WODONGA COUNCIL

Climate change adaptation action plan (2017-2021)

VAS Partnership project: Climate change adaptation action plans

Indigo Shire Council | Towong Shire Council | Wodonga Council

CONTENTS

EXECUTIVE SUMMARY

Expectations for hotter and generally drier conditions in future, with increasing frequency and intensity of extreme climatic events, have implications for the continued delivery of local government assets and services. Wodonga Council is already faced with heatwave, drought, fire and flood. These extremes place pressure on the achievement of strategic objectives, via a range of community, reputation, service delivery, financial and environmental consequences.

Climate change adaptation is a process of adjustment to actual or expected climate and its effects. It aims to reduce harm and vulnerability, and make use of opportunities.

The *Climate Change Adaptation Action Plans* project is combining knowledge of previous experiences with proactive planning; it is an opportunity to contribute to increasing the organisation's resilience and to be better prepared for the future. The Climate Change Adaptation Action Plan (the Adaptation Plan) includes a risk assessment, development of adaptation actions and an implementation plan to assist Council in preparing for climate change.

The Council's adaptation planning process began with a risk assessment of potential climate impacts. Risks and opportunities were identified by Council staff through outputs from working group discussion and a scan of Council Plan content then refined using extensive staff engagement. Risks were analysed using the Council's risk management framework and follow up meetings with Council staff. Existing controls were assessed against funding availability, review periods and effectiveness to identify gaps in risk treatment. New treatments were developed and ranked using a multi-criteria analysis before inclusion into this Adaptation Plan.

Challenges and opportunities relating to the highest rated risks for 2030 included supporting ecologically sustainable design, complex planning decisions and maintaining recreation and community activities. Many adaptation actions address Council's capacity for improving the environmental responsiveness of public and urban spaces, subdivision design and building design and maintenance. Other actions focus on reimagining tourism offerings and water management.

Adaptation actions identified in this Adaptation Plan will help to increase Council's emergency management response and recovery to bushfires and intense storms; improve staff and community working and recreation conditions; and enhance resource conservation efforts.

The purpose of the Adaptation Plan is to deliver adaptation actions and to build adaptive capacity within the organisation. The intent is to embed the climate change lens into Council organisational processes, and to establish a continuous improvement cycle for identifying climate risks and developing adaptation actions. As such, the adaptation process considers pathways for actions in the plan to be incorporated into 'business as usual'.

Adaptation actions identified in this Adaptation Plan will help to increase Council's emergency management response and recovery to bushfires and intense storms; improve staff and community working and recreation conditions; and enhance resource conservation efforts

Adaptation is not an end in itself but rather a constantly cycling process of adapting, monitoring, reviewing and adapting further. As such this Adaptation Plan is intended as a starting point for Council to understand the process of adaptation and commence building adaptive capacity.

1   Introduction

1.1 Background

Wodonga is one of Victoria's fastest growing regional cities located on the Murray River between Melbourne and Sydney. The city is rapidly changing from its rural base to become the largest city in north east Victoria and home to first class education, health and arts facilities. Access to water has made Wodonga an important manufacturing hub whilst access to national railway and road infrastructure ensures recognition as a transport and logistics centre. Strongly diversified industries give Wodonga a stable base for population growth into the future.

Increasing scientific evidence of changes in global climate indicate that some degree of climate change is inevitable, and adapting to climate change will be necessary. Early planning for climate change is desirable to improve understanding of the impacts, enable responses to be developed, and allow opportunities to be identified.

Expectations for hotter and generally drier conditions in Wodonga, with increasing frequency and intensity of extreme climatic events, have implications for the continued delivery of local government assets and services into the future. Climate change risks cut across all functional areas of local government which are now faced with the impacts of heatwave, drought, fire and flood. These extremes place pressure on the achievement of Council's strategic objectives, via a range of financial, people and safety, environmental, governance, business continuity and reputational consequences.

Combining the lessons of previous experiences with proactively planning for a changing climate is an opportunity to contribute to increasing Council's resilience and be better prepared for the future. Understanding the specific climate risks faced by the Council assists to develop and prioritise responses which become adaptation actions when implemented. In addition, the Council identified further value in embedding the adaptation plan into organisational programs and plans to ensure strategic and operational decision were viewed through the climate change lens.

Managing climate change risks is an important way for Council to prepare for future impacts from climate change and ensure that Council's vision for Wodonga of *'Our people, our city, our future'* will be realised.

1.2 Regional and local climate projections

Climate change adaptation planning at Wodonga Council is underpinned by climate projections in the Murray Basin Cluster Report from CSIRO and the Australian Bureau of Meteorology's Climate Change in Australia Projections (Timbal et al. 2015). Assessing climate related risks and opportunities took into account the key messages presented in Box 1.

When considering the potential change to risks through time, the scenarios applied are:

- intermediate emissions scenario for the near future (2030), and
- a high emissions scenario for late in the century (2090).

With climate change, Wodonga is expected to be warmer and drier in future and facing increasingly variable weather. Bushfires and storm events will be more intense and occur more frequently, increasing demand for emergency response and recovery.

Box 1: Key messages about the Murray Basin's future climate

CSIRO and the Bureau of Meteorology's January 2015 publications reinforce the following messages for the future of the Murray Basin region:

Average temperatures will continue to increase in all seasons.

There will be more hot days and warm spells, and fewer frosts

Less rainfall is projected during the cool season. Rainfall may remain unchanged in the warm season.

There will be increased intensity of extreme rainfall events.

A harsher fire-weather climate is expected in the future.

1.3 Purpose of this plan

Council's vision for Wodonga "*Our people, our city, our future*" will be challenged by the expected impacts of climate change. To assist in fulfilling Council's mission to *strengthen our community in all that we do*, Council is seeking to;

- embed the climate change lens into all operational and strategic policy and decision making;
- increase the resilience of Council's infrastructure and service delivery by building internal capacity to absorb, adapt and adjust to the expected shocks of climate change;
- promote cooperative partnerships with neighbouring Councils to facilitate adaptation.

The purpose of this Adaptation Plan is to:

- identify risks to the high standard of existing Council services and infrastructure posed by climate change and develop adaptation responses;
- provide a plan which acknowledges adaptation is necessary and prepares Council to respond to the impacts of climate change;
- address the Council Plan's strategic objective "We are innovative, responsive and responsible in the way we conduct business" by implementing practical actions which respond to identified climate risks;
- demonstrate Council's commitment to climate change adaptation and identify key concerns requiring longer term, strategic action.

