to vulnerability assessments.</p> <p>Gradual improvement of road drainage.</p> <p>Budget contingency as part of financial planning.</p> <p>Abandonment of some road assets based upon multi-criteria analysis and or cost benefit analysis that incorporates usage levels and maintenance costs.</p> <p>Flood mapping/modelling to 1% AEP.</p>	<p>Undertake an audit to identify vulnerable assets in relation to climate projections.</p> <p>Based upon the audit of vulnerable assets, flag identified vulnerable assets in the <i>Strategic Asset Management Plan</i> and capital works plans.</p> <p>Undertake a multi-criteria analysis to determine asset management priorities.</p> <p>Identify a process for disclosure and sharing of flood risk data and knowledge.</p>

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
<p>Bushfire Impact on Infrastructure Escalating frequency and intensity of bushfires will result in increasing likelihood of damage to infrastructure and assets such as road surfaces, bridges, recreational infrastructure - and extensive additional resources for clean up and repair, having an unforeseen impact on budgets.</p>	Works & Infrastructure	Likely	Moderate	High	<p>Ensure flammable vegetation is removed from the proximity of infrastructure and that mechanisms to minimise implications of ember attack are implemented.</p>	<p>Identify the high risk assets.</p> <p>Review insurance cover for potentially exposed assets.</p> <p>Manage road corridors to reduce flammability and the risk of bushfire damage to infrastructure.</p>

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
<p>Bushfire & Access Issues Increasing frequency and intensity of bushfires exacerbating the potential for evacuation and access issues on roads to vulnerable localities, having implications for council's emergency preparedness, e.g. Powers Rd, Pyengana and Stieglitz.</p>	Corporate Services	Likely	Major	High	<p>Planning for potential installation of new passing bays to enable more effective traffic management in emergencies.</p>	<p>Identifying potential alternative access routes.</p>

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
<p>Bushfire & Emergency Response Increased call on Council's emergency response team in the face of the threat of unprecedented fire emergencies resulting in an urgency to ensure evacuation centres are fit for purpose and procedures and action plans cover all potential scenarios, including strategies to cope with power and communications outages, security and water supply.</p>	Corporate Services	Almost certain	Minor	Medium	<p>Regular review and update of Council's Emergency Management Plan and procedures.</p> <p>A clear contingency plan to ensure there is a back up plan for power and communications and enough resources to keep people going for a number of days e.g. water, sanitation, food.</p>	<p>Examining opportunities to increase the size of Council's emergency response team.</p> <p>Climate change implications for emergency management considered in an update of the Break O'Day Emergency Management Plan.</p>

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
<p>Flood Damage to the Bike Track Network Heavier rainfall resulting increased cost burden to council for repair and maintenance on the footpath and bike track network.</p>	Works & Infrastructure	Almost certain	Minor	Medium	<p>Maintenance of drainage on the network together with well designed and constructed tracks.</p>	<p>Redesign and realignment of tracks where necessary.</p> <p>Inclusion of gravel and FRP grating to build resilience to tracks in vulnerable locations.</p>

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
Flooding & Community Isolation Heavier rainfall events leading to more extensive road inundation (e.g. Ansons Bay Rd, Binalong Bay Rd, Reids Rd, and St Helens Point Road) leading to periods of community isolation and disruption of council services to these areas.	Governance	Almost certain	Insignificant	Medium	Address community expectations - through a communications plan. Early warning systems at St Marys. Closing roads where appropriate. Mobilisation of operational teams rapidly to get roads reopened.	Improve alternative access road and infrastructure e.g. Reids Rd bridge, to build resilience against flooding. A flood management system and flood warning for Binalong Bay. Climate change implications for emergency management considered in an update of the Break O'Day Emergency Management Plan.

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
Heavy Rainfall & Stormwater Heavier rainfall events resulting in increasing likelihood that stormwater infrastructure will be under-capacity resulting in localised flooding, and costs to council for cleanup, repairs and potential upgrades to meet service levels objectives.	Works & Infrastructure	Almost certain	Minor	Medium	Regular maintenance program - pit cleaning and upgrades to pits and pipes where necessary. Placing requirements on developers to contribute resources to the system downstream and to map overland flow paths. Defined service level (i.e. system designed to cope with at least 1:10 year flood). Flood mapping/modelling.	Audit stormwater assets to determine condition and vulnerability, flag identified vulnerable assets in the <i>Strategic Asset Management Plan</i> and capital works plans. Undertake a multi-criteria analysis to determine asset management priorities. Incorporation of 'Water Sensitive Urban Design' principles into new developments and as retrofits to existing systems - design for retention and absorption. Communicate service levels to the community (and how these may change over time as the scale of floods escalates) to manage expectations.

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
Heavy Rainfall & Landslip Heavier rainfall exacerbating the likelihood of landslip and potential for damage to Council assets or disruption to services e.g. Falls Road, St Helens Point Road.	Works & Infrastructure	Possible	Minor	Medium	Monitor known sites and restrict use, particularly heavy vehicle access. Make sure roadside drains are cleaned.	

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
Heat Impact on Trees & Reserves Increasing temperature, more heatwaves and longer dry spells affecting the 'livability' of towns through impacts to trees along streets, in parks, reserves and playgrounds.	Works & Infrastructure	Possible	Minor	Medium	Street Tree Policy and Procedures.	Street Tree Policy updates to account for appropriate tree species selection in the eventuality of harsher conditions. Position trees to provide cooling and shade benefits for the community.

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
Sea Level Rise Impact on Assets Increased inundation from storm tide events resulting in the loss of or damage to Council assets (such as St Helens Point Rd, coastal footpaths and recreational areas) requiring increased maintenance and capital expenditure and potentially reduced service levels.	Works & Infrastructure	Almost certain	Minor	Medium	Increasing maintenance and betterment works.	Audit assets vulnerable to storm tide and inundation and develop a strategy to address the impact over the long term. Based upon the audit of vulnerable assets, flag identified vulnerable assets in the <i>Strategic Asset Management Plan</i> and capital works plans. Undertake a multi-criteria analysis to determine asset management priorities. Ensure any new infrastructure is not within coastal hazard zones.

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
Sea Level Rise & Policy Changes in sea level and the frequency of coastal/estuarine inundation events placing pressure on council to protect private assets, manage expectations, and find acceptable solutions.	Development Services	Likely	Insignificant	Medium		Adopt a Coastal Hazards Policy to guide decision making (e.g. Kingborough Council's Policy). Community education program around council roles and responsibilities in regard to coastal protection, development and planning considerations.

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
Combined Hazards & Inundation During flood events, Georges River flood flows and storm surge result in inundation and flooding around Georges Bay and in St Helens. This is occurring to higher levels more often, increasing demand for emergency management support and mitigation of impact on infrastructure.	Works & Infrastructure	Likely	Minor	Medium	Provision of sand bags, plant and equipment and labour to assist with protection works. Road signage and traffic management.	

Risk Statement	Primary business area impacted	Likelihood	Consequence	Risk rating	Existing Controls	Proposed Additional Treatments
Combined Hazards & Development Increasing exposure of developments to climate-related hazards requiring developers to engage consultants to address regulatory requirements resulting in reliance by Councils without the specialist and technical expertise to assess consultant's reports, and if challenged Council's incurring additional costs to defend or engage technical expertise.	Development Services	Almost certain	Minor	Medium	Planning scheme controls. Statewide data sets (The LIST). Council flood modelling. Engagement of specialists for additional advice at additional cost to council.	Seek cost recovery for additional advice where council doesn't have the in-house capacity to make the assessment. Sectoral support mechanisms through engagement with LGAT - panel of providers.

Asset Management Plan of Action

Projected increases in the intensity and frequency of extreme events directly impact on the Council's asset base with significant and unpredictable financial and service delivery implications. The Council's stormwater system for example is designed for historical climate, however with projected climate change the system will not perform as well, and this is already being observed. Increasingly the Council is allocating resources for peer review of stormwater modelling undertaken by developers, obtaining correct information on which to base decision making is becoming an increasing challenge.

The Council will need to consider the additional cost of managing assets at the current acceptable level of service, and either fund that cost, or accept that a greater frequency of inundation events, and reduced service levels is likely. This may result in community inconvenience, safety issues, and potentially legal liability for damage to property from poorly performing council infrastructure and reputational damage.

Break O'Day has mapped an effective approach to asset management due to escalating climate hazards as follows:

- Identify and Assess the Climate Risk
 - Climate hazard mapping of assets.
 - Vulnerability assessment, including material durability, of assets.
 - Lifecycle management and planning, and adjustment of renewal schedules for assets where necessary.
 - Risk-based asset prioritisation using multi-criteria assessment (MCA) to prioritise funding.
- Financial Planning for Climate Risk
 - Establish a Climate Resilience Fund as part of Long-Term Financial Planning (linked to Asset Management Plans) that dedicates resources for prioritised adaptation / resilience projects.
 - Build up a contingency reserve dedicated to climate related events that enable quick responses to emergency situations such as damage to infrastructure.

- Communication and Awareness
 - Develop a communication strategy and collateral to ensure the Council’s role and capability is well understood, and communities are aware of risks.
- Review, Monitor and Report
 - Developing reporting indices to enable the measurement of the Council’s resilience program such as: asset failure rates during extreme events, numbers of resilience upgrades and community satisfaction to response times.
 - Undertake regular reviews of assets and priorities as new information and climate data becomes available.

The approach above is outlined in Figure 1 below

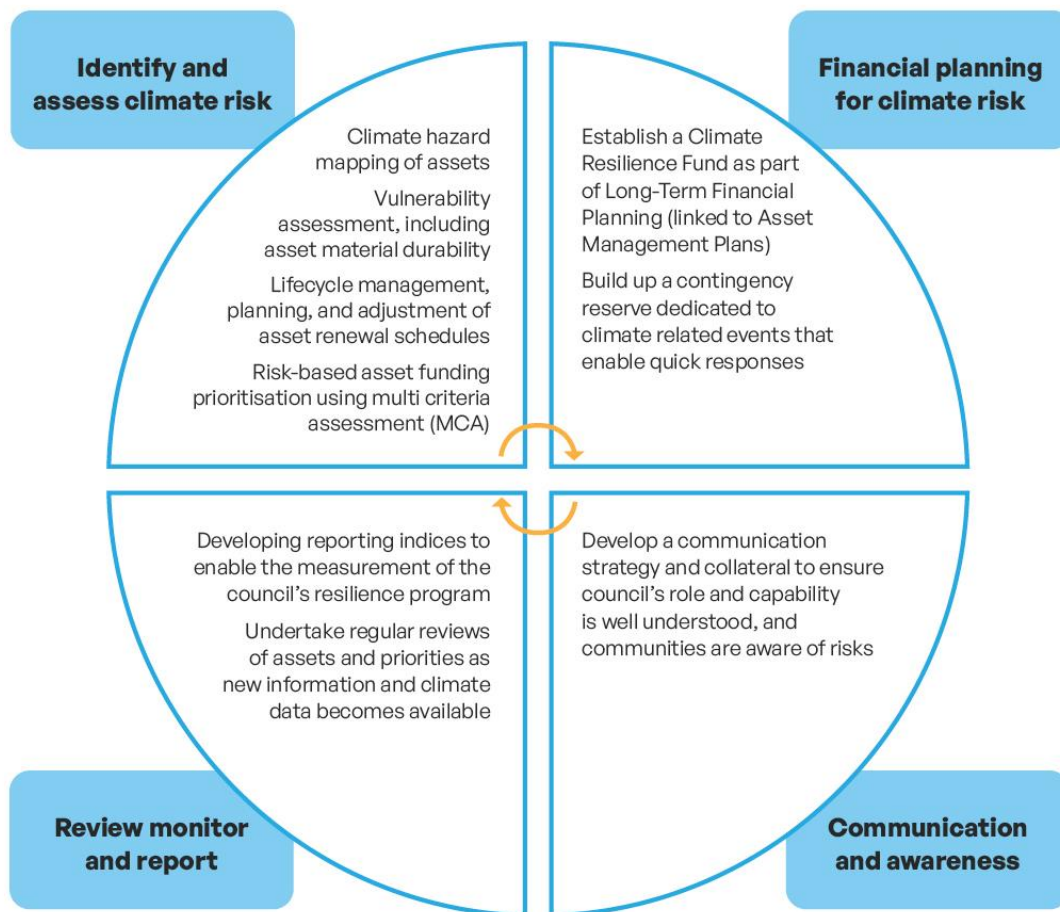


Figure 1 – Managing asset management in an escalating climate

Key Corporate Governance Actions

Good governance is about leadership and ensuring that climate change planning is guided from the top rather than reliant upon a climate change ‘champion’ within the staff. The effective uptake and mainstreaming of climate adaptation within a council is enabled through the support and leadership of Executive Management.

Key corporate governance actions recommended to ensure climate change risks are incorporated existing governance structures, and to manage legal liability and emergency response are:

- Management of legal liability in relation to development decisions and asset management which includes:
 - keeping up to date on general climate change science and information, particularly in relation to potential risks from natural hazards
 - 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
- Emergency response plans should be reviewed, developed and implemented considering hazard changes under climate change projections. Up to date emergency response procedures can minimise consequences when extreme events occur.
- Incorporation of climate change action into existing documents and processes such as the Strategic Plan, Annual Plan and Annual Report, Long Term Financial Management, Asset Management Plans and Strategies and Risk Register.
 - Consideration of climate change in the Strategic Plan demonstrates leadership resulting in a higher likelihood of the issue being mainstreamed across Council’s operations.
 - Climate change is highly likely to impact the Council’s financial performance including increased costs associated with asset management, service delivery, and insurance, and potential pressure on revenue streams through decline in rateable property value in hazard prone areas. An identified way to source funds for climate change adaptation action becomes the enabler of actions that will ultimately save money for council by reducing the impact of climate hazards.
 - Incorporation of defined risks and actions into the corporate risk register demonstrates to the Council’s insurers and finance providers that risks are understood, acknowledged, rated, and that there is a plan of action to address them. Detail in the corporate risk register becomes the engine room to drive action across the organisation.

