



08 August 2023

NOTICE OF MEETING

Dear Committee Member,

The next Environmental Advisory Committee meeting will be held at 6.00pm on Tuesday, 15 August 2023 in the Committee Room, 7000 Great Eastern Highway, Mundaring.

The attached agenda is presented for your consideration.

Yours sincerely

Jonathan Throssell
CHIEF EXECUTIVE OFFICER

Please Note

If a Council Member has a query regarding a report item or requires additional information in relation to a report item, please contact the senior employee (noted in the report) prior to the meeting.



AGENDA
ENVIRONMENTAL ADVISORY COMMITTEE MEETING
15 AUGUST 2023

ATTENTION/DISCLAIMER

The purpose of this Committee Meeting is to discuss and make recommendations to Council about items appearing on the agenda and other matters for which the Committee is responsible. The Committee has no power to make any decisions which are binding on the Council or the Shire of Mundaring unless specific delegation of authority has been granted by Council. No person should rely on or act on the basis of any advice or information provided by a Member or Employee, or on the content of any discussion occurring, during the course of the Committee Meeting.

The Shire of Mundaring expressly disclaims liability for any loss or damage suffered by any person as a result of relying on or acting on the basis of any advice or information provided by a Member or Employee, or the content of any discussion occurring during the course of the Committee Meeting.

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**ENVIRONMENTAL ADVISORY COMMITTEE MEETING
COMMITTEE ROOM, 7000 GREAT EASTERN HIGHWAY, MUNDARING – 6.00PM**

1.0 OPENING PROCEDURES

Acknowledgement of Country

Shire of Mundaring respectfully acknowledges the Whadjuk people of the Noongar Nation, who are the traditional custodians of this land. We acknowledge Elders past, present and emerging and respect their continuing culture and the contribution they make to the region.

Recording of Meeting

Members of Council and guests are advised that this meeting will be audio-recorded.

1.1 Announcement of Visitors

1.2 Attendance/Apologies

2.0 ANNOUNCEMENTS BY PRESIDING MEMBER WITHOUT DISCUSSION

3.0 DECLARATION OF INTEREST

3.1 Declaration of Financial Interest and Proximity Interests

Council Members must disclose the nature of their interest in matters to be discussed at the meeting (*Part 5 Division 6 of the Local Government Act 1995*).

Employees must disclose the nature of their interest in reports or advice when giving the report or advice to the meeting (*Sections 5.70 and 5.71 of the Local Government Act 1995*).

3.2 Declaration of Interest Affecting Impartiality

A Council Member or an employee who has an interest in a matter to be discussed at the meeting must disclose that interest (*Shire of Mundaring Code of Conduct, Local Government (Admin) Reg. 34C*).

4.0 CONFIRMATION OF MINUTES OF PREVIOUS MEETINGS

RECOMMENDATION

That the Minutes of the Environmental Advisory Committee Meeting held 20 July 2022 be confirmed.

5.0 PRESENTATIONS

6.0 REPORTS OF EMPLOYEES

6.1 Review of Environmental Advisory Committee

File Code	GV.MTG 6.7
Attachments	1. Advantages and Disadvantages

SUMMARY

Director Corporate Services and Governance Coordinator to provide an overview of the local government reforms that have or are expected to impact the Shire's committees and also the implications of the recently adopted "Committees, Advisory Groups, Representatives Meetings and Working Groups Policy".

Generally, a member is appointed to a committee until the next ordinary election day in accordance with the *Local Government Act 1995*. As such, the Shire undertakes a review of the Shire's committees prior to each ordinary election to ensure the format of the various groups are the appropriate mechanism for facilitating and improving community participation in the Shire's decision-making processes.

Feedback to be provided by current Environmental Advisory Committee members to inform a report to be presented to Council to determine the composition and membership of the group following the 2023 local government ordinary election.

COMMENT

Attachment 1 provides details on the advantages/disadvantages of continuing as a formal committee of Council and the advantages/disadvantages of being established as an advisory group. An excerpt of "Committees, Advisory Groups, Representatives Meetings and Working Groups Policy" is also included.

Anecdotal feedback has been received that members appointed to committees have expressed frustration that the Environmental Advisory Committee meetings are held in a formal manner, which is considered to be restrictive on how the committee functions and how advice is provided by members. However, what can be seen as 'red tape' is required by legislation, as committees are established and function in accordance with the *Local Government Act 1995* and associated regulations. As such it is recommended that the group be established as an Advisory Group in accordance with the "Committees, Advisory Groups, Representatives Meetings and Working Groups Policy" following the October 2023 ordinary local government election.

Should feedback be received from the current members that the group should to continue as a formal committee of Council established under section 5.8 of the *Local Government Act 1995*, this feedback will be presented to Council for consideration. Noting that the group will be required to adhere to legislated requirements including the *Local Government Act 1995*, various regulations, the *Meeting Procedures Local Law 2015* and the "Code of Conduct for Council Members, Committee Members and Candidates". Members may be subject to penalties for failing to adhere to these requirements.

A report will be presented to Council to formally resolve to continue, disband or amend all current committees, advisory groups and representatives meetings at the September 2023

Ordinary Council Meeting with Council to review and adopt Terms of Reference and Charters as applicable.

VOTING REQUIREMENT

Simple Majority

RECOMMENDATION

That the Committee:

1. Notes the advantages/disadvantages of continuing as a formal committee of Council (established under section 5.8 of the *Local Government Act 1995*) and the advantages/disadvantages of being established as an Advisory Group.
2. Recommends that the Environmental Advisory Committee disband following the October 2023 ordinary local government election and is established as the Environmental Advisory Group in accordance with the "Committees, Advisory Groups, Representatives Meetings and Working Groups Policy".

Currently, the Environmental Advisory Committee is established under section 5.8 of the *Local Government Act 1995*.

Council has recently adopted the "Committees, Advisory Groups, Representatives Meetings and Working Groups Policy". It is intended that this policy provide clear expectations, consistency and direction for groups established by the Shire whilst adhering to legislated requirements.

Due to the recent changes to the *Local Government Act 1995*, there is a reduction of council members which may result in less council members nominating to be appointed to the various Committees, Advisory Groups and Representatives Meetings established by the Shire.

Advantages of staying a Committee

- Committees may make recommendations to Council with reports of Committees (written by officers) recommended to Council for consideration. Note: these recommendations are not binding on Council.
- Details of Committees including membership and their adopted Terms of Reference are available on the Shire's website.
- Recent changes to the *Local Government Act 1995* provides that if decided by a local government, committee members who are not council members or an employee may be reimbursed by the local government for an expense incurred by the person in relation to a matter affecting the local government.

Disadvantages of staying a Committee

- The Committee is required to adhere to strict legislated requirements including the *Local Government Act 1995*, various regulations, the *Meeting Procedures Local Law 2015* and the "Code of Conduct for Council Members, Committee Members and Candidates". Members may be subject to penalties for failing to adhere to these requirements. Requirements include (but are not limited to):
 - Meetings are to be held in a formal manner with items only able to be debated and voted on with only decisions of the meeting recorded, not discussion.
 - Members are required to disclose interests in matters to be discussed at meetings in writing and at the meeting. Depending on the type of interest, the member may be required to leave the meeting during consideration of the item.
 - Unable to hold meetings by electronic means without prior Council approval.
 - Unable to attend in person meetings by electronic means without prior approval from the Shire President.
 - Requirements for the appointment of Presiding Member and Deputy Presiding Member to be elected using Optional Preferential Voting.
- There have been recent changes to the *Local Government Act 1995*. The details of the Regulations have not yet been finalised by the State Government with some unknown implications for Committees.
- The number of external members would need to be less than the number of council members appointed to the Committee.

Advantages of changing to an Advisory Group

- Meetings are able to be held in a less formal manner in accordance with the “Committees, Advisory Groups, Representatives Meetings and Working Groups Policy”. This policy provides that Advisory Group meetings are held generally in keeping with the principles of the *Local Government Act 1995*.
- The composition of the group would be able to stay the same (majority of external members to council members).
- With the recent adoption of the “Committees, Advisory Groups, Representatives Meetings and Working Groups Policy”, details of Advisory Groups including membership and their endorsed Charters will be available on the Shire’s website.
- Informal discussions could be had with agreed actions (by consensus, not a formal vote) captured in the Record of Proceedings. Advice from the Advisory Group may then be included in an Officer report for formal consideration by Council. Note: agreed actions would be assessed for financial or resourcing implications prior to being actioned.
- Where a member has an interest in a matter to be discussed at the meeting, they are to disclose the interest and the extent of such interest to be listed in the Record of Proceedings. Members would be required to ensure probity is maintained but it would be at their discretion to participate in the meeting.

Disadvantages of changing to an Advisory Groups

- Perceived lack of direct ‘access’ for Council to consider recommendations, instead, advice from the Advisory Group would be incorporated into officer reports to Council.

Excerpt of “Committees, Advisory Groups, Representatives Meetings and Working Groups Policy”

	Committee	Advisory Group
Establishment	<p>A report is to be presented to Council to establish committees.</p> <p>Committees will only be established when tasks cannot be allocated to existing committees.</p> <p>Terms of Reference to be adopted by Council.</p>	<p>A report is to be presented to Council to establish an advisory group.</p> <p>Charter to be endorsed by Council.</p>
Delegation/ Powers	<p>Committees may make recommendations to Council. These recommendations are not binding on Council.</p> <p>Where a committee has delegated authority for a specific functions, it is able to make a decision in its own right.</p>	<p>Advisory groups have no delegated authority to make any decisions for or on behalf of Council.</p> <p>Advisory groups are not authorised to:</p> <ul style="list-style-type: none"> • Expend or authorise the expenditure of any Shire funds • Correspond with any party • Speak on behalf of the Shire or Council • Issue any media release • Issue any instruction to Shire employees.
Remuneration	<p>External members are to be remunerated in accordance with s.5.100 of the Act.</p> <p>The extent to which external members can be reimbursed shall be as determined by the Salaries and Allowances Tribunal.</p>	Nil
Membership	<p>Membership to be listed in the endorsed Terms of Reference. There is to be a majority of council members compare to external members.</p> <p>If authorised by the committee, council members attending as observers may participate in the meeting (but are not able to vote).</p> <p>Generally, employees are not voting members. The committee may invite, through the CEO, Shire employees or others to attend but such persons shall not be entitled to vote.</p> <p>Tenure of membership is to be consistent with s.5.11 of the Act.</p> <p>If for any reason, a member is unable to hold office for the full period of their appointment, Council shall fill that vacancy. The member appointed shall hold office for the balance of the term of the member originally elected.</p>	<p>Membership to be listed in the endorsed Charter. There is to be a majority of external members compared to council members.</p> <p>If authorised by the advisory group, council members attending as observers may participate and/or vote.</p> <p>Generally, employees are not voting members. The advisory group may invite, through the CEO, Shire employees or others to attend but such persons shall not be entitled to vote.</p> <p>An external member absent for three consecutive meetings without leave shall forfeit their membership.</p> <p>If for any reason, a member is unable to hold office for the full period of their appointment, Council shall fill that vacancy. The member appointed shall hold office for the balance of the term of the member originally elected.</p>

	Committee	Advisory Group
Appointment	<p>Council members:</p> <ul style="list-style-type: none"> • Council members to be appointed to committees by Council (s.5.10). <p>External members:</p> <ul style="list-style-type: none"> • Selection criteria for external members to be included in endorsed Terms of Reference. • Nominations for external members to apply for a position on the group must be advertised detailing the selection criteria of external members for a period of at least two weeks. Advertising is to be in keeping with the principles of local public notice as defined by the Act and the "Community Engagement Policy". • At the close of the advertising period, applications for external members shall be assessed against the selection criteria with a report providing recommendations for appointment to be considered by Council (s.5.10). <p>Deputy committee members:</p> <ul style="list-style-type: none"> • Deputy committee members to be appointed by Council (s.5.11A). • A deputy is to act in the capacity of a committee member unable to attend a meeting and shall exercise all rights of the absent committee member. 	<p>Council members:</p> <ul style="list-style-type: none"> • Council members to be appointed to the advisory group by Council (no absolute majority required). <p>External members:</p> <ul style="list-style-type: none"> • Selection criteria for external members to be included in endorsed Charter. • Nominations for external members to apply for a position on the group must be advertised detailing the selection criteria of external members for a period of at least two weeks. Advertising is to be in keeping with the principles of local public notice as defined by the Act. • At the close of the advertising period, applications for external members shall be assessed against the selection criteria with a report providing recommendations for appointment to be considered by Council.
Presiding Member	<p>Presiding member and deputy presiding member to be appointed by the Committee (s.5.12).</p> <p>Where the presiding member is unable or unwilling to chair the meeting, the deputy presiding member will chair the meeting.</p>	<p>Advisory groups to appoint their own presiding member.</p> <p>Presiding member is to be a council member appointed to the advisory group.</p> <p>Where the presiding member is unable or unwilling to chair the meeting, the senior employee tasked with supporting the advisory group will chair the meeting (but does not have voting rights).</p>

