WARREN BLACKWOOD ALLIANCE OF COUNCILS

Subregional Climate Change Action Plan 2022-32

Updated November 2025

Shire of Boyup Brook

Shire of Bridgetown-Greenbushes .... simply beautiful

Shire of Donnybrook Balingup

Shire of Nannup rest • connect • grow

SHIRE OF MANJIMUP

Acknowledgements

The Warren Blackwood Alliance of Councils (WBAC) acknowledges the Traditional Custodians of the land and seas of the region, and its pays respects to Elders past, present and emerging.

The WBAC acknowledges and appreciates the contribution of the Shire of Bridgetown-Greenbushes Sustainability Advisory Committee to the WBAC in advancing the climate action agenda in the region.

About this document

This draft Subregional Climate Change Action Plan has been developed to assist the Warren Blackwood Alliance of Councils (WBAC) to establish climate change actions that improve the resilience of their operations, and their communities, to the impacts of climate change, at the subregional scale.

Developed by the WBAC Climate Alliance Reference Group (CARG), this draft Subregional Climate Change Action Plan is underpinned by a draft WBAC Climate Change Policy.

It is important to acknowledge that this WBAC Subregional Climate Change Policy and Action Plan are non-binding on member Councils. The actions outlined in the Subregional Climate Change Action Plan should align with the commitments that have been endorsed by the Councils as part of the WBAC Climate Change Policy. The identified actions should also be reflected in individual member Councils strategic documents and operating procedures, where applicable (e.g. Strategic Community Plan, Corporate Business Plan, Risk Management and Business Continuity Plans). Such reflections are the sole prerogative of the individual member Councils. A number of actions identified also directly relate to actions identified in the Warren Blackwood Sub-regional Growth Plan 2019[i].

The Subregional Climate Change Action Plan focuses on identifying actions that the WBAC can pragmatically take to mitigate risks and impacts, reduce costs and adapt to the impacts of climate change on their operations, primarily at the subregional level. Many actions are also applicable, and have been identified as such, for potential implementation at the individual Shire level.

In providing this draft Subregional Climate Change Action Plan to the WBAC, the CARG is acutely aware that the individual Shires have varying levels of resource capacity and commitment, and that for many actions to be progressed, additional resources will be required, through direct funding, grant funding and collaborative partnerships with State and/or Commonwealth government agencies. Such resources will need to be deployed by the WBAC at the subregional level, and by individual member Councils, for local climate actions as determined by those individual member Councils.

Executive Summary

The impacts of climate change are already being felt by communities around the world, including increasing temperatures, longer droughts, more frequent and intensive natural disasters such as heatwaves and bushfires, and sea level rise, and associated increases in coastal erosion and inundation. With these impacts projected to further increase over the coming years and decades, the Warren Blackwood Alliance of Councils needs to take action now to safeguard the future.

The risks associated with climate change are becoming more important to Local Governments, and the need for Local Governments to respond to, and manage the impacts of climate change has never been greater. With Local Governments on the front line of addressing climate change, the WBAC has an important role to play. To establish our support for pragmatic climate change action, the WBAC has committed to a Subregional Climate Change Policy and Action Plan.

The WBAC recognises that climate change will continue to have a significant effect on the Western Australian environment, community and economy. Accordingly, we have committed to continue addressing climate change at the subregional level and within our member Local Government areas to minimise these impacts.

The WBAC acknowledges the importance of taking action, and as such is committed to continue finding practical and affordable ways to address climate change risks and impacts within the Warren Blackwood subregion. Underpinned and informed by the work of our CARG, we have developed this draft Subregional Climate Change Action Plan, which brings together 11 adaptation, 9 mitigation, 14 leadership and advocacy, and 7 communication actions that we need to undertake in order to help tackle climate change, build resilience and minimise the vulnerability of our communities to climate change.

Our overall objective is to act to mitigate, and adapt to, climate change and therefore sustain the social, environmental and economic qualities which are intrinsic to the character of our region.

Acting on and responding to climate change is an ongoing process, and this Subregional Climate Change Action Plan will be need to be reviewed and updated every three years to reflect changing political, legislative and resourcing circumstances, and emerging scientific information.

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Context

Climate science

International scientific consensus is that climate change is occurring, and it is driven by anthropogenic (human) causes, with human activities having a profound impact on the concentration of greenhouse gas emissions since the start of the industrial revolution. Ultimately, these activities, such as the burning of fossil fuels, land clearing and agriculture, have increased greenhouse gas concentrations in the atmosphere, leading to changes in the climate system over a relatively short period of time.

