



Environmental Management Strategy 2023 – 2033

SHIRE OF WAROONA

About this document

The Environmental Management Strategy incorporates all the functions and land related asset classes as a part of an overall framework that provides for the sustainable management of the natural environment.

The objective of the Strategy is to present information about the Shire's natural and land assets, provide evidence of responsible management and compliance, and summarise required resourcing to meet the communities' environmental goals, in addition to the Shire of Waroona's legislated obligations.

This document is available in alternative formats such as large print, electronic, audio or Braille, on request.



“The Shire of Waroona stretches from sea to scarp between the Indian Ocean and the Darling Scarp, featuring pristine beaches, coastal lakes, fertile farmlands and peaceful jarrah forests. Covering a total area of 835km², the Shire includes the localities of Waroona, Hamel, Lake Clifton and Preston Beach”.

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Date	Details	Author
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Waroona – Past, Present & Into the Future

Waroona has provided a home for generations, from the days when Indigenous Australians roamed the coastal areas in spring and summer, and the hills in autumn and winter.

Settlers began to arrive in the area in the late 1830's, although Drakesbrook (later to be known as Waroona) did not come into its own until the Pinjarra to Picton railway line was opened in 1893. The town catered to the needs of the mill workers with a post office, general store, blacksmith, a number of hotels come boarding houses, churches, doctor and dentist.

The farms supplied butter, fruit and vegetables for the men of the mills, and chaff for the horse teams that hauled the logs. As is many of the small towns of the time, dances, picnics and football formed the core of social life within the community and to this day Waroona still proves to be a successful sporting and extremely social community.

Today, agriculture, mining, manufacturing and tourism are important contributors to the local economy.

Waroona is an evolving district that services the diverse, social and economic needs of a growing community. The strong agricultural heritage will continue to guide any future district developments, particularly in Waroona and Hamel, and its enviable location on the Indian Ocean and along with the Yalgorup National Park will, influence future considerations for Preston Beach and Lake Clifton.

The population is expected to grow over the next thirty years. With this growth comes challenges, but smart planning and a focus on broadening the economic base will open up significant opportunities for tourism, commercial investment, employment and education.

The long-term vision for Waroona is to create a district distinctive by its creativity, liveliness, activity and vibrancy, attracting new investment, seizing opportunities to develop and expand its business sector, and encourage innovation and collaboration, while providing an enticing array of lifestyle attractions.

The Shire of Waroona is excited about its future.

Chief Executive Officer's Message

The Shire of Waroona provides assets for the community including roads, bridges, buildings, drainage, footpaths and public open space. The Shire also manages the natural environment. Careful planning and coordination of local government assets is fundamental to the economic and social wellbeing of our communities. Sustainably managed and diverse natural ecosystems, coastal areas and public open spaces, make possible our wide range of lifestyle choices and standards of living. The Environmental Management Strategy is a summary of the functions and land related asset classes, forming a part of an overall framework that provides for the sustainable management of the natural environment.



The objective of the Strategy is to present information about the Shire's natural and land assets, provide evidence of responsible management and compliance, and summarise required resourcing to meet the communities' environmental goals, in addition to the Shire of Waroona's legislated obligations.

To ensure progress toward the outlined objectives and actions, collaboration with relevant stakeholders, agencies, and the community will be essential for successful implementation. The organisational structure for the Environmental portfolio, is designed to be customer centric, with four thematic sub-portfolios, focused on who is coordinating the related objectives. This plan also outlines the Shire of Waroona's implementation actions.

These four themes are –

- 1. Shire Council Strategic Environmental Management Objectives**
- 2. Sustainable Business and Green Industry**
- 3. Other Agency and NGO Environmental Partnerships**
- 4. Community Environmental Management and Sustainability**

The Environment Management Strategy is reviewed annually, at which time it is amended and extended as new issues are identified and priorities change. Once again, I would like to acknowledge the input received from individuals within our organisation who have assisted greatly in the preparation of this document. The Council and Staff remain committed to creating an environment that supports moderate, high quality, sustainable growth, whilst seeking to *“Protect and Enhance our existing Natural Assets, Waterways, Bushland, and Biodiversity”*.

Mark Goodlet
Chief Executive Officer



About the Environmental Management Strategy

The Environmental Management Strategy incorporates all the functions and related land use asset classes, as part of an overall framework that provides for the sustainable management of the environment. The objective of the Strategy is to present information about the Shire's natural and land assets, provide evidence of responsible management and compliance, and summarise required resourcing to meet the communities' environmental goals, in addition to the Shire of Waroona's legislated obligations.