	Committee	Advisory Group
Conduct	<p>All committee members to conduct themselves in accordance with:</p> <ul style="list-style-type: none"> the Act Meeting Procedures Local Law Code of Conduct for Council Members, Committee Members and Candidates. <p>Disclosure of interests</p> <ul style="list-style-type: none"> Council members/ employees to disclose financial, proximity and impartiality interests (s.5.60). External members to be aware that any conflict of interest needs to be recognised to ensure that probity is maintained at all times. 	<p>All advisory group members to conduct themselves in keeping with the provisions of:</p> <ul style="list-style-type: none"> the Act Meeting Procedures Local Law Code of Conduct for Council Members, Committee Members and Candidates. <p>Disclosure of interests</p> <ul style="list-style-type: none"> Council members/ employees, to be disclose financial, proximity and impartiality interests (s.5.60). External members to be aware that any conflict of interest needs to be recognised, to ensure that probity is maintained at all times.
Meetings	<p>Committees with a delegation to be generally open to the public (s.5.23) with public participation in accordance with the Meeting Procedures Local Law. Committees that do not have a delegation may not be open to the public.</p> <p>Meeting documents to be available on the Shire's official website (s.5.25).</p> <p>Committees to operate in accordance with their adopted Terms of Reference.</p>	<p>Meetings to be generally open with the public to attend as observers.</p> <p>Meeting details available on request.</p> <p>Meeting documents available on request.</p>
Quorum/ Voting	<p>Meeting quorum is at least 50% of the number of members of the committee (s.5.19).</p> <p>Each committee member who is present at a meeting is entitled to one vote (s.5.21).</p>	<p>Meeting quorum is at least 50% of the number of members of the advisory group (in keeping with principles of s.5.19).</p> <p>One vote per member (in keeping with principles of s.5.21).</p> <p>Decisions are to be made by consensus (i.e. members are satisfied with the decision even though it may not be their first choice). If not possible, the presiding member can make the final decision.</p>

	Committee	Advisory Group
Recording	<p>Contents of Minutes in accordance with the Act and Meeting Procedures Local Law:</p> <ul style="list-style-type: none"> • Only decisions of the meeting are required to be recorded, not discussion. • Unconfirmed Minutes of a meeting must be published within seven days after the meeting is held. (r.13 of Admin Regs) 	<p>Record of Proceedings shall record:</p> <ul style="list-style-type: none"> • details of any disclosure of interest and the extent of such interest. • the times any member has departed and/or re-enters the meeting. • consensus agreement on actions. <p>Record of Proceedings will not reflect verbatim discussion on issues or matters discussed prior to consensus agreement being reached.</p> <p>At the end of each meeting, the presiding member will read out the agreed actions and any points of agreement to the meeting to ensure they are accurately reflected to the consensus view.</p> <p>Unconfirmed Record of Proceedings to be provided to group within 7 days after the meeting is held (in keeping with principles of r.13).</p>
Reporting	<p>Where a committee does not have a delegation/ authorisation, if a decision is the duty or function of the Council, it must be referred to Council.</p> <p>Recommendations of the committee to be included in a council meeting agenda to obtain a formal council decision, where applicable.</p>	<p>Where advice is received from an advisory group which may inform decisions made by Council and has been included as consensus agreement in the record of proceedings, advice may be included in an Officer report for formal consideration by Council.</p> <p>Agreed actions will be assessed for financial or resourcing implications prior to being actioned.</p>
Changes to Terms of Reference/ Charter	<p>Terms of reference to be reviewed prior to each ordinary local government election.</p> <p>Committees may amend their Terms of Reference when required with Council to endorse any changes.</p>	<p>Charter to be reviewed prior to each ordinary local government election.</p> <p>Advisory groups may amend their Charter when required with Council to endorse any changes.</p>
Disband	<p>Council may determine at any time that a committee is no longer required and is to be disbanded.</p>	<p>Council may determine at any time that an advisory group is no longer required and is to be disbanded.</p> <p>Where advisory groups are for a project with a finite end date or in response to a specific matter Council is not required to formally disband the advisory group, instead the advisory group will be dissolved as referenced in the relevant Charter.</p>

6.2 Climate Change Adaptation

File Code	EV.PRG 11
Author	Briony Moran, Coordinator Environment and Sustainability
Senior Employee	Steve Trlin, Acting Director Statutory Services
Disclosure of Any Interest	Nil
Attachments	<ol style="list-style-type: none">1. Local Climate Change Adaptation Action Plan2. WA Climate Adaptation Strategy actions3. Sustainable Development Goals - Summary Table4. Emissions Data Analysis Report 2021/2022

SUMMARY

The Shire's Local Climate Change Adaptation Action Plan 2012 was prepared over ten years ago, with assistance from the Eastern Metropolitan Regional Council (EMRC).

The State Government has recently amended the *Local Government Act 1995* to refer specifically to the general functions of a local government including the need 'to plan for, and to plan for mitigating, risks associated with climate change'.

This report recommends that a business case be prepared for reviewing and updating the Shire's climate change adaptation plan.

BACKGROUND

EMRC was commissioned to prepare a draft Local Climate Change Adaptation Action Plan (LCCAAP) with input from Shire staff and residents through workshops held in 2009 and 2010. The LCCAAP (see **Attachment 1**) was adopted by Council at its meeting of 10 April 2012 (C6.04.12).

Since that time the global climate has continued on a warming trajectory. The global average temperature is now around 1.1°C warmer, and projected to reach 1.5°C warmer than pre-industrial levels in the 2030s. The most recent series of reports from the Intergovernmental Panel on Climate Change (IPCC) have identified that the some impacts of climate change already being experienced are more severe than had been expected, and likely to intensify in the next decade. Some consequences of climate disruption in terms of increasing frequency, intensity and compounding effects of extreme weather events had previously been underestimated, as had vulnerability of species and ecosystems.

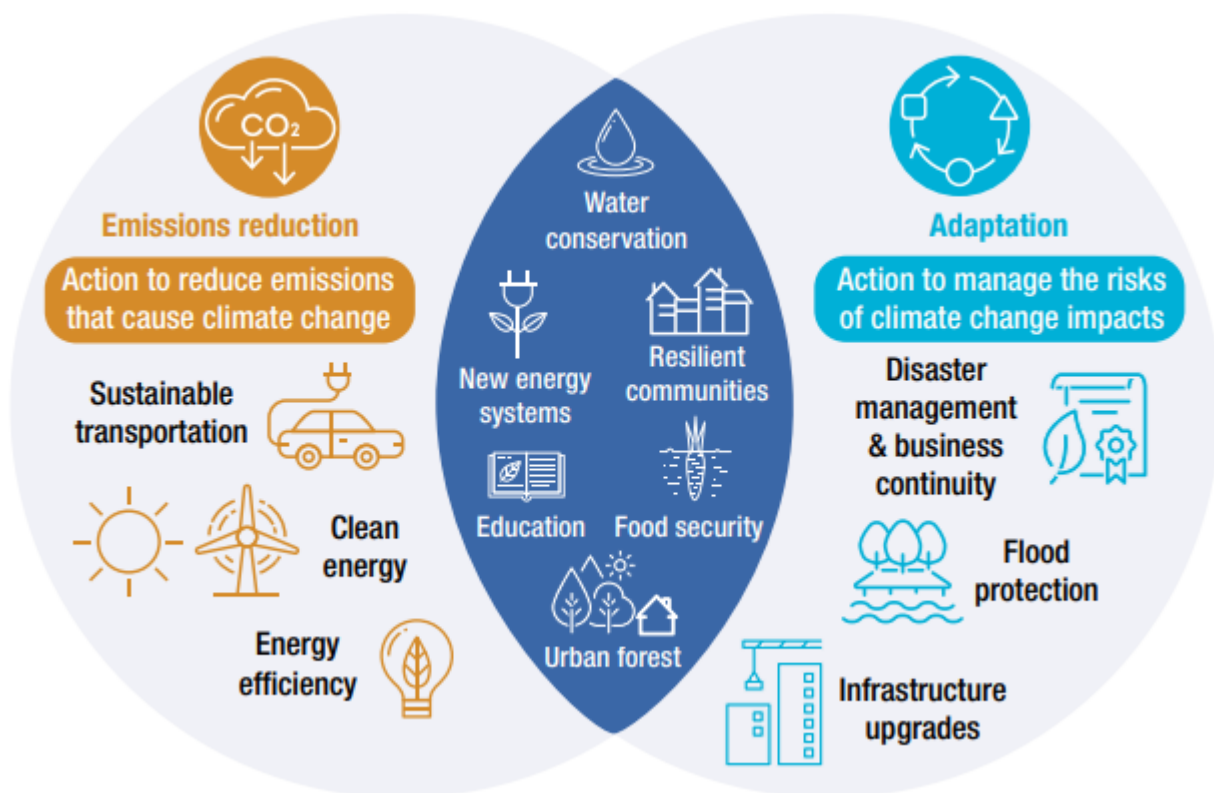
The Australian Department of Climate Change, Energy, the Environment and Water is preparing climate risk assessment guidance documents, which may be released in late 2023 or early 2024.

The WA Department of Water and Environmental Regulation has established a Climate Science Initiative. It is developing updated and fine-scaled climate change projections for Western Australia, in partnership with Murdoch University, the Pawsey Supercomputing Research Centre, and the New South Wales Department of Planning and Environment (via the NSW and Australian Regional Climate Modelling Project). The first set of results of this modelling are expected in 2024, with finer scale projections more likely to be delivered in 2025.

The State Government released its Climate Adaptation Strategy: Building WA's Climate Resilient Future in late July 2023. The Strategy includes information about climate impacts to date, including the excerpts below.

- *Western Australia's south-west has experienced climate-induced drying at one of the fastest rates in the world, and this is projected to continue. At the same time, extreme rainfall events across the state are becoming more frequent and intense, leading to localised flooding and infrastructure damage.*
- *Our state's bushfire weather is changing, with fires burning more intensely and bushfire seasons getting longer.*
- *Climate change is increasing pressure on every ecosystem in Australia, posing challenges for management of our natural environment, national parks, biodiversity and other cultural assets, such as natural springs.*
- *Western Australia's south-west is a hotspot for both global biodiversity and climate-induced drying. Many of our rivers and wetlands now dry out more frequently through summer and autumn, causing major problems for freshwater animals and fringing vegetation.*
- *Climate change impacts human health directly, through extreme weather events or heatwaves, or via complex pathways such as altered patterns of disease transmission and spread. There are also mental health impacts, including those associated with experiencing an extreme weather event.*
- *Long-term trends such as rising temperatures and changing rainfall patterns will present ongoing challenges to resilience and prosperity.*

The WA Climate Adaptation Strategy includes the diagram below explaining the connection between emissions reduction and adaptation actions, as well as some areas of overlap.



Council has adopted an Energy and Emissions Reduction Strategy in 2018, which is already under review. While both the Energy and Emissions Reduction Strategy and LCCAAP relate to climate change, the nature of actions to address mitigation (emissions reduction) and adaptation (preparing for expected impacts) at the local government level are quite different.

The State Government has supported development of the WA Local Government Association's Climate Change Action Framework, which includes guides to facilitate climate risk assessment and adaptation planning for local government authorities.

The Strategy includes 37 actions (**see Attachment 2**). Actions listed within the Strategy to be completed by 2023 that will further clarify expectations for local governments include:

14. *Develop climate legislation, including statutory requirements for adaptation strategies and plans to enhance climate resilience.*
24. *Evaluate outcomes of the Regional Climate Alliance pilot program and consider options to strengthen local government capacity.*

STATUTORY / LEGAL IMPLICATIONS

The *Local Government Amendment Act 2023* which passed on 11 May 2023 included changes to the general function of local governments. The updated section 3.1 of the *Local Government Act 1995* is below, which now refers specifically to a requirement for planning for climate change and associated risks.

3.1. General function

- (1) *The general function of a local government is to provide for the good government of persons in its district.*
- (1A) *Without limiting subsection (1), the general function of a local government must be performed having regard to the following —*
 - (a) *the need —*
 - (i) *to promote the economic, social and environmental sustainability of the district; and*
 - (ii) *to plan for, and to plan for mitigating, risks associated with climate change; and*
 - (iii) *in making decisions, to consider potential long-term consequences and impacts on future generations;*
 - (b) *the need —*
 - (i) *to recognise the particular interests of Aboriginal people; and*
 - (ii) *to involve Aboriginal people in decision-making processes;*
 - (c) *the need to consider collaboration with other local governments.*
- (2) *The scope of the general function of a local government is to be construed in the context of its other functions under this Act or any other written law and any constraints imposed by this Act or any other written law on the performance of its functions.*
- (3) *A liberal approach is to be taken to the construction of the scope of the general function of a local government.*

While the Shire has a plan for mitigating risks associated with climate change it was prepared over ten years ago, and should be reviewed and updated.

POLICY IMPLICATIONS

The Environmental Sustainability Policy (OR-23) includes a number of policies relevant to climate change risks and adaptation, including:

- 1.4. *Human induced climate change is recognised as a key threat to biodiversity, requiring mitigation action to reduce carbon emissions at all levels of government, and adaptation to local impacts.*

An updated assessment of local climate change risks and adaptation options would be consistent with this policy.

FINANCIAL IMPLICATIONS

There will be costs associated with responding to climate change driven extreme weather, including bushfires, flooding and heatwaves. The WA Climate Adaptation Strategy states:

Climate-induced extreme weather events have cost Australian communities an estimated \$120 billion over the past 50 years, and this is expected to increase to \$150 billion over the next decade. Research also demonstrates that delaying investment in adaptation responses will increase the costs of managing future impacts.

To prepare an updated climate change adaptation plan will require significant staff time in addition to consultancy and community engagement costs. This report recommends the preparation of a business case to more clearly outline those costs, to be considered by Council in future budget decision-making.

An updated climate change adaptation plan could allow the Shire to seek disaster mitigation funding and undertake planned actions that reduce the costs and impacts of responding to and recovering from future bushfires and other extreme events.