The Intergovernmental Panel on Climate Change (IPCC) is an international body responsible for assessing the science related to climate change. IPCC assessments provide a scientific basis for governments at all levels to develop climate related policies, and they are fundamental inputs to negotiations at the United Nations Climate Conferences and the negotiation of international climate agreements. The IPCCs Fifth Assessment Report, found that:

> *"Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased"*[ii].
>
> *Most aspects of climate change will persist for many centuries even if emissions of CO_2 are stopped."*[iii]

The IPCC has also found:

> *"It is extremely likely [95–100%] that human influence has been the dominant cause of the observed warming since the mid-20th century."*[iv]

Climate scenarios

In order to make projections of future climate change, the scientific community has developed climate models, using advanced computer simulations, for a range of different greenhouse gas emissions scenarios (i.e. projections of what the global greenhouse emissions may be in future years). These scenarios are used to inform policy and decision makers to plan for the future.

In the Fifth IPCC Assessment, a set of four possible scenarios, also known as Representative Concentration Pathways (RCPs), were proposed. These RCPs represent possible pathways based on global atmospheric greenhouse gas emissions concentrations and predict how concentrations of greenhouse gases in the atmosphere will impact the climate.

- **Very low emissions scenario** – based on the IPCC's RCP2.6. Under this scenario, significant collaborative effort will be made to drive

decarbonisation and lower emissions, which will result in a temperature increase of 1°C, a 0.4m sea level rise and a minor increase in extreme weather events (by 2081-2100, relative to 1986-2005).

- **Low emissions scenario** – based on the IPCC's RCP4.5. Under this scenario, collaborative efforts will be made to drive decarbonisation and lower emissions, which will result in a temperature increase of 1.8°C, a 0.47m sea level rise and a moderate increase in extreme weather events (by 2081-2100, relative to 1986-2005).

- **High emissions scenario** – based on the IPCC's RCP6.0. Under this scenario, minimal efforts will be made to drive decarbonisation and lower emissions, which will result in a temperature increase of 2.2°C, a 0.48m sea level rise and a moderate increase in extreme weather events (by 2081-2100, relative to 1986-2005).

- **Very high emissions scenario** – based on the IPCC's RCP8.5. Under this scenario, very low efforts will be made to drive decarbonisation and lower emissions, which will result in a temperature increase of 3.7°C, a 0.63m sea level rise and a large increase in extreme weather events (by 2081-2100, relative to 1986-2005).

Projected climatic changes

In the 20th century the impacts of climate change have become increasingly visible, with observed impacts including increases in global average air and ocean temperatures, rising global sea level, long-term sustained widespread reduction of snow and ice cover, and changes in atmospheric and ocean circulation and regional weather patterns, which influence seasonal rainfall conditions.

These changes threaten both human and natural systems, both directly and also through increased extreme weather events, such as heat waves, cyclones and other natural disasters, coastal inundation due to sea level rise, and disruptions to rainfall patterns.

In Australia, the 2018 Bureau of Meteorology State of the Climate Report (CSIRO and Australian Government Bureau of Meteorology 2018)[v] noted that Australia has experienced increases to sea and air temperatures, sea level rises and ocean acidification, along with observed declines in rainfall amounts in the southwest and southeast of Australia.

Australia is the driest inhabited continent on earth, and even in the absence on climate change is characterised by variability and extremes. With the impacts of climate change projected to place additional stress on our natural and human systems, there is an urgent need to address climate change.

For the South West of Western Australia, projected changes to our climate in the future include:

- Further increase in temperatures, with more extremely hot days and fewer extremely cool days;

- More heat waves that will be longer and hotter;
- More frequent, extensive, intensive and longer-lasting marine heatwaves;
- Ongoing sea level rise;
- Further warming and acidification of the oceans;
- A decrease in cool-season rainfall across southern Australia, including the southwest of WA;
- More frequent, longer and more intense droughts across southern Australia, including the southwest of WA;
- More intense heavy rainfall throughout Australia, particularly for short-duration extreme rainfall events (storms);
- An increase in the number of high fire weather danger days and a longer fire season for south western Australia; and
- Through a combination of many of these impacts, changes to biodiversity including increased probability of species extinction.

These changes will have impacts on the region's environment, infrastructure and assets, and communities' health and well-being.

Role of Government

As a signatory to the Paris Agreement under the United Nations Framework Convention on Climate Change and the United Nations Sustainable Development Goals (SDGs), Australia has committed to taking action on climate change and to ensuring that mitigation and adaptation action is equitable and consistent with the aims of the SDGs. The Paris Agreement expressly recognises the importance of engagement at all levels of government. As such, the management of climate-change risks is spread across the three tiers of government: Commonwealth, State and Territory and Local.

In 2012, the Councils of Australian Governments (COAG) formally agreed on the roles and responsibilities for climate-change adaptation in Australia.

The Commonwealth Government is responsible for:

- Managing climate change science and national adaptation research to allow Australia to effectively adapt to the impacts of climate change;
- Providing leadership on national adaptation reform, and collaborating with States and Territories in setting and implementing national priorities and regional priorities;
- Managing climate change risks and impacts across the Commonwealth's portfolio of assets and programs; and
- Maintaining a strong, flexible economy and social safety net that will help Australia adapt to climate change impacts by ensuring resources are available to respond to climate change and can be deployed efficiently.