1.4   Policy context

The Victorian Government is "committed to positioning Victoria as a leader in climate change, by mitigating risks, reducing emissions and adapting to the impacts of climate change" (DELWP, 2015). Two aspects of the Victorian Climate Change Act (2010) hold particular relevance:

- The Act requires the Victorian Government to develop a Climate Change Adaptation Plan every four years.

- The Act requires decision makers in government to have regard to climate change when making specified decisions under other Acts. This includes a requirement for local government to consider climate change in the development of municipal public health and wellbeing plans.

Regional guiding documents, including the *The Hume Strategy for Sustainable Communities 2010-2020* (Victorian Government, 2010) and *Hume Regional Growth Plan* (Victorian Government, 2014b) recognise the significance of climate change and importance of adaptation.

The *Hume Strategy* recognises climate change as "one of the most challenging issues facing the region" with, "social, economic and environmental impacts." The Strategy includes a key direction of "anticipating and adapting to the effects of climate change".

Of the challenges identified in the *Growth Plan*, "finding the most effective ways to adapt to the potential impacts of climate change" cuts across all themes. The Plan includes a strategy to "plan for the potential impacts of, and opportunities arising from, climate change."

At a local level, the Council acknowledges the need to address climate change in the Wodonga Council Plan 2013-2017. There is recognition that the Council must 'commit to improving the sustainability of the city for future generations' and that future growth in Wodonga needs to respond to the challenges of climate change. Climate change impacts cut across all three key areas of Council:

- Our People: Providing a great lifestyle
- Our City: Planning for growth and development
- Our Future: Managing our business to support our community

Other local policy and planning context relevant to climate change adaptation includes the following documents: Community Vision, Municipal Strategic Statement, Municipal Public Health and Wellbeing Plan, emergency management plans, Heatwave Plan and Sustainability Strategy. Each of these guiding documents acknowledges climate change and the increasing nature of extreme events, and some take the additional step of putting forward various adaptation responses. These documents help set the scene for the climate risk assessment and are a reference point for existing and intended risk management controls.

1.5   Why adaptation is necessary

Climate change adaptation is a term used to describe a range of actions that can be taken to increase resilience to actual or expected climate and its effects. It aims to reduce harm and vulnerability, and make use of opportunities. Adaptation contributes to being better prepared for a future of increased heat, flood, bushfire and drought, and gradually changing temperature and rainfall averages.

Adaptation is different to mitigation. Mitigation (or greenhouse gas abatement) efforts focus on minimising the extent of climate change by reducing greenhouse gas emissions. Adaptation is a complementary area of work; it recognises that some level of climate change is still occurring, then plans and acts accordingly to adjust to changing conditions.

A particular action may have outcomes relating to both adaptation and mitigation. For example, retrofits to a community facility may concurrently:

- help keep the inside of the building cool at times of increasing heat (adaptation outcome), and
- improve energy efficiency of the building, thus contribute to reducing greenhouse gas emissions (mitigation outcome).

A number of benefits can be achieved by understanding how increasing climatic extremes impact on local government assets and services, and then responding appropriately. Key considerations contributing to the business case for adapting to climate change include:

- managing organisational climate risks
- reducing financial loss
- reducing risk to human life
- identifying opportunities
- raising awareness of climate related issues
- addressing reputational risk
- managing legal issues, and
- planning for vulnerable communities.

These considerations align closely with the consequence types included in Council's risk management framework.

2 Climate change risks

2.1 Identifying climate change risks

The aim of the risk and opportunity assessment is to understand the possible impacts of climate change on the achievement of Wodonga Council's organisational objectives. This assessment is intended as an information base for developing opportunities through the organisation's climate change adaptation planning process.

The assessment method is consistent with Australian Greenhouse Office guidelines (AGO 2006), Wodonga Council's risk management framework (Appendix 2) and in turn, with the Australian and New Zealand Standard for Risk Management (AS/NZS 4360:2004) and international standard (ISO 31000), which is "widely used in the public and private sectors to guide strategic, operational and other forms of risk management" (AGO 2006).

A risk assessment includes identification, analysis and evaluation, and is nested within an overall risk management process. Figure 1 outlines how this generic process was applied to develop an understanding of climate-related impacts on Wodonga Council's assets and services. To support a positive and proactive view, and to not become unnecessarily focused on negative impacts of change, discussions referred not only to risks, but also opportunities.
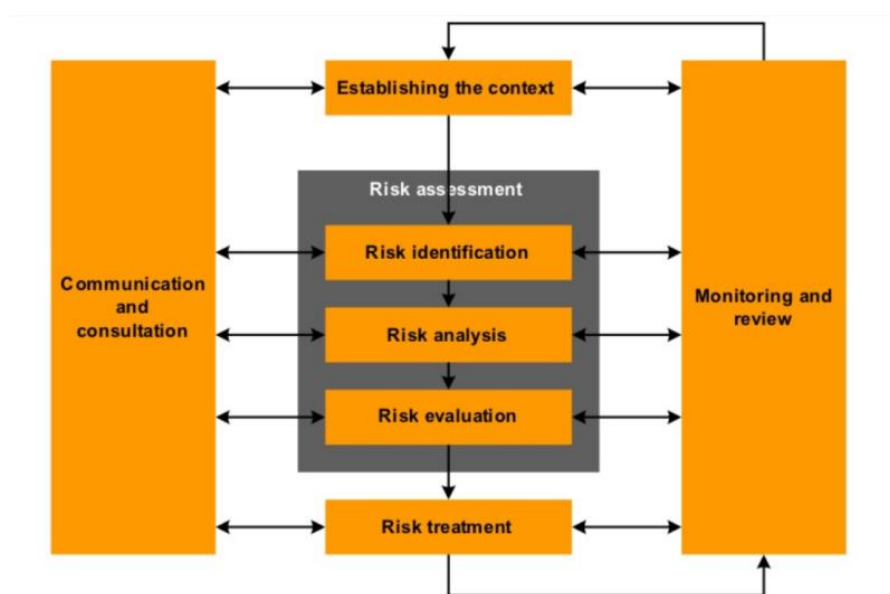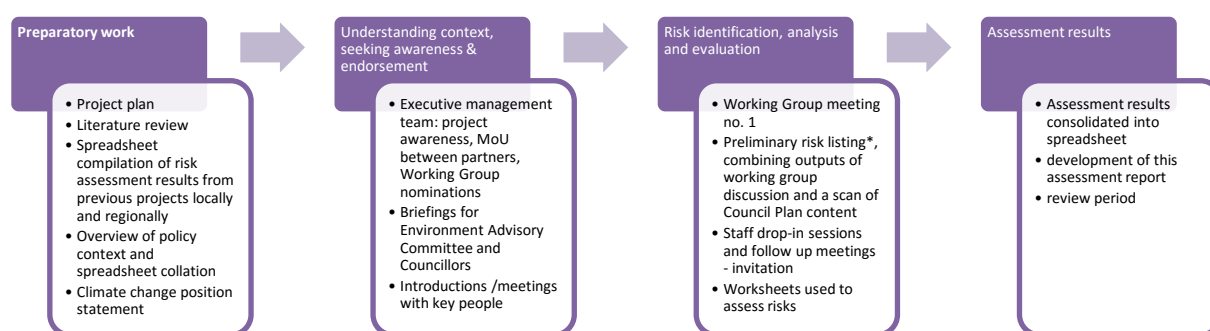