STRATEGIC IMPLICATIONS

Mundaring Strategic Community Plan 2020 - 2030

Priority 1 - Community

Objective 1.1 – Healthy, safe, sustainable and resilient community

Strategy 1.1.7 – Provide emergency management planning, disaster management and disaster recovery, and associated community liaison and education

SUSTAINABILITY IMPLICATIONS

While climate change is well-recognised as a threat to the natural environment, species and ecosystems, it is also a threat to human health, agriculture, infrastructure, economic and governance systems.

Climate change is recognised as a global Sustainable Development Goal (SDG) in its own right: 'Take urgent action to combat climate change and its impacts.' However, adequate climate change mitigation and adaptation will also be a critical factor in whether other SDGs can be achieved (**see Attachment 3**).

RISK IMPLICATIONS

Risk: Natural Environment – lack of an updated climate risk assessment and adaptation plan could prevent adaptation actions that avoid/reduce future environmental impacts.		
Likelihood	Consequence	Rating
Possible	Major	High

Action / Strategy		
Plan for an updated climate risk assessment and adaptation strategy.		
Risk: Financial Impact – lack of an updated climate risk assessment and adaptation plan could prevent adaptation actions that avoid/reduce future costs, as well as contribute to lost opportunities to receive disaster mitigation funding for preventative action.		
Likelihood	Consequence	Rating
Likely	Major	High
Action / Strategy		
Plan for an updated climate risk assessment and adaptation strategy.		
Risk: Reputation – lack of an updated climate risk assessment and adaptation plan could result in a perception that the Shire is not adequately preparing for climate change and meetings its obligations as required by the amended <i>Local Government Act 1995</i> .		
Likelihood	Consequence	Rating
Likely	Moderate	High
Action / Strategy		
Plan for an updated climate risk assessment and adaptation strategy.		

EXTERNAL CONSULTATION

EMRC were contacted to confirm the status of the Regional Climate Change Adaptation Action Plan 2013-2016. While it is still regarded as current, there have been some changes to the structure of EMRC as well as understanding of climate risks since 2013. The EMRC Sustainability Strategy 2022/2023 – 2026/2027 lists ‘respond to a climate emergency’ as a sustainability goal and identifies responses that align with global SDGs.

The Shire’s LCCAAP 2012 and subsequent regional plan were developed under EMRC’s Future-Proofing Perth’s Eastern Region project which has now ceased. A different service has been established which provides for reporting on the SDGs, which will include actions to address the impacts of climate change. The initial report for the Shire of Mundaring is expected to be completed by the end of 2023.

COMMENT

As noted above, the Shire has both an Energy and Emissions Reduction Strategy (EERS) and LCCAAP. Some local government have developed climate emergency action plans which combine both. While they each relate to climate change and have whole-of-organisation implications, the nature of actions required and key staff involved differs between mitigation (emissions reduction) and adaption.

The WALGA Climate Change Action Framework has been developed in consultation with the State Government and lists development of mitigation plans and adaptation plans as separate actions. Initial consultation by the national Department of Climate Change, Energy, the Environment and Water suggests that local governments will be expected to use their pending climate risk assessment guidance documents to develop adaptation strategies and plans, not connected to local emissions reduction activities. It is therefore recommended that the Shire continues to maintain and update separate strategies for adaptation and emissions reduction.

The EERS has been reviewed and with further input from staff and the EMRC, is expected to be presented to the EAC and Council later this year. An updated Emissions Snapshot

for 2021/2022 has been prepared (see **Attachment 4**) which shows that the Shire has been tracking towards the greenhouse gas emissions reduction target set in the EERS adopted in 2018. Pending changes to convert streetlights to LED and other energy saving initiatives are likely to make a further significant reduction in the Shire's organisational emissions in 2023/2024, and the Shire may reach the 2030 target by 2024.

An updated EERS will therefore include a new target for 2030, and a longer term political commitment will be critical to its success. Acknowledging the above, and the impending change of leadership (Local Government elections and change of CEO in October) it is expected that the revised EERS will be presented to EAC at its next meeting.

Despite local and international efforts to curb greenhouse gas emissions, continued warming is unavoidable in the short to medium term. An updated climate risk assessment for the Shire of Mundaring can be informed by WALGA, State and national frameworks and guidelines, which have all been in development this year. This report therefore recommends that a business case be prepared for updating the LCCAAP from 2024/2025, to be included in future budget considerations.

VOTING REQUIREMENT

Simple Majority

RECOMMENDATION

That Council request that the Chief Executive Officer prepare a business case for reviewing climate risks and updating the Shire of Mundaring climate adaptation strategy.



Shire of Mundaring
Local Climate Change Adaptation Action Plan

March 2012

Produced by EMRC
and the Shire of Mundaring

LCCAAP plain text version – see full graphic version at www.mundaring.wa.gov.au/environment-waste/environment-sustainability/climate-change

FOREWORD

The Shire of Mundaring recognises that our climate is changing and that there is a need for the Shire to adapt to both the changes that are already occurring, and the changes that are likely to follow in the decades to come.

The Shire also understands that some of the climate change impacts will develop slowly, while others will be in the form of big events. The Shire of Mundaring will need to adapt and be ready for these events.

Adaptation is about taking action to avoid, manage or reduce the consequences that will be brought about from climate events. Adapting to climate change must be integrated into day to day planning and risk management activities of local government, and this discipline must be transferred within local communities.

The Shire of Mundaring, in partnership with the Eastern Metropolitan Regional Council (EMRC) and its local community, has developed the Local Climate Change Adaptation Action Plan (LCCAAP) to address impacts of climate change that will create various challenges for local government, impacting not only on the environment, but the Shire's business operations and communities.

This LCCAAP will complement and consolidate the implementation of the Shire's Strategic Directions: A Plan for the Future (2008-2012).

The LCCAAP provides a strategic framework for actions that target a number of key environmental areas and environmental threats.

The implementation of the LCCAAP will protect and enhance the environment as well as foster economic prosperity within Perth's Eastern Region.

LCCAAP 2012 plain text version – see full graphic version at www.mundaring.wa.gov.au/environment-waste/environment-sustainability/climate-change

ACKNOWLEDGEMENTS

This report has been prepared with resources and coordination between the Shire's relevant officers and EMRC staff.

The Shire of Mundaring would like to thank its staff members, Councillors and community members for their contribution and support in this process.

The Shire would especially like to thank the following staff who provided input into the development of the Regional Climate Change Adaptation Action Plan (RCCAAP) and LCCAAP during two workshops held in February 2009:

- Shane Purdy, Director Infrastructure Services
- Toni Burbidge, Coordinator Environment and Sustainability
- Adrian Dyson, Manager Health and Community Safety
- Mark Luzi, Director Statutory Services
- John Devereux, Manager Planning Services
- Stuart Thiele, Senior Planning Officer - Strategic
- Brad Lukosius, Community Facilities Coordinator
- Jon Dooner, Senior Engineering Technical Officer
- Liam Noonan, Manager Design Services.

The actions included in this LCCAAP were identified by the above group and community members during the workshops held in 2009 and 2010.

The Shire would also like to thank members of EMRC and Greensense for their assistance in the LCCAAP development process.

Adoption and implementation of the LCCAAP will enable the Shire of Mundaring to establish local government leadership in the area of climate change adaptation and mitigation.

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INTRODUCTION

The Shire of Mundaring is located on the eastern fringe of Perth, Western Australia, approximately 35 kilometres from the Perth GPO and serves more than 30,000 residents.

Encompassing a total land area of 644 square kilometres, of which nearly half is National Park, State Forest or water catchments, the Shire comprises a number of townships and a mix of semi-rural hobby farms, lower-density rural use and public open spaces. The diverse and varied landscapes, activities and communities of the Shire are at risk from the impacts of climate change.

Scientists use computer models to predict climate change scenarios based on the amount of greenhouse gases in the atmosphere, along with other key indicators. Whilst there are no detailed climate change projections for Perth's Eastern Region, or the Shire of Mundaring, modelling undertaken at a broader scale (south-west Western Australia) can be applied to the Shire to give an indication of the likely impacts and magnitudes of climate related changes. The lack of detailed projections and scenarios for the region and the Shire is a constraint in undertaking precise impact assessment. However, this should not preclude climate change risk management activities being undertaken.

Scientific modelling indicates that the south-west of Western Australia, including the Shire of Mundaring, will continue to be affected by forecast reductions in rainfall, increased temperatures, increased extreme weather events, and further reductions in surface and groundwater resources.

How Climate Change is Likely to affect Perth's Eastern Region	
Climate Change Impacts for 2030 Have Been Predicted to Include (IPCC 2007, IOCI 2005):	Our Climate in 2070
<ul style="list-style-type: none"> • WA will be hotter, particularly in inland regions. Expected average temperature will increase 0.5 to two degrees. • Annual average number of days above 35 degrees could increase from the current 28 days to 29 – 48 days. • WA will be drier, particularly in the South West. Rainfall reductions of 2% to 20% in annual rainfall, with a 17% reduction in winter rain days and catchment runoff decreases of 5% to 40% are expected. • Sea-level will increase by three to 17 cm. • More frequent heat waves per year. • More frequent and severe droughts. • Increased bushfire risk. • Increased storm and flooding intensity. • More frequent and intense tropical cyclone occurrence. 	<ul style="list-style-type: none"> • WA average temperature will continue to rise. Expected average temperature will increase up to three to four degrees. • Perth's annual average number of days above 35°C could increase from the current 28 days to 36 – 67 days. • WA will continue to become drier, with rainfall reductions of 5% to 20%. • Sea level will increase by 25 to 75 cm. • More frequent heat waves per year. • More frequent and severe droughts – up to 80% more droughts than current patterns. • Increased bushfire risk. • Increased storm and flooding intensity. • More frequent and intense tropical cyclone occurrence.

Source: CSIRO and BOM (2007), IPCC (2007) and IOCI (2005)

These forecasted changes to the climate will create challenges for all levels of government, including the local government sector. Some of the key challenges for the Shire are likely to be the impacts on infrastructure, land use planning, population health, biodiversity, environmental health services, fire and emergency services, as well as parks and reserve management. Other key risks include changing economic viability of local industries, such as vineyards and orchards, or high energy or water use industries.

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The Shire has already taken some steps to reduce its contribution to climate change by reducing or mitigating its greenhouse gas emissions through implementation of the Achieving Carbon Emissions Reduction (ACE_R) Program and commitment to undertake the WALGA Reporting Platform that will enable the Shire to track and report its greenhouse gas emissions, energy consumption, and energy production.

While mitigation continues to be important (as it is only through continuing to reduce carbon emissions that climate change trends can be slowed or even halted) it is now widely recognised that some climate change is happening now, is unavoidable, and that we will need to adapt to these changes.

Adaptation is about taking action to avoid, manage or reduce the consequences that will be brought about from climate change and extreme weather events. Effective adaptation also requires recognising and taking advantage of the opportunities that new markets and new skills may present.

This LCCAAP will ensure that the Shire has the knowledge to adapt to these changing circumstances and can continue to provide a quality lifestyle to the community.

The LCCAAP provides a suite of actions that the Shire can implement to adapt to the anticipated impacts of climate change.

REGIONAL STRATEGIC FRAMEWORK FOR CLIMATE CHANGE ADAPTATION

The current and potential impacts from climate change are both varied and extensive. In order to effectively adapt to the impacts of climate change, the Shire cannot act in isolation from the regional, state or national context.

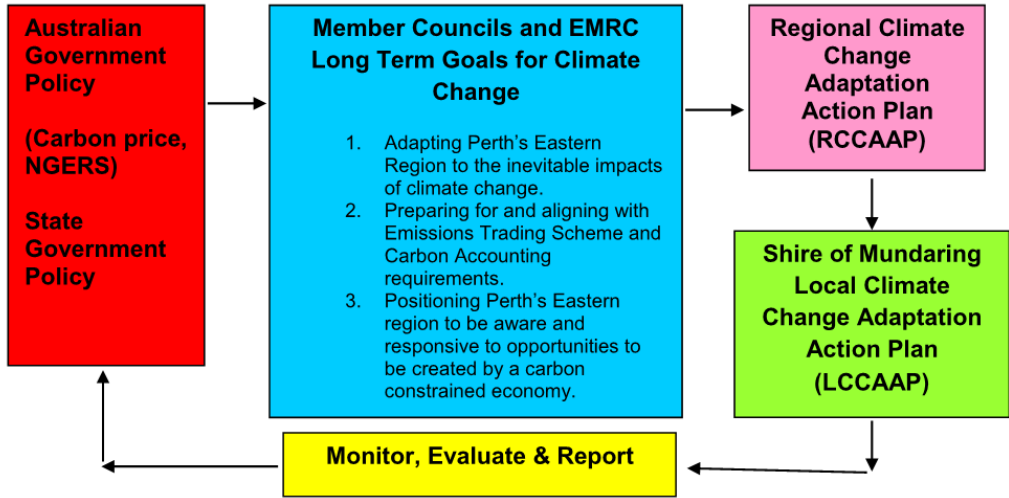
For this reason the Shire of Mundaring, along with EMRC and its five other member Councils, collaborated to undertake a comprehensive risk assessment to identify potential impacts and risks from climate change for Perth's Eastern Region. In addition, actions that could better prepare the region to adapt to the pressures of climate change were identified. This formed the basis of a Regional Climate Change Adaptation Action Plan (RCCAAP) outlining what needs to be done at the regional level to adapt to climate change.

To consolidate and complement the work done at the regional level, the Shire has developed this Local Climate Change Adaptation Action Plan (LCCAAP). While the RCCAAP identifies actions which benefit from a regional approach, the LCCAAP focuses on actions related to the Shire's operations that are local in nature and/or partner with the community. This will ensure that climate change adaptation is integrated into the day to day planning and risk management activities of the Shire and its communities.