The State Government is responsible for:

- Providing local and regional science and information;

- Managing climate change risks and impacts across State assets and programs;
- Working with the Commonwealth to implement the national adaptation reform; and
- Encouraging climate resilience and adaptive capacity.

In 2020, the Western Australian State Government released its Climate Policy[vi], which has several actions directly related to Local Government, viz:

- Western Australian Regional Climate Alliance - Support regional local governments to drive action on climate change, energy and sustainability through regional partnerships.
- Climate Resilience Action Plan 2022–25 - Develop a coordinated, collaborative plan to support Western Australian industries, cities and regions to identify and manage climate impacts and enhance climate resilience.
- Coastward - Implement a coastal adaptation program to deliver a strategic response to the recommendations of the Assessment of Coastal Erosion Hotspots report, including grants to support local governments to undertake coastal management for the public benefit.

Coastal Adaptation and Protection Fund - Invest in adaptation and interim protection works for highpriority coastal erosion hotspots. There are numerous other State Government actions from its Climate Policy that will have a direct and substantial impact on the WBAC Sub-regional Growth Plan 2019, and this Subregional Climate Change Action Plan. It is imperative that a review of the WBAC Sub-regional Growth Plan is undertaken, in collaboration with key stakeholders, in order to give full consideration to the State Government proposed activities as outlined in its Climate Policy on said Sub-regional Growth Plan.

Local Governments are on the frontline in addressing climate change impacts and have a critical role to play in ensuring that mitigation and adaptation responses are suitably tailored to the specific risks in our area, and that local communities and stakeholders are consulted and involved in these efforts.

As small regional local governments with commensurately small rate bases, there is a significant resource deficit reality that will need to be addressed. The WBAC subregional approach is a pragmatic reflection of the economies of scale and collaborative opportunities that can be realised through a collective approach by low resourced Shires.

Local Governments are responsible for:

- Administering relevant state and territory and/or Commonwealth legislation to promote adaptation as required including the application of relevant codes;
- Managing risks and impacts to public assets owned and managed by Local Governments;
- Managing risks and impacts to Local Government service delivery;
- Collaborating across Local Governments and with State and Territory Governments to manage risks of regional climate change impacts;

- Ensuring policies and regulations under their jurisdiction, including local planning and development regulations, incorporate climate change considerations and are consistent with State and Commonwealth Government adaptation approaches;
- Facilitating building resilience and adaptive capacity in the local community, including through providing information about relevant climate change risks;
- Working in partnership with the community, locally based and relevant NGOs, business and other key stakeholders to manage the risks and impacts associated with climate change; and
- Contributing appropriate resources to prepare, prevent, respond and recover from detrimental climatic impacts.

Adaptation and Mitigation

The impacts of climate change will impact the WBAC sub-region in a variety of ways. These impacts are predicted to increase in severity and frequency in the future, which will pose increasing risks to our community, environment, assets and infrastructure. In order to respond to these impacts there are two main categories of climate change response: adaptation and mitigation, both of which are essential, and equally as important in addressing climate change.

1. **Climate change mitigation** involves actions that are intended to reduce our greenhouse gas emissions to minimise the severity of climate change or enhance the sinks for these emissions. For example, mitigation actions may include switching to renewable forms of energy such as wind and solar, and implementing energy efficiency initiatives, and supporting emission sinks such as investing in revegetation and or modified landscape management (e.g. fire management) to improve carbon capture.

2. **Climate change adaptation** consists of actions undertaken to reduce the consequences of the physical impacts of climate change, as well as to harness any opportunities as a result of these actions. Through adaptation actions we will become more prepared and able to adapt to the impacts of climate change, reducing our vulnerability. For example, adaptation actions may include building seawalls to protect infrastructure from erosion, raising the height of houses in flood prone areas, or behaviour change initiatives, such as monitoring vulnerable segments of the community during heatwaves.

Mitigation involves avoiding and reducing the causes of climate changes (greenhouse gas emissions), whereas adaptation addresses the impacts of climate change and associated risks and how we respond to them. For effective global mitigation it is important for everyone in the community, all businesses, and all levels of government to contribute to reducing emissions. Therefore, an effective climate change response requires both adaptation and mitigation actions to build the resilience of our subregion to the impacts of climate change and help avoid worst case climate change scenarios.

For the WBAC, this also requires a commitment to communication and political leadership and advocacy to ensure the required collaboration and resources can be acquired to ensure the timely delivery of robust, pragmatic adaptation and mitigation action.

This plan outlines the Warren Blackwood Alliance of Councils Climate Change Policy commitments, and the relevant adaptation, mitigation, leadership and advocacy, and communication advocacy actions that we have committed to at both the subregional and organisational levels.