Integrated Planning & Reporting Framework	
Strategic Community Plan	Community vision, strategic direction, long and medium-term priorities and resourcing implications with a horizon of 10 years.
Corporate Business Plan	4-year delivery program, aligned to the Strategic Community Plan and accompanied by 4-year financial projections.
Annual Budget	Financial plan for the current year.

Informing Strategies	
Long Term Financial Plan	10-year financial plan.
Asset Management Plans	Approach to managing assets to deliver chosen service levels.
Workforce Plan	Shaping the workforce to deliver organisational objectives now and in the future.
Place & Area Specific Plans	Any other informing strategies – including this Environmental Management Strategy.

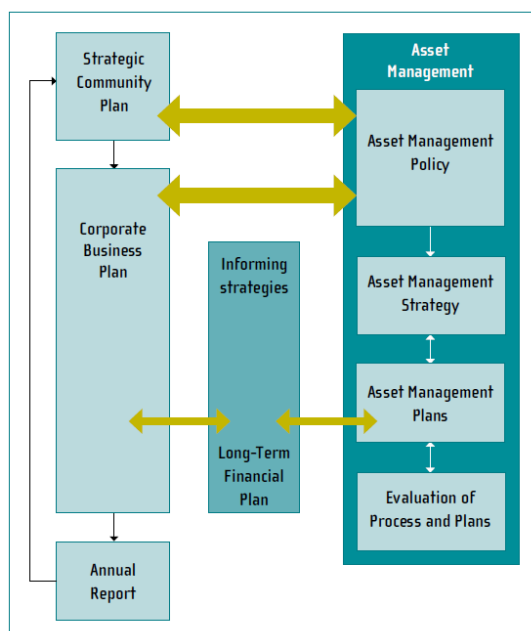


Figure 1: Elements of the Integrated Planning & Reporting Framework. Source: Department of Local Government, Sport & Cultural Industries.