The relationship between the RCCAAP, the LCCAAP and the wider state and national context is described in the diagram below. The alignment of local and regional planning, within the wider context, will ensure a well planned and comprehensive approach for adapting to the challenges that are presented by climate change.

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The collaborative approach applied to create and publish the RCCAAP 2009-2013, paved the way forward for EMRC and member Councils to take climate change to the next step and provided a foundation for localised climate change adaptation action planning and an opportunity for community engagement into the action planning process.

The Shire of Mundaring provided leadership by engaging its community in the climate change risk and adaptation process. This enabled the Shire to establish a LCCAAP reflecting community views on the actions the Shire needs to undertake to adapt to climate change. The Shire of Mundaring was the first local government in Perth's Eastern Region to undertake climate change adaptation workshops with its community. This is highly innovative and recognised by the EMRC as a project that needs to be showcased and widely promoted to other local governments.

During the climate change adaptation process there were 25 representatives of the local community involved in the climate change risk assessment and adaptation action planning sessions. Community members had an opportunity to participate in risk rating, action planning and generating new ideas to tackle local climate change issues. The list of these new ideas is included in Appendix A, which presents a valuable resource for the Shire in the adaptation process.

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To consolidate staff and community workshop outcomes, the Shire undertook data evaluation and analysis to generate a detailed picture of the Shire's risk profile and to prioritise adaptation actions to address identified risks.

STRATEGIC OBJECTIVES

The Shire's Strategic Directions: A Plan for the Future (2008-2012) key strategic objectives are:

1. Promote and support sustainable development.
2. Protect, manage and enhance the natural environment.

To reflect these objectives, the Shire of Mundaring aims to implement a range of climate change adaptation and mitigation measures in order to better prepare, protect and inform its residents and rate payers for anticipated impacts of climate change.

These objectives will be achieved through the application of a best practice risk management framework that sets strong, clear goals and is underpinned by sustainable principles that drive all actions outlined in this plan.

AIM & PRINCIPLES

The aim of the LCCAAP is to provide a risk management approach and to clarify and develop local policy and planning actions to enable the Shire to adapt to the issues of climate change.

The LCCAAP will address key issues by aiming for the Shire to:

- prepare itself and take necessary action so that it can adapt to the expected impacts of climate change with minimal impact to its operations and community;

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- promote resilience and support local communities to partner with the Shire to improve the management of the local environment and community public assets;
- encourage transport, planning and building systems that support low emissions and accommodate a changed climate; and
- support disadvantaged communities to adjust to the cost of a low emissions economy to reduce climate change impacts on these communities.

The following principles will underpin all future planning of initiatives relating to climate change adaptation while also addressing the key drivers for change.

The key principles are to:

- continue to seek knowledge and improve our understanding of future climate change and expected impacts;
- engage with the community and other stakeholders in planning for climate change;
- ensure that risks from climate change impacts are minimised and benefits to the community are maximised;
- ensure that the Shire's planning schemes and development plans for commercial and residential development reflect the principles of future proofing for climate change;
- ensure that local initiatives are supportive of the RCCAAP actions that are taken at a regional level; and
- ensure community awareness and engagement occurs during the planning and implementation processes.

PRIORITY RISK AREAS

Eight priority risk areas, which contain actions for implementing climate change adaptation, have been identified. These align with the priority risk areas identified in the RCCAAP for Perth’s Eastern Region.

The eight Priority Risk Areas, listed in no particular order, are found in the table below.

Priority Risk Areas	
1	Infrastructure Failure and Loss
2	Impacts on Essential Services (Power Loss and Water Availability)
3	Watercourse Damage and Loss
4	Increasing Bushfires
5	Loss of Ecosystems and Provision of Public Open Space
6	Decline in Population Health and Wellbeing
7	Economic Challenges and Opportunities
8	Changing Leadership and Development Requirements

Note: Some actions cross over more than one priority risk area.

Consolidated staff and community workshop outcomes have been evaluated and analysed and are presented in the identified eight priority risk sections.

RISK ANALYSIS

A risk matrix was applied to establish risk prioritisation values. A risk matrix presents combinations of consequence and likelihood, and aligns them to a risk level.

Risk Matrix

	CONSEQUENCE				
LIKELIHOOD	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Low	Medium	Medium	Medium
Rare	Low	Low	Low	Low	Medium

Following this matrix, an impact that is almost certain to occur, which has a moderate consequence, is considered to be a high risk. While an impact that is unlikely to occur, and has a minor consequence, is considered to be a low risk. The definitions for each risk level are presented below.

EXTREME priority risks demand urgent attention at the most senior level and cannot be simply accepted as part of routine operations. Actions required to treat an extreme priority risk are likely to be beyond the standard operational procedures and require additional human and/or financial resources.

HIGH priority risks are the most severe that can be accepted as part of routine operations, but they will be the responsibility of the most senior operational management. Senior management will be responsible for ensuring that adaptation actions towards management of the risk are implemented.

MEDIUM priority risks can be expected to form part of routine operations but they will be explicitly assigned to relevant managers for action and maintained under review.

LOW priority risks will be maintained under review, but it is expected that existing controls will be sufficient.

In general, EXTREME and HIGH priority risks need to be treated immediately or subject to more detailed analysis. LOW priority risks on the other hand, may be set aside with no further action to treat them apart from routine reviews to ensure that there has been no change that would make them more severe.

TIMEFRAMES

The timeframes link to the Shire's planning and budget cycles and were selected based on an understanding of the local context in which the action would be implemented. This plan will address each of the priority risk areas in turn and identify the actions necessary to achieve the objectives.

Timeframe	Time
Immediate	2012-2013
Short term	2012-2014
Medium term	2012-2016
Long term	2012-2026

MONITORING AND REVIEW

The LCCAAP will be monitored annually to determine progress against the plan.

A review will be undertaken in 2013/14 to identify future action that might be needed. This review will coincide with a major review of the RCCAAP and will take into account any changes to climate change action at a regional scale.

PRIORITY RISK AREA 1 - Infrastructure Failure and Loss

The provision and maintenance of infrastructure is one of the core responsibilities of local government and is vital for making the environment more practical and accessible for the community. The Shire's built environment positively contributes to the quality of life of residents, the image of the Shire and its economic vitality. It comprises public infrastructure (eg roads, footpaths, right-of-ways, street lighting, drainage, parks, and bushland) and public facilities (eg Shire's buildings for community use).

Climate change factors such as drought, bushfires, extreme rainfall and flooding, extreme temperatures, acid sulphate soils and increased stream bank erosion will have the potential to further impact upon this physical infrastructure. Infrastructure including roads, building and drainage, may all require higher costs for maintenance, more frequent repair and maintenance schedules and additional costs for upgrading. Similarly, consideration needs to be given to changing requirements in relation to higher building and construction standards when planning for and maintaining assets.

The Shire must be able to respond to any possible infrastructure failure in an effective and timely manner to ensure that there is minimal impact on local residents and the Shire's operations. This requires knowledge of the potential climate change impacts, vulnerability of infrastructure, likelihood of failure and appropriate response management plans.

Objectives

- To ensure that the Shire's infrastructure is resilient to the impacts of climate change.
- To ensure the Shire is able to respond in the event of infrastructure failure.

#	Action Required	Timeframe	Risk Level	Responsible Service Area(s)
1.1	Conduct community education about drainage and flooding events in the Shire	Immediate	High	Infrastructure
1.2	Design infrastructure appropriately in floodway.	Immediate	Medium	Infrastructure Design
1.3	Write to Department of Water and request flood modelling for the hills.	Short	High	Infrastructure/ Planning
1.4	Identify risk areas for flooding in the Shire.	Immediate	High	Infrastructure/ Planning
1.5	Review effluent disposal controls potentially affected by flood situations.	Medium	High	Health / Infrastructure
1.6	Review insurance for the Shire with relation to flooding.	Short	Medium	Corporate Services
1.7	Adopt new special control areas in the Town Planning Scheme for flood prone land.	Medium	Medium	Planning and Statutory Services
1.8	Ground truth all creek lines and tributaries to ascertain condition assessment mapping.	Medium	Medium	Environment with Swan River Trust
1.9	Conduct asset pick up infrastructure in floodway and monitor.	Medium	Medium	Infrastructure Design

PRIORITY RISK AREA 2 - Impacts on Essential Services

Power and water services are essential for the Shire's operations and business, community sectors, households and residents. Interruption to or loss of these services for any period of time can have severe repercussions.

Disruption to electricity and fuel supplies may result in increased electricity and fuel costs; lack of access to air conditioning and lighting; and disruptions to medical equipment, refrigeration and commercial equipment, resulting in various negative health and financial consequences.

Increased temperatures and decreased rainfall have reduced water availability in the south-west of Western Australia. This has implications for residential, rural and industrial/commercial water use and could result in increasing costs and further restrictions being placed on water consumption.

The provision of power and water are essential services provided for by the state government, and as such, the Shire has limited ability to influence future proofing of these services other than through advocacy.

The RCCAAP details a comprehensive range of advocacy actions that focus on pursuing positive and sustainable outcomes for the provision of these services in Perth's Eastern Region. While EMRC will take the lead in advocating for the region, the Shire will provide support and strength to these advocacy campaigns.

In addition, the Shire can take steps to ensure that it has the capability to cope with disruptions to these essential services with minimal impact on its operations and the community.

Objectives

- To reduce the risk to the Shire from loss of power by undertaking appropriate energy management practices.

LCCAAP plain text version – see full graphic version at www.mundaring.wa.gov.au/environment-17/waste/environment-sustainability/climate-change

- To reduce the risk to the Shire from reduced water availability by undertaking appropriate water management practices.

LCCAAP 2012 plain text version – see full graphic version at [www.mundaring.wa.gov.au/
environment-waste/environment-sustainability/climate-change](http://www.mundaring.wa.gov.au/environment-waste/environment-sustainability/climate-change)

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#	Action Required	Timeframe	Risk Level	Responsible Service Area(s)
2.1	Water Availability			
2.1.1	Education in primary schools for water conservation issues.	Short	High	Environment/ State Govt
2.1.2	Investigate and monitor best-practice water saving measures at high water use sites	Medium	High	Infrastructure - Parks and Community Services Recreation
2.2	Power Loss			
2.2.1	Continue to maintain back-up power at Shire facilities.	Medium	High	Infrastructure - Assets

PRIORITY RISK AREA 3 – Watercourse Damage and Loss

The Shire's watercourses play a vital role in collecting and distributing water, sustaining ecosystems and contributing to water supply. They support a high diversity of living organisms and play an important role in many physical, biological and chemical processes. The Shire's watercourses are an important feature of the natural environment and as such, it is critical that their health and viability is maintained.

In addition to the existing pressures from land use activities and loss of vegetation, climate change will add further pressure by increasing erosion and subsidence, sedimentation, flooding and creating potential acid sulphate soils.

The Shire's drains and watercourses are already being impacted by altered seasonal flows leading to flooding of low lying areas and altered biodiversity. The consequences of increased periodic watercourse flooding events include:

- damage to infrastructure;
- higher risks to public safety and therefore higher costs for management eg signage for peak events, temporary road and park closures and diversion of traffic;
- higher costs for storm water drainage maintenance, repairs and upgrades; and
- higher emergency management and response costs.

Erosion and subsidence poses a significant risk to infrastructure, vegetation and habitat along waterways. It also can be a risk to public safety and amenity. Rigid building structures along the watercourses such as dual use paths, bridges and retaining walls are at risk from erosion and subsidence.

Drought conditions are likely to exacerbate erosion and downstream sedimentation. Higher sediment loads enter watercourses following extreme rainfall or bushfire

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events, both of which are projected to increase with climate change. Changed climatic conditions are also likely to produce conditions that favour riparian and aquatic weeds and algal blooms (Australian Government Department of Climate Change, 2009). Sedimentation may also lead to increased blockage of gutters and drains.

The Shire's watercourses are used for both public and private extraction and provide important environmental flows supporting wetlands and groundwater dependent vegetation. Falling groundwater tables and pressure for a high density development in and around waterways, have the potential to expose potential acid sulphate soils (PASS).

The Shire's watercourses are an invaluable environmental and community asset that will be under significant threat unless adaption measures are implemented.

Objectives

- To reduce the impact of the drainage system on the Shire's watercourses.
- To support and facilitate the community in the rehabilitation and management of watercourses.
- To identify and increase the Shire's understanding of the condition and threats to watercourses.
- Ensure the Shire's planning and development activities create a positive impact on watercourses.