Figure 1: Overview of a standard risk management process (ISO 31000: 2009, image from Newdick 2011)

The main outputs from the preparatory phase included a project plan, adoption of a climate change scenario position statement and a literature review. A working group comprised of council staff from a range work areas initiated a preliminary list of risks after thinking about how expected climate extremes might affect Wodonga council. Council staff then attended drop-in sessions and follow up meetings to

- review the risk/opportunity descriptions summarised from previous discussions

- add any impacts not already considered

- identify activities/measures already in place that help respond to the risks, and

- with consideration for the effectiveness of existing measures, rate the risks and opportunities (likelihood and consequences). Figure 2 describes the process of identifying risks arising from climate change.

Preparatory work	Understanding context, seeking awareness & endorsement	Risk identification, analysis and evaluation	Assessment results
• Project plan • Literature review • Spreadsheet compilation of risk assessment results from previous projects locally and regionally • Overview of policy context and spreadsheet collation • Climate change position statement	• Executive management team: project awareness, MoU between partners, Working Group nominations • Briefings for Environment Advisory Committee and Councillors • Introductions /meetings with key people	• Working Group meeting no. 1 • Preliminary risk listing*, combining outputs of working group discussion and a scan of Council Plan content • Staff drop-in sessions and follow up meetings - invitation • Worksheets used to assess risks	• Assessment results consolidated into spreadsheet • development of this assessment report • review period

Figure 2: **Overview of the assessment and engagement process towards understanding the impacts of climate change at Wodonga Council.**

2.2 Climate change risks for Wodonga

The assessment exercise resulted in 62 risks and opportunities described and evaluated with consideration of all areas of the organisation. The 62 initial risks become 'causes' of 17 'strategic risks and opportunities' aligned with strategic objectives of the Council Plan covering the themes of Our people, Our city and Our Future. The strategic risks of highest rating for 2030 give rise to challenges and opportunities relating to:

- Demand for resources to activate emergency management plans more frequently and for more complex events (particularly heatwave)

- Balancing the needs of community safety, environment and development in planning decisions

The challenge of grouping and organising risks into a helpful arrangement reinforced the interdependent nature of different functions of local government, and the multifaceted impacts of various climatic extremes. For example:

- The role of community facilities providing shared cool spaces in the face of increasingly hot conditions had broad significance across urban design, asset management and community well-being.

- Some impacts, such as those relating to hazardous outdoor and travel conditions, are felt across many areas of the organisation through OHS concerns for staff members (e.g. outdoor crews, library staff, community carers) and/or service disruptions (which in turn may impact on community members).

The 17 strategic risks and opportunities relating to climate change were identified across the organisation with most risks relating to more than one directorate:

- Community Development (10 risks)
- Planning and Infrastructure (13 risks)
- Business Services (9 risks)
- Investment Attraction (3 risks)

These risks are shown in figure 3 where risks are broken down into ratings across each directorate. There are no extreme risks identified for 2030.

Figure 3:   **Climate risk number and rating for each directorate.**

The primary climate hazards relevant to the Council were identified as:

- Bushfire
- Flood (both inundation from sustained rainfall and flash flooding from intense storms)
- Storm (extreme rainfall and increased intensity of storm events especially wind)
- Heat (hot days and heatwaves)
- Drought (extended periods of decreased rainfall and increased average temperatures)

Most risks are related to a combination of these hazards which may occur separately or simultaneously, such as storms and flash flooding. A few risks were related to all hazards.

2.3   Key climate change risks for 2030

All 17 strategic risks have a rating of significant or above for 2030 hence all have been included in the adaptation planning process. No risks have a rating of extreme for 2030.

Table 1: Climate-related strategic risks, aligned with key areas and strategies of the Wodonga Council Plan

Key area	Strategy	Risk ref.	Strategic risk/opportunity	Risk ratings		
				2015	2030	2090
Our People	Actively develop partnerships to work towards a safe, secure and accessible residential environment.	A	Increasing frequency and intensity of extreme weather events reduces the safety and accessibility of residential environments.	significant	high	extreme
	Offer diverse and accessible recreation, leisure and sporting opportunities.	B	Increasing frequency and intensity of extreme weather events disrupts the use of community facilities and recreational spaces whilst being used for emergency management response or as refuges.	significant	high	high
	Offer diverse and accessible recreation, leisure and sporting opportunities.	C	Extreme weather conditions reduce or prevent the use of recreational facilities.	significant	significant	high
	Actively develop partnerships to work towards a safe, secure and accessible residential environment.	D	Increasing temperatures creates an opportunity to educate consumers and developers about the benefits of energy efficient building design.	medium	significant	high
	Promote community health and wellbeing.	E	Increasing climatic extremes (including heatwave) lead to reduced levels of health and activity in the community.	significant	high	extreme
Our City	Plan for Wodonga's growth by ensuring land and infrastructure is sustained for residential, commercial and industrial development.	F	Increasing frequency and intensity of extreme weather events increases demand for environmentally responsive design of urban and public spaces.	significant	significant	high
	Plan for Wodonga's growth by ensuring land and infrastructure is sustained for residential, commercial and industrial development.	G	Increasing frequency and intensity of damaging events compromise the quality of the built environment, disrupting long term asset management.	medium	significant	high
	Plan for Wodonga's growth by ensuring land and infrastructure is sustained for residential, commercial and industrial development.	H	Extreme weather conditions increase the potential for conflict between community safety, environmental and development objectives.	medium	significant	high