Our Shire

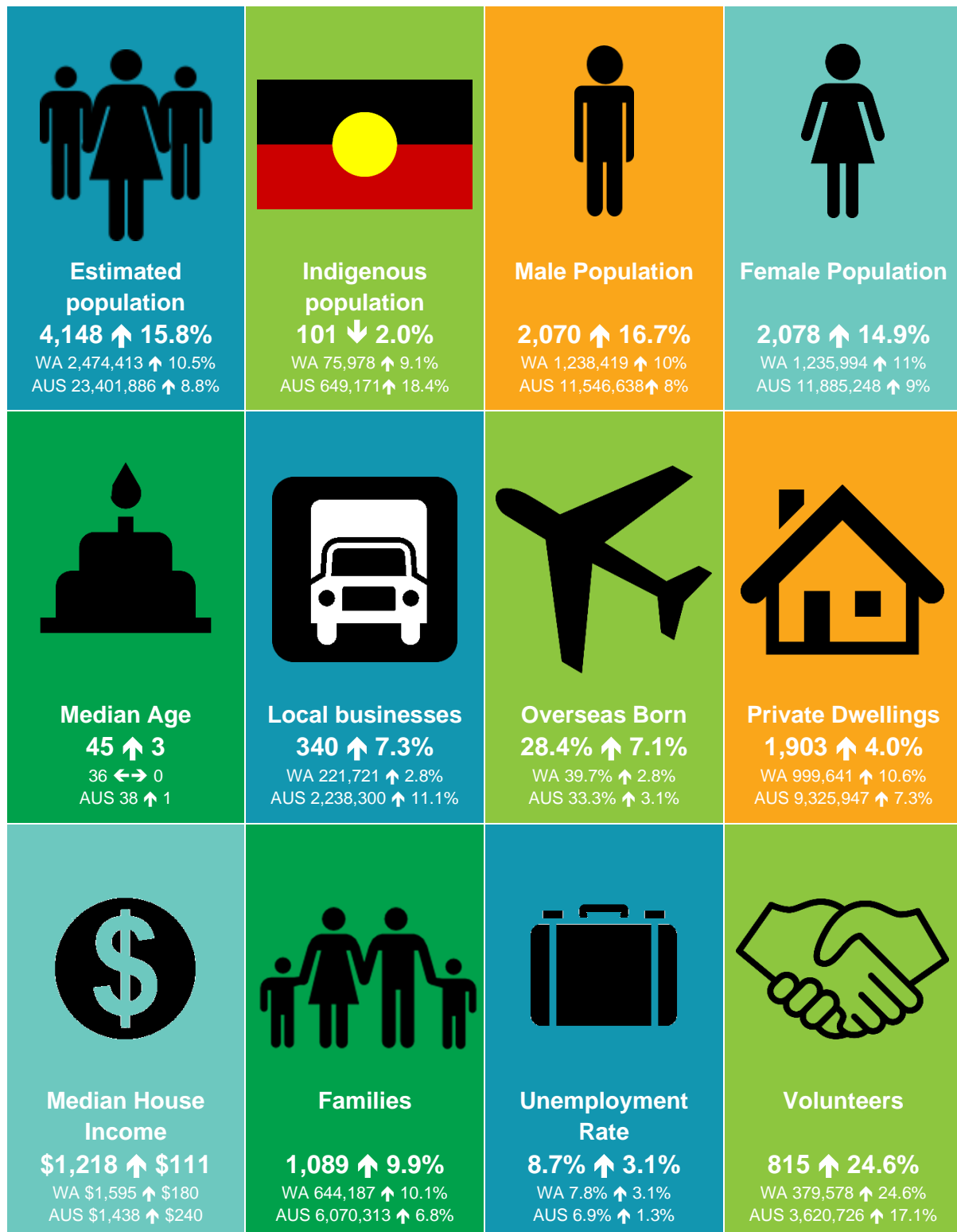


Figure 2: Shire of Waroona Statistics. Source: Australian Bureau of Statistics 2016 Census.

Our Council



Cr Mike Walmsley
Shire President



Cr Naomi Purcell
Deputy Shire President



Cr John Mason



Cr Karen Odorisio



Cr Dion Pisconeri



Cr Laurie Snell



Cr Vince Vitale

Our Staff



Mark Goodlet
Chief Executive Officer

- Strategy
- Elections
- Major Projects
- Council Services
- Business Improvement



Ashleigh Nuttall
Director Corporate & Community Services

- Finance
- Human Resources
- Governance
- Risk Management
- Information Technology
- Customer Service
- Library Services
- Community Development
- Recreation Services
- Tourism



Karen Oborn
Director Infrastructure & Development Services

- Technical Services
- Works & Services
- Waste Management
- Community Safety & Rangers
- Planning & Development Services
- Regulatory & Building Services
- Environmental Services
- Asset Management

Service Areas

The Shire of Waroona is responsible for a range of functions, facilities and services including:

- Services to properties and the community;
- Regulatory services;
- General administration; and
- Process of government

Office of the Chief Executive Officer		
Department	Services	
Strategy	<ul style="list-style-type: none"> • Integrated planning and reporting 	<ul style="list-style-type: none"> • Master planning
Elections	<ul style="list-style-type: none"> • Elections 	
Major Projects	<ul style="list-style-type: none"> • Major projects 	
Council Services	<ul style="list-style-type: none"> • Council services 	
Business Improvement	<ul style="list-style-type: none"> • Continuous improvement 	<ul style="list-style-type: none"> • Business management
Corporate & Community Services		
Department	Services	
Finance	<ul style="list-style-type: none"> • Budgeting • Finance / Accounting • Loans / Investments • Grants management 	<ul style="list-style-type: none"> • Rates • Payroll • Asset accounting / management
Human Resources	<ul style="list-style-type: none"> • Human resources management • Recruitment 	<ul style="list-style-type: none"> • Workforce planning • Workplace health and safety
Governance	<ul style="list-style-type: none"> • Policies and procedures • Delegations • Registers 	<ul style="list-style-type: none"> • Audit • Local laws
Risk	<ul style="list-style-type: none"> • Insurance • Risk management 	<ul style="list-style-type: none"> • Business continuity
Information Technology	<ul style="list-style-type: none"> • Information technology • Records • Freedom of information 	<ul style="list-style-type: none"> • Public information disclosure
Customer Service	<ul style="list-style-type: none"> • Customer service • Licensing • Facility bookings 	<ul style="list-style-type: none"> • Marketing / Engagement and media
Library Services	<ul style="list-style-type: none"> • Library services 	
Community Development	<ul style="list-style-type: none"> • Place attraction • Community development 	<ul style="list-style-type: none"> • Events
Recreation Services	<ul style="list-style-type: none"> • Recreation services 	<ul style="list-style-type: none"> • Club development
Tourism	<ul style="list-style-type: none"> • Visitor Centre 	<ul style="list-style-type: none"> • Tourism