Advocacy and Leadership

This Climate Change Action Plan captures and highlights the opportunities and actions across the region that will help the Shires of the region respond to the impacts of climate change. However, not all adaptation and/or mitigation actions can be organised or implemented at a WBAC subregional level. Some responsibilities, authority and resourcing capacities sit at the State or Commonwealth levels.

In these circumstances, political advocacy by Shire Presidents and elected members will be critical to influence and lead action.

Engagement with local politicians, relevant State Ministers and Directors General to socialise the subregional climate change action agenda will be essential in the acquisition of the required human and financial resources for a significant number of the identified actions in the Climate Change Action Plan.

Existing avenues for advocacy already exist through elected member and senior officer participation in relevant state agencies engagement processes (e.g. representation on the South West Development Commission), and the existing WALGA governance structures (South West Country Zone of WALGA). These constructs should be should be maximised. Aside from direct Commonwealth Ministerial engagement, the opportunity to engage via the Australian Local Government Association - though submitting motions to the annual ALGA National General Assembly - also should not be discounted when advocacy to the Commonwealth Government is required.

Communication

Communication is an important component of climate change action planning, to ensure that both the WBAC and its Shires are able to reach their desired respective audiences to obtain support for climate change adaption or mitigation action, and to share its successes and challenges.

Local Governments may integrate communications relating to their climate actions within existing communication programs, or determine that significantly new communication efforts are required.

Local Governments should consider both internal (i.e. within their operations) and external (i.e. outside of their operations) communication methods. Local Governments should ensure that communications do not discriminate and are accessible for the whole community.

It is important for the WBAC to communicate what we are doing in relation to climate change to our communities and stakeholders, to obtain support for our actions, and to share our successes and challenges.

WBAC Shires have already integrated a number of aspects relating to climate change within their Strategic Community Plans, Corporate Business Plans and operational plans. It is important that key stakeholder engagement and messaging is conducted in a consistent manner across the region.

The WBAC acknowledges that member Shires are best placed for local community engagement.

The WBAC climate action communication plan comprises both internal and external aspects.

The WBAC will:

- Share resources on our adaptation and mitigation actions
- Provide updates at member Councils' meetings
- Include communications within internal newsletters
- Communicate what we are doing through our websites
- Share good news stories in our local media outlets
- Establish an external working group of key stakeholders and community leaders

Stakeholder Engagement

Stakeholder engagement ensures that the needs of all stakeholders, both internal and external, are considered in organisational goal setting and strategy development. As such, the WBAC believes that effective consultation is critical to the success of climate adaptation and mitigation. Therefore, in order to evaluate the effectiveness and understand the viability of the WBAC response to climate change, the WBAC engages with both member Shires and external stakeholders.

Obtaining stakeholder input and understanding stakeholder views on our climate change response will also help us to more effectively design and embed actions within the WBAC Subregional Climate Change Action Plan. We will also use stakeholder engagement as part of our monitoring process to assess the effectiveness of our actions. We will conduct the following stakeholder engagement activities:

- As part of updating a Shire Strategic Community Plan, conduct a survey of communities to gain insights on the perceptions of our climate change challenges, and our climate change mitigation and adaptation actions.
- Consult with elected members of our member Shires. Obtain individual Shire Council sign off on our draft Subregional Climate Change Policy, and Action Plan.
- Establish a climate change stakeholder working group with key stakeholders and the community, to assist the CARG in its deliberations.
- Engage with other Local Governments within the South West region to share learnings and progress regional actions.
- Engage with WALGA and other organisations to remain informed, and to contribute to, discussions on climate change management at the Local Government level.

Approach to Climate Change

In 2021 the WBAC committed to a Subregional Climate Change Policy and Action Plan. As part of this, we have committed to:

- Develop and implement a Subregional Climate Change Action Plan (this Plan).
- Encourage and empower the local community and local businesses to reduce their greenhouse gas emissions and to adapt to the impacts of climate change.
- Support WALGA to work with State and Federal Government to ensure achievement of greenhouse gas emissions reduction targets as set out in key National and International agreements.
- Support WALGA to work with State and Federal Government to implement key actions and activities for climate change management at a local level.
- Work with key stakeholders within region, where relevant, to ensure achievement of the actions set out in our Climate Change Action Plan.
- Assess the locally specific risks associated with climate change and implications for our services, and identify areas where appropriate mitigation and/or adaptation strategies should be further developed and implemented.
- Ensure that, at appropriate review intervals, our Subregional Climate Change Policy and Action Plan, as well as individual Shire Corporate Business Plan and Strategic Community Plans/policies/strategies are reviewed and amended to incorporate the latest climate science, and to reflect the subregional climate change management priorities.
- Monitor the progress of the WBAC Climate Change Action Plan adaptation and mitigation actions and communicate our achievements to the both the member Councils and their Communities.