The Table 1 Climate Change Adaptation Implementation Priorities, overpage, outlines key actions that support and strengthen climate governance within the Council, and assigns key personnel who are responsible for their implementation.

Evaluation of climate change adaptation progress can be achieved using key maturity measures developed for all council business areas and functions. Some example climate maturity measures, adapted from the Tasmanian Climate Resilient Councils are provided in the document.

This Adaptation Plan recommends a mechanism to implement regional adaptation actions where common and shared issues are identified across councils through both a regional adaptation strategy and ongoing involvement with the Northern Tasmanian Alliance for Resilient Councils to progress actions collaboratively.

Table 1: Climate change adaptation - Implementation Priorities

Strategic Priority Action	Comment	Responsible
Endorsement of the Council Climate Adaptation Plan	Adoption of Adaptation Plan either for operational purposes by Executive Management, or formal endorsement by the Council, committing to its implementation and positively demonstrating leadership.	General Manager
Integrate climate change risk management into existing Council wide risk assessment framework.	Inclusion of climate risks in the Council’s existing risk management processes, mainstreams climate considerations within the Council’s governance processes and ensures that climate risks are addressed.	General Manager Corporate Services
Assign an officer to oversee climate change activities and implementation of this Adaptation Plan.	The appointment of a council officer to oversee the implementation of actions outlined in the Adaptation Plan, provides a central point of contact within the Council, and responsibility for its implementation.	NRM Facilitator
Consideration of climate change risks and impacts during the development of other Council strategies, policies and plans.	The climate impacts, risks and responses contained in the Adaptation Plan should be considered in the development of plans, policies and strategies to enable incorporation across the council’s functions. This will also establish mechanisms for the implementation of actions.	Community Services Infra. & Develop. Corporate Services Governance
Report on climate change adaptation progress into any future publicly available documents or reports.	Reporting/communicating on climate change adaptation progress will assist in normalising and engaging the elected representatives, the community and informing other councils on Council’s progress.	Executive Management Team
Development of climate maturity measures	Climate maturity measures can be reported on through the Council’s annual report and other reporting mechanisms incentivising continuous improvement.	Executive Management Team NRM Facilitator NTARC Manager
Ensure that the projected climate impacts are properly considered in the 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.	Executive Management Team NRM Facilitator
Support the implementation of Northern Tasmanian Alliance for Resilient Councils and its delivery of programs across the region.	The Northern Tasmanian Alliance for Resilient Councils aims to drive adaptation in local government for the region and deliver on common actions that are relevant to its member councils. The success of this Adaptation Plan is dependent on a high level of buy in from each of the councils across Northeastern Tasmania.	General Manager Executive Management Team NRM Facilitator NTARC Manager

1.0 Introduction

Break O'Day Council has been active in building awareness of, and developing an approach to managing, the hazards associated with climate change for over a decade number of years. This has been proactively led by staff and their commitment, and a growing awareness, through experience, that the municipal area is acutely exposed to hazards, particularly from flooding and bushfire.

This Adaptation Plan incorporates the intent, and findings of Council's previous adaptation action projects¹, and aims to continue to improve the capability of Council to manage the risks associated with climate change so it can:

- Establish a baseline for understanding, monitoring and implementing responses to climate risks and hazards.
- Increase the capacity of the Council to protect and strengthen assets, and to understand challenges to its service delivery.
- Prepare as effectively as reasonable for intensifying natural hazards through clarification and prioritization of risks and addressing any information/knowledge gaps.
- Reduce exposure to potential liability in decision-making.
- Minimise financial risks through effective asset and strategic planning.
- Effectively engage with the community and stakeholders regarding the Council's roles and responsibilities to enable effective collaboration and to manage expectations.
- Identify capacity limits and financial constraints, and find appropriate ways to address these through collective advocacy and regional responses.
- Identify key performance indicators to support ongoing management and responses.
- Review and monitor treatments regularly to identify emerging risks associated with the emerging conditions.
- Scale risks and adaptation responses regional to ensure resource efficiencies and avoid duplication.

Climate change adaptation is defined as action taken to prepare for actual or expected climate changes:

- in order to minimise harm; and
- to cope with the consequences.

Extreme weather events, once deemed a rare occurrence, are evolving into a 'new normal' and need to be managed. The majority of Australians (80%) have experienced some form of extreme weather disaster since 2019².

It is unusual if a year goes by without a destructive downpour, heatwave or a bushfire that re-defines expectations. Recent examples in Tasmania include:

- the out-of-season bushfires at Freycinet and Dolphin Sands in winter-spring 2023;

¹ Break O'Day Council – Climate Change Action 2023; Workshop Series Outcomes Climate Change Action 2022 – www.bodc.tas.gov.au

² Climate Council (2023), Climate Trauma: The growing toll of climate change on the mental health of Australians. www.climatecouncil.org.au/resources

- the unprecedented deluge in St Helens in February 2024 where recently upgraded stormwater systems failed to cope with the rainfall volume;
- the heatwave across northern Tasmania in March 2024; and
- major flooding in the Meander and Derwent catchments in combination with statewide record winds gusts in September 2024.

Recorded extreme weather events have increased worldwide by 90% over the past 20 years. Since 2020, 13 natural catastrophes were declared in Australia and \$17 billion in insurance claims were paid.³

The cost of natural disasters in Australia is expected to rise from an average \$38 billion currently to closer to \$94 billion per year by 2060⁴. For Tasmania, the costs could increase to about \$600 million per year by 2050⁵.

Climate change is affecting how local government delivers its critical services and maintains infrastructure that the community depends upon by magnifying the threats that extreme weather events have always posed.

Climate change adaptation is relevant across all of a council’s business areas as shown in Figure 2 below:

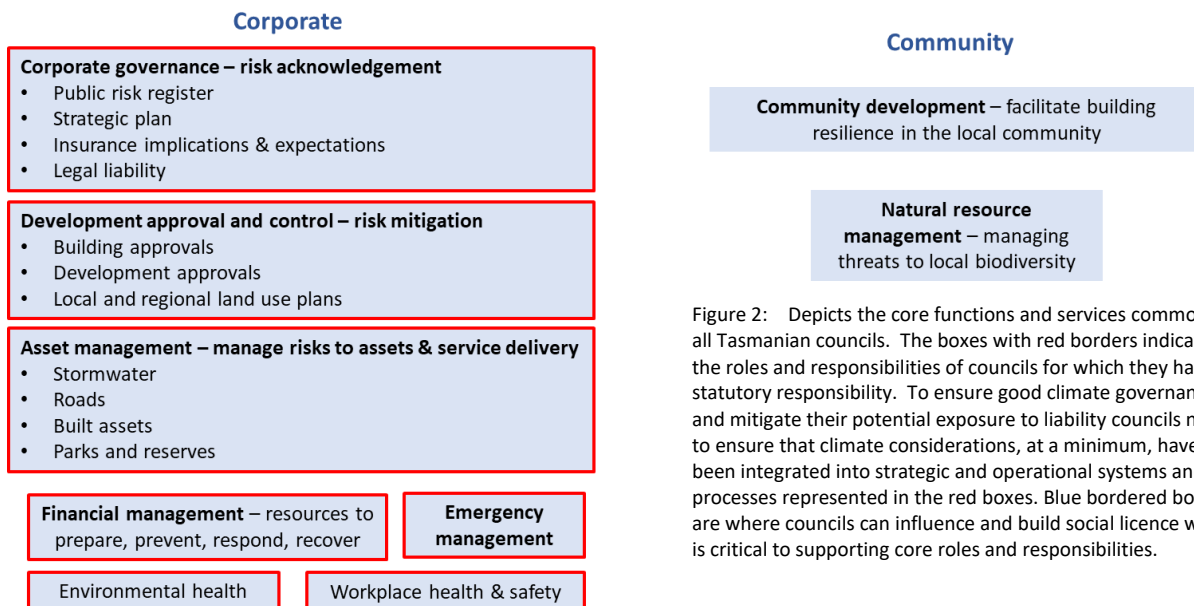


Figure 2: Depicts the core functions and services common to all Tasmanian councils. The boxes with red borders indicate the roles and responsibilities of councils for which they have statutory responsibility. To ensure good climate governance and mitigate their potential exposure to liability councils need to ensure that climate considerations, at a minimum, have been integrated into strategic and operational systems and processes represented in the red boxes. Blue bordered boxes are where councils can influence and build social licence which is critical to supporting core roles and responsibilities.

Climate change risk statements, and ratings, developed based on a standard risk management approach (ISO 13000), form the basis of this Plan. The risk management approach used in this Adaptation Plan was undertaken in accordance with the Risk Management Standard ISO 31 000 and is based upon the following principles: Establishing the Context; Risk Identification; Risk Analysis; and Risk Treatment.

Risk assessments are a commonly utilised approach to identify and quantify the potential impacts of climate change. Formulation of risk statements were informed by climate change modelling specific to the Break O’Day municipal area and involved input from the Council’s staff representing all business areas.

³ Insurance Council of Australia

⁴ Update to the economic costs of natural disasters in Australia – Australian Business Roundtable for Disaster Resilience & Safer Communities – Deloitte Access Economics

⁵ <https://www.lgat.tas.gov.au/lgat-advocacy/emergency-management#:~:text=The%20costs%20associated%20with%20natural,around%20%24600%20million%20for%20Tasmania.>

For each risk statement current controls and additional adaptation actions are identified, including responsibility, and timeframes. For some risks and actions, stakeholders are identified for situations where it provides greater efficiencies for councils to work collaboratively to manage climate change hazards.

‘Investment’ in adaptation actions can be based upon factors such as risk priority and a cost benefit analysis which weighs up factors such as the value of the asset, the importance of the asset to the community and the average annual cost of protecting and maintaining the asset.

Experience has demonstrated that adaptation investments exponentially decrease economic losses from climate impacts and bigger investments leads to lower losses. However, there will always be costs from residual climate change impacts that adaptation cannot alleviate⁶. The World Resources Institute finds that every dollar invested in adaptation yields net economic benefits ranging from \$2 to \$10⁷.

This Adaptation Plan is developed under the Northern Tasmanian Alliance for Resilient Councils (NTARC) program – see Figure 3. It builds on two comprehensive Tasmanian local government adaptation programs, developed by councils for councils:

- the Southern Councils Climate Collaboration Project (2021-24)
- Regional Councils Climate Adaptation Project (2011 – 2014)

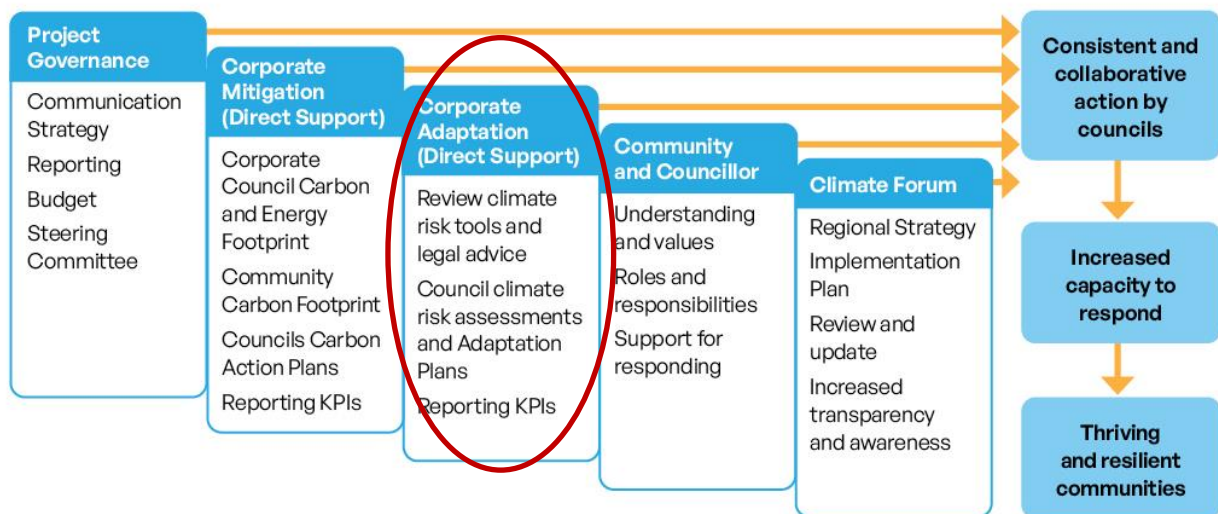


Figure 3: shows delivery of the NTARC program to increase the capacity and capability of councils to develop evidence-based response to climate change, to create thriving and resilient communities.

⁶ European Environment Agency 2023: assessing the costs and benefits of climate change adaptation.

⁷ World Resources Institute 2023: Adapt Now: A global call for leadership on climate resilience.

1.1 Climate Change Adaptation Plan Background

The Northern Tasmanian Alliance for Resilient Councils (NTARC) is a Partnership Agreement by the Executive of the eight north eastern Tasmanian councils to harmonise climate action and resilience. It is developing evidence-based foundations for understanding councils' climate risk and exposure and reducing their emissions, increasing capacity and capability, embedding responses across their organisations, sharing knowledge, ensuring efficient resource use and scaling action. It consists of two components:

- A regional collaboration to coordinate climate resilience; and
- Capacity building across all councils and individual support for opt-in councils.