Infrastructure & Development Services		
Department	Services	
Technical Services	<ul style="list-style-type: none"> • Design and investigation • Asset management • Subdivision and development application referrals 	<ul style="list-style-type: none"> • Project management • Extractive industry • Grants management (assets)
Works & Operations	<ul style="list-style-type: none"> • Buildings • Parks and gardens • Maintenance, capital and operations 	<ul style="list-style-type: none"> • Infrastructure • Plant and fleet
Waste Management	<ul style="list-style-type: none"> • Collection services 	<ul style="list-style-type: none"> • Disposal services
Community Safety	<ul style="list-style-type: none"> • Emergency services • Bushfire Mitigation • Bush Fire Brigades 	<ul style="list-style-type: none"> • Closed circuit television • Community Safety Services
Planning Services	<ul style="list-style-type: none"> • Strategic planning • Statutory planning 	<ul style="list-style-type: none"> • Environmental planning • Heritage services
Regulatory Services	<ul style="list-style-type: none"> • Building approvals • Environmental health services 	<ul style="list-style-type: none"> • Ranger services • Preston Beach volunteer rangers
Environmental Services	<ul style="list-style-type: none"> • Reserves, Native Vegetation and Foreshore Management 	<ul style="list-style-type: none"> • Biosecurity and pest control • Biodiversity and Conservation
Asset Management	<ul style="list-style-type: none"> • Asset Management Planning & Programming 	<ul style="list-style-type: none"> • Asset Management Program Delivery

In order to develop the Shire of Waroona’s strategic vision to ***continually care for, protect and enhance our environment for the generations to come, by seeking to protect and Enhance our existing Natural Assets, Waterways, Bushland, and Biodiversity.*** This strategy provides guidance and direction for Environmental Services such as

- **Biosecurity and Pest Control**
- **Biodiversity and Conservation**
- **Street Trees, Verges, Parks and Gardens**
- **Reserves, Native Vegetation and Foreshore Management**

The Shire of Waroona Environmental Management themes align with the Shire of Waroona’s organisational structure in figure 3 below, indicating the flow of aligned strategic decision making;