LCCAAP plain text version – see full graphic version at www.mundaring.wa.gov.au/environment-21/waste/environment-sustainability/climate-change

#	Action Required	Timeframe	Risk Level	Responsible Service Area(s)
3.1	Acid Sulphate Soils (ASS) and Potential Acid Sulphate Soils (PASS)			Environment and Statutory Services Planning and Infrastructure
3.1.1	Assist friends groups and catchment groups in rehabilitation of Shire land and watercourses.	Short	Medium	Environment
3.1.2	Use Private Land Conservation Awareness and Eastern Hills Catchment Management Program (EHCMP) Officers to educate private property owners.	Short	Medium	Environment
3.1.3	Map salinity in the Shire.	Medium	Medium	Environment/others
3.1.4	Improve mapping of Acid Sulphate Soils (Ground Truth).	Medium	Medium	Environment/others
3.1.5	Incorporate updated mapping in Local Planning Strategy to avoid disturbance of Acid Sulphate Soils.	Medium	Medium	Statutory Services - Strategic Planning
3.2	Foreshore Erosion and Subsidence			Environment/Infrastructure
3.2.1	Develop a guideline for waterway management in the Shire.	Short	Medium	Environment/Infrastructure
3.3	Sedimentation			Environment/Infrastructure
3.3.1	Incorporate Water Sensitive Urban Design principles in statutory planning.	Immediate	Low	Statutory Services - Strategic Planning
3.1.5	Incorporate updated mapping in Local Planning Strategy to avoid disturbance of Acid Sulphate Soils.	Medium	Medium	Statutory Services - Strategic Planning
3.3.2	Conduct asset pick up for maintenance and replacement of infrastructure (drains).	Short	Low	Infrastructure - Design

3.3.3	Provide training programs for Shire staff regarding drain maintenance and environmental issues.	Short	Low	Environment/Infrastructure
3.3.4	Enforce compliance issues of no stormwater discharge from structures onto neighbours' property. Use water flow restriction devices and best practice to ensure minimal impact to watercourses.	Short	Low	Building
3.3.5	Advocate to State Government for assistance in information on dams.	Medium	Medium	Environment

PRIORITY RISK AREA 4 – Increasing Bushfires

Bushfire has the potential to take lives and destroy infrastructure and property. Risks to the Shire include injury to staff involved in fire-fighting or to residents in the local areas, damage to infrastructure and facilities and disruption to services.

Bushfires create higher costs through loss and damage of both public and private infrastructure, loss of natural vegetation and the loss of the significant community and local government investment in environmental management.

Bushfires also create significant environmental impacts including loss of vegetation, loss or displacement of fauna, erosion, sedimentation of watercourses, air pollution, which can impact on health, and the release of greenhouse gases.

The bulk of scientific evidence argues that the magnitude and intensity of bushfires has risen and is expected to rise even further as a result of climate change. The Shire needs to plan and prepare for this increase in bushfires, including the need for increased management and prevention activities.

Objectives

- Undertake appropriate planning and management activities to ensure the Shire and its residents are prepared in the event of a bushfire.
- Ensure that the Shire takes necessary action to minimise the risk of potential bushfires.

LCCAAP plain text version – see full graphic version at [www.mundaring.wa.gov.au/ environment- 24 waste/environment-sustainability/climate-change](http://www.mundaring.wa.gov.au/environment-24/waste/environment-sustainability/climate-change)

#	Action Required	Timeframe	Risk Level	Responsible Service Area(s)
4.1	Insert bushfire information in rates notice and new resident welcome pack.	Immediate	High	Community Safety/fire
4.2	Conduct community workshops.	Immediate	High	Community Safety/fire
4.3	Incorporate Local Planning Scheme Provisions for development in bushfire hazard areas.	Immediate	High	Statutory Services - Strategic Planning
4.4	Spread the corporate knowledge of the Shire of Mundaring's Emergency Response Plan.	Immediate	High	Community Safety/fire
4.5	Understand involvement of Local Emergency and Management Committee (LEMC) and the Bushfire Advisory Committee.	Immediate	High	Community Safety/fire
4.6	Provide information on acceptable burning practices in the Hills (e.g. green waste).	Immediate	High	Community Safety/fire
4.7	Continue an Awareness Program re bushfires as per FESA guidelines.	Short	High	Community Safety/fire
4.8	Review evacuation procedures and safe havens in accordance with the Emergency Management Act (2005)	Short	High	Community Safety/fire
4.9	Apply or Implement AS 3959 – Building Houses and additional requirements.	Immediate	High	Planning/Building
4.10	Audit escape routes for residents in the Shire.	Medium	High	Community Safety/fire; Planning
4.11	Implement changes to escape routes.	Medium	High	Community Safety/fire; Planning
4.12	Install fire fighting systems to new infrastructure to Code.	Medium	High	Infrastructure; Community safety/fire

4.13	Apply subdivision conditions to new developments as per best practice for fire fighting purposes.	Medium	High	Planning; Community safety/fire
4.14	Implement construction requirements for new infrastructure to meet AS 3959 in bushfire prone areas.	Medium	High	Building

PRIORITY RISK AREA 5 – Loss of Ecosystems and Provision of Public Open Space

The Shire's natural ecosystems are already under stress, and climate change will add further pressures. Natural ecosystems are important to all aspects of life as they provide ecosystem services essential for all life, as well as supporting regional industries and economies.

The Shire has a rich diversity of natural environments made up of streams, wetlands, forests and woodlands, with a unique display of endemic flora and fauna, all on the Shire's doorstep.

The Shire encompasses a total land area of 644 square kilometres, of which nearly half is National Park, State Forest or water catchments, which the Shire is committed to preserving and enhancing.

Reduced rainfall and changed temperature regimes may result in local native species being unable to breed or survive in their current habitats. Failure to build resilience into our natural ecosystems to help them to adapt to climate change will result in far reaching consequences, with many animal and plant species being lost forever.

A natural environment is also essential for the health and well being of local communities by providing recreational opportunities. Climate change presents a real challenge for maintaining the current level of provision and amenity of sporting, recreational and leisure facilities.

The Shire is required to balance finite resources against the community's expectations for increasing access to high quality public open spaces, while also complying with a range of statutory obligations being placed upon them by state and federal agencies relating to aspects of public open space provision. Falling groundwater levels and reduced groundwater allocations, increasing evaporation

LCCAAP plain text version – see full graphic version at www.mundaring.wa.gov.au/environment-27/waste/environment-sustainability/climate-change

and urban expansion are also set to present a significant challenge for governance, policy development and management concerning the ongoing provision of irrigated sports grounds, public open spaces, verges and medians.

Objectives

- Continue and improve the Shire's biodiversity and ecosystem protection and enhancement activities.
- Provide public open space that meets the community's needs and reflects the local ecosystems and environmental conditions.

LCCAAP plain text version – see full graphic version at www.mundaring.wa.gov.au/environment-28/waste/environment-sustainability/climate-change

#	Action Required	Timeframe	Risk Level	Responsible Service Area(s)
5.1	Implement Local Biodiversity Strategy.	Short	High	Environment
5.2	Implement Private Land Conservation Strategy.	Short	High	Environment
5.3	Continue support of Eastern Hills Catchment Management program (EHCMP) and volunteers.	Short	Medium	Environment
5.4	Consider weed control strategies in the Environmental Management Strategy and State of the Environment reporting.	Short	Medium	Environment
5.5	Review recreation types in the Shire and investigate alternative sporting surfaces.	Medium	Extreme	Recreation/Leisure
5.6	Investigate alternative water sources for ovals.	Medium	Extreme	Infrastructure parks
5.7	Review Public Open Space Strategy.	Medium	High	Planning and Statutory Services
5.8	Consider future landscaping guidelines based on change in species range.	Medium	High	Environment
5.9	Create watercourse hierarchy document policy incorporating into Public Open Space revision.	Medium	Medium	Environment/planning
5.10	Consolidate Shire sporting facilities and seek opportunities to share these with the Department of Education facilities (e.g. district facilities).	Long	Extreme	Recreation/Leisure

PRIORITY RISK AREA 6 – Decline in Population Health and Wellbeing

There is a growing recognition that climate change is having and will have further significant impacts on human health and populations. The increase in people suffering from disease and injury due to heatwaves and severe weather events such as floods, fires and storms, will lead to ever increasing issues with mental health and stress and displaced and homeless people.

There may be an increased workload for the Shire's Health Services and management requirements to deal with potential health risks associated with a changing climate including increased risk of vector, food and water borne disease as seasonal epidemics such as Ross River Virus spread south with changing climatic conditions; and increased injury levels sustained as a result of more frequent extreme weather conditions (eg floods, cyclones, gales etc).

There may be consequences for Shire facilities that may not have adequate heating and especially cooling, for example, with childcare facilities. There may also be additional occupational health and safety concerns, particularly for outdoor workers.

Displaced populations were identified as being a high risk to local government services and operations, with climate change possibly resulting in increased urban immigration on a regional, national and international level. Rising sea levels could see "climate refugees" relocate to Australia with consequences for the Shire, such as increased pressure for social services and social issues. Pressure to develop current undeveloped lands may also result, with a need to meet increasing housing pressure.

Objectives

- To ensure that appropriate planning and policy mechanisms are in place to facilitate the management of increased health risks as a result of climate change.
- To ensure that appropriate policy, procedures and infrastructure are in place to protect the health and well-being of the Shire's staff and the community.

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#	Action Required	Timeframe	Risk Level	Responsible Service Area(s)
6.1	Population Health			Community Services/Health
6.1.1	Utilise existing State Government education packages and distribute to the elderly or vulnerable in the Shire.	Short	Low	Community Services/Health
6.1.2	Develop a Heat Event Response Plan and alert system for the Shire.	Medium	Low	Community Services/Health
6.1.3	Prioritise shade in urban design (e.g. physical structures and passive shade).	Medium	Low	Infrastructure; Parks; Planning
6.2	Displaced People			Health/Planning/Community Services
6.2.1	Develop a community education program for flood/fire	Short	Medium	Community Services/Health

PRIORITY RISK AREA 7 – Economic Challenges and Opportunities

Apart from the obvious environmental and physical impacts, climate change will also impact on business, industry, employment and the cost of resources, creating both economic challenges and opportunities. The Shire's role in dealing with these challenges and opportunities is two-fold. Firstly, to maximise the efficiency of the Shire's operations so as to minimise the impact of rising resource costs. Secondly, to help its communities adapt to these new challenges and opportunities.

Increased resource costs are already impacting, and will further impact on many aspects of the Shire's operations and services, including energy costs, water costs, road construction, building construction and waste management. This is in addition to the costs of adapting to climate change and the costs of participation in a carbon trading system. The Shire's residents are already experiencing, and will further experience financial challenges from the increased costs of energy, water, fuel, food and services. It is important that the Shire minimises any costs that it may have to pass on to local residents and rate payers.

Business and industry within the Shire may experience displacement due to climate change impacts. Industries that require high inputs of carbon/energy and imported materials will be vulnerable, whereas industries requiring low levels of imports and carbon energy will yield opportunities, such as service industries including health and education.

The growing role of local government in fostering economic development provides it with the mandate to support adaptation and innovation by existing industries. It will be necessary to facilitate a change in the industry mix in order to better match the altered climatic, economic and planning and regulatory conditions, and to attract new industries offering solutions to climate change. The Shire has a competitive advantage given its inland location from vulnerable coastal conditions and the spread of existing residential, commercial and industrial areas. Employment self sufficiency and self containment rates are also much better than other corridors of

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Perth's metropolitan area. On the other hand, there is limited scope to develop additional commercial or industrial land in the Shire, and limitations in local public transport network services may in turn limit employment self-sufficiency and self-containment.

Objectives

- Implement a range of resource efficiency measures to reduce costs.
- Ensure the appropriate planning and policy mechanisms are able to support business to adapt to the impacts of climate change.

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#	Action Required	Timeframe	Risk Level	Responsible Service Area(s)
7.1	Continue to implement ways to be water and energy efficient to decrease costs to the Shire	Short	Low	Environment/Infrastructure
7.2	Review all sources of funding for the Shire.	Short	Low	Community Services Grants Officer/corporate services
7.3	Continue to improve bushfire safety in the Shire suburbs (e.g. re AS 3959).	Medium	Medium	Community Safety/fire
7.4	Advocate to State Government for improvements to public transport.	Medium	Medium	Infrastructure / Community Services / Planning

PRIORITY RISK AREA 8 – Changing Leadership and Development Requirements

The Shire's operations cover an extensive range of activities and extremely large asset portfolios. It is inevitable that most of these activities and assets will be impacted further by climate change. The decisions that will come with climate change adaptation will be unprecedented, and the Shire's decision makers will need to show both leadership and innovation.

In meeting the increasing challenges that climate change will bring, the Shire must be prepared to formally embed climate change into mainstream management and governance decision making. This means that climate change impacts and risks must be explicitly recognised and incorporated across all of the Shire's plans and procedures.

A broader issue for climate change adaptation will be to understand the legal liabilities that all levels of government will be faced with. This will require clarification of issues and associated legal responsibilities such as disclaimers and insurance requirements to protect local government from litigation as a result of climate change events. Insurers will also need to be transparent on matters of indemnification in order to make a level playing field for all. Liability issues are an emerging concern, with the climate risk group, an advisor to government and business, advising that developers and local governments may face risk litigation for negligence if they fail to factor climate change into planning.

The Shire has many active environmental groups working to restore and protect its significant environmental bushland and wetland areas. These groups participate in on-ground activities (tree planting, rubbish collection and weed control), research (flora and fauna surveys), educational programs and strategic natural resource planning. The participation and involvement of the community in the management, rehabilitation and protection of the natural environment is a key component in environmental management. The Shire will need to continue to nurture and support

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this community participation, as it will be an invaluable asset in climate change adaptation.

Objectives

- To build community and institutional capacity to meet the challenges of further expected climate change impacts.
- To ensure the Shire has a clear understanding of its legal responsibilities related to climate change and insurance.