NTARC emphasises, in the first instance, the development of actions and responses where a council has direct control, ownership and/or a role and responsibility, for an asset, program or service to ensure:

- climate impacts/risks (adapt) are understood and managed, and
- emissions, and energy use, are reduced (mitigate).

By ensuring that councils organisationally understand their roles and responsibilities they are able, from this evidence base, to engage with elected representatives, communities and stakeholders to inform and demonstrate leadership that increases resilience and supports thriving communities in the face of climate change. The following objectives informs a collaborative and consistent climate resilience framework by:

- Providing a clear set of principles to guide councils in responding to climate change adaptation and mitigation.
- Strengthening the resilience of councils to climate impacts locally and regionally, and contribute to managing the transition to low carbon economies.
- Reviewing existing strategies and plans and identify necessary updates.
- Providing strategic direction for key council functions including land use planning, infrastructure/assets management, natural resource management, recreational and cultural values.
- Building awareness of potential liability for decisions and actions associated with climate change impacts, risks and hazards.
- Directing awareness to what councils' key stakeholders are doing to adapt to climate change to encourage collaborative responses, resource sharing, and effective communication.

1.2 Climate Change Adaptation Plan Context

In Australia, “Local governments are on the frontline in dealing with the impacts of climate change. They have an essential role to play in ensuring that local circumstances are adequately considered in the overall adaptation response, and local communities are directly involved in adaptation efforts. Local governments are well positioned to inform State and Commonwealth governments about on-the-ground needs of local and regional communities, communicate directly with those communities, and respond to local challenges⁸.” Figure 4 provides an overview of council’s spheres of control and influence for climate action.

Specifically local governments are responsible for:

- Delivery of adaptation responses that align to State and Australian Government legislation.
- Provision of information about relevant climate change risks and contribution of appropriate resources to prepare, prevent, respond and recover from detrimental climatic impacts.
- Informing other levels of government about the on-the-ground needs of local and regional communities.
- Managing risks and impacts to council’s public assets and to local government service delivery.⁹

Scope is also afforded to Tasmanian councils to address climate change under the *Local Government Act (Tas) 1993*, which describes the role of 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.¹⁰ Additionally the Local Government (Content of Plans and Strategies) Order 2014 s.8. (2) (2) (b) (vii) requires councils to have in place an Asset Management Policy that includes the planning for climate change adaptation and mitigation.¹¹

In managing and preparing for the impacts of climate change, local government is well positioned to work with communities due to its:

- 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.

Local experience, in combination with relevant scientific data and technical expertise, provides the basis for undertaking a well-informed ‘risk management’ approach to climate change. Effective adaptation requires a portfolio of actions, ranging from fortifying infrastructure to advocacy and collaboration. There is also an appreciation that managing climate change risks has benefits, regardless of the magnitude of climate change that occurs. It is a ‘no regrets’ approach that can bolster infrastructure, reduce risk and liability, improve community well-being, and protect biodiversity.

⁸ [National Climate Resilience and Adaptation Strategy 2021 to 2025 \(dceew.gov.au\)](https://www.dcceew.gov.au)

⁹ Role and Responsibilities for Climate Change Adaptation in Australia, Council of Australian Governments Select Council on Climate Change 2012

¹⁰ *Local Government Act (Tas) 1993*.Section 20 Function and Powers.

¹¹ <https://www.legislation.tas.gov.au/view/whole/html/inforce/current/sr-2014-035>

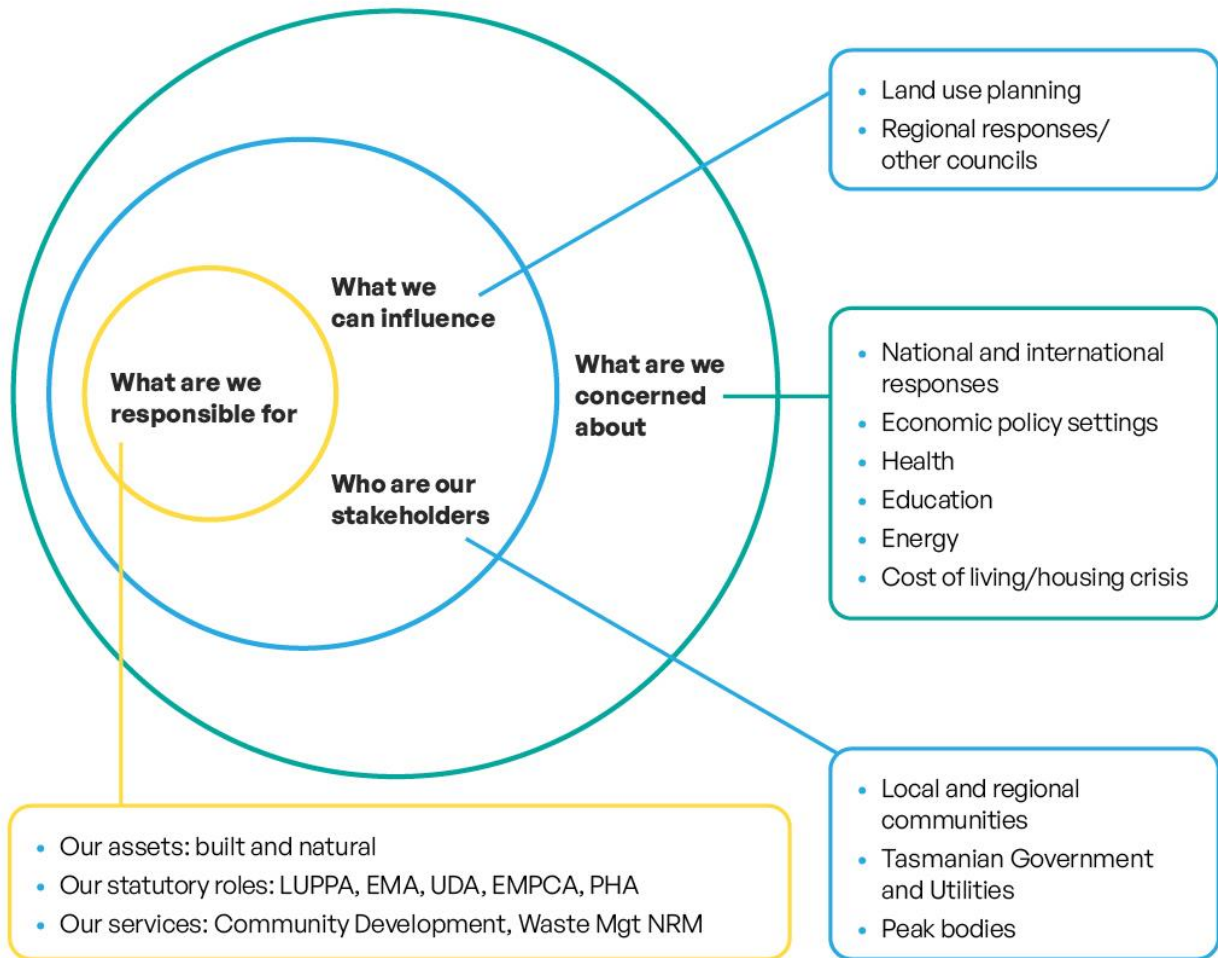


Figure 4 shows the spheres of influence control for councils and climate action. The spheres depicting where council control, influence and concern, and is critical to understanding where and how ensuring decision making is most powerful and effective, as well as providing transparency to stakeholders and community for responses.

1.3 Climate Change Summary Data for Break O’Day Council

The development of this Climate Change Adaptation Plan was based upon council-specific, climate projection data provided by Climate Futures for Tasmania. Modelled future climate is continually becoming a more exact science as real-world data is fed back into models helping validate outcomes and improve forecasts. The modelling equips us well to forecast future scenarios in relation to council’s assets and functions. However, climate change is likely to deliver surprises and potentially unforeseen outcomes through intensifying and intersecting climate driven hazards.

The information in Table 2 below is a summary of Climate Futures data relevant to the Break O’Day municipal area.

Table 2: Break O’Day future climate projection data– from Climate Futures Tasmania (average sub region data) 2019 RCP 8.5 (business as usual) scenario¹²

	Baseline 1961-1990	Current 2020-2040	Mid-century 2040-2060	End of century 2080-2100
Average daily maximum temperature (°C)	16.2	17.1	17.8	19.2
Average annual hot days (above 30°C)	2	3	5	8
Average annual cumulative Forest Fire Danger Index	700	761	803	1064
Asphalt - critical viscosity	54400	80300	134900	169800
	Baseline 1961-1990	Current	Mid-century 2040-2060	End of century 2080-2100
Average annual rainfall (mm)	840	790	790	761
Average annual evaporation (mm)	970	1006	1053	1193
Extreme rainfall - 24hr AEP 1%	352 mm	369 mm	381 mm	405 mm
Sea level - AEP 1%	1.56	1.72	1.8	2.5

The Forest Fire Danger Index (developed by CSIRO scientist A. G. McArthur) combines a measure of **vegetation dryness with air temperature, wind speed and humidity**. The annual cumulative Fire Danger Index is calculated by adding the daily values over a year for a given location.

Current climate and recent trends

- Break O’Day Council has a temperate, maritime climate. Long-term average temperatures have risen in the decades since the 1950s, at a rate of up to 0.1 °C per decade, however this rate is now accelerating.
- The average annual rainfall across the municipality is currently around 790 mm. There has been a decline in average annual rainfall since the ‘baseline period’ (1961-1990).
- Tasmania’s northern region is influenced by large-scale climate drivers. For example, the extended dry spell of 1995-2009 coincided with an ‘El Nino’ pattern; the dry spell of 2018-20 coincided with an Indian Ocean Dipole event; and extended wetter spells, such as between 2020-2022, often coincide with dominance of a ‘La Nina’ climate driver. It is expected that climate change will exacerbate the impact of these broader scale patterns, and particularly from east-coast lows which are expected to intensify with potential to deliver damaging flood events to eastern Tasmania.

¹² Climate Change Information for Decision Making (2019): T. Remenyi, N. Earl, P. Love, D. Rollins, R. Harris; Climate Futures Programme, Discipline of Geography & Spatial Sciences, University of Tasmania.

1.3.1 Extreme events

The changes in climate that are most likely to impact upon council infrastructure, roads, the local community and the environment are an increase in intensity of extreme events:

- Increased evaporation and longer dry periods coupled with more extreme temperatures is likely to enhance the occurrence and intensity of bushfires, with more starts due to lightning strikes. Future fire danger. A guide to the increasing bushfire risk under climate change is: twice the danger, twice the area, twice as often.
- Heavier rainfall events than witnessed historically, particularly from east-coast lows, are expected to occur. High daily runoff events are likely to increase, including those that may lead to erosion, landslips or flooding.
- Inundation in vulnerable coastal areas will increase due to sea level rise. The current 100-year coastal inundation event is likely to occur almost every year by 2100.

Intersecting hazards magnify the impact of extreme events and can include the following examples:

- heavy rain and gale force winds associated with storms which may cause road cuts due to both fallen trees and flash-flooding;
- heatwave conditions associated with bushfire and smoke pollution; and
- a confluence of low pressure, high tide, storm surge, and in some cases high river levels, have the potential to result in unprecedented inundation adjacent to coastal or estuarine areas.

Additionally, compounding events (extreme events in relatively rapid succession) are now occurring and exhaust the economic and human resources of councils to manage and respond effectively.

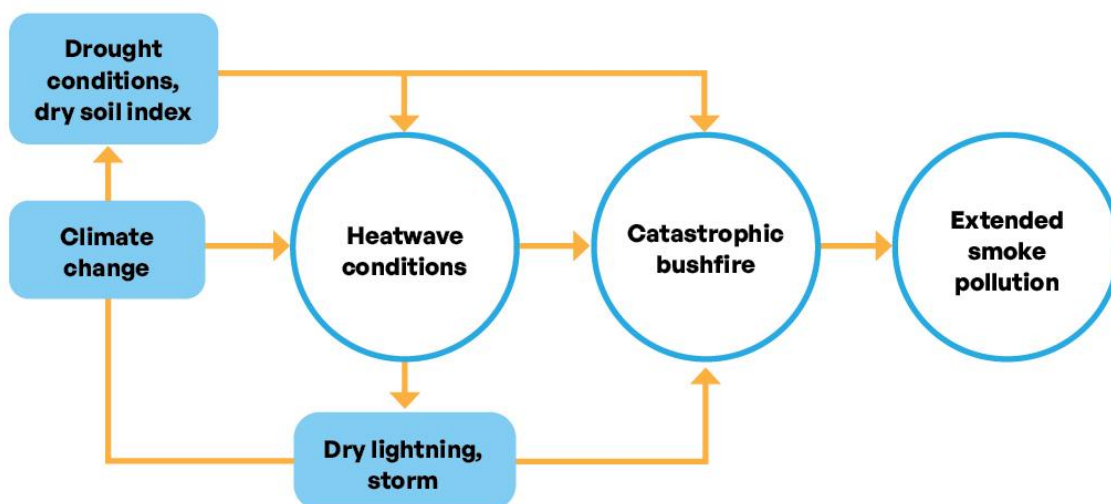


Figure 5. Threat multiplier – intersecting hazards *Image adapted from: Tasmanian Disaster Risk Assessment (TASDRA) 2022*

More Information

Detailed information from the Climate Futures Programme on the modelled future climate for Tasmanian sub-regions may be found here: <https://www.wineaustralia.com/climate-atlas>

2.0 Overarching Corporate Considerations

Corporate climate change adaptation considerations fall across all the Council's strategic, operational and service areas. Engagement with these requires the development of understanding and governance by senior management who have overall responsibility for the setting and delivery of strategic and budgetary parameters. They are also increasingly expected to demonstrate leadership in the response to climate change.