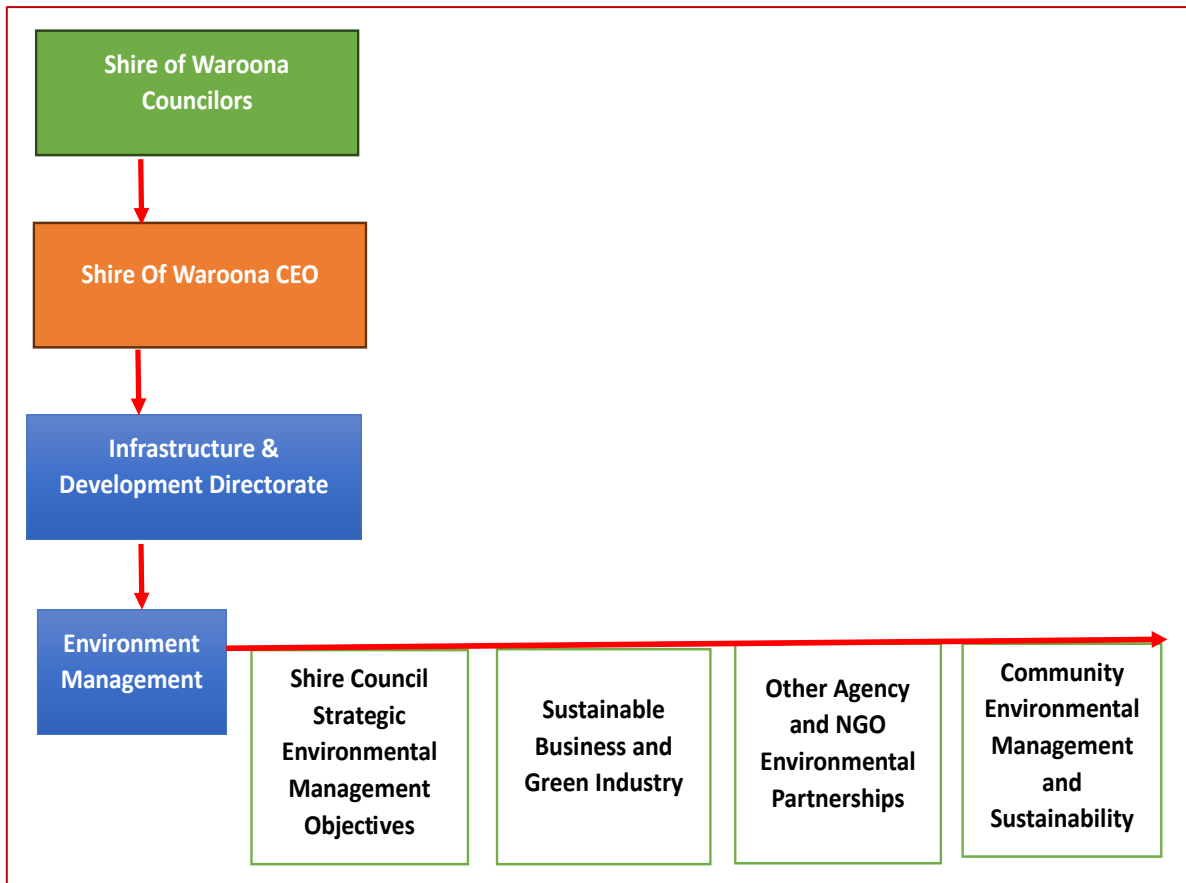


Figure 3: Shire of Waroona's organisational structure – extract.

Links to Corporate Strategies

The Environmental Management Strategy is prepared under the direction of the vision, goals and objectives in the Strategic Community Plan. This Strategy is a crucial component of the Shire planning process, linking with the following documents:

- Strategic Community Plan 2020 – 2030;
- Corporate Business Plan 2022 – 2026;
- Long Term Financial Plan 2022 – 2032;
- Workforce Plan 2020 – 2024;
- Preston Beach Foreshore Management Plan
- Related Shire Policies and Local Laws; and
- Asset Management Plans and Delivery Programs.

Vision, Mission & Values

Vision

The Shire of Waroona will create a sense of place and identity, embracing creativity, our natural environment and a strong and diverse economy.

Mission

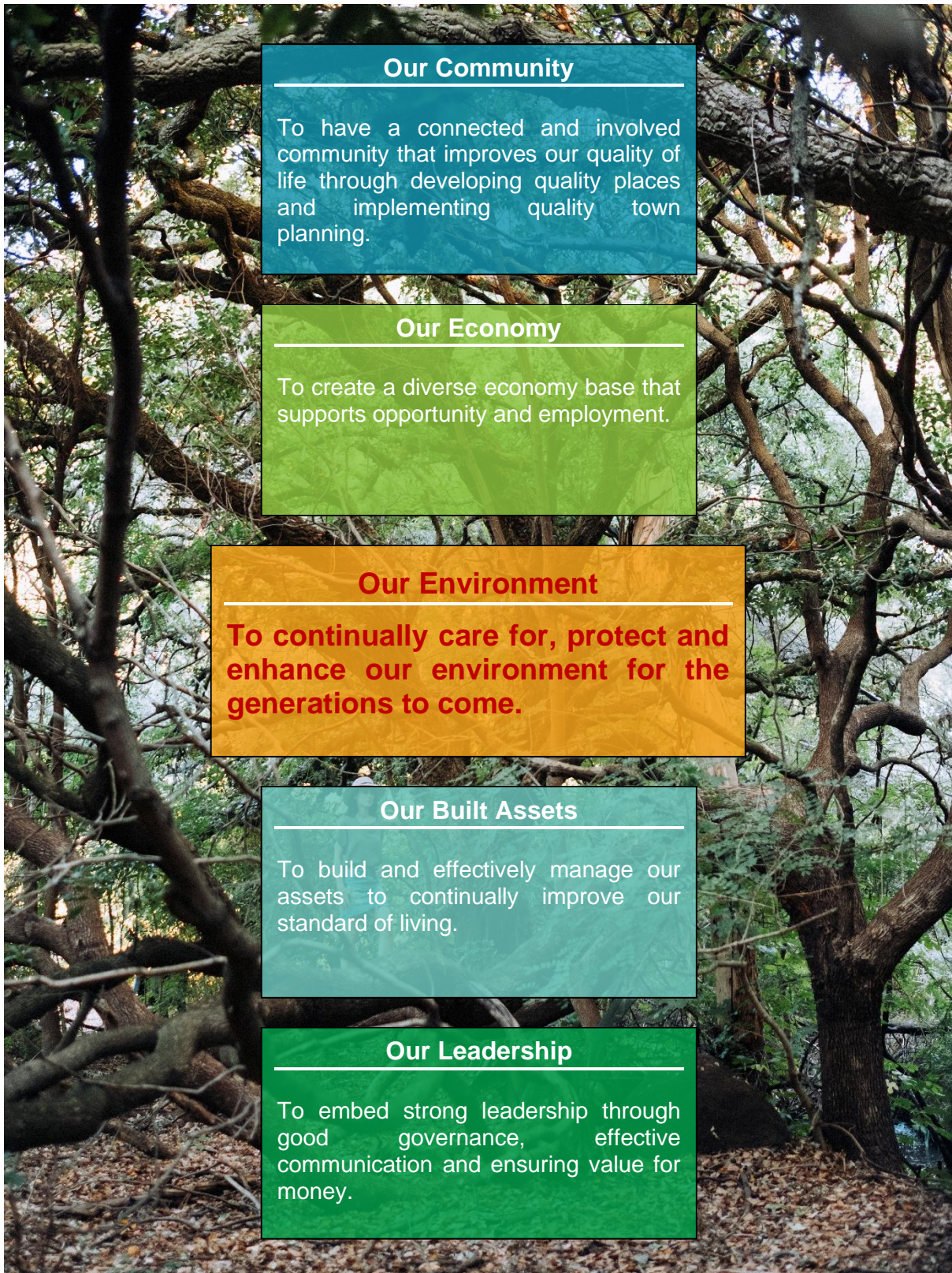
We will be an organisation, with a can-do attitude that strives for service excellence, continued improvement and a commitment to outcomes.