In order to respond to the impacts of climate change, the WBAC and its members have already taken action including, but not exclusive to:-

- Retrofitting of local government buildings with energy efficient technologies. (Shire of Boyup Brook, Shire of Bridgetown-Greenbushes, Shire of Donnybrook-Balingup, Shire of Manjimup, Shire of Nannup)

- Bulk procurement of 100% renewable energy for contestable Shire sites (Shire of Boyup Brook, Shire of Bridgetown-Greenbushes, Shire of Donnybrook-Balingup, Shire of Manjimup)

- Solar PV Implementation Plan
(Shire of Bridgetown-Greenbushes, Shire of Manjimup)

- Developing a Climate Change Action Plan
(Shire of Bridgetown-Greenbushes)

- Retrofitting streetlights with energy efficient streetlighting
(Shire of Donnybrook-Balingup, Shire of Manjimup)

- Joined the Cities Power Partnership
  (Shire of Donnybrook-Balingup)

- Retrofitting parks and gardens with water efficient plants and/or irrigation systems
  (Shire of Boyup Brook, Shire of Bridgetown-Greenbushes, Shire of Donnybrook-Balingup, Shire of Manjimup, Shire of Nannup)

- Being a Water Corporation certified Waterwise Council
  (Shire of Bridgetown-Greenbushes)

The WBAC are committed to taking further action at both the subregional and local level to mitigate against, and adapt to, climate change, and hence have developed this Subregional Climate Change Action Plan.

We use the following principles to assist our subregional climate change action planning:

- Pragmatic – Our goals and actions work towards a pragmatic vision.
- Inclusive – We involve multiple Shires, stakeholders and communities in planning and implementation.
- Fair – We seek solutions that equitably address the risks of climate change and share the costs and benefits of action across the WBAC Shires.
- Comprehensive and integrated – We aim to coherently undertake actions across a range of sectors within the WBAC, as well as supporting broader regional and initiatives, and the realisation of priorities of higher levels of government, when possible and appropriate.
- Relevant – Our actions seek to deliver local benefits and support local social, economic and environmental priorities.
- Actionable – We propose cost-effective actions that can realistically be implemented.
- Evidence-based – Our action planning reflects both scientific knowledge and local understanding.

Climate Risk Assessment Process

As part of our action planning process, we conducted a qualitative Shire level climate change risk assessment, which allowed us to identify the aspects of our operations most at risk to the physical and transitional impacts of climate change. This enabled us to prioritise management of these at risk areas through the development of our current and future Shire actions.

It is recommended that a more detailed risk assessment process be conducted in line with the ISO 31000:2018 Risk Management.

The key steps in the risk assessment process should be:

- Preparing for the risk assessment by gaining agreement on the purpose of the assessment, collating the data and information that we required, identifying the resources needed, and forming the project team and developing a schedule.
- Defining the scope, and developing an understanding of the external and internal context of the risk assessment. This included identifying our objectives and responsibilities, and reflecting on the demographic, socio-economic and environmental context in which we operate.
- Identifying the risks that we will be exposed to as a result of climatic changes, and the shift to a low carbon world.
- Evaluating the consequence and likelihood of each risk, and identifying the controls that we currently have in place to manage these risks.
- Following this process, a combination of the consequence and likelihood ratings can generate inherent risk scores, and then be assessed how well existing controls are managing these risks, to determine the residual risk.
- This should include a workshop with key Shire internal stakeholders to validate our risks, agree on consequence and likelihood ratings, identify existing controls for each risk and their effectiveness, and determine residual risk ratings.
- Using the residual risk scores, Shires will be able to prioritise risks and use this information to inform the setting of future actions.

Risks and Opportunities

We recognise that climate change presents various significant challenges, risks and opportunities to the WBAC Shires.

Changes to our climate will present risks across many aspects of our subregion including

- Damage to, or loss of, properties building and infrastructure

- Reduced community liveability
- Damage to, or loss of, biodiversity and natural habitat
- Increased heat, pest and water stress on vegetation
- Increased demand for water and electricity services
- Increased risks to public health or loss of life (e.g. through disease outbreaks exacerbated by higher temperatures)
- Reduced public safety and/or wellbeing
- Increased number of higher bushfire risk days, and severe bushfires
- Damage to, or loss of biodiversity and natural habitat, as a result of coastal inundation and/or salt intrusion
- Damage to, or loss of coastal and low-lying buildings, infrastructure and land, as a result of coastal inundation
- Potential public displacement resulting from residents being forced to flee certain areas as a result of climatic changes
- Increased insurance premiums
- Increased maintenance of road and drainage networks
- Decreased environmental water quality
- Decreased water security
- Increased demand on emergency response and management services
- Impacts on food resources and food production industries due to reduced agricultural outputs from reduced rainfall and damage to agricultural lands

While the risks of climate change have the potential to have severe impact on our subregion, managing these risks also creates opportunities for the WBAC to improve the resilience of both its communities and respective Shire operations.