2.1 Insurer Expectations

Local government insurers Municipal Association of Victoria (MAV) and JLT are increasingly expecting councils to demonstrate responses to climate hazards, to reduce exposure and resultant risk. Lack of engagement and action could at a minimum result in insurance premiums rising and at worst litigation for negligence in failure to address risks appropriately. Councils with a solid framework in climate change adaptation procedures will minimise risk to council business and the community who relies on decision making that is appropriate, well considered, and based on up-to-date facts.

2.2 Legal Liability

Climate change is clearly established through legislation and national, and state policy and international agreements. It is likely that a court will construe that the risks and impacts of climate change are now foreseeable.

With increasing vulnerability to climate change impacts councils need to provide solutions to adapt to and manage, identified risks associated with climate change. A key consideration of councils in the face of climate change is potential liability that they are exposed to in discharging their various statutory roles, powers and functions in times where exposure to natural hazards is increasing.

- MAV Insurance¹³, has provided advice that councils have a duty of care in the context of climate change adaptation which may arise in the context of:
- Development approvals – where the risk of harm was 'foreseeable';
- The provision of protective standards in planning schemes e.g. regarding flood protection;
- Failure to maintain or build infrastructure e.g. stormwater systems; and
- The provision, or lack thereof, of information which is considered by a court to be negligent.

Baker and McKenzie, in a report to the Australian Local Government Association¹⁴ outlined actions that councils may follow to reduce liability. These include:

- keeping up to date on general climate change science and information, particularly in relation to potential risks from natural hazards;
- 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;
- exercising reasonable care when making planning decisions, taking care to ensure relevant facts are known and understood, and reasons for decisions are clear, accurate and documented;

¹³ MAV Insurance Fact Sheet: Liability Risk & Climate Change Adaptation

¹⁴ 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.

- increasing public consultation, as this may improve transparency around decision-making processes and limit administrative review; and
- facilitating the provision of up-to-date information to property owners on potential risks to property.

In the Tasmanian local government context legal advice ¹⁵was sought by the Southern Tasmanian Councils Authority, in 2011, from Shaun McElwaine + Associates, to guide Regional Climate Change Adaptation Planning ¹⁶project (RCCAP); on the:

- Role of councils as a planning authority
- Management of asset base and other functions/services
- Liability and defenses available
- Level of action to effectively discharge duties
- How to reduce level of exposure
- Legislative reform

The advice was shared state-wide to all Tasmanian councils, along with extension of the RCCAP and preparation of climate change adaptation plans, and advised that council's:

- Exposed through *Civil Liability* for decision making
- The development of Climate Change Adaptation Planning was a positive step
- The adoption of Climate Change Adaptation Planning set the standard for action
- The need for State leadership by legislation and a comprehensive policy response

Useful information and case studies about legal risk and climate change adaptation can be accessed at: https://coastadapt.com.au/sites/default/files/information-manual/IM06_Legal_Risk.pdf

¹⁵ Regional Councils Climate Change Adaptation Project Legal Advice, 2011 SM+A Shaun McElwaine + Associates

¹⁶ https://recfit.tas.gov.au/what_is_recfit/climate_change/adapting/local_government_adaptation_planning

2.3 Emergency Management

As the closest level of government to the community, together with having a responsibility for the health, safety and welfare of their communities, councils have an important role in emergency management. Although councils are not a provider of emergency services, they are required to have in place Emergency Management Plans that cover functions including:

- provision of recovery centres and relief services during emergencies or disasters;
- provision of resources and information to emergency service teams such as Tasmania Fire Service and the SES;
- informing the community of the current situation, developments and ongoing prognosis during emergency events; and
- local emergency planning and development of mitigation options using risk analysis, prioritisation and treatment approaches.

As outlined earlier, extreme events and associated emergencies are increasing due to the changing climate resulting in resources for emergency management being required more frequently, and for greater periods than in the past.

Some Tasmanian Councils are already managing staff for the stresses associated with responding to extreme events, and at times multiple events. Some Councils have experienced staff shortages during significant flood or bushfire events. The support and availability of staff and necessary resources will require careful consideration and management as these events increase in scale.

In addition to the recently established State and Regional Emergency Management Committees, councils may coordinate their responses through their own corporate committee who have the role of preparing and reviewing a municipal emergency management plan. It is pertinent for this committee to be aware of, and discuss, possible scenarios for intensifying natural hazards and the implications for council's ability to respond adequately.

3.0 Climate Change Identified Risks & Actions

Risk is the outcome of the confluence of hazard, vulnerability and exposure. Hazards only become risks if there is exposure, and that there is vulnerability to their impacts.

Adaptation is about actively reducing exposure or building coping mechanisms for when hazards occur. Adaptation options that are feasible and effective today are likely to become constrained and less effective with increasing global warming. In other words, there are limits to adaptation, in some case moving away from the hazard may be the only option.

The risk management approach used in this Adaptation Plan was undertaken in accordance with the Risk Management Standard ISO 31 000 and is based upon the following principles:

- Establishing the Context;
- Risk Identification;
- Risk Analysis; and
- Risk Treatment

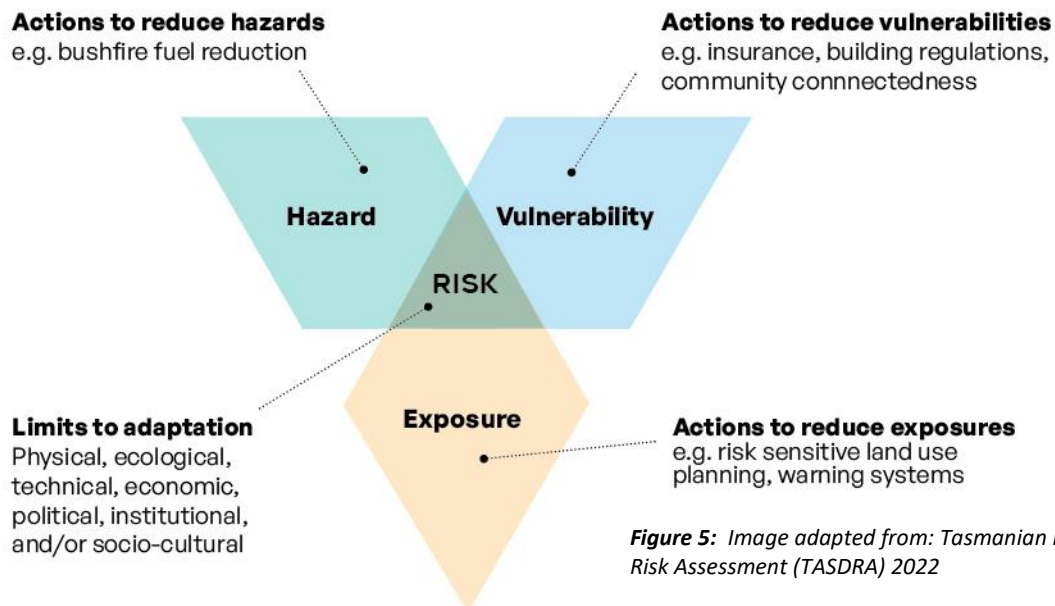


Figure 5: Image adapted from: Tasmanian Disaster Risk Assessment (TASDRA) 2022

‘Risk statements’ are the primary way that councils define hazards and their implications on corporate functions and services. Climate change requires the development of specific risk statements to cover emerging climate hazards.

Components of a meaningful risk statement are:

1. Climate change impact/hazard;
2. Consequence; and
3. Implication for council.

Example risk statement:

Increase in the frequency and intensity of extreme storms will result in heavier rainfall and unprecedented flooding (identify specific locations) leading to infrastructure damage or failure.

3.1 Risks & Actions Associated with Rainfall & Flooding

3.1.1 Rainfall & Flooding Vulnerabilities

Heavier rainfall events due to climate change is, and will continue to, impact infrastructure, disrupt services, create hazards, and stretch the capacity of staff to cope. Heavy rainfall and flooding are challenging councils resource capacity and, in the future, may create increasing dependence upon external funding sources to cope with the escalating hazard.

Vulnerabilities RAINFALL & FLOODING

Increasing extreme rainfall events has the following implications:

- **Exposure of infrastructure vulnerabilities and shortcomings – more frequent damage to assets.**
- **Implications for planning decisions made in areas that are vulnerable to flooding.**
- **Absence of up-to-date modelling or hydrological studies in some areas to guide decision making in relation to development.**
- **Exposure of shortcomings in the stormwater system – management of localised flooding associated with council infrastructure.**
- **Testing of emergency services capacity, e.g. managing road closures and recovery centres.**
- **More resources required for dealing with the aftermath of more intense rainfall events.**

A total of 7 climate risks and adaptation responses were identified for the Council associated with rainfall and flooding, with 1 rated as high, 4 medium and 2 low or emerging. The high and medium risks related to costs to the Council for repair of impacted roads and associated infrastructure, landslip disrupting services and isolation of vulnerability communities. Adaptation responses ranged from vulnerability audits of assets and future proofing through upgrading, realignment and communicating service levels to communities and updating of critical strategies such as the Emergency Management Strategy.

Identified rainfall and flooding risk statements and actions specific to Break O' Day Council are listed below.

3.1.2 Rainfall & Flooding Identified Risk Statements & Actions

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
1	Heavier rainfall events resulting in increased cost burden to council for repair of flood damaged roads and associated infrastructure.	Works & Infrastructure	financial	service delivery	Almost certain	Moderate	High

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
<p>Gradual infrastructure improvements and upgrades at the end of asset lifecycles - prioritised according to vulnerability assessments.</p> <p>Gradual improvement of road drainage.</p> <p>Budget contingency as part of financial planning.</p> <p>Abandonment of some road assets based upon multi-criteria analysis and or cost benefit analysis that incorporates usage levels and maintenance costs.</p> <p>Flood mapping/modelling to 1% AEP.</p>	<p>Undertake an audit to identify vulnerable assets in relation to climate projections.</p> <p>Based upon the audit of vulnerable assets, flag identified vulnerable assets in the <i>Strategic Asset Management Plan</i> and capital works plans.</p> <p>Undertake a multi-criteria analysis to determine asset management priorities.</p> <p>Identify a process for disclosure and sharing of flood risk data and knowledge.</p>	Infrastructure	Ongoing	State & Australian Govt

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
2	Heavier rainfall resulting increased cost burden to council for repair and maintenance on the footpath and bike track network.	Works & Infrastructure	financial	community & lifestyle	Almost certain	Minor	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
Maintenance of drainage on the network together with well designed and constructed tracks.	<p>Redesign and realignment of tracks where necessary.</p> <p>Inclusion of gravel and FRP grating to build resilience to tracks in vulnerable locations.</p>	Infrastructure	ongoing	

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
3	Heavier rainfall events leading to more extensive road inundation (e.g. Ansons Bay Rd, Binalong Bay Rd, Reids Rd, and St Helens Point Road) leading to periods of community isolation and disruption of council services to these areas.	Governance	service delivery	public safety	Almost certain	Insignificant	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
<p>Address community expectations - through a communications plan.</p> <p>Early warning systems at St Marys.</p> <p>Closing roads where appropriate.</p> <p>Mobilisation of operational teams rapidly to get roads reopened.</p>	<p>Improve alternative access road and infrastructure e.g. Reids Rd bridge, to build resilience against flooding.</p> <p>A flood management system and flood warning for Binalong Bay.</p> <p>Climate change implications for emergency management considered in an update of the Break O'Day Emergency Management Plan.</p>	Governance	Immediate	

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
4	Heavier rainfall events resulting in increasing likelihood that stormwater infrastructure will be under-capacity resulting in localised flooding, and costs to council for cleanup, repairs and potential upgrades to meet service levels objectives.	Works & Infrastructure	financial	service delivery	Almost certain	Minor	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
<p>Regular maintenance program - pit cleaning and upgrades to pits and pipes where necessary.</p> <p>Placing requirements on developers to contribute resources to the system downstream and to map overland flow paths.</p> <p>Defined service level (i.e. system designed to cope with at least 1:10 year flood).</p> <p>Flood mapping/modelling.</p>	<p>Audit stormwater assets to determine condition and vulnerability, flag identified vulnerable assets in the <i>Strategic Asset Management Plan</i> and capital works plans.</p> <p>Undertake a multi-criteria analysis to determine asset management priorities.</p> <p>Incorporation of 'Water Sensitive Urban Design' principles into new developments and as retrofits to existing systems - design for retention and absorption.</p> <p>Communicate service levels to the community (and how these may change over time as the scale of floods escalates) to manage expectations.</p>	Infrastructure	Immediate	

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
5	Heavier rainfall events and unprecedented flooding meaning that new developments near waterways could be in harms way, requiring review of information on which planning decisions are made to avoid future litigation risk (e.g. flood mapping).	Development Services	financial	public safety	Rare	Major	Low

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
Risk has been minimised through planning controls and detailed flood modelling.	Review of information for planning decisions.	Development Services	Immediate	State Govt

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
6	Heavier rainfall exacerbating the likelihood of landslip and potential for damage to Council assets or disruption to services e.g. Falls Road, St Helens Point Road.	Works & Infrastructure	financial	service delivery	Possible	Minor	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
Monitor known sites and restrict use, particularly heavy vehicle access. Make sure roadside drains are cleaned.		Works and Infrastructure	Ongoing	

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
7	Elevated ground water, due to a combination of extended periods of higher than normal rainfall and heavy rainfall events makes failure of on-site waste water systems and ponding of stormwater more likely, with potential localised water contamination, and a need to investigate system performance, the provision of alternative waste water systems, potable water supply and waterway management.	Development Services	public safety	community & lifestyle	Possible	Insignificant	Low

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder

3.2 Risks & Actions Associated with Rising Temperature

3.2.1 Heat Vulnerabilities

The modelled temperature rise for Break O'Day from the baseline period to end of century is 3°C with an expected four-fold increase in hot days (above 30°C) (Table 1).