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#	Action Required	Timeframe	Risk Level	Responsible Service Area(s)
8.1	Continue to seek information and then inform the Shire and provide education to staff, councillors and community.	Immediate	Low	Office of CEO / Environment
8.2	Develop a survey to establish community expectations about adapting to climate change.	Short	High	Community services
8.3	Develop and adopt a Communication Strategy to assist in the above point.	Short	High	Community services
8.4	Provide leadership and governance re climate change.	Short	High	All
8.5	Continue support of Shire's volunteer programs.	Ongoing	High	Environment/Community Services
8.6	Incorporate Scheme provisions on bushfire hazard and flooding.	Short	Low	Statutory Services - Strategic Planning
8.7	Audit insured Shire facilities to determine whether action is required.	Medium	Low	Corporate services
8.8	Increase volunteer group support by creation of a volunteer plan.	Long	Extreme	Environment/Community services/HR
8.9	Adopt Shire Climate Change Adaptation Action Plan/Policy to show internal commitment.	Long	High	Environment/Council
8.10	Educate Shire staff and community in an ongoing commitment.	Long	High	All
8.11	Investigate opportunities to convert and utilise facilities for sustainability purposes.	Ongoing	Low	Statutory Services

ACRONYMS AND ABBREVIATIONS

ACE _R	Achieving Carbon Emissions reductions
AS	Australian Standard
ASS	Acid Sulphate Soils
BOM	Bureau of Meteorology
CPRS	Carbon Pollution Reduction Scheme
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEC	Department of Environment and Conservation
DSR	Department of Sports and Recreation
EHCMP	Eastern Hills Catchment Management Project
EMRC	Eastern Metropolitan Regional Council
FESA	Fire and Emergency Services Authority
GPO	General Post Office
IOCI	Indian Ocean Climate Initiative
IPCC	International Panel for Climate Change
LCCAAP	Local Climate Change Adaptation Action Plans
LEMC	Local Emergency and Management Committee
NGERS	National Greenhouse and Energy Reporting System
PASS	Potential Acid Sulphate Soils
RCCAAP	Regional Climate Change Adaptation Action Plan
SRT	Swan River Trust
WALGA	WA Local Government Association

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GLOSSARY

Adaptation	Making adjustments to existing activities and practices so that vulnerability to potential impacts associated with climate change can be reduced or opportunities realised.
Adaptation Action	Specific tasks required to ensure that the adaptation measure is implemented.
Acid Sulphate Soil	A soil with naturally occurring sediments that contain sulfides that have or may have the potential to generate sulfuric acid when exposed to air.
Algal Bloom	The proliferation of either macro algae (seaweed) or surface scum accumulation or brightly coloured water due to microalgae (phytoplankton).
Climate Change	A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.
Disease Vectors	An organism that does not cause disease itself but that transmits infection by conveying pathogens from one host to another, serving as a route of transmission.
Mitigation	Climate change mitigation are measures or actions to decrease the intensity of radiative forcing in order to reduce global warming. Mitigation is distinguished from adaptation, which involves acting to minimize the effects of global warming.
Resilience	The ability of human or natural systems to withstand, recover from or adapt to significant pressures and stresses without losing their essential characteristics.
Riparian	The area of land bordering a waterway, where the structure, function and composition of the landscape are influenced by the waterway.

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APPENDIX A

Note: This list of climate change adaptation actions was generated by the Shire's community during an adaptation action workshop through a brainstorming session to address identified risks that the Shire may face due to climate change. During this session all participants were given an opportunity not only to generate the ideas that will assist the Shire in the climate change adaptation process but also to vote on the preferred ideas to highlight the priority of the action. The workshop participants were limited to 3 votes only, therefore some proposed actions were left without a single vote. The number of votes allocated to the action indicates the implementation priority level that will be considered by the Shire's staff during the adaptation process and review of the LCCAAP.

List of the Climate Change Adaptation Ideas:

Category	Idea	Votes
Environment	Develop existing townsites and maintain bushland & open area & farmland.	6
Infrastructure	Encourage infill development in existing townsites and protect existing bushland and farmland.	6
Infrastructure	Update planning rules to all new houses to include mandatory installation of required equipment to generate solar power, and, harvest/ utilize rain water and grey water.	5
Bushfire	Roof sprinklers on automatic system.	4
Environment	Ensure connections between green spaces to allow species migrations.	3
Environment	Free or low-cost travelling mulch to reduce burning-off, green waste, air pollution, and to help with plantings.	2
Environment	Bridle path maintenance requires community input. Consider incentives from Shire for volunteers.	2
Environment	Preserve water by encouraging greywater use and rain water collection. Set goal for Shire to become "water neutral, 2020".	2
Environment	Increase collaboration of Shire with DEC & DSR regarding	2

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Category	Idea	Votes
	strategies for green spaces for recreation purposes.	
Environment	Conduct "Carbon Audit" for the Shire of Mundaring. Then 'manage the balance'.	2
Infrastructure	Require ongoing community engagement. Not 'ad hoc'.	2
Infrastructure	Improve rail infrastructure and reduce trucks on roads. Encourage establishment of the local growers market to reduce food miles.	2
Bushfire	Education from FESA on how to burn private properties to reduce fire hazards	2
Community	Support integration of new people into community to help people to work together during emergencies (eg a 'Welcome to our community information pack').	2
Community	Avoid disruption to electricity supply by increasing local solar generated electricity in each locality to be 'power positive' by 2020.	2
Community	Community facility - air-conditioned - recreation. Benefits to handicapped, overweight, elderly during times of high heat stress.	2
Community	Establish of local 'neighborhood watch(or similar program) to support vulnerable members of community during storms, bushfires etc.	2
Environment	More public education regarding weeds.	1
Environment	Reduction in disturbance to soil and removal of natural vegetation.	1
Environment	Dam creeks to slow down flow and create swamps/wetlands.	1
Infrastructure	Encourage solar power in community with funding for batteries (like the EMRC Perth Solar City initiative).	1
Infrastructure	Increased use of rainwater tanks for gardens. Education programs. Subsidies to support introduction.	1
Infrastructure	Move power and phone lines to underground services.	1
Infrastructure	Underground power lines.	1
Infrastructure	Car pooling scheme for commuters.	1
Infrastructure	Increase collaboration with community. 'Top down' management of land and infrastructure counters community effort to address climate change.	1
Infrastructure	Install bicycle racks at the Shire office and encourage more bicycle riding in town.	1

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Category	Idea	Votes
Infrastructure	Large amount of state owned land currently forces over development to generate revenue for the Shire. The Shire needs to: 1. Reduce revenue requirements; 2. Find other sources of revenue; and 3. Obtain return for State for maintenance of state land.	1
Infrastructure	Reduce influence of State Administrative Tribunal. Devolve environmental control to Shire and community.	1
Infrastructure	Community based insurance company. Not reliant on large corporations.	1
Infrastructure	Houses, suburbs and cities should be well designed to implement solar positive principles, water sensitive design and community conviviality. This may be achieved by higher density public transport and more support for pedestrian and cycling infrastructure.	1
Bushfire	Ensure no cul-de-sac's exist in any new subdivisions and an opening of existing no-through roads where ever possible enhance escape routes.	1
Bushfire	Develop township bushfire protection plan to: 1. Control burn plan for total community; 2. Assistance with burns; and 3. More coordination with DEC & FESA.	1
Bushfire	Modify building requirements in high bushfire risk areas - wooden houses, pole homes, tile roofs etc.	1
Community	More planning/control of residential burns to manage air quality.	1
Community	Bury power supply lines between main lines and house.	1
Community	Building regulations - mandatory passive solar radiation.	1
Community	Find ways to reduce instances where the environment and/or 'character' suburbs unnecessary because of a perceived trade off between safety and the environment/character.	1
Environment	Record, monitor & enhance resilience of keystone species.	0
Environment	Community education in creating habitat for local species.	0
Environment	Water quality. Promote residents to buy water tanks with filters. Consider incentive (eg \$100 off rates).	0
Environment	Subdivision. Restraints on clearing bushland. Promote	0

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Category	Idea	Votes
	good greenbelt corridors.	
Environment	Preserve water by changing drainage systems so that water is contained in reservoirs and does not flow to the sea.	0
Environment	The Shire to investigate the use of natural pesticides and herbicides and reduce use of toxic chemicals.	0
Environment	Map the shire from the point of view of environmental relationships. Show where the various pressures will apply (eg population, environmental stress etc) and the resultant risk to that area of cumulative pressure.	0
Environment	Change golf course to nine holes to use less water.	0
Environment	Compliance in planning - river and stream bank protection.	0
Environment	Tip fees drive people to dump rubbish in natural reserves. Need more education and more encouragement of recycling.	0
Environment	Investigate potential for NRM funding for care and restoration of crown land in region.	0
Environment	Ongoing fauna surveys.	0
Environment	Protection of habitat through minimization of clearing.	0
Environment	Carbon emission reduction by way of community tree planting days.	0
Environment	Shire to spray more verges to control weeds.	0
Environment	Reduce automobile dependence to reduce carbon emission.	0
Environment	Well planned housing. Needs to close its system by recycling, reusing, recovering etc.	0
Environment	Promote planting of endemic species (reduce bushfire risk).	0
Environment	Improve infrastructure planning to manage the risk of power failure could cause sewerage outlets and the resulting pollution of creeks.	0
Environment	For the 'Restore the canopy' program, provide information to the community on fire vulnerability as well as water resilience.	0
Environment	Expand green spaces to better ensure survival of remaining species.	0
Environment	More effort to control unwelcome species - corellas, pines, rabbits, rainbow lorikeets.	0

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Category	Idea	Votes
Environment	Seek more funding from State and Federal government to conserve biodiversity. Could this include funding for residential projects such as helping people create more frog ponds?	0
Environment	Work in collaboration with Department of Health on establishing mosquito management plan for the region	0
Environment	Integrate composting into waste pick up service. Reduce 'green bin' to fortnightly and increase 'blue bin' (composting) to be weekly.	0
Environment	Encourage the use of more ecologically sustainable toilets (eg EcoSen composting toilets).	0
Environment	Educate public so they can identify at risk areas and species. Project to monitor species populations.	0
Environment	Establish green waste collection system for regions of higher population density (eg blocks < 4000m ²).	0
Environment	Establish Riparian Zones (20m) for all creeks and streams.	0
Environment	Implement a 'tip shop' to recover items which may be re-used.	0
Infrastructure	Ensure that Shire planning is truly 'integrated'.	0
Infrastructure	More support for friends groups to keep planting.	0
Infrastructure	Maintain/enhance riparian zones and vegetation.	0
Infrastructure	Better cross-agency coordination. Local government and community groups are planting seedlings, while other government agencies are cutting down trees.	0
Infrastructure	Encourage renewable energy generation.	0
Infrastructure	Negotiate with insurance companies to provide lower insurance rates for people who demonstrate more sustainability (eg bushfire protection, water/energy self-sufficiency).	0
Infrastructure	More enforcement of stormwater management compliance.	0
Infrastructure	Council to arrange large mobile generator to improve energy security in the area (eg power station in a truck).	0
Infrastructure	Provide information to people on how to live 'off the grid'.	0
Infrastructure	More sustainable power supplies. More underground power.	0
Infrastructure	Cut down on heating and cooling.	0
Bushfire	Require at risk properties to have sprinklers on rood.	0

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Category	Idea	Votes
Bushfire	Provide more support (physical aid) to clear and maintain areas around land (especially for elderly residents).	0
Bushfire	Provide community shelters/gathering points.	0
Bushfire	More road verge maintenance.	0
Bushfire	Free/low-cost travelling mulchar to reduce amount of green waste.	0
Bushfire	State and federal government rely on arsonists to conduct their un-controlled burning.	0
Bushfire	Set planning restrictions regarding the distance of foliage from house/building.	0
Bushfire	Reward or discount rates for volunteers.	0
Bushfire	Require water tanks and generators.	0
Bushfire	Review of burning requirements and communication education on correct burning procedures.	0
Bushfire	Shire tree canopy program; Friends group planting	0
Community	More education regarding health risks from reduced air quality.	0
Community	Make the Shire an educational center for climate change adaptation and mitigation strategies based on community engagement in a practical sense.	0
Community	Different parts of the Shire act as 'backup' for other parts in case of displacement due to emergency.	0
Community	Bury power lines to address risk to power supply.	0
Community	Recharge aquifers with treated sewerage water.	0
Community	Develop friends groups for first planting for different direction and groups not connected to reserve.	0
Community	Use the resource which is 'community' better (eg to reduce the need for external consultants and/or permanent shire staff).	0
Community	Build a recreation center with air conditioning. Also can be used to house displaced people from fire or flood events.	0
Community	Educate community about risks of water borne diseases and pests.	0
Community	To address risk of heat stress. Encourage more cold water dispensers in town areas (eg encourage shops to provide cold water).	0
Community	Plan additional land to house displaced people (climate change refugees).	0


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Category	Idea	Votes
Community	To address risk of heat stress provide a flyer our with rates telling people how to cope with extreme hot days.	0
Community	Free/low-cost travelling mulchar to reduce amount green waste and improve air quality.	0
Community	Community education on maintenance of rainwater tank.	0
Community	Extend community fire plan to deal with other kind of emergencies (eg flood and storm).	0
Community	'Adopt a family' scheme to house displaced people.	0
Community	Education on how to burn rubbish with minimal smoke to reduce air pollution.	0
Community	Community alert/communication plan to notify people during emergencies. Run regular 'whole of community' drills (eg test homeowners' fire plans).	0
Community	Provide community gardens and encourage community responsibility and ownership.	