Broadly, effective adaptation and mitigation actions will assist to minimise disruptions and costs of climate change physical impacts. Subject to business cases, this may represent a good investment for the Local Government. Taking action to address climate change can also have positive social, environmental and economic impacts. For example, improving liveability, social inclusion, health and wellbeing, and our emergency preparedness, and supporting economic growth of both the sub-regional and local economies.

Evaluation and Prioritisation of Actions

To select climate change actions that will bring about the greatest improvements in the resilience of WBAC activities, while being pragmatic and achievable for our subregion, we undertook a first-pass assessment of a long list of adaptation and mitigation actions against a number of criteria, which enabled us to prioritise those that can realistically be achieved over the life of the Action Plan (2022-2032).

The following criteria were used as part of the assessment process:

- Ability to manage climate risks
- Scale of investment needed
- Scale of potential emission reductions
- Ability to facilitate/leverage State and Commonwealth investment
- Equity implications (benefits and costs to various stakeholders)
- Complexity
- Human resources available to implement action
- Level of funding required to implement action
- Timeframe for implementation

Each action was assessed against the criteria and assigned a draft score of either Low, Medium or High. Where it was identified that one or multiple Shires have the resources available to execute a particular action, and that the action will result in our desired outcomes, these were selected for inclusion in the WBAC Sub-region Climate Change Action Plan.

Monitoring and Review

Having a formal, periodic process in place for monitoring and evaluating our Subregional Climate Change Action Plan is fundamental to understanding our progress in addressing climate change, and the effectiveness of our actions, and will assist us in guiding future decisions. Monitoring and evaluation of our Subregional Climate Change Action Plan will also generate learning and idea creation opportunities in relation to climate change which will help to improve the design and delivery of future climate change related policies, plans and activities. It is our aim that, through this ongoing monitoring and evaluation process, we will embed climate change adaptation considerations into our business as usual processes.

We will use indicators to understand how we are tracking in relation to implementing our adaptation actions. For each action we have identified indicators that we can measure to track performance and understand whether the desired outcomes are being achieved.

This Subregional Climate Change Action Plan will be monitored on an annual basis, in order to report to member Shires, and make recommendations to respective annual budgets, as required.

The outcomes of the annual review will be used to identify key challenges and focus areas for the following years based on actions that are not on track for completion within their timeframe, and actions that have not resulted in the achievement of the intended outcomes.

Following the annual monitoring process, we will evaluate our Subregional Climate Change Action Plan and identify whether any areas require updates, or additional funding/focus in order for the outcomes to be achieved. Any substantive changes made will be communicated through the respective Shires and to our community where relevant.

Reporting

The outputs of the three yearly review process will be documented in a WBAC report to the Shire Councils, showing progress against each action. Where changes are required to the Subregional Climate Change Action Plan as a result of the annual report, these will be submitted to individual WBAC Shire Councils for approval.

The outcomes of the full review process in 2026 will generate a revised version of the Subregional Climate Change Action Plan, which will be submitted to WBAC members for Council approval, before being adopted.

Major updates and achievements will be publicly communicated to our residents, businesses, and the wider community such as through online media communications, and within our annual reporting requirements.

Actions

On the following table, the WBAC has initially identified these climate change related actions as current priorities:-

Category	Adaptation Action	Opportunity for Stakeholder Engagement	Priority	Targeted completion date
A1	Develop and implement a subregional waste strategy, including an assessment for localised industry hubs for priority recycled materials and green waste (GO/FOGO) and the development of a business case for value adding waste streams.	WBAC / Shires	H	2025-2028
A2	Support the development of alternate, economically sustainable energy opportunities to improve local resilience and decrease reliance on the South West Interconnected Grid. *	WBAC / Shires / Western Power	M	2028
A3	Evaluate and facilitate mini grids/embedded networks/grid connected solar panels/hybrid grids embedded in the community to reduce emissions from electricity consumption.	WBAC / Shires / Western Power	M	2028
A4	Advocate to the State Government to provide the Shires with the necessary tools and knowledge to enable a Public Health Plan, or similar, to be developed to respond to the challenges that climate change will have on public health and wellbeing. Assess the implications of the findings of the Climate Health Inquiry.	WBAC / Shires / DoH	M	2027
A5	Advocate to relevant agencies for more specific flood modelling and water balancing, and collaborate with DWER and DBCA on developing Streamflow Management Plans for stressed waterways in the region.	WBAC / Shires / DBCA / DWER / BoM	M	207
A6	Develop a business case for a subregional bulk streetlight replacement program with Western Power.	WBAC	M	2027