There are synergies between increasing temperature, decreasing moisture in the landscape, and escalating incidence of fire-starts. Increasing temperature, particularly resultant temperature extremes and heatwaves, is part of a range of climate-forced factors that often in combination produce an impact.

Vulnerabilities HEAT

Increasing extreme heat and heatwaves can have the following implications:

- **Impact on materials performance, e.g. road surfaces;**
- **OHS implications for outdoors work crew, and the types of work undertaken (in relation to potential for creating sparks);**
- **heatwave related illness and mortality in the local community (particularly in vulnerable demographics such as the elderly) translating to consideration for creating of cool spaces and more shade trees in urban areas;**
- **detrimental impact on landscaping, street trees and recreation grounds; and**
- **challenges for natural resource management in Council reserves due to: impact on vegetation communities and threatened species; and escalated potential for fire starts.**

Three climate risks and adaptation responses were identified for the Council for increasing temperatures, with 1 rated as medium and 2 as low or emerging. The medium risk related to impacts on the Council's green assets: street trees, parks and playgrounds and subsequent liveability of towns. Whilst the low risks related to degradation of road surfaces and wellbeing of the Councils staff in particular outdoor workforce. Adaptation responses related to the preparation of policies and strategies to enable and guide the Councils response.

Identified Temperature/Heat statements and actions specific to Break O'Day Council are listed overpage.

3.2.2 Identified Risk Statements & Actions for Rising Temperature

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
8	Increasing hot weather causing accelerated degradation of road assets resulting in increased maintenance costs.	Works & Infrastructure	financial	service delivery	Unlikely	Minor	Low

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
<p>Direct contractors to adjust the 'mix' to use new generation binders. Adjust materials according to the incline of roads.</p> <p>Advocate to the State regarding issues on their network.</p>		Works & Infrastructure	Ongoing	

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
9	Increasing temperature, more heatwaves and longer dry spells affecting the 'livability' of towns through impacts to trees along streets, in parks, reserves and playgrounds.	Works & Infrastructure	community & lifestyle	environmental	Possible	Minor	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
Street Tree Policy and Procedures.	<p>Street Tree Policy updates to account for appropriate tree species selection in the eventuality of harsher conditions.</p> <p>Position trees to provide cooling and shade benefits for the community.</p>	Works & Infrastructure	Ongoing	

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
10	Increasing hot days and heatwaves will result in impacts on human health, having implications for the WH&S of Council Staff, particularly outdoors workers.	Corporate Services	work health & safety	service delivery	Rare	Moderate	Low

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
WH&S program. Job Safety Analysis forms and risk/incident reporting.	Staff notifications & procedures triggered by heatwaves.	Corporate Services	Immediate & Ongoing	

3.3 Risks & Actions Associated with Bushfire

3.3.1 Bushfire Vulnerabilities

Twice the danger, twice the area, twice as often is now being used to summarise the escalating bushfire risk.

Rising average temperatures and more frequent extreme temperatures contribute to a variety of impacts including rapid drying of the landscape (flash droughts); longer bushfire seasons; and enhanced wildfire intensity. Council's infrastructure, property, and natural assets are exposed to potential impact, not to mention the devastating toll bushfire can take on the community, and the resources Council invests in recovery effort.

Vulnerabilities BUSHFIRE

Changes to bushfire likelihood & behaviour may result in:

- **Emergency services response capacity challenges.**
- **An increase in repair or replacement costs of council and community infrastructure.**
- **Planning considerations in relation development in locations with extreme bushfire hazard and exposure.**
- **Difficulty in accessing sufficient water resources when fire is associated with drought.**
- **Significant community disruption leading to a range of public health and safety issues, and delays to core council services.**
- **Exposure of shortcomings in the communications network i.e. mobile phone black-spots and/or damage to communications infrastructure.**
- **Pressure to upgrade roads in vulnerable areas to enable safe evacuation and access for emergency services.**
- **Pressure on natural resources not well adapted to fire.**

Four climate risks and adaptation responses were identified for the Council for escalating bushfires, with 2 rated as high, 1 as medium and 1 as low or emerging. The high risks related to impacts on the Council's assets: roads, bridges and recreational facilities, along with associated clean up and recovery operations. Whilst the medium and low risks related to capacities of evacuation centres and their associated resources, increasing compliance requirements respectively. Adaptation responses included audits, increased hazards reduction along road side, updating policies and increased resources.

Identified Bushfire statements and actions specific to Break O'Day Council are listed overpage.

3.3.2 Identified Risk Statements & Actions for Bushfire

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
11	Escalating frequency and intensity of bushfires will result in increasing likelihood of damage to infrastructure and assets such as road surfaces, bridges, recreational infrastructure - and extensive additional resources for clean up and repair, having an unforeseen impact on budgets.	Works & Infrastructure	financial	community & lifestyle	Likely	Moderate	High

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
Ensure flammable vegetation is removed from the proximity of infrastructure and that mechanisms to minimise implications of ember attack are implemented.	<p>Identify the high risk assets.</p> <p>Review insurance cover for potentially exposed assets.</p> <p>Manage road corridors to reduce flammability and the risk of bushfire damage to infrastructure.</p>	Works & Infrastructure	Immediate	Tas Fire Service

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
12	Increasing frequency and intensity of bushfires exacerbating the potential for evacuation and access issues on roads to vulnerable localities, having implications for council's emergency preparedness, e.g. Powers Rd, Pyengana and Stieglitz.	Corporate Services	public safety	governance	Likely	Major	High

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
Planning for potential installation of new passing bays to enable more effective traffic management in emergencies.	Identifying potential alternative access routes.	Emergency Management Committee	Short term	Tas Fire Service

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
13	Increased call on Council's emergency response team in the face of the threat of unprecedented fire emergencies resulting in an urgency to ensure evacuation centres are fit for purpose and procedures and action plans cover all potential scenarios, including strategies to cope with power and communications outages, security and water supply.	Corporate Services	public safety	community & lifestyle	Almost certain	Minor	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
<p>Regular review and update of Council's Emergency Management Plan and procedures.</p> <p>A clear contingency plan to ensure there is a back up plan for power and communications and enough resources to keep people going for a number of days e.g. water, sanitation, food.</p>	<p>Examining opportunities to increase the size of Council's emergency response team.</p> <p>Climate change implications for emergency management considered in an update of the Break O'Day Emergency Management Plan.</p>	Emergency Management Committee	Ongoing	SES

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
14	Increasing frequency and intensity of bushfires will result in more areas of the municipality that are exposed to extreme bushfire risk having implications for hazard abatement, performance of development approval conditions, and compliance.	Development Services	community & lifestyle	financial	Likely	Insignificant	Low

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
<p>Bushfire management plans as part of development approval process.</p> <p>Roadside vegetation management.</p> <p>Compliance follow-up together with hazard abatement notices.</p>	Review bushfire management plan compliance activities.	Development Services	Ongoing	Tas Fire Service

3.4 Risks & Actions Associated with Sea Level Rise

3.4.1 Sea Level Rise & Storm Surge Vulnerabilities

Approximately 20 cm of sea level rise, from baseline levels, has been experienced so far. The current annual rise in sea level is approximately 4 mm and increasing. Based upon current modelling, another 70 cm of sea level rise is expected by the end of the century (Table 1), however, this data is regularly updated as real-world observations are fed back into global climate models enabling projections to be more accurately modelled.

The impact of the gradual rise of sea level is magnified when associated with storm tide generated by severe events. Storm tide events have potential to irreversibly change the coastline through catastrophic erosion events on soft and hard shorelines creating loss of, or serious damage to, coastal ecosystems and private and public infrastructure.

Whilst Georges Bay has some shelter from direct storm surge, low lying roads around the Bay are inundated when flood waters from the catchment are constricted by the narrow opening to the Bay and back-up for longer with higher sea level. Other settlements along the coast, such as Scamander are directly exposed to the ocean and storm surge is likely to cause significant erosion along low lying sandy shorelines.

Two climate risks and adaptation responses were identified with both 2 rated as medium. They related to damage to Council's roads and walkways and managing community expectations in relation to protecting private properties.

Vulnerabilities

SEA LEVEL RISE & STORM SURGE

Rising sea level may result in the following issues for Council:

- **Periodic inundation of council infrastructure including playgrounds, roads, and buildings having implications for future service delivery in some areas and mounting costs for repairs.**
- **Planning considerations in relation development in locations that are potentially subject to inundation or storm surge hazard.**
- **Natural resource management concerns for the structure of coastal landforms, vegetation communities, and habitat features for local species.**
- **Legacy issues - resident's expectations for protection of their property.**
- **Forward planning for potential retreat of some communities.**
- **Performance issues in relation to onsite wastewater treatment systems in low lying coastal settlements.**
- **Absence of clear policy or guidelines to assist Council in make clear and consistent decisions in relation to coastal issues.**

There are several useful resources available to council when considering the implications of sea level rise and storm surge, including:

- Regional Strategy - Adapting to a Changing Coastline in Tasmania, 2022
- CoastAdapt;
- Sea level rise planning allowances for Tasmania;
- Coastal vulnerability mapping; and
- Tasmanian Coastal Adaptation Pathways Project.

Regional Strategy - Adapting to a Changing Coastline in Tasmania

The Regional Coastal 'Strategy' developed by the Regional Climate Change Initiative (RCCI) in 2022 guides Councils to use a risk management approach to existing or potential coastal hazards that threaten harm to public and natural assets, infrastructure, people or private property. Risk assessments lead to the identification of several options for responding to hazards, and with stakeholder and community involvement, can be used to develop local coastal hazard plans. These plans outline what actions will be implemented, e.g. re-vegetating dunes or engineering solutions such as sea walls. Retreat or relocation, and 'no action' are sometimes viewed as the most appropriate responses.

The Strategy's coastal 'Principles' cover coastal values, public safety and private property through to the role of council and their coastal management role. The principles provide clarity and transparency on the roles and responsibilities of coastal councils and stakeholders (public and private) to develop responses that suit their local coastal issues and resources.

The Strategy may be downloaded at: <https://www.stca.tas.gov.au/rcci/our-projects/our-changing-coastline/>

CoastAdapt

The CoastAdapt web site has a comprehensive range of useful information and planning tools, for example: data and graphics on inundation and coastal erosion; estuaries and sea level rise; local scale risk assessment guidelines; legal risk; municipal specific data (Figure 6); and adaptation options for planning, engineering, environment and community.

CoastAdapt was funded by the Australian Government. It was developed by the National Climate Change Adaptation Facility, with input from Tasmanian representatives from Hobart and Kingborough councils. It is currently being reviewed by Griffith University who host the site and will include case studies of *the Regional Strategy - Adapting to a Changing Coastline in Tasmania*, and NTARC climate program.

The CoastAdapt website can be accessed at: (coastadapt.com.au).

Sea level rise planning allowances (SLRPAs) for Tasmania

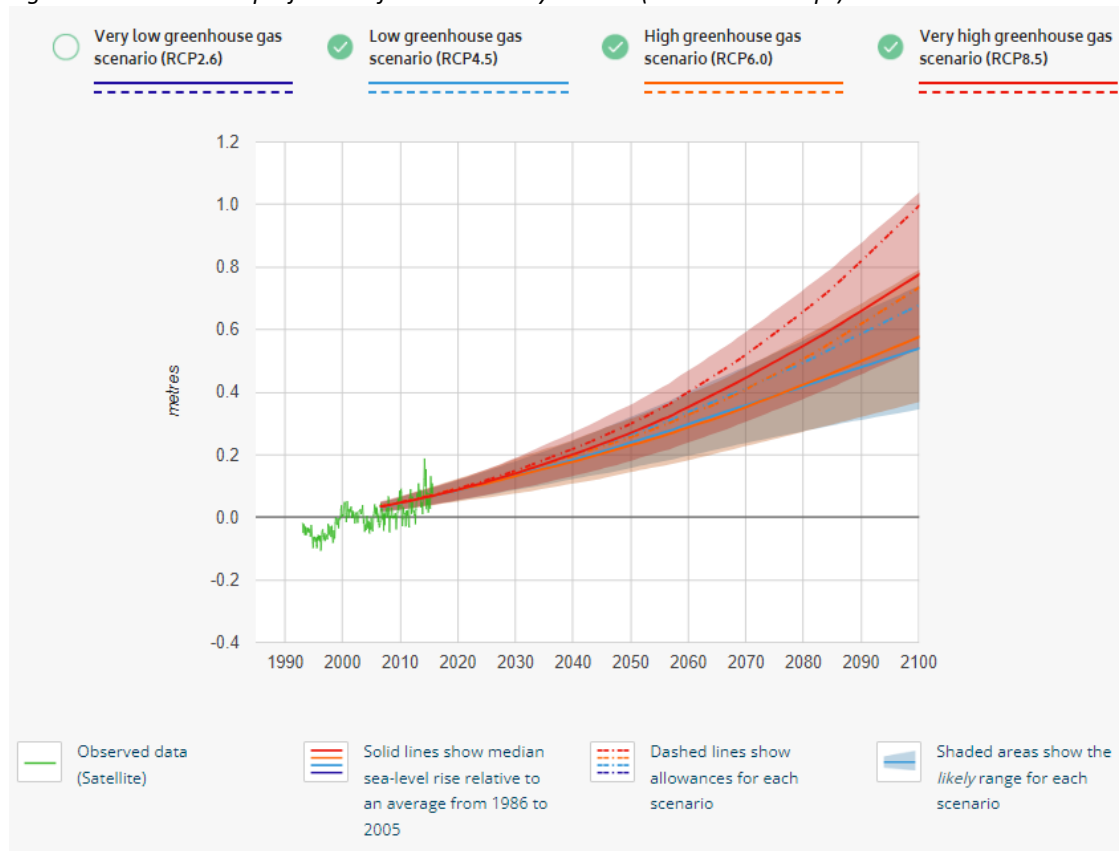
SLRPAs¹⁷ were implemented by the Tasmanian Government in 2012 to promote consistent decision making concerning future land use and development and to reduce the level of uncertainty around the management of future sea level rise. Based upon emissions scenario RCP 8.5, the sea level planning allowance for Break O'Day is 0.23 m for 2050 and 0.85 m by 2100.