Key area	Strategy	Risk ref.	Strategic risk/opportunity	Risk ratings		
				2015	2030	2090
	Plan for Wodonga's growth by ensuring land and infrastructure is sustained for residential, commercial and industrial development.	I	Increased drought/dry conditions increases pressure on water supplies for residential and business.	significant	significant	high
	Plan for a central business area which is economically and socially vibrant.//Position Wodonga as a visitation destination offering a wide range of arts, cultural and community experiences.//Maximise the value of Wodonga's heritage and cultural precincts.	J	Increasing frequency and intensity of climatic extremes lead to a decline in tourism development and visitation.	medium	significant	high
	Plan for a central business area which is economically and socially vibrant.//Position Wodonga as a visitation destination offering a wide range of arts, cultural and community experiences.//Maximise the value of Wodonga's heritage and cultural precincts.	K	Extreme weather conditions lead to reduced levels of connectivity and social inclusiveness in the community.	medium	significant	high
	Plan for the sustainable growth of the city.	L	Increasing frequency and intensity of drought, heatwave, flood, fire and changes to average temperature and rainfall lead to parks, gardens, open spaces and natural reserves not being maintained and enhanced to desired standards.	significant	high	high
Our Future	Ensure the council is committed to improving the sustainability of the city for future generations	M	Increasing frequency and intensity of extreme weather events reduces the sustainability of natural resources.	significant	significant	high
	Deliver council services with a strong customer focus.	N	Increasing frequency of intense weather events increases the volume of waste requiring disposal.	significant	significant	high
	Practice responsible financial management	O	Increasing frequency and intensity of extreme weather events and increasing average temperatures reduces the financial sustainability of Wodonga Council.	significant	high	high
	Ensure our workforce is engaged, healthy and responsive to the community.	P	Increasing frequency and intensity of extreme weather events reduces the efficiency of conducting the business of the Wodonga council.	significant	high	extreme
	Ensure our workforce is engaged, healthy and responsive to the community.	Q	Strain on WC resources to respond to increasing frequency, scale and complexity of emergencies leads to service disruptions and reduced community satisfaction.	medium	significant	high

2.4   Existing controls to reduce risk

Risk assessments are an embedded Council practice with many existing initiatives and actions applicable to the 17 identified climate risks. These treatments or control measures are driven by the need to:

- Manage risks to assets and property owned or managed by the Council
- Plan for, and respond to, emergency events
- Manage other strategic objectives such as community recreation and economic development

They also serve to assist Council to adapt to changing climatic conditions. Some examples of existing controls to manage climate change risks include:

- Plans for managing heatwaves, emergencies, irrigation, healthy communities, business continuity and sustainable water use.
- Public liability insurance
- Sustainability Strategy, Greening Strategy
- Flood overlay and bushfire management overlay
- Policies for working in heat and occupational health and safety
- Participation in Resilient Community Facilities project

Existing controls were considered when analysing the climate change risks with further discussion regarding the effectiveness of these controls, their funding status and requirement for review. These discussions then assisted to identify the gaps in treatments which could potentially become new adaptation actions.

3   Adaptation planning

3.1   Guiding principles for adaptation action

Following completion of a climate-related risk and opportunity assessment for each of the three partner councils, a framework was developed to guide the development and selection of treatments. After identifying potential treatments, treatment options were further explored to ascertain whether they would adequately treat the risk. Treatments were categorised according to their type and position on the management hierarchy. Assuming the treatment is successfully implemented, the risk level was then re-evaluated to determine the residual risk. Residual risk levels show whether the proposed treatment is effective in changing the risk level. Finally, a multi criteria analysis (MCA) was used to rate the treatment options and provide a guide to the option which reflects better adaptation practice. Once a treatment has been selected and implemented it becomes an adaptation action.

A set of principles or criteria was used to explore and rate treatment options for the multi criteria analysis (MCA). Having thought of possible ways to deal with particular risks or opportunities, a set of criteria or principles help guide towards the most appropriate treatments with which to proceed. These may be used to compare a number of options being chosen between to deal with a particular risk, or may assist with filtering and prioritising a broader range of treatments, and allocating resources to the most 'worthy' options. Criteria may be weighted according to the needs of an organisation. Treatments are scored on the criteria of:

- Priority – based on the risk assessment results
- Cost – where low cost (<$5000) will receive a higher score
- Effectiveness and flexibility – using an adaptive approach; robust and flexible options
- Opportunity – including win-wins and multiple benefits
- Implementation – funding availability, reflects stakeholder role

Each criterion is scored out of five where a treatment with a higher total score tends to reflect better adaptation practice than a treatment with a lower total score (see Appendix 3 for scoring system). Adaptation actions with a MCA score of 21 or above were identified as the priority actions for Council to undertake within two years.

3.2   Adaptation Actions

3.2.1   Adaptation actions to be completed in 2 years

A total of 25 adaptation actions met the criteria for implementation within the next two years.   The proposed actions address risks from all areas of council business. They include a range of activities which when implemented will result in improvements to emergency planning and response; asset and natural resource management; and improved safety and comfort levels for council staff and community members.

3.2.2   Adaptation actions to be completed in 3-7 years

Eighteen adaptation actions have a MCA score between 16 and 20 inclusive and were identified for implementation in three to seven years. Actions in this category generally require either longer term planning for implementation or are high cost activities requiring funding provision.

3.2.3 Adaptation actions to be completed beyond 7 years

A total of two actions have a MCA score of 15 or below and are identified for implementation beyond seven years. These actions are less time critical than those which scored higher and may rely on external engagement making implementation and opportunity more challenging.

A summary of the prioritised adaptation actions by theme and timeframe is found in tables 2 to 4.