A7	Attain and ensure subregional climate data informs Shire Strategic Community, Corporate Business, Risk Management and Business Continuity Plans.	Shires	M	2032
A8	Develop and implement a Stakeholder engagement process to obtain input from the wider community on climate change adaptation planning.	Shires	M	2025-27
A9	Revise Regional Tourism Strategy, or similar, which considers how climate change will impacts tourism, and identifies tourism areas that are likely to be resilient in the long term (*The Future of Tourism: Southern Forests and Valleys Region*, Warren Blackwood Alliance of Councils, 2017; *State Government Strategy for Tourism in Western Australia* 2020, Tourism Western Australia, 2010).	WBAC	M	2027
A10	Work with Water Corporation and DWER to evaluate technology options for potable water security for Windy Harbour, Northcliffe and other 'at risk' communities.	Shire/s / Water Corporation / DWER	M	2028
A11	Shires to include an optional section in community grant applications inviting applicants to identify any contributions to environmental or climate resilience outcomes, where relevant.	Shires	M	2026
A12	Coordinate a subregional approach to regional water security, including alternative water sources, localised supply solutions, and collaboration with DWER and Water Corp	WBAC / Shires / DWER/Water Corp	H	2025+ Ongoing

Category	Mitigation Action	Opportunity for Stakeholder Engagement	Priority	Targeted completion date
M1	Continue to provide support to the Chief Fire Control Officer and Volunteer Bush Fire Brigades. *	Shires	H	Ongoing
M2	Member Shires continue to partner with DFES, DBCA and FPC on Bushfire mitigation. *	Shires	H	Ongoing
M3	Ensure Shire bushfire management planning and actions considers future regional climate change impacts.	WBAC / DFES / DBCA / FPC	H	Ongoing
M4	Procure a WBAC wide energy audit of local government facilities, to enable targeting of high emission/high cost operations.	WBAC / Shires	M	2027
M5	Undertake a regional kerbside waste minimisation strategy, including community education. Consider using the WALGA Bin-tagging program.	Shires / WALGA	M	2025-28
M6	Ensure all Community events are Wastewise events – apply for grant funding from the Waste Authority.	Shires / Waste Authority	M	2027
M7	Investigate a subregional wide urban forest / street tree strategy to reduce heat island effects in regional towns.	WBAC / Shires	M	2022+
M8	Undertake a subregional wide assessment of urban stormwater harvesting/WSUD/ hydrozoning and other water efficiency opportunities to reduce potable use and improve overall water security. Join the Water Corporation Waterwise Councils Program	Shires	M	2027
M9	Offset Shire vehicle emissions through participating in Greenfleet, or similar accredited offset program.	Shires	M	2027

Category	Leadership and Advocacy	Opportunity for Stakeholder Engagement	Priority	Targeted completion date
L1	Support knowledge partnerships to assist Local Government through recovery processes after large emergency events. *	Shires	H	Ongoing
L2	WBAC's Subregional Growth Plan (2023) to be revisited and amended when the State Climate Policy (2020) is updated, ensuring alignment with new climate adaptation and mitigation priorities.	WBAC	H	Ongoing
L3	Resource a dedicated WBAC officer to advance action items in the final Subregional Climate Change Action Plan.	WBAC	H	Ongoing
L5	Advocate to the Minister for Environment, Minister for Primary Industries and Regional Development and the Minister for Planning and Heritage for the continuation of the State Government Climate Policy Regional Climate Alliance, CoastWA, and the Coastal Adaptation and Protection Fund, and for the inclusion of State Climate Policy actions in all Development Commission Investment Plans. Inform the Minister for Local Government.	WBAC / SWCZ / WALGA	H	Ongoing
L6	Advocate to the State Government and relevant agencies to continue to improve emergency warning systems.	WBAC / Shires / SWCZ / WALGA / DFES	H	Ongoing
L7	Support programs, activities and initiatives which encourage strategic alliances, cooperative approaches and shared resources to optimise outcomes. *	WBAC / Shires	H	Ongoing
L8	Advocate for a review of regional strategic planning documents are reviewed to ensure they reflect subregional and State Government climate initiatives (South West Strategic Plan 2021-2023, South West Development Commission, 2021; South West Regional Blueprint, Regional Development Australia South West and South West Development Commission, December 2014).	WBAC / SWDC / RDASW	H	2027

L9	Advocate for a state planning policy, with the inclusion of measures to reduce carbon emissions of new buildings and infrastructure.	WBAC	M	2025-27
L10	Advocate to the State Government and other relevant agencies for stronger planning and infrastructure guidelines that account for climate change impacts.	WBAC / SWCZ / WALGA / DPLH	M	2027
L11	Ensure Shire policies and regulations, including local planning and development regulations, incorporate climate change considerations and are consistent with State and Commonwealth Government adaptation and mitigation approaches.	Shires	H	Ongoing
L12	Advocate to relevant State and Commonwealth Government agencies for residential/industry rebates and incentives to assist energy and water efficiency and in the transition to renewable energy.	WBAC / DWER	L	2028
L13	Support WALGA's advocacy efforts to improve adoption of energy efficient lighting in streetlights.	WBAC / Shires	L	2022+
L15	Advocate for increased State investment and collaboration to support agricultural resilience in the face of climate and water stress in the Warren Blackwood region.	WBAC / SWDC / DPIRD / DWER/ SFFC/SWNRM	M	Ongoing