The Tasmanian Government has developed a 'Coastal Hazards Package' in response to the risks posed by coastal erosion and inundation. The Package provides guidance for the management of coastal hazards in

¹⁷ The Southern Tasmanian Councils Authority climate program, the Regional Climate Change Initiative successfully advocated to the Tasmanian Government for the adoption of SLRPA's following council-based risks assessments that identified the need to support evidence based decision making coastal zone through its Regional Councils Climate Adaptation Project, 2011 to 2015.

terms of land use planning and development resources and can be accessed at: www.dpac.tas.gov.au/divisions/osem/coastal_hazards_in_Tasmania

Figure 6: Sea level rise projections for Break O’Day Council (From CoastAdapt)



Coastal vulnerability mapping

Coastal hazard layers are available through LISTmap

- Coastal Erosion Hazard Bands 2016
- Coastal Inundation Hazard Bands 2016

Tasmanian Coastal Adaptation Pathways Project (TCAP)

The TCAP project, 2013 – 2015, aimed to assist Tasmanian communities and decision makers (including councils) to undertake community-based coastal adaptation planning. Reports were prepared for two sites in the northeastern region: Kelso and St Helens. The Communities and Coastal Hazards Project built upon TCAP with further work undertaken in Kingborough and Glamorgan Spring Bay.

3.4.2 Identified Risk Statements & Actions for Sea Level Rise & Storm Surge

Identified and rated risk statements in relation to the sea level rise hazard in Break O’Day are presented below. As identified in the staff workshop, sea level rise along Break O’Day’s coastline is likely to lead to environmental and financial implications in the short term, and ultimately consequences for infrastructure and service delivery.

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
15	Increased inundation from storm tide events resulting in the loss of or damage to Council assets (such as St Helens Point Rd, coastal footpaths and recreational areas) requiring increased maintenance and capital expenditure and potentially reduced service levels.	Works & Infrastructure	financial	community & lifestyle	Almost certain	Minor	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
Increasing maintenance and betterment works.	<p>Audit assets vulnerable to storm tide and inundation and develop a strategy to address the impact over the long term.</p> <p>Based upon the audit of vulnerable assets, flag identified vulnerable assets in the <i>Strategic Asset Management Plan</i> and capital works plans.</p> <p>Undertake a multi-criteria analysis to determine asset management priorities.</p> <p>Ensure any new infrastructure is not within coastal hazard zones.</p>	Works & Infrastructure	Ongoing	State Govt

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
16	Changes in sea level and the frequency of coastal/estuarine inundation events placing pressure on council to protect private assets, manage expectations, and find acceptable solutions.	Development Services	governance	community & lifestyle	Likely	Insignificant	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
	<p>Adopt a Coastal Hazards Policy to guide decision making (e.g. Kingborough Council's Policy).</p> <p>Community education program around council roles and responsibilities in regard to coastal protection, development and planning considerations.</p>	Development Services	Short term	State Govt

3.5 Risks & Actions Associated with Combined Hazards

Intersecting, cascading or combined hazards magnify the impact of extreme events and can result in the following vulnerabilities:

Vulnerabilities COMBINED HAZARDS

Escalating climate hazards playing out in combination may present the following vulnerabilities for Council:

- **compounding events (extreme events in relatively rapid succession) can exhaust the economic and human resources of councils to manage and respond effectively;**
- **a confluence of low pressure, high tide, storm surge, and in some cases high river levels, have the potential to result in unprecedented inundation and service disruption in coastal or estuarine areas;**
- **extreme rainfall events followed by long dry spells causing destabilisation of building foundations, particularly for Councils with a large stock of heritage assets;**
- **extreme rainfall events followed by long dry spells can create challenges for councils in managing recreational areas and natural assets.**

Whilst not explicitly a combined risk a strategic governance risk was identified, in this section, relating to the authorising environment within, and supporting, councils in developing climate responses. The absence of clear and defined structural climate roles and responsibilities for Tasmanian councils means that that consideration of climate is discretionary that can result in ad-hoc, duplicating and resource inefficient responses that may expose a council to potential liability for its decision making or lack there-of.

Three climate risks and adaptation responses were identified for the Council for combined hazards with 2 rated as medium and 1 as low or emerging. The medium risks related to concurrent, or increasing frequency of events impacting the Council's emergency management capacity, and the reliance on consultants to provide specialist advice and costs associated with defending council decisions if challenged.

Identified Combined Hazards statements and actions specific to Break O'Day Council are listed overpage.

3.5.1 Identified Risk Statements & Actions for combined hazards

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
17	During flood events, Georges River flood flows and storm surge result in inundation and flooding around Georges Bay and in St Helens. This is occurring to higher levels more often, increasing demand for emergency management support and mitigation of impact on infrastructure.	Works & Infrastructure	public safety	financial	Likely	Minor	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
Provision of sand bags, plant and equipment and labour to assist with protection works. Road signage and traffic management.		Works & Infrastructure	Ongoing	

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
18	Increasing exposure of developments to climate-related hazards requiring developers to engage consultants to address regulatory requirements resulting in reliance by Councils without the specialist and technical expertise to assess consultant's reports, and if challenged Council's incurring additional costs to defend or engage technical expertise.	Development Services	financial	governance	Almost certain	Minor	Medium

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
Planning scheme controls. Statewide data sets (The LIST). Council flood modelling. Engagement of specialists for additional advice at additional cost to council.	Seek cost recovery for additional advice where council doesn't have the in-house capacity to make the assessment. Sectoral support mechanisms through engagement with LGAT - panel of providers.	Development Services	Immediate	LGAT & the Region

Risk ID	Risk Statement	Primary business area impacted	Primary risk category	Secondary risk category	Risk rating in light of increasing climate change threats (primary risk category)		
					Likelihood	Consequence	Risk rating
19	Lack of Australian and State Government leadership on climate change (in terms of good quality information, clearly defined roles and responsibilities, strategies and legislative frameworks) flowing through to governance challenges for Council - resulting in discretionary decision making when preparing for and dealing with climate hazards, resulting in potential legal liability exposure, and lack of progress.	Corporate Services	governance	community & lifestyle	Possible	Insignificant	Low

Existing Controls	Proposed additional treatments	Responsibility	Timeframe	Key External Stakeholder
<p>Councils active participation in the NTARC Program.</p> <p>Council taking advantage of opportunities from Australian Government programs to address climate change issues.</p>	<p>Advocate to NTDC, LGAT and the State Government for the ongoing provision of good quality information.</p>	<p>Corporate Services</p>		<p>LGAT & the Region</p>

4.0 Issues for Council Business Areas

4.1 Infrastructure & Development

Break O’Day Council’s Infrastructure and Development Services is responsible for overseeing the construction, maintenance and replacement of property and infrastructure assets, including roads, drains and culverts, bridges, stormwater infrastructure, council owned buildings and recreational infrastructure such as bike tracks and walking tracks. The ‘Works & Infrastructure’ area is the council business area usually most impacted by climate change due to the:

- direct exposure of infrastructure to hazards, which it is responsible for, particularly from flood-water;
- challenges to design and build resilience into infrastructure so that it can cope better with extreme events;
- challenges in managing staff in relation to preparing for and dealing with the aftermath of extreme events; and
- additional costs, beyond budgets, associated with extreme events, and the limited funds available to cope with anything over the ‘business-as-usual’ allocation for asset management.

For councils, effective asset management is about understanding the required level of service and delivering it in the most cost-effective manner. Managing this objective is core business for local government and is key to ensuring council sustainability. The projected impacts of climate change threaten conventional asset management both in terms of financial modelling, as well as the level of service that is acceptable or even achievable. When there are no longer any guarantees regarding ‘service levels’ for council assets then there is work to be done to communicate the challenges to the community in the hope that there will be increased ‘tolerance’ when things go wrong.

Projected increases in the intensity and frequency of extreme events directly impact on council’s asset base with significant and unpredictable financial and service delivery implications. Council’s stormwater system for example is designed for historical climate and with projected climate change, will likely become under-capacity in places. Council will therefore need to consider the additional cost of managing stormwater at the current acceptable level of service and either fund that cost or accept that a greater frequency of inundation events is likely. This may result in public inconvenience, safety issues, and potentially legal liability for damage to property from poorly performing council infrastructure.

The Council has already invested resources into mapping out an effective approach to asset management due to escalating climate hazards¹⁹, this includes consideration of the following approach to manage the situation:

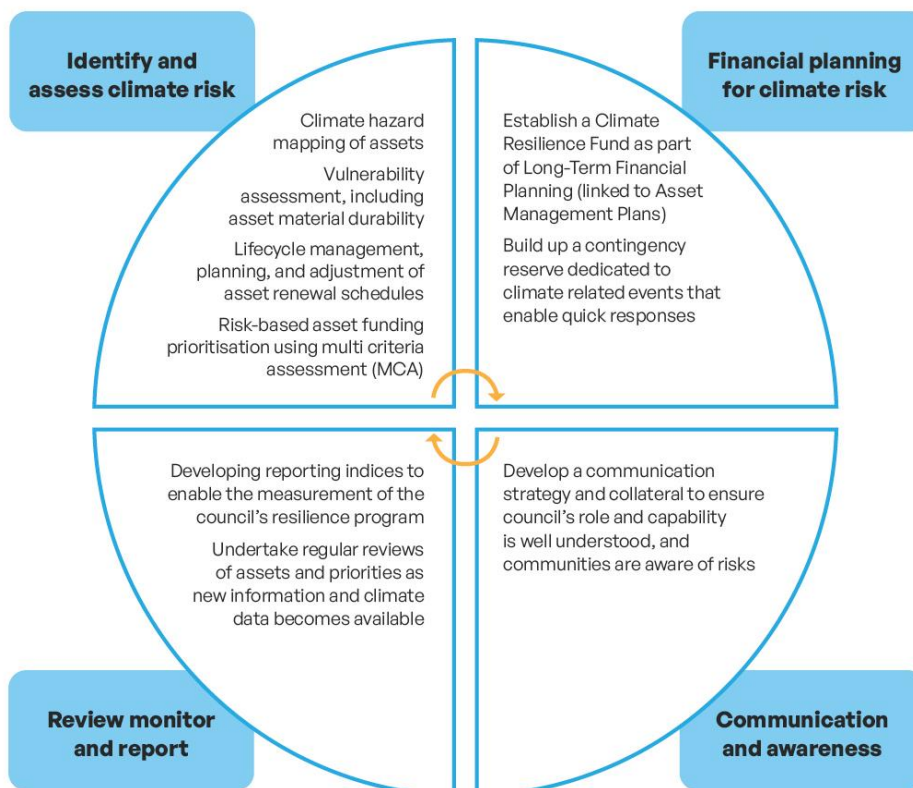
- Climate Hazard Mapping - Use of GIS-based climate risk mapping to identify areas prone to floods, fires and storms. Overlay this information with the asset inventory to highlight vulnerable infrastructure.
- Vulnerability Assessment – Evaluate key infrastructure in risk-prone areas to assess their ability to withstand climate driven hazards (current and emerging), and assess the material durability of roads and bridges.

¹⁹ BOD Council internal document - Building Resilience into Local Government Asset Management & Financial Management Plans for Flood, Fire, & Storm Prone Areas.

- Lifecycle Management & Planning – Increase the frequency of maintenance checks on infrastructure in high-risk areas. Adjust renewal schedules to account for increased wear and tear from climate events.
- Risk-Based Asset Prioritisation – Use multi-criteria assessment (MCA) to prioritise which assets receive funding. MCA to be based upon criteria such as: risk exposure; asset criticality; cost-benefit analysis; community impact. Such analysis can be used to determine whether an asset is protected, fortified, abandoned or relocated.
- Climate Adaptation Funding – Incorporate climate resilience into Long-Term Financial Plans (linked to the *Strategic Asset Management Plan*) by establishing dedicated funds for adaptation projects. Create a sustained budget allocation for progressive upgrades to assets based upon vulnerability assessments and multi-criteria assessment. Build up contingency reserves specifically for climate-related events so that ‘climate shocks’ can have a chance to be absorbed.

Further to the projected increases in extreme events, incremental changes to the climate such as increasing average temperatures or reduced average rainfall will also have implications for council’s capacity to deliver its infrastructure-based services. Such changes may result in impacts on materials performance (e.g. road surfaces) or accelerated structural fatigue in council’s infrastructure. Design standards based upon past climate data and patterns may need to be reconsidered for new or replacement infrastructure to account for climate change projections.

There is also a physical and emotional toll on council staff in assisting the community through extreme events, particularly when their scale is increasing due to climate change. Council may be required to invest extra resources in the way staff are managed to avoid burnout, anxiety and fatigue. Ways to find back up staff to back-fill and assist during disasters will also need to be explored.