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Climate Adaptation action plan

Action	Lead agency	Completed by
Direction 1: Produce and communicate credible climate information and resources		
Understand how our climate may change 		
1. Expand the Climate Science Initiative to produce detailed climate projections for the north-west of Western Australia	Department of Water and Environmental Regulation	2028
2. Model the urban heat island effect of Perth's future climate to provide better data for local adaptation planning	Department of Water and Environmental Regulation	2026
3. Investigate the impacts of marine heatwaves on fisheries and the marine environment	Department of Primary Industries and Regional Development	2027
4. Upgrade weather stations to better support pastoralists' preparedness and response to extreme weather events in the Southern Rangelands	Department of Primary Industries and Regional Development	2027
5. Model the impact of climate change on selected state-owned cultural buildings and recreational camps, and prioritise responses	Department of Local Government, Sports and Cultural Industries	2024
Communicate science and adaptation knowledge to improve how we respond		
6. Produce climate science communication materials, including visualisation tools, to make climate projections more accessible for communities, non-profit organisations and businesses.	Department of Water and Environmental Regulation	2028
7. Develop and promote climate change communications products to build community awareness of climate risks and practical options for responding	Department of Water and Environmental Regulation	2028
8. Collaborate with the Bureau of Meteorology and CSIRO to understand and communicate the impact of climate change on Western Australia's water resources	Department of Water and Environmental Regulation	2025
Strengthen adaptation research to drive innovation		
9. Collaborate with researchers, community organisations and the private sector to establish a Climate Adaptation Research Hub that identifies priority research needs and funding requirements	Department of Water and Environmental Regulation	2028
10. Support climate adaptation research on Western Australia's biodiversity, including threatened species and ecological communities, and identify on-ground actions to enhance climate resilience	Department of Biodiversity, Conservation and Attractions	2028
11. Evaluate the climate risk for rivers in the south-west to inform priority actions to enhance resilience	Department of Water and Environmental Regulation	2027
12. Collaborate with universities, other research institutions and stakeholders to develop a prioritised and targeted research program to address key climate change challenges for the Western Australian water sector	Department of Water and Environmental Regulation	2027
13. Manage the south-west native forests through an adaptive, evidence-based approach that prioritises biodiversity, forest health and resilience	Department of Biodiversity, Conservation and Attractions	2033
Direction 2: Build public sector climate capability and strengthen accountability		
Set the right policies to enhance decision-making and encourage action 		
14. Develop climate legislation, including statutory requirements for adaptation strategies and plans to enhance climate resilience	Department of Water and Environmental Regulation	2023
15. Implement a Climate Risk Framework to monitor, assess and report on the implications of climate change on the state's finances, physical assets and service delivery	Department of Water and Environmental Regulation, Department of Treasury	2026
16. Incorporate climate adaptation into the State Planning Framework and policies to inform land use planning and management decisions.	Western Australian Planning Commissions, Department of Planning, Lands and Heritage	Ongoing
17. Implement new approaches to identification of future bushfire hotspots and improve fuel management strategies	Department of Fire and Emergency Services	Ongoing

Action	Lead agency	Completed by
Drive transformation through State Government leadership		
18. Strengthen the capability of the public sector to assess and manage climate risk through training programs and tools	Department of Water and Environmental Regulation	2026
19. Deliver a program of new water sources for Perth, with the immediate priority being the finalisation of planning and design for Perth's newest water source, the proposed Alkimos Seawater Desalination Plant	Water Corporation	2028
20. Explore regional water supply options for key towns to address the impact of climate change	Water Corporation	2025
21. Invest in a more climate-resilient water supply for the wider Busselton area	Busselton Water	2029
22. Seek to secure Infrastructure Australia's support for future coastal and estuary adaptation initiatives	Department of Planning, Lands and Heritage	2024
Develop appropriate metrics to measure progress		
23. Establish robust metrics to measure progress towards building climate resilience and adaptation across Western Australia's communities and sectors	Department of Water and Environmental Regulation	2025
Direction 3: Enhance sector-wide and community partnerships to unite and coordinate action		
Support local communities to create their own adaptation pathways		
24. Evaluate outcomes of the Regional Climate Alliance pilot program and consider options to strengthen local government capacity	Department of Water and Environmental Regulation	2023
25. Support small-to-medium enterprises to better anticipate, manage and adapt to the impacts of climate change through delivery of a Climate Adaptation Toolkit, a training program, and science and innovation funding	Department of Jobs, Tourism, Science and Innovation	2025
26. Expand the Rangelands Revitalisation Project to build capability of pastoralists to enhance resilience and ecological outcomes	Department of Primary Industries and Regional Development	2027
27. Support WaterSmart farms – enhancing resilience of farmers, rural agribusiness and small communities by ensuring access to high-quality water	Department of Primary Industries and Regional Development	2027
Develop and deliver adaptation action plans together		
28. Deliver a Sector Adaptation Plan Program for Western Australia to identify sector-specific climate impacts and priority adaptation actions. Deliver the following sector adaptation plans:	Department of Water and Environmental Regulation	2028
Health and human services	Department of Health	2024
Emergency management	State Emergency Management Committee	2024
Primary industries	Department of Primary Industries and Regional Development	2026
Small-to-medium enterprises	Department of Jobs, Tourism, Science and Innovation	2025
Natural environment	Department of Biodiversity, Conservation and Attractions	2026
Further consideration will be given to the timeframe for delivery of adaptation plans for Built Environment and Water	Department of Water and Environmental Regulation	2024

Action	Lead agency	Completed by
Direction 4: Empower and support the climate resilience of Aboriginal people		
Enhance adaptive capacity of communities and create opportunities for involving and empowering Aboriginal people		
29. Engage with Aboriginal organisations and academics on the Adaptation Research Hub to ensure existing Aboriginal research and future research priorities of Aboriginal people are incorporated	Department of Water and Environmental Regulation	2028
30. Investigate climate adaptation practices currently being delivered through groups funded by the DBCA's Aboriginal Ranger Program, and identify future opportunities	Department of Biodiversity, Conservation and Attractions	2026
Empower Aboriginal-led climate adaptation action		
31. Engage with Aboriginal leaders and regional communities on a First Nations Climate Resilience Fund to build trust, share knowledge and design a dedicated fund for Aboriginal-led adaptation projects	Department of Water and Environmental Regulation	2025
32. Develop an Aboriginal-led West Kimberley Climate Adaptation Strategy through a community-led and collaborative design approach, informed by Traditional Owner knowledge and Western science	Department of Water and Environmental Regulation	2026
33. Collaborate with the Aboriginal Health Council of WA to support Aboriginal communities develop place-based climate-related health adaptation measures	Department of Health	2024
34. Deliver improved and more climate-resilient water and power services to remote Aboriginal communities through the Transfer of Essential Services program	Water Corporation and Horizon Power	Ongoing
35. Deliver the Remote Communities Fund to support improved and more climate resilience, and co-designed sustainable, culturally appropriate housing in remote communities	Department of Communities	2026
36. Evaluate climate risk to airport infrastructure in remote Aboriginal communities and identify investments to enhance resilience	Department of Transport	2026
Tracking progress of the Climate Adaptation Strategy		
37. Develop a framework for monitoring, evaluation and reporting to track implementation progress	Department of Water and Environmental Regulation	2025

Sustainable Development Goals (the Global Goals or UNSDGs)

1 NO POVERTY	End poverty in all its forms everywhere.
2 ZERO HUNGER	End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
3 GOOD HEALTH AND WELL-BEING	Ensure healthy lives and promote well-being for all at all ages.
4 QUALITY EDUCATION	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
5 GENDER EQUALITY	Achieve gender equality and empower women and girls.
6 CLEAN WATER AND SANITATION	Ensure availability and sustainable management of water and sanitation for all.
7 AFFORDABLE AND CLEAN ENERGY	Ensure access to affordable, reliable, sustainable and modern energy for all.
8 DECENT WORK AND ECONOMIC GROWTH	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.
10 REDUCED INEQUALITIES	Reduce inequality within and among countries.
11 SUSTAINABLE CITIES AND COMMUNITIES	Make cities and human settlement inclusive, safe, resilient and sustainable.
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Ensure sustainable consumption and production patterns.
13 CLIMATE ACTION	Take urgent action to combat climate change and its impacts.
14 LIFE BELOW WATER	Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
15 LIFE ON LAND	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss.
16 PEACE, JUSTICE AND STRONG INSTITUTIONS	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
17 PARTNERSHIPS FOR THE GOALS	Strengthen the means of implementation and revitalise the global partnership for sustainable development.



Eastern Metropolitan Regional Council

Sustainability

Emissions Data Analysis Report 2021/2022





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1 Introduction

The Shire of Mundaring previously made a commitment to “Reduce the greenhouse gas emissions resulting from Shire’s operations and activities” in the *Environmental Management Plan 2012-2022*. This includes the development of a Carbon Emissions Strategy for the Shire. The Shire endorsed its first Energy and Emissions Reduction Strategy in 2018 which encourages the Shire to reduce corporate carbon emissions and implement renewable energy when possible. The Strategy also set the Shire’s first Emissions Reduction Target.

The Shire’s new Emissions Reduction Target is:

- *To reduce corporate emissions by 30% by 2030, from 2016/2017 levels*

The following report analyses the Shire’s corporate emissions for 2021/2022 compared to the Shire’s target with a baseline year of 2016/2017. The Shire’s corporate emissions have been analysed using data managed in the Shire’s Azility Platform.

The Shire is not obliged to report emissions under the National Greenhouse and Energy Reporting System (NGERS) or any other legislative framework. The Shire has chosen to report emissions annually as part of adopting a best practice approach to carbon management and in doing so will enable carbon emissions and reduction claims to be objectively assessed by the public.

Data disclaimer

The data within this report is correct at the time extracted from the Shire’s Azility platform (19/07/2023).

It is recommended that the Shire considers supplying Azility with its e-bills (electronically provided invoices) to reduce estimated data in the future and improve data quality within the platform.

The data within this report has been updated with the most recent complete set of historic figures, meaning that totals may vary from previous years due to estimates being revised with accurate data. For more information, contact the EMRC Sustainability Officer.



2 Emissions Reduction Target

Figure 1 displays the historical carbon emission for the Shire of Mundaring since 2016/2017. The Shire has reduced their emissions by 5% from the previous reporting period as it continues to upgrade facilities. The Shire continues to strive for the reduction of emissions from their corporate assets and has committed to Carbon Emission Reduction Strategy and Carbon Emission Reduction Plan in 2018. Error! Reference source not found. shows the potential trajectory for emissions reduction for the Shire and its progress towards reaching this goal.

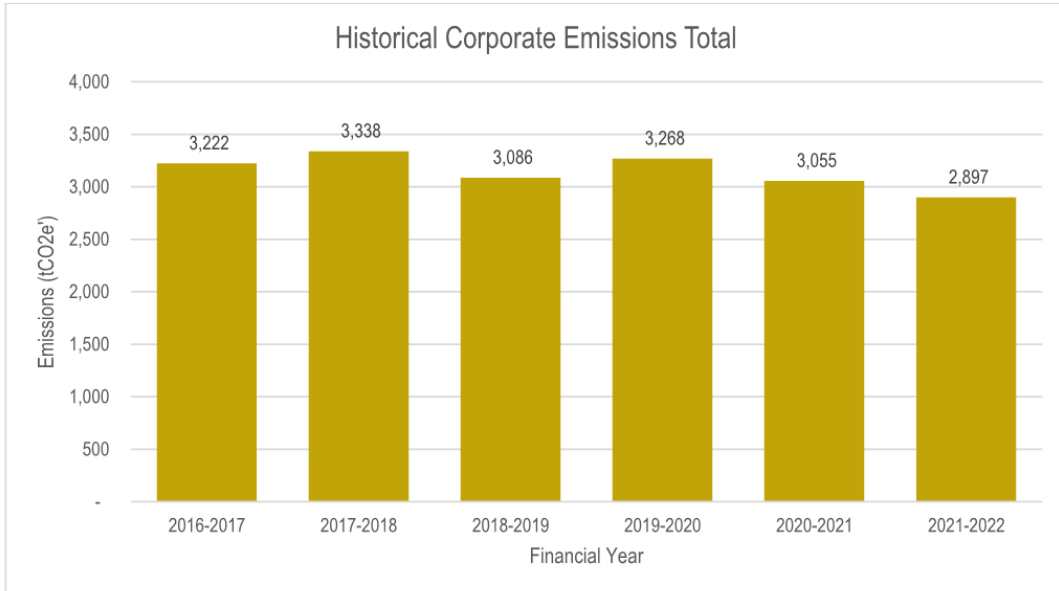


Figure 1 - Shire of Mundaring’s historic emissions (tCO₂-e) since 2016/2017

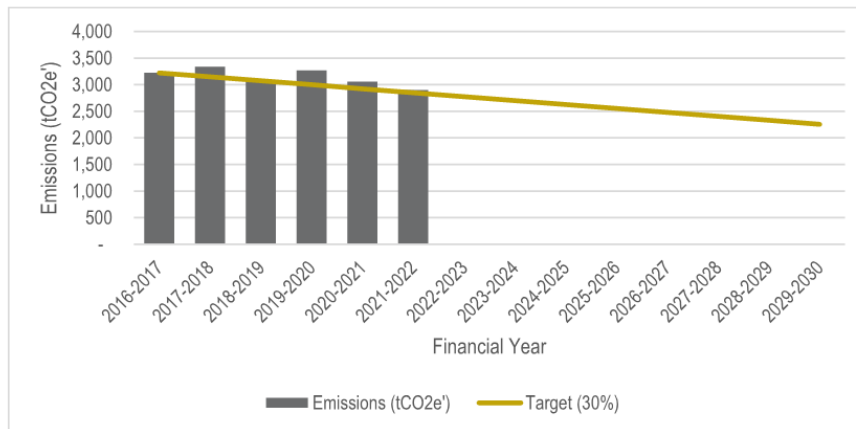


Figure 2: An approximate reduction path for Shire of Mundaring’s target for the year 2029/2030.



Table 1 highlights the Shire's progress towards the target of a 30% reduction on 2016/17 levels. Whilst 2017/2018 and 2019/2020 saw slight increases, levels are in general tracking downwards. Should the Shire continue on this trajectory it would likely reach its target before the 2030 goal date.