Table 2: Our People: Providing a great lifestyle

Adaptation action	Risk ref.	Climate Hazard	Responsible Directorate	MCA
Within 2 years				
Include climate change considerations in next review of Sport and Recreation Plan and Physical Activities Strategy.	E	Drought Heat Flood	Community Development	24
Include in criteria for selection of evacuation centre consideration of whether a major event is being held.	B	Fire Storms Flood	Business Services	24
Develop community awareness that environmental reserves can pose a fire hazard.	A	Fire	Community Development	23
Implement environmental reserve closures on total fire ban and extreme fire risk days.	A	Fire	Planning & Infrastructure	23
Promote Council Alliance for a Sustainable Built Environment tool BESS (Built Environment Sustainability Scorecard) for assessing building energy efficiency to developers.	D	Heat	Planning & Infrastructure	23
Liaise with police and emergency relief providers to develop strategies to deal with anticipated spikes in alcohol abuse and family violence during heatwaves and emergency events.	E	Heat Fire	Community Development	22
Use tools from the Resilient Community Buildings project to assess evacuation centres.	B	Fire Flood Storms	Business Services	22
Add formal acknowledgement of emergency role in contracts/leases/licences so community groups/operators understand the obligation.	B	Fire Flood Storms	Business Services	21
Develop a works list for grounds with criteria for managing climate change impacts to ensure a more programmed approach to upgrades.	C	Drought Flood	Planning & Infrastructure	21
Review management of highly used grounds and identify alternative practices and grounds for when the surface fails, and whether more grounds are required.	C	Drought Flood	Community Development	21

Within the next 3-7 years				14
Review water recycling use at grounds and identify opportunities to harvest stormwater for storage and reuse on all grounds, particularly new facilities.	C	Storms Drought	Planning & Infrastructure	20
Exclude mosquito breeding sites from developments during planning phase eg. stagnant water sources.	E	Storms	Business Services	19
Enforce septics standards and maintenance and identify existing systems in flood plains.	E	Storms Flood	Business Services	18
Beyond 7 years				
Work with NECMA and CFA to identify a measurable trigger point to review the adequacy of planning scheme mapping (i.e. when temperatures rise by 1 degree a flood study will be undertaken).	A	Fire Flood Heat	Planning & Infrastructure	15

Table 3: Our City: Planning for growth and development

Adaptation action	Risk ref.	Climate Hazard	Responsible Directorate	MCA
Within 2 years				
Design urban spaces with shade and connectedness to reduce heat island effect and encourage activity.	F	Heat	Planning & Infrastructure	23
Adopt the use of the IDM Sustainable Infrastructure guidelines for sustainable design and material selection and procurement.	F	Heat	Planning & Infrastructure	23
Review destination branding to ensure it is robust enough to respond to climate change.	J	All	Community Development	23
Review standards of maintenance for parks, develop categories which match with activities eg. Category 1 = mow every week and use RECLESS program to engage with the community	L	Drought Heat Flood	Planning & Infrastructure	22
Review herbicide program as weed spectrum and timing is changing.	L	Heat	Planning & Infrastructure	22
Monitor outcomes from Resilient Community Facilities project and scale up applicable tools and processes.	G	All	Planning & Infrastructure	22
Liaise with NE Water to review attitudes and strategies for increasing recycled water for residential and business use ie. Third pipe.	I	Drought	Planning & Infrastructure	21
Within the next 3-7 years				
Develop a relationship with NE Water to understand trigger points for restrictions, water split between residential and business, competing demand for water downstream under severe drought conditions and likely impact on existing businesses and potential for new businesses.	I	Drought	Investment Attraction	20
Review the effectiveness of building design codes and permit conditions to achieve desired environmentally responsive standards and review enforcement measures.	F	Heat	Planning & Infrastructure	20
Assess building and infrastructure design requirements against 2030 climate projections.	G	Heat Fire	Planning & Infrastructure	20
Include long term maintenance costs at the design stage - bring in whole of life costs when considering new projects.	G	Heat	Planning & Infrastructure	20

Reschedule opening hours for businesses and council run facilities in extreme weather eg. early morning/late evening.	K	Heat	Business Services	19
Develop policy to embed in local planning scheme to ensure more environmentally responsive urban design outcomes in new subdivisions.	F	Heat Drought	Planning & Infrastructure	19
Review infrastructure design parameters around water capture to cope with increased intensity of rainfall eg. Retention areas to utilise stormwater during dry periods.	I	Storms	Planning & Infrastructure	18
Survey community attitudes towards environmental values and development needs to deliver better planning outcomes and avoid conflict.	H	All	Planning & Infrastructure	17
Offer initiatives that support product development in areas of arts/cultural/community and aligns with destination branding.	J	All	Community Development	17
Define the interface between council and private land to manage expectations of council obligations.	H	Fire	Planning & Infrastructure	16
Beyond 7 years				
Upgrade Exhibition Centre to enable some large events to be held indoors.	K	Heat Storms	Community Development	11

Table 4: Our Future: Managing our business to support our community

Adaptation action	Risk ref.	Climate Hazard	Responsible Directorate	MCA
Within 2 years				
Integrate personal health and wellbeing into employee induction.	P	All	Community Development	24
Review Business Continuity Plan to ensure core services and responsibilities, and key priorities for each staff role in an emergency are identified.	P	Fire Storms Flood	Business Services	24
Review options for handling of waste after extreme events to develop strategies - use Marysville post 2009 as a case study.	N	Fire Storms Flood	Business Services	23
Engage and strengthen links with metal recycler and brick/cement reprocesser to determine their capacity to handle sudden, large increases in waste.	N	Fire Storms Flood	Business Services	23
Develop a monitoring system to capture information about effect of extreme events on employment ie. capture work hours spent on dealing with emergency then analyse so can understand changes over time.	P	Fire Storms Flood	Business Services	22
Develop an internal communications strategy to inform staff of changes to personnel during an extended emergency.	P	Fire Storms Flood	Community Development	22
Review council documents to determine any requirement for financial compensation for commercial operators experiencing financial loss during emergencies..	O	Fire Storms Flood	Business Services	21
Include formal emergency management role in staff position descriptions.	Q	Fire Storms Flood	Community Development	21
Within the next 3-7 years				
Develop a strategy for backfilling, succession and support for staff positions engaged in emergency management relief and recovery.	Q	Fire Storms Flood	Community Development	20
Investigate flexible working conditions to allow staff to vary work hours to accommodate extreme events.	P	Fire Storms Flood	Community Development	20
Develop an internal emergency response strategy to define staff roles and responsibilities during an emergency and in recovery phase.	Q	Fire Storms	Business Services	20

		Flood		
Develop a strategy to determine appropriate areas for protected reserves and roadsides to maintain and enhance biodiversity.	M	All	Planning & Infrastructure	18
Replant and/or manage vegetation along creek lines to slow runoff and trap sediment, decrease erosion and improve water quality.	M	Storms Flood	Planning & Infrastructure	18
Beyond 7 years				
Nil				

3.3 Resourcing

This Adaptation Plan is a long term strategy outlining how Council will respond to the changing climate and better prepare for the future. Resourcing for the Adaptation Plan will be assisted by the introduction of Council's *Climate Change Policy*. The policy acts as a driver for implementation of the Adaptation Plan which will be embedded into Council documents through the Risk Management Framework. The Adaptation Plan recognises that demands on Council services may change as a result of climate change and will be used to inform future budgetary decisions.