4.2 Corporate Governance & Community

Corporate and governance climate adaptation considerations fall across all Council strategic, operational and service areas. A council's Corporate Services, and its governance functions, is where several key drivers of climate change adaptation sit and are managed, for example, the risk register, insurance considerations, financing, and legal liability issues. Identifying risks, rating them and defining actions is a key component of this Adaptation Plan. Incorporating identified risks into the Council's risk register so that the recognised financial, insurance and legal ramifications of escalating climate hazards can be effectively managed is a critical next step to implement the Adaptation Plan.

4.2.1 Insurance

Maintaining assets that are fundamental to council operation and community services is an important role of councils. Increasing climate hazards have the potential to cause more frequent impacts on and damage to council buildings. Insurance premiums are likely to rise, as are repair and replacement costs if damage is sustained. Weighing up the value of the asset, the importance of the asset to the community, and the average annual cost of protecting and maintaining the asset are important considerations in determining where to allocate limited resources.

Local government insurers Municipal Association of Victoria (MAV) and JLT expect Councils to demonstrate responses to climate hazards, to reduce exposure and resultant risk. Lack of action could at a minimum result in insurance premiums rising, and at worst litigation for negligence if there is failure to address risks appropriately. Councils with a solid framework in climate change risk management and adaptation procedures minimise risk to council business and the community.

4.2.2 Legal

With increasing vulnerability to climate change impacts councils need to provide solutions to adapt to and manage, identified risks associated with climate change. A key consideration of councils in the face of climate change is potential liability that they are exposed to in discharging their various statutory roles, powers and functions in times where exposure to natural hazards is increasing. Managing legal liability issues in relation to climate change was covered in more detail in Section 2.

4.2.3 Financial

Most of the hazards and impacts identified in risk management have financial consequences for councils. Councils are likely to have an under-quantified financial risk due to millions invested in assets (some with long life cycles) that are more exposed to damage or failure from climate hazards as time goes by.

One of the biggest barriers to climate change planning and implementation of actions is lack of assigned funding. Ensuring climate change actions have a funding pathway should be identified as an important governance objective. It is well established that implementing climate change adaptation actions (derived through recognised risk management approaches and policy frameworks) is a no-regrets exercise. In fact, resources spent on climate change adaptation actions have a significant return on investment (up to 10 x) in that they:

- upgrade and future proof infrastructure;
- increase asset life and resilience;
- make the community and residents safer;
- build resilience in the environment;
- alleviate costs for continued asset repairs;
- build surety into continued service delivery; and
- can assist in avoiding litigation.

As per Section 4.1 - Incorporate climate resilience into Long-Term Financial Plans by establishing dedicated funds for adaptation projects. Create a sustained budget allocation for progressive upgrades to assets based upon vulnerability assessments and multi-criteria assessment. Build up contingency reserves specifically for climate-related events so that 'climate shocks' can have a chance to be absorbed.

4.2.4 Community

Councils have an important role in creating healthy vibrant communities, in fact most of council's roles and functions have a bearing on the wellbeing of residents and supporting thriving and resilient communities. Climate change, and its resultant range of hazards, is now a well-documented impact on mental health and is beginning to regularly disrupt the fabric of communities and their social cohesion. The majority of Australians (80%) have experienced some form of extreme weather disaster since 2019²⁰.

If the community is not well prepared for the impacts of climate change, it increasingly looks to Council for support. Effects on community members can include mental health issues, a sense of vulnerability, financial loss, and housing displacement. The level of expectation and need for assistance can be high during extreme events.

Council are recognised, by the Australian Government as having a core role to 'Provide information about relevant climate change risks and contribute appropriate resources to prepare, prevent, respond and recover from detrimental climatic impacts.' https://www.dcceew.gov.au/climate-change/policy/adaptation#toc_5

Council may be required to invest more resources to assist residents through natural disasters, including:

- making recovery centres more fit for purpose in terms of – food handling facilities, heating, ventilation, adequate toilet facilities, waste removal, bedding, and backup communications and power;
- increasing the capacity and resourcing of recovery centres given that larger scale natural disasters are becoming more likely;
- operating recovery centres more often, and for longer mean there needs to be scrutinization of staff resourcing;
- leading local clean-up effort;
- providing community support due to disruption of local businesses; and
- assisting in the bigger picture of 'stakeholder mapping', for the clarification of roles and responsibilities in response and recovery across all sectors of the community.

4.3 Development Services

Climate change risks have implications for council's role in planning and development approval, particularly in relation to possible litigation if risk to property from climate change related disasters are not adequately identified or communicated.

In relation to changes in flood and bushfire risk from a warming climate, planning scheme overlays should be updated if and where possible to incorporate modelled data to appropriately guide development. If there

²⁰ Climate Council (2023), Climate Trauma: The growing toll of climate change on the mental health of Australians. www.climatecouncil.org.au/resources

remain grey-areas, or uncertainty about potential impact from natural hazards, then additional information to guide decision making should be sought.

With increasing bushfire likelihood, it may be useful to have the State Planning Provisions modified to require planning schemes to be informed by modelled fire data that could include: vegetation flammability; slope; ignition potential; and suppression capability.

The Bushfire-Prone Areas Code overlay covers the majority of the municipal area. It prompts thinking around appropriateness of developments in terms of location, access, and water supply. For each development a detailed bushfire attack level (BAL) assessment is required as part of the planning assessment process. This assessment informs detail around positioning of buildings, buffer areas, construction technique, and appropriate building materials to minimise bushfire impact and flammability.

4.3.1 Environmental and Public Health

Councils have a statutory role for the provision of environmental and public health services across their communities. In addition to these formal roles other functions may include: aged care, child health, special needs care, supported accommodation and counselling and support services.

Climate change has many implications for public health. Gradual shifts over time in temperature, humidity and rainfall patterns can create ideal conditions for disease vectors, such as mosquitos, in areas where there was no previous exposure. Direct impact of extreme events such as bushfire and heatwaves can result in emergency services and community support services being stretched beyond their capacity. There is now an established link between extreme heatwaves and an increase in mortality in vulnerable sectors of the Tasmanian community.

Flooding can result in mobilisation of contaminants from; the sewage system; from contaminated sites; or from dead animals in extreme events; resulting in community health concerns in relation to elevated exposure risk. In some low-lying coastal or riverine communities rising water tables and more frequent inundation can lead to poorly functioning on-site wastewater treatment systems and consequent localised contamination and human health risks.

4.3.2 Natural Resource Management

Council's role in natural resource management is focused on management of local reserves, protecting local biodiversity, managing threats such as weeds, and running community programs e.g. revegetation projects.

The natural environment is under pressure from climate change. The climate change we are now experiencing is occurring relatively rapidly. In natural vegetation communities this change is likely to favour some species and disadvantage others. A possible outcome is loss of vulnerable species and changes in structure, function and composition of vegetation communities. Additionally, exacerbated threat to vegetation communities may occur through proliferation of weeds which may be favoured by changing temperature and rainfall conditions. Councils often need to establish good working relationships with stakeholders in managing weed outbreaks that usually occur across multiple land tenures. Defining ways to work together and share resources is critical so that Councils are not using scarce resources to deal with issues that result from issues not being addressed on Crown Land, State Forest or reserves.

There may be a need to refocus natural resource management activities in the future away from addressing issues in isolation to a strategic approach that is well informed about landscape-scale ecological processes. An effective working relationship with regional NRM bodies is often the best way for Councils to be involved. A collaborative approach will enable limited resources to be deployed wisely and in ways that address issues strategically.

5.0 Adaptation Plan Implementation & Review

5.1 Strategic Priorities: incorporate into corporate processes

The implementation of this Plan requires a co-ordinated approach, both across council business areas, in partnership with NTARC councils, and with external stakeholders. Strategic priorities are broad level climate change adaptation actions that increase the Council's climate governance and cross numerous Council service areas.

Having strategic action priorities in place facilitates the inclusion of climate consideration across council's corporate strategic and operational functions. This increases council's climate resilience and mitigates exposure to potential liability.

Success of strategic actions is dependent on management support. Implementation of strategic actions will provide the Council with a solid framework in climate change adaptation and will build an internal culture that supports the implementation of the specific adaptation options listed earlier. Strategic priority examples are provided in Table 2 over the page.

5.2 Governance

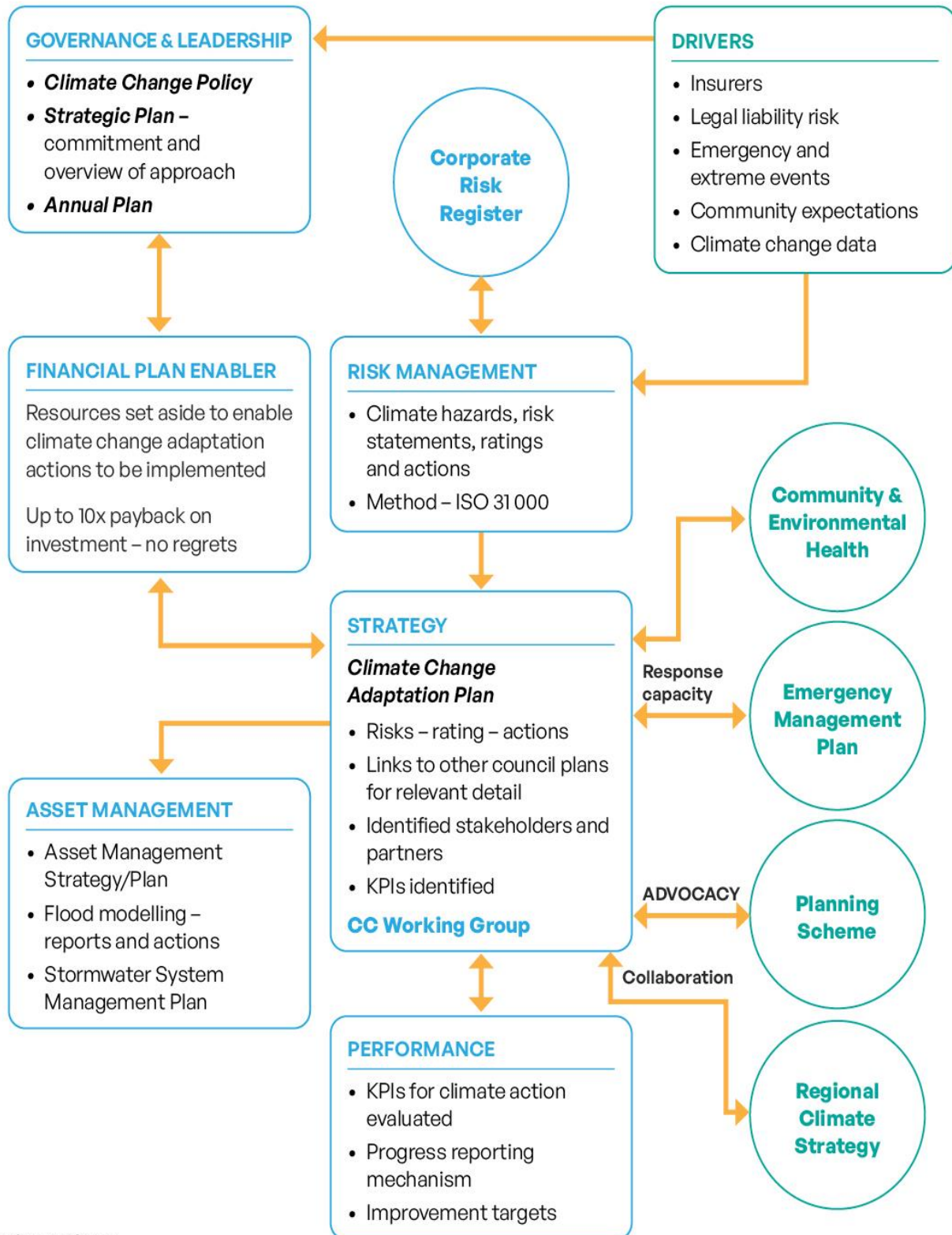
Good climate and resilient organisational governance is about leadership and ensuring that climate and resilience planning is enabled from the executive level rather than reliant upon a climate 'champion' within the staff. The uptake of climate adaptation and resilience within a council depends upon the support and leadership of Executive Management.

A framework for management of organisational climate change risk is best practice for avoiding ad-hoc responses and entrenches leadership in the space and to build understanding about how climate risk and resilience has linkages through all council functions. The schematic on the next page (Figure 7 on page 44) is a pragmatic way to climate resilience governance and a framework can work to ensure that risk is adequately recognised and captured in all council decision making and resource allocation considerations. Key elements of this governance structure are: Leadership, Risk Management, Strategy (driven by an internal working group) and Performance (through identified KPIs, reporting and targets).