Table 1: Total emissions data (tCO₂-e) with differences for last five years and progress towards target (target baseline year highlighted)

Financial Year	Emissions Total	Difference since previous year	Difference since baseline year 2016/2017
2017-2018	3,338	116	4%
2018-2019	3,086	-252	-4%
2019-2020	3,268	182	1%
2020-2021	3,055	-212	-5%
2021-2022	2,897	-158	-10%

3 Total Carbon Footprint

The Shire has recorded an overall decrease in emissions. **Table 2** demonstrates the volume and percentage change of emissions for each scope, and total change in comparison to the previous reporting year of 2020/2021. Scope one emissions have increased 1%, this is attributed to a variety of reasons but it is such a minor increase it is of no significance. Scope two emissions have seen a reduction of 8%, this is attributed to removing gas from facilities and the installation of solar panels. Additionally, scope three has reduced by 7%, this is due to the replacement of some globes with LED through Western Power's ordinary maintenance.

Table 2: The Shire's 2020/2021 and 2021/2022 carbon emissions source and scope

Emissions Source	Total Greenhouse Gas Emissions (tCO ₂ -e)		Volume Change	Percentage Change
	2020/2021	2021/2022	tCO ₂ -e	%
Scope 1				
Emissions from Fuel Combusted for Transport and Fuel Combusted for Stationary Energy	841.45	846.49	5.04	1%
Scope 2				
Electricity and Gas	1012.74	931.40	-81.33	-8%
Scope 3				
Electricity for Street Lighting*	1201.28	1119.54	-81.74	-7%
Total	3055.46	2897.43	-158.03	-5%

*Streetlighting data is based on inventory numbers

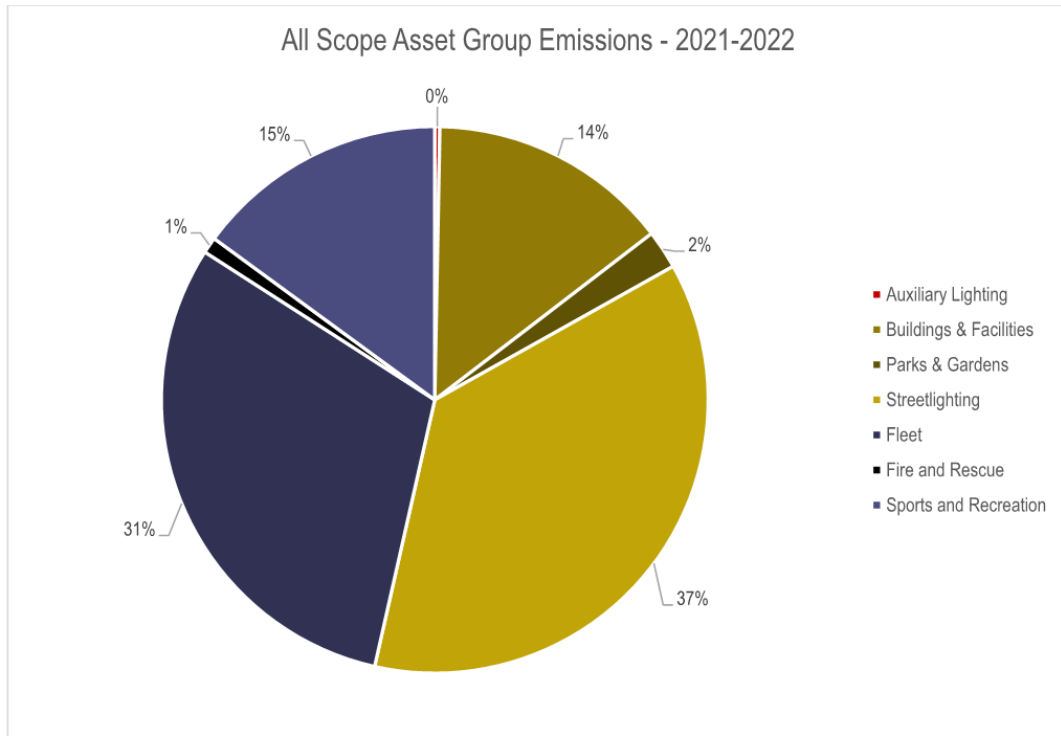


Figure 3: Shire of Mundaring's emissions (tCO₂-e) by organisational unit for 2021/2022

Error! Reference source not found. demonstrates the percentage of emissions by each asset group in the 2021/2022 reporting period. Unmetered Streetlighting is the largest contributor (37%), followed by Fleet (31%), Sport and Recreation (15%) and Buildings and Facilities (14%).

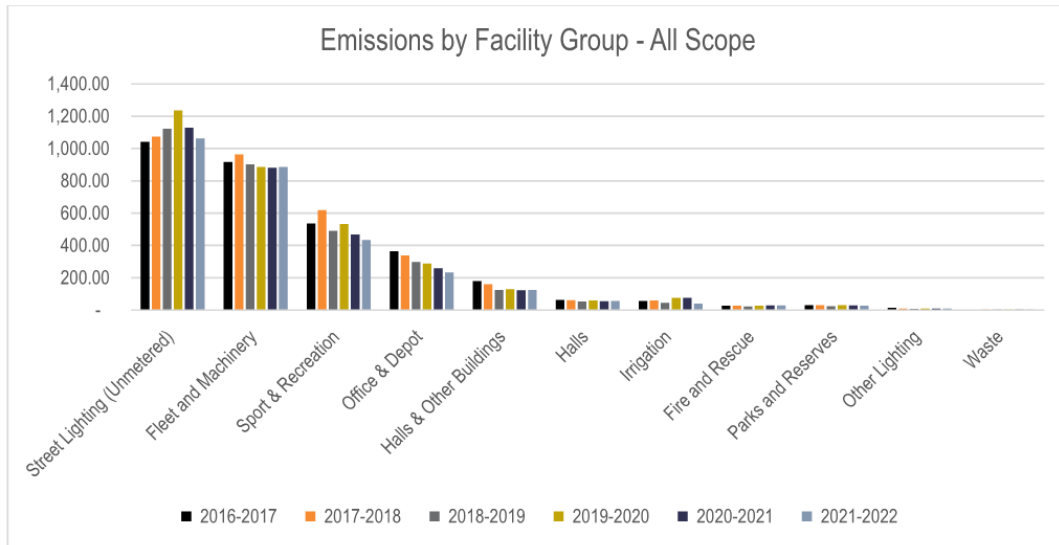


Figure 4: Shire of Mundaring’s emissions (tCO₂-e) by organisational unit for 2021/2022

Error! Reference source not found. displays historical emissions for each facility group, providing insight into the reductions that the Shire has achieved over time. Unmetered street lighting continues to be the biggest contributor to emissions in 2021/2022, 37% of the Shire’s total. Streetlighting emissions have reduced since the preceding reporting period as previously discussed this is due to the traditional globes being replaced with LED by Western Power as required.

Fleet emissions are the second highest contributor for the Shire at 31%. Historically, fleet emission has been quite. The Shire has investigated the feasibility of switching to electrical vehicles in order to reduce emissions from fleet vehicles and continues to work towards reducing emissions from this group.

4 Highest Emission Assets

Table 3 reveals the performance of the Shire’s top emitting Assets. The table shows that majority of the assets have reduced their consumption. The Shire of Mundaring Administration and Civic Complex is the top emitting asset however it has still seen a decline in emissions, this decrease is attributed to a decline in use with continued work from home arrangements, adjustments to the HVAC system and upgrades in lighting. It is anticipated that this facility will continue to decline in emissions with the recent commissioning of an additional 70kW of solar panels now totaling 90kW, air conditioning upgrades and insulation improvements. The Salisbury Road bore has seen the largest percentage decrease. Additionally, the Mundaring Arena, Bilgoman Pool and Lake Leschenaultia Kiosk have all had PV systems installed or expanded resulting in a decline in emissions at these locations.



Table 3: Highest emitters for 2021/2022 with comparison to previous reporting period 2020/2021

Asset Name	Emissions (tCO ₂ -e) 2020/2021	Emissions (tCO ₂ -e) 2021/2022	Volume Change (tCO ₂ -e)	% Change
Shire Of Mundaring Administration & Civic Complex	219.89	179.61	-40.28	-18%
Mundaring Arena	124.88	120.89	-3.99	-3%
Bilgoman Pool	108.50	107.50	-1.01	-1%
Boya Community Hub and Oval	71.62	59.64	-11.98	-17%
Shire Depot	39.04	52.43	13.39	34%
Lake Leschenaultia	45.75	42.31	-3.44	-8%
Elsie Austin Reserve	26.43	26.59	0.16	1%
Midvale Early Childhood & Parenting Centre	20.19	22.64	2.44	12%
Salisbury Road Bore	48.41	21.03	-27.38	-57%
Mundaring Adult Creative & Learning Centre	18.25	21.02	2.77	15%
Fleet				
Diesel	795.01	805.88	10.87	1%
ULP	86.18	79.65	-6.53	-8%
Street Lighting				
Unmetered Street Lighting	1128.20	1062.28	-65.92	-6%

6.3 Owl Friendly Mundaring

File Code	EV.PRG 1
Author	Briony Moran, Coordinator Environment and Sustainability
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Disclosure of Any Interest	Nil
Attachments	Nil

SUMMARY

Owls and other native animals can be affected by secondary poisoning from rodenticides.

This report recommends that Council declare the Shire of Mundaring to be 'Owl Friendly' as recommended in the Local Biodiversity Strategy 2023-2030, and amend the Purchasing Policy to specify that higher-risk rodenticides not be used at Shire facilities.

BACKGROUND

There are different types of rodenticides commonly available. Some have much more significant potential for secondary poisoning, where toxins can build up in the body of predators that may eat a number of poisoned rodents.

The most harmful poisons are slower acting, Second Generation Anticoagulant Rodenticides (SGARs). Rodents can eat multiple baits before dying, then pets, owls or other native predators can eat the more heavily poisoned rodents. There are relatively safer poisons and baits which could be chosen, as well as different types of physical traps.

The Local Biodiversity Strategy 2023-2030 included as the below action:

2.16 Declare the Shire of Mundaring to be Owl Friendly and provide promotional and educational material about the harm of secondary poisoning to pets and wildlife from some rodenticides.

STATUTORY / LEGAL IMPLICATIONS

Accidental or indirect poisoning of owls and other native animals by rodenticides can cause them to be injured or killed. Native animals are protected under the *Biodiversity Conservation Act 2016*, with additional protection for threatened species.

POLICY IMPLICATIONS

The Environmental Sustainability Policy (OR-23) includes a number of actions relating to biodiversity and community engagement, including:

3.1 The Shire recognises that healthy ecosystems and well-managed natural areas support the health and well-being of the community, and the Shire will strive to lead by example as a responsible custodian of public environmental assets.

3.3 Information will be made available for schools and residents on sustainability and local environmental issues through publications, talks, workshops and other mediums.

This report recommends an amendment to the Shire's Purchasing Policy, therefore the Policy Development and Review Policy is also relevant.

FINANCIAL IMPLICATIONS

There are minimal financial implications as the Shire's Asset Management team already arranges for pest control (where required) to use lower risk rodenticides, and the Shire's Planning and Environment Service already produces information sheets and other material for residents to better understand and care for the natural environment.

STRATEGIC IMPLICATIONS

Mundaring Strategic Community Plan 2020 - 2030

Priority 2 - Natural Environment

Objective 2.1 – Protecting natural areas and biodiversity

Strategy 2.1.1 – Pursue revegetation and address weeds and other threats to native flora and fauna in partnership with Friends Groups, the wider community, government and non-government organisations

SUSTAINABILITY IMPLICATIONS

Reducing secondary poisoning of owls and other wildlife from rodenticides has environmental benefits. The natural environment and native animals also have social values and contribute to the character and identity of Shire localities.

RISK IMPLICATIONS

Risk: Reputational – there is a reputational risk if pest control at Shire facilities was thought to contribute to secondary poisoning of native animals.		
Likelihood	Consequence	Rating
Possible	Moderate	Moderate
Action / Strategy		
Amend the Purchasing Policy to specify that pest control at Shire facilities does not use SGARs.		

EXTERNAL CONSULTATION

No external consultation was undertaken specifically on this matter, however this action and explanatory text was included in the draft Local Biodiversity Strategy when it was advertised for public comment.

COMMENT

While there are also risks to other animals including reptiles and other birds of prey, declaring the Shire of Mundaring as an 'Owl Friendly' area would build on an established secondary poisoning awareness raising initiative that has been successful elsewhere in Western Australia.

Declaring the Shire to be 'Owl Friendly' provides an opportunity to quickly draw attention to the issue of secondary poisoning from rodenticides and encourage residents to immediately change their own pest management practices.

To ensure that the Shire continues to use lower risk methods of pest control at Shire facilities, this report also recommends that the Purchasing Policy (AS-04) be amended to give effect to the Owl Friendly declaration. A review of the Purchasing Policy is scheduled in the adopted Governance Committee Work Plan, the Purchasing Policy be amended to require that any pest management at Shire facilities is planned to minimise risk to wildlife and does not include the use of Second Generation Anticoagulant Rodenticides.

VOTING REQUIREMENT

Simple Majority

RECOMMENDATION

That Council:

1. Declare the Shire of Mundaring to be Owl Friendly; and
2. Requests that as part of the scheduled review of the Purchasing Policy, it be amended to require that any pest management at Shire facilities is planned to minimise risk to wildlife and does not include the use of Second Generation Anticoagulant Rodenticides.

7.0 URGENT BUSINESS (LATE REPORTS)

8.0 CLOSING PROCEDURES

8.1 Date, Time and Place of the Next Meeting

8.2 Closure of the Meeting