4   Implementation, monitoring and review

Assessing the progress of adaptation allows Council to review the effectiveness and direction of the Adaptation Plan, and to determine how well it has been implemented.   The adaptation actions developed in response to identified risks from climate change are the best available with current knowledge and technology. As new knowledge and technology becomes available, some actions may be redundant before being implemented. This illustrates the need for a continuous improvement cycle for identifying and delivering adaptation actions which become embedded in business as usual practices.

As this is Council's first Adaptation Plan the intent is to improve understanding of climate risks and integrate the adaptation actions into existing documents and practices. The risks posed by climate change have been identified across all work areas of Council highlighting the need to work cooperatively to manage these risks.   Table 5 outlines the governance structure for the adaptation plan.

Table 5: Summary of roles and responsibilities within council for the Climate Change Adaptation Plan

	Council	CEO	Directors
Role	Council Plan Climate Change Policy	Operational Directive – Climate Change Adaptation Action Plan	
Responsibility	Oversight of Adaptation Plan including funding	Ensure the Adaptation Plan is implemented and outcomes reported	Review and update climate change risks and implement adaptation actions.

4.1   Monitoring and evaluation

Monitoring and evaluation (M&E) of climate change adaptation is a critical component of the adaptation planning cycle. Embedding a monitoring and evaluation (M&E) process into Council procedures assists to establish continuous improvement and understanding of adaptation. It allows review of the success of a particular adaptation, and should work to strengthen future adaptations.

Planned adaptation processes can be categorised as either building adaptive capacity or delivering adaptation actions. This describes building organisational capacity to respond effectively to climate change or enabling practical actions to be implemented. The purpose of M&E is summarised below:

	Building Adaptive Capacity	Delivering Adaptation Actions
What is being monitored and evaluated?	Determining how well consideration of climate change risks and responses have been integrated into council decision making and organisational processes.	Determining how well the Adaptation Action Plan has been implemented and led to organisational action.

Review of this plan will focus on both building adaptive capacity and monitoring the implementation of a bundle of adaptation actions included in the Adaptation Plan.

4.2   Delivering adaptation actions

The risks identified in this Adaptation Plan will be managed through the Council's Risk Management Framework. As climate change is an external factor which affects Council, it is identified as a strategic risk. An overarching risk encompassing the 17 climate risks identified in this plan such as: '*Council fails to recognise and adapt to the changing climate*' should appear on the risk register. Strategic risks are reviewed every 6 months by the Executive and quarterly by the Audit team. A key treatment for this risk is implementation of the Adaptation Plan.

Strategic risks identified in this plan will be addressed through the organisation's risk register. These risks and linked actions will be assigned to the most appropriate work team (see Appendix 5) and will be reviewed quarterly through the Managers Forum with reports on action implementation.

The Director of Business Services through the Sustainability team has overall responsibility for the Adaptation Plan and will report progress on implementing the Adaptation Plan to executive level every six months. The Adaptation Plan will be reviewed and updated every 5 years to ensure Council's adaptation responses remain valid and relevant to local priorities and climatic conditions.

4.3   Building adaptive capacity

Organisational adaptation to climate change incorporates some or all of the following strategies; moderating potential damages, taking advantage of opportunities, and coping with the consequences. The Adaptation Plan plays a role in delivering these strategies by identifying the risks and opportunities of climate change impacts, and developing actions to moderate potential harm.

Building adaptive capacity within an organisation relates to the ability to embed considerations about climate change risks and impacts into business as usual structures. From the Adaptation Plan perspective this will be achieved when risks and actions from outside the plan are developed within normal organisational processes. Developing specific adaptation objectives and using indicators to monitor performance will enable Council to assess how normal organisational processes are changing to accommodate considerations of climate change. This work is outside the scope of the Adaptation Plan however could be developed into a separate project at a later date.

4.4   Adaptation indicators

Measuring performance against a baseline is commonly used when monitoring progress although establishing the baseline is challenging given the constantly changing nature of the subject of evaluation. However, providing the baseline remains flexible, it enables the use of indicators to monitor processes or outcomes.

Effective indicators need to show long term trends of the impact of climate change on key service areas. They need to be measureable, and specific to Council's operations, and should not replicate work done by other agencies.

Developing indicators is outside the scope of this Adaptation Plan but is an area which should be considered when reviewing the Plan. Indicators could be developed around key risk themes to assist Council in tracking the impacts of climate change and the Council's resilience to these impacts.

5   Conclusion

This Adaptation Plan has been developed in response to a recognition that despite efforts to mitigate climate change some form of adaptation is inevitable. The Adaptation Plan has identified risks to the continued delivery of services and protection of assets from future climate impacts, and developed responses to address these risks. These responses become adaptation actions when implemented and will help to increase Council's resilience and be better prepared for the future. Adaptation actions identified in this plan will assist to increase Council's emergency management response and recovery from bushfires and intense storms; improve staff and community working and recreation conditions; and enhance resource conservation efforts.

Climate change risks will vary over time in response to further climate change, and some adaptation actions will be made redundant before being implemented by new knowledge or technologies. A process of regularly monitoring the Adaptation Plan, and developing indicators, will ensure that Council's adaptation responses to climate change remain effective and relevant. Adaptation is not an end in itself but rather a constantly cycling process of adapting, monitoring, reviewing and adapting further. As such this Adaptation Plan is intended as a starting point for Council to understand the process of adaptation and commence building adaptive capacity.

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Appendix 1: Project Methodology

The *Climate Change Adaptation Action Plans* project is being delivered in partnership between Indigo Shire Council (lead organisation), Towong Shire Council and the Wodonga Council. The project is funded with the support of the Victorian Government under the Victorian Adaptation and Sustainability Partnership. While project resources are shared, individual outputs are being developed for each of the three councils.

The project is developing a *Climate Change Adaptation Action Plan* for each partner council by:

- systematically assessing the impacts of climate change on the achievement of local government objectives developing and prioritising responses to risks and opportunities for inclusion in an adaptation plan
- testing a selection of actions (outcomes shared across the partner organisations), and
- embedding the respective adaptation plans into organisational policies and plans (undertaken within each partner organisation).