Table 2: Corporate climate change adaptation - Implementation Priorities to embed across councils strategic and governance processes

Strategic Priority Action	Comment	Responsible
Endorsement of the Council Climate Adaptation Plan	Adoption of Adaptation Plan either for operational purposes by Executive Management, or formal endorsement by the Council, committing to its implementation and positively demonstrating leadership.	General Manager
Integrate climate change risk management into existing Council wide risk assessment framework.	Inclusion of climate risks in the Council’s existing risk management processes, mainstreams climate considerations within the Council’s governance processes and ensures that climate risks are addressed.	General Manager Corporate Services
Assign an officer to oversee climate change activities and implementation of this Adaptation Plan.	The appointment of a council officer to oversee the implementation of actions outlined in the Adaptation Plan, provides a central point of contact within the Council, and responsibility for its implementation.	NRM Facilitator
Consideration of climate change risks and impacts during the development of other Council strategies, policies and plans.	The climate impacts, risks and responses contained in the Adaptation Plan should be considered in the development of plans, policies and strategies to enable incorporation across the council’s functions. This will also establish mechanisms for the implementation of actions.	Community Services Infra. & Develop. Corporate Services Governance
Report on climate change adaptation progress into any future publicly available documents or reports.	Reporting/communicating on climate change adaptation progress will assist in normalising and engaging the elected representatives, the community and informing other councils on Council’s progress.	Executive Management Team
Development of climate maturity measures	Climate maturity measures can be reported on through the Council’s annual report and other reporting mechanisms incentivising continuous improvement.	Executive Management Team NRM Facilitator NTARC Manager
Ensure that the projected climate impacts are properly considered in the 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.	Executive Management Team NRM Facilitator
Support the implementation of Northern Tasmanian Alliance for Resilient Councils and its delivery of programs across the region.	The Northern Tasmanian Alliance for Resilient Councils aims to drive adaptation in local government for the region and deliver on common actions that are relevant to its member councils. The success of this Adaptation Plan is dependent on a high level of buy in from each of the councils across Northeastern Tasmania.	General Manager Executive Management Team NRM Facilitator NTARC Manager

Figure 7: Council corporate climate governance framework



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5.3 Financial & 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 Council will initially support implementation of those adaptation actions which are cost effective and align with current resource capacity and availability. As mentioned earlier in this document every dollar invested in adaptation typically yields net economic benefits ranging from \$2 to \$10²¹, hence implementation of prioritised actions may be viewed as a 'no regrets' approach.

Prioritising 'investment' in adaptation actions can be based upon factors such as risk priority and a cost benefit analysis. Weighing up the value of the asset, the importance of the asset to the community, and the average annual cost of protecting and maintaining the asset are important considerations in determining where to allocate resources. In some cases it may not be feasible to protect an asset and consideration of relocation may be the only option.

The importance of allocating dedicated funds for adaptation projects and building up contingency reserves is discussed in Section 4.1.

It is important to recognise that not all climate change action within the Council will require its own funding but will become embedded in the operational business of Council through appropriate governance arrangements, policy, and long-term financial planning. Notwithstanding this, some of the more complex adaptation options, such as road relocation or coastal fortification will 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.

5.4 Stakeholder Involvement & Collaboration

Climate change will impact either directly or indirectly on all aspects of council function. Further to this, impacts will be felt throughout the community affecting other organisations that council is involved with. A collaborative adaptation response between all stakeholders is therefore essential for council to maintain its service level in a changing climate. It is important that::

- linkages between organisations and commonalities of hazards and risks are identified;
- there is a clear understanding of roles and responsibilities in relation to management of identified climate change risks;
- there is awareness of what stakeholders are doing to manage climate change;
- recognition of opportunities to develop or strengthen existing collaborations and share resources; and
- duplication of efforts is avoided wherever possible.

²¹ World Resources Institute 2023: Adapt Now: A global call for leadership on climate resilience.

5.5 Evaluation and Review

Monitoring and evaluation of climate change adaptation is necessary to ensure a flexible response and effective allocation of resources. Despite increasing accuracy of modelling based upon the input of real-world data as time goes by, climate change is likely to deliver surprises and potentially unforeseen outcomes. This is because we are entering uncharted waters in relation to escalating climate hazards and it is often difficult to predict how infrastructure and the environment will respond to unprecedented impacts.

Monitoring and evaluation are important to evaluate the progress of:

- climate change planning across the organisation;
- defining and re-evaluating risks;
- progression of adaptation actions;
- integration of new knowledge about climate change projections and impacts into core decision making processes; and
- understanding legal implications associated with planning decisions as climate changes the scope of areas likely to be impacted by natural hazards.

5.5.1 Council Climate Maturity Indicators

Evaluation of progress can be done using climate maturity indicators. Ideally, climate maturity indicators should be developed for all council business areas and functions, but most importantly for the key drivers of enabling climate change action within the organisation: The Strategic and Annual Plan, Long Term Financial Plan and Corporate Risk Register:

- Consideration of climate change in the Strategic Plan demonstrates leadership resulting in a higher likelihood of the issue being mainstreamed across Council's operations.
- Climate change is highly likely to impact Council's financial performance including increased costs associated with asset management, service delivery, and insurance, and potential pressure on revenue streams through decline in rateable property value in hazard prone areas. An identified way to source funds for climate change adaptation action becomes the enabler of actions that will ultimately save money for council by reducing the impact of climate hazards.
- Incorporation of defined risks and actions into the corporate risk register demonstrates to council's insurers and finance providers that risks are understood, acknowledged, rated, and that there is a plan of action to address them. Detail in the corporate risk register becomes the engine room to drive action across the organisation.

Examples of Climate Maturity Indicators are provided in Table 3. The most effective way to make progress is to set targets, and in the example provided reaching the 'advanced (level 4)' over a given time frame would be a useful target.

Table 3: Example Governance Performance Indicator Matrix for strategic planning, financial planning and the corporate risk register²²

Governance Indicator Type	Indicator Instructions	None (0)	Basic (1)	Intermediate (2)	High (3)	Advanced (4)
Strategic Plan	Council's Strategic Plan was reviewed for words associated with managing climate change (e.g. 'climate change', 'sea level rise' and 'adaptation').	No consideration of climate change (or associated key words) in the Strategic Plan.	General statements about climate change (e.g. in the introduction) OR includes other key words associated with managing climate change in a general context.	Prescribed responses/ guidance for one climate change issue (e.g. sea level rise) AND/OR one council function (e.g. land use planning) only.	Detailed inclusion of climate change, but is limited to two climate change issues (e.g. sea level rise and flooding) AND/OR two council functions (e.g. land use planning & asset management).	Climate change is well considered and includes recognition of and responses to all hazards.
Financial Planning	Council's financial plan or strategy was reviewed for words associated with managing climate change (e.g. 'climate change', 'sea level rise' and 'adaptation').	No consideration of climate change (or associated words) in financial planning documents.	General statements about climate change (e.g. in the introduction) OR includes other key words associated with managing climate change in a general context.	Prescribed responses/ guidance for one climate change issue (e.g. sea level rise) AND/OR one council function (e.g. land use planning) only.	Climate change adaptation is recognised in financial planning (more than one climate change issue AND/OR council function). But the financial management documents do not guide innovative finance or investment policies.	Climate change adaptation is well-budgeted for and resources allocated for mainstreaming. Consideration for climate change in investments and/or investment policies etc. is stated. Innovated finance mechanisms may also be encouraged.
Corporate Risk Register	Council's corporate risk register was reviewed for words associated with managing climate change (e.g. 'climate change', 'sea level rise' and 'adaptation').	No consideration of climate change (or associated key words) in the corporate risk register.	General statements about climate change (e.g. in the introduction) OR includes other key words associated with managing climate change in a general context.	Prescribed responses/ guidance for one climate change issue (e.g. sea level rise) AND/OR one climate change risk (e.g. infrastructure risk) only.	Detailed inclusion of climate change with at least two climate change issues considered.	Climate change is well considered and includes recognition of and responses to all hazards.

Detailed climate change governance assessments were undertaken of 17 Tasmanian councils, including Break O Day Council, by Climate Planning on behalf of the Tasmanian Government in 2018 through the Climate Resilient Councils project. The assessment provides a useful baseline for regular future reporting of climate change metrics which could be undertaken annually as part of Council's annual reporting process.

The NTARC is developing a climate governance maturity matrix for the northeast Tasmanian councils to increase their capability and capacity to incorporate climate adaptation considerations into their operational and strategic decision making.

5.5.2 Ongoing assessment of risks

Establishment of executive leadership and an appropriate staff team to conduct risk re-assessment involving staff from all operational areas is important. Staff who have local knowledge and influence over potential impacts, including ability to implement actions and allocate resources, must be involved in these assessments. Climate change adaptation tools that provide a guide to the whole process of adaptation planning are available at:

https://recfit.tas.gov.au/what_is_recfit/climate_change/adapting/local_government_adaptation_planning

www.stca.tas.gov.au/rcci/our-projects/regional-council-climate-adaptation-project/

²² Adapted from: Climate Planning (2018) - Detailed Climate Change Governance Assessment Report for Launceston City Council.

5.5.3 Regional Strategy

The primary purpose of a Regional Strategy is to progress identified shared risks and actions between councils. Implementation of a Regional Strategy is through a regional working group who coordinate the development and implementation of an action plan. A Regional Councils Climate Change Adaptation Strategy for northern Tasmania, will provide a policy platform and the parameters for cohesive and effective regional and sub-regional action.

Regional actions relate to the following themes:

- Education and awareness raising – Communications Strategy.
- Advocacy for resources to help councils manage their escalating asset management and emergency response costs.
- Advocacy to State/Australian Government/ and other stakeholders.
- Collaboration and cost sharing on climate actions that are relevant across jurisdictions.

A Regional Councils Climate Change Adaptation Strategy for northern Tasmania could borrow from the Southern Councils Regional Climate Change Strategy's underlying principles:

- Climate change is a global issue requiring local solutions.
- Climate change action is a shared responsibility between local, state and Commonwealth governments, communities and the private sector.
- Local governments have an important role in leadership and educating communities at both the municipal and regional level on climate change and adaptation.
- Councils must prepare for and manage the impacts of climate change on its assets and services.
- Early climate change adaptation action is more cost effective than late action.
- Collaboration and cooperation on climate change adaptation actions by local government provides more effective use of resources.

5.6 Related resources

Tasmanian Disaster Resilience Strategy 2020-2025

www.dpac.tas.gov.au/divisions/osem/Tasmanian_disaster_resilience_strategy_2020-2025

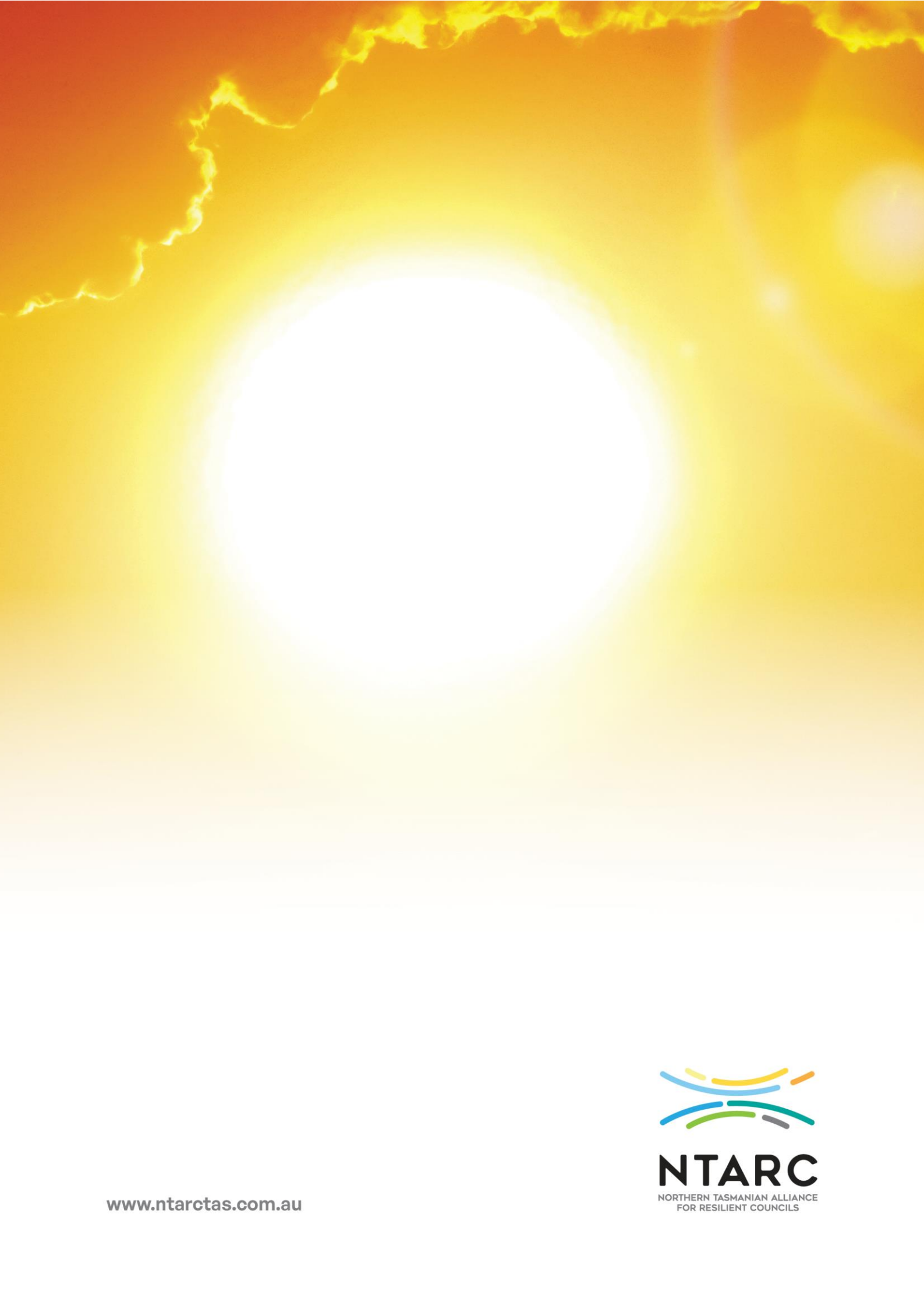
Tasmanian Climate Change Action Plan 2023-25

https://recfit.tas.gov.au/climate/climate_change_action_plan

Of relevance to local government in the Action Plan is:

- an undertaking to update the fine-scale climate projections for Tasmania;
- development of a state-wide Climate Change Risk Assessment;
- development of a consistent state-wide approach to managing the impacts of coastal hazards under a changing climate.

Detailed information from the Climate Futures Programme on the modelled future climate for Tasmanian sub-regions may be found here: <https://www.wineaustralia.com/climate-atlas>



www.ntarctas.com.au



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