Category	Communication	Opportunity for Stakeholder Engagement	Priority	Targeted completion date
C2	Undertake stakeholder engagement to inform the wider community on climate change adaptation and mitigation action.	WBAC / Shires	M	2022+
C3	Support and promote environmental education and awareness in the subregion. *	Shires	M	2022+
C6	Engage with other Local Governments within the South West region to share learnings and progress regional actions.	Shires	H	2022+
C7	Engage with WALGA and other organisations to remain informed, and to contribute to, discussions on climate change management at the Local Government level.	Shires	M	2022+

Note: * Denotes action from the WBAC *Subregional Growth Plan 2019*

Glossary

Climate

The composite of surface weather conditions such as temperature, rainfall, atmospheric pressure, humidity, sunshine and winds, averaged over a period of time ranging from months to thousands of years.

Climate change

Any change in climate over time, whether due to natural variability or as a result of human activity.

Climate change mitigation

Climate change mitigation consists of actions to limit the magnitude or rate of long-term climate change. Climate change mitigation generally involves reductions in human emissions of greenhouse gases.

Climate change adaptation

Climate change adaptation is a response to global warming and climate change, that seeks to reduce the vulnerability of social and biological systems to relatively sudden change and thus offset the effects of global warming.

Adaptive capacity

The capacity of an organisation or system to moderate the risks of climate change, or to realise benefits, through changes in its characteristics or behaviour.

Climate projection

A projection of the response of the climate system to scenarios of greenhouse gas emissions or atmospheric concentrations of greenhouse gases. Climate projections are often based upon simulations of the climate system by computer based mathematical models. Climate projections depend on assumptions about emission rates and concentrations and response of the climate system to changes in these variables and can therefore be distinguished from climate predictions.

Climate scenario

A coherent, plausible but often simplified description of a possible future state of the climate. A climate scenario should not be viewed as a prediction of the future climate. Rather, it provides a means of understanding the potential impacts of

climate change, and identifying the potential risks and opportunities created by an uncertain future climate.

Climate variability

Variations or deviations from the mean state of the climate. The climate system has natural, internal variability but variability could be affected by external factors driving climate change such as changes in the atmospheric concentration of greenhouse gases.

Enhanced greenhouse effect

Increases in the atmospheric concentration of greenhouse gases such as carbon dioxide, methane and nitrous oxide due to human activities, leading to an increase in the amount of thermal radiation near the Earth's surface.

Extreme event

Weather conditions that are rare for a particular place and/or time such as an intense storm or heat wave.

Global warming

An increase in the global average surface temperature due to natural or human caused factors.

Greenhouse gases

A greenhouse gas (GHG) is a gas in an atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect.

Greenhouse effect

The process where gases in the lower atmosphere such as carbon dioxide and water vapour trap radiation released by the Earth's surface after it has been warmed by solar energy. These gases then radiate heat back towards the ground, adding to the heat the ground receives from the Sun.

Net zero emissions

Carbon neutrality, or having a net zero carbon footprint, refers to achieving net zero carbon emissions by balancing a measured amount of carbon released with an equivalent amount sequestered or offset, or buying enough carbon credits to make up the difference.

Offsets

A carbon offset (or carbon credit) is generated from an activity that prevents, reduces or removes greenhouse gas emissions from being released into the atmosphere to compensate for emissions occurring elsewhere.

Renewable energy

Renewable energy is energy that is collected from renewable resources that are naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat.

Resilience

The capacity of individuals, institutions, businesses and systems to adapt to chronic stresses and acute shocks.

Sensitivity

The degree to which a system is affected, either adversely or beneficially, by climate related variables including means, extremes and variability.

Urban heat island effect

Refers to when an urban area is significantly warmer than its surrounding rural areas due to human activities. The main cause of the urban heat island effect is from the modification of land surfaces.

Vulnerability

The extent to which a system or organisation can cope with the negative impacts of climate change, variability and extremes. It is a function of risk and adaptive capacity.

[1] *Warren Blackwood Sub-regional Growth Plan 2019;* Warren Blackwood Alliance of Councils 2019 warren-blackwood-sub-regional-growth-plan-2019 (boyupbrook.wa.gov.au)
[1] IPCC (2013). "Summary for Policymakers" in *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA at 4. Available at: https://www.ipcc.ch/report/ar5/wg1/.
[1] As above, at p27.
[1] As above, at p28.
[1] For example, BOM and CSIRO's Climate Change in Australia: https://www.climatechangeinaustralia.gov.au/
[1] *Western Australian Climate Policy 2020*; Government of Western Australia Western_Australian_Climate_Policy.pdf (www.wa.gov.au),

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Shire of Boyup Brook
Shire of Bridgetown-Greenbushes .... simply beautiful
Shire of Donnybrook Balingup
Shire of Nannup rest • connect • grow
SHIRE OF MANJIMUP