Figure 4: **Outline of the Climate Change Adaptation Action Plans Project**

Project phase	Project planning	Assess risks & opportunities	Develop adaptation plans	Develop climate change policy	Implement, embed & review
Activities/ outputs	• Project plan	• Working Group/staff input into the organisation's **climate change Risk & Opportunity Assessment** • Literature review of existing risk assessments • Understanding organisational risk frameworks • Adopting a climate change scenario position statement • Developing guidance for climate change adaptation action development & selection	• Review of key Council strategic & policy documents • Working Group/staff input into developing responses to identified risks • Develop Climate Change Adaptation Action Plan template	• Developing monitoring and evaluation tool • Developing **Climate Change Policy** for adoption by Council • Finalise Climate Change Adaptation Action Plans	• Executive endorsement of *Climate Change Adaptation Action Plan* • Final project evaluation & reporting • Piloting/testing of selected actions • Knowledge sharing plan • Implementation plans (for schedule of doc reviews)
Timeline	**Aug 2014**				**Mar 2017**

Appendix 2:   Risk Framework

	Minor (4)	Moderate (3)	Major (2)	Outstanding (1)
Opportunities	• may change attitude or contribute to a change in attitude of small section of the community or organisation OR • small reduction in expenditure/no impact on budget or minimal/no increase in income for the business units' project or program OR • may improve or contribute to the improvement of capacity and/or efficiency of some business units OR • may enhance or contribute to the enhancement of reputation with small section of the community OR • may improve or contribute to the improvement of health/wellbeing of staff and/or sections of the community	• change in small section of the community and/or organisational behaviours OR • moderate reduction in expenditure or increase in income for the business unit project or program (by 15% to 30%) OR • improvement of capacity and/or efficiency of some business units OR • enhancement of reputation with a small section of the community OR • some improvement in health/wellbeing of staff and/or sections of the community	• significant changes in sections of the community or organisational behaviours OR • significant reduction in expenditure for the business units' project or program (by 30% or more) OR • significant improvement in capacity and/or efficiency of multiple business units OR • significant enhancement of reputation with sections of the community OR • significant improvement in health/wellbeing of staff and/or sections of the community	• significant change in community and organisational behaviours OR • significant improvement in organisational financial position OR • significant improvement in organisational capacity and/or efficiency OR • significant enhancement of reputation with all/most of the community OR • significant improvement in health, wellbeing of all/most community members or staff
	Minor (4)	**Moderate (3)**	**Major (2)**	**Catastrophic (1)**
Risks	• could require action to offset the impact on some aspect of a business units' program or project OR • consequence may be dealt with by routine operations or management action OR • limited impact on the business units' operational objectives OR • limited political/community sensitivity OR • management reporting required OR • may result in minor injury or reversible health damage which may be dealt with through primary first aid OR • no reputational damage	• would not threaten a business units' program or project, but could result in a significant review OR • some political/community sensitivity and local media scrutiny OR • parliamentary questions OR • require management initiated review OR • some impact on the business units' objectives OR • result in injury or health impacts that are reversible, but may require medical attention but limited on-going treatment	• would threaten the continuation of a business units' program or project OR • impact adversely on the achievement of a business units' strategic objectives OR • result in significant political community sensitivity and media scrutiny OR • ministerial intervention OR require external audit OR • result in life-threatening or serious injury which is irreversible requiring medical attention and on-going treatment OR • may significantly impact one or more of the organisations' objectives as outlined in the Council Plan	• would threaten the organisations' viability OR • result in extreme political/community sensitivity and national media scrutiny OR • result in a commission of inquiry or inquest OR • result in death or permanent disability OR • would not allow the organisation to achieve its objectives according to the Council Plan

Likelihood	Consequence			
Almost Certain (A) Can be expected to occur in most circumstances (i.e. weekly)	Significant	High	Extreme	Extreme
Likely (B) Will probably occur in most circumstances in the future (i.e. monthly)	Medium	Significant	High	Extreme
Possible (C) May occur in some circumstances in the future (i.e. yearly)	Medium	Significant	High	High
Unlikely (D) Could occur at some time in the future, but doubtful (i.e. every 2-10 years)	Low	Medium	Significant	High
Rare (E) Expected to occur only in the most exceptional circumstances (i.e. 10 years)	Low	Low	Medium	Significant

Appendix 3: Multi Criteria Analysis

When applying this to the worksheet, score each proposed treatment against each of the criteria (priority, cost, effectiveness & flexibility, opportunity, implementation) from 1 to 5, where 5 is a very favourable and 1 is very unfavourable.

Table 6: Criteria to assist selection of treatments

Criterion	Key considerations	Guidance for scoring	1	2	3	4	5
Priority	•Focus on priority climate change issues, as identified in the risk assessment •Generally high/extreme first to deal with appropriate resource allocation	Score priority according to the 2030 rating of the risks that the action is responding to	The risk isn't significant enough to make it onto the org's risk rating matrix	Addresses a low risk	Addresses a medium risk	Addresses a high risk	Addresses an extreme risk
Cost	Economic, environmental & social costs Capital & ongoing costs	Consider financial and in-kind value	Over $5.0M	$1.0M to $5.0M	$50,000 to $1.0M	$5,000 to $50,000	<$5000
Effectiveness & Flexibility	Reliability of assumptions that underpin the action. Robust & flexible Meeting objectives	Make a qualitative judgement along this scale	Rigid, potentially maladaptive				Highly flexible approach Responsive to new information
Opportunity	Includes win-wins, multiple/ancillary benefits Integrates with broader organisational risk management	Make a qualitative judgement along this scale	Limited opportunity No additional benefits				Integrates well with other efforts A good fit with org. timing and processes
Implementation	Funding sources Legitimacy: politically feasible, community acceptance	Make a qualitative judgement along this scale	No clear role for local govt. No funding source				Fits clearly in local govt. role Easy to implement

Appendix 4:   Participation

Table 7: List of Wodonga Council staff who contributed to the project

Planning & Infrastructure	Business Services	Community Development	Investment Attraction
David Becroft*	Susan Bennett * ^	Damien Adams *	Catherine Cunningham *
Kenneth Chan* ^	Helen Bray *	Marcia Armstrong *	Adam Wiseman ^
Timothy Cheetham*	Michael Caton *	Sue Beattie *	
Ken Cooper*	Trina Dale *	Courtney Bryce *	
Claire Coulson* ^	David Davies *^	Liona Edwards * ^	
Ellen Evans*	Kellie Davies^	Felicity Finn *	
Mir Faruque*	Paul Drummond *	Victoria Griffiths * ^	
Andrew Griffiths* ^	Kelvin Duke * ^	Shelli Hardwick *	
Bridie Guy^	Julia Fenech^	Simone Hogg *	
Trevor Ierino^	Paul Leddy ^	Natalie Howard *	
Terry Irvine*	Jim Maher * ^	Astrid Kriening *	
Bernard Kennedy* ^	Hayley Martin *	Samantha Lampe *	
Richard Lamb*	Craig McClanahan *	Shannon McKeogh *	
Belinda Landman*	Robert Meagher *	Kellie Miller^	
Owen Lappin* ^	Charles Mitchell * ^	Debra Mudra^	
Peter McLarty* ^	Julie Murray *	Melissa Nagle *	
Theo Panagopoulos*^	Abbey O'Brien *	Renee Nesbitt^	
Liz Rankin*	John Peach *	Danielle Palhares *^	
John Sidgwick*^	Jason Perna *^	Kim Strang * ^	
Anne Visser*^	Lauren Preston *	Claire Taylor *^	
Scott Williamson^	Suzann Read * ^	Marnie Teal *	
	Spencer Rich *^	Jenelle Williamson * ^	
	Dale Tassie *	Natalie Wills^	
	Mark Verbaken * ^	Bernadette Zanet^	
	Michelle Wilkinson * ^		

* Participated in learning afternoon tea (58 staff members)

^ Participated in drop-in session or follow up meeting (37 staff members)

Appendix 5: Implementation Plan

Table 8: Adaptation actions to be implemented by Planning and Infrastructure

Action no.	Adaptation action	Risk ref.
	Within 2 years	
1	Promote Council Alliance for a Sustainable Built Environment tool BESS (Built Environment Sustainability Scorecard) for assessing building energy efficiency to developers.	D
2	Design urban spaces with shade and connectedness to reduce heat island effect and encourage activity.	F
3	Adopt the use of the IDM Sustainable Infrastructure guidelines for sustainable design and material selection and procurement.	F
4	Review attitudes and strategies for increasing water harvesting and recycled water use. ie. third pipe, stormwater collection.	I
5	Review levels of service for public open space and develop criteria for determining standards of maintenance which match with activities eg. Category 1 = mow every week	L
6	Review herbicide program as weed spectrum and timing is changing.	L
7	Monitor outcomes from Resilient Community Facilities project and scale up applicable tools and processes.	G
	Within 3-7 years	
8	Review water recycling use at sportsgrounds and open public spaces and identify opportunities to harvest stormwater for storage and reuse.	C
9	Review the effectiveness of building design codes and permit conditions to achieve desired environmentally responsive standards and review enforcement measures.	F
10	Assess building and infrastructure design requirements against 2030 climate projections.	G
11	Include long term maintenance costs at the design stage - bring in whole of life costs when considering new projects.	G
12	Develop policy to embed in local planning scheme to ensure more environmentally responsive urban design outcomes in new subdivisions.	F
13	Review infrastructure design parameters around water capture to cope with increased intensity of rainfall eg. Retention areas to utilise stormwater during dry periods.	I
14	Survey community attitudes towards environmental values and development needs to deliver better planning outcomes and avoid conflict.	H
15	Define the interface between council and private land to manage expectations of council obligations.	H
16	Develop a strategy to determine appropriate areas for protected reserves and roadsides to maintain and enhance biodiversity.	M
17	Replant and/or manage vegetation along creek lines to slow runoff and trap sediment, decrease erosion and improve water quality.	M

Table 9: Actions to be implemented by Community Development

Action no.	Adaptation action	Risk ref.
	Within 2 years	
18	Include climate change considerations in next review of Sport and Recreation Plan and Physical Activities Strategy.	E
19	Review management of highly used grounds and identify alternative practices and grounds for when the surface fails, and whether more grounds are required.	C
20	Develop community awareness that environmental reserves can pose a fire hazard.	A
21	Develop a works list for sportsgrounds with criteria for managing climate change impacts to ensure a more programmed approach to upgrades.	C
22	Review destination branding to ensure it is robust enough to respond to climate change.	J
23	Liaise with police and emergency relief providers to develop strategies to deal with anticipated spikes in alcohol abuse and family violence during heatwaves and emergency events.	E
24	Develop an internal communications strategy to inform staff of changes to personnel during an extended emergency.	P
25	Include formal emergency management role in staff position descriptions.	Q
26	Integrate personal health and wellbeing into employee induction.	P
	Within the next 3-7 years	
27	Develop a strategy for backfilling, succession and support for staff positions engaged in emergency management relief and recovery.	Q
28	Investigate flexible working conditions to allow staff to vary work hours to accommodate extreme events.	P
29	Offer initiatives that support product development in areas of arts/cultural/community and aligns with destination branding.	J

Table 10:   **Adaptation actions to be implemented by Business Services**

	Adaptation action	Risk ref.
	Within 2 years	
30	Review Business Continuity Plan to ensure core services and responsibilities, and key priorities for each staff role in an emergency are identified.	P
31	Include in criteria for selection of evacuation centre consideration of whether a major event is being held.	B
32	Implement environmental reserve closures on total fire ban and extreme fire risk days.	A
33	Review options for handling of waste after extreme events to develop strategies - use Marysville post 2009 as a case study.	N
34	Engage and strengthen links with metal recycler and brick/cement reprocesser to determine their capacity to handle sudden, large increases in waste.	N
35	Use tools from the Resilient Community Buildings project to assess evacuation centres.	B
36	Develop a monitoring system to capture information about effect of extreme events on employment ie. capture work hours spent on dealing with emergency then analyse so can understand changes over time.	P
37	Review council documents to determine any requirement for financial compensation for commercial operators experiencing financial loss during emergencies.	O
38	Add formal acknowledgement of emergency role in contracts/leases/licences so community groups/operators understand the obligation.	B
	Within 3-7 years	
39	Develop an internal emergency response strategy to define staff roles and responsibilities during an emergency and in recovery phase.	Q
40	Reschedule opening hours for businesses and council run facilities in extreme weather eg. early morning/late evening.	K
41	Exclude mosquito breeding sites from developments during the planning phase eg. stagnant water sites.	E
42	Enforce septics standards and maintenance and identify existing systems in flood plains.	E

Table 11:   **Adaptation actions to be implemented by Investment Attraction**

	Adaptation action	Risk ref.
	Within 2 years	
	Nil	
	Within 3-7 years	
43	Develop a relationship with NE Water to understand trigger points for restrictions, water split between residential and business, competing demand for water downstream under severe drought conditions and likely impact on existing businesses and potential for new businesses.	I