Values

Our values are A REALITY:

- A** – Accountable
- R** – Respect
- E** – Excellence
- A** – Accessible
- L** – Leadership
- I** – Innovative
- T** – Transparent
- Y** – Yours

Focus Areas & Aspirations



Environmental Management Overview

The Shire of Waroona is responsible for providing a number of community focused services. In doing so, the Shire must ensure that its assets and community facilities are maintained in accordance with well-developed asset management programs and strategic forward plans to enable these services to meet community needs. Asset management is recognised as a practicable and financially responsible means of managing Council's assets by ensuring that the assets continue to provide a specified level of service delivery to defined standards over their entire life. Each Asset Management Plan informs the works program for that Asset class. The works programs are reviewed as a part of the budget planning process.

The Shire of Waroona plans for and implements a range of local Strategic Community Objectives, as well as Federal State and Regional Environmental outcomes. This **Environmental Management Strategy** forms an informing Strategy in the Shire of Waroona's *'Integrated Planning and Reporting'* framework. Forming the - Land, Reserves, Native Vegetation & Foreshore Asset Management Plan, which includes assets such as the Drakesbrook Weir, Waterways, Camping Grounds, Reserves, Native Vegetation, Woodlands, Coastal dunes and Foreshores.

Purpose

The purpose of the Environmental Management Strategy is two- fold:

1. To plan for and implement Strategic Community Objectives:
 - **SCP Objective 3.1:** Protect and Enhance our existing Natural Assets, Waterways, Bushland, and Biodiversity.
 - **SCP Objective 3.2:** Proactively manage resources and practice sustainability through responsible management of water, energy, fire control and waste.
- And
2. To plan for and implement as Federal State and Regional Environmental priorities within the Local Governments remit.

This strategy provides strategic and operational structure and guidance, in achieving the implementation of aligned deliverables, with regard to Environmental Management objectives. This Environmental Management Strategy encompasses various facets of sustainability and environmental stewardship, aiming to make the Shire of Waroona a model for sustainable living and development in Western Australia. Regular monitoring and evaluation should be conducted. To ensure progress toward the outlined objectives and actions. Collaboration with relevant stakeholders, agencies, and the community will be essential for successful implementation. The organisational structure for the Environmental portfolio, is designed to be customer centric, with four thematic sub-portfolios, focused on who is coordinating the related objectives. This plan also outlines the Shire of Waroona's implementation actions.

These four themes are –

1. **Shire Council Strategic Environmental Management Objectives**
2. **Sustainable Business and Green Industry**
3. **Other Agency and NGO Environmental Partnerships**
4. **Community Environmental Management and Sustainability**

Asset Valuation Summary

Asset Group	Replacement Cost	Fair Value (Depreciated Value)	Annual Depreciation Expense 21/22
Plant & Equipment	\$3,860,779	\$2,851,672	\$216,785
Land	\$20,051,000	\$20,051,000	0
Buildings (revalued)	\$42,847,500	\$24,345,505	\$369,774
Roads Infrastructure	\$82,279,385	\$75,801,295	\$1,684,241
Furniture & Equipment	\$352,498	\$170,203	\$44,508
Other Infrastructure	\$18,282,348	\$15,551,142	\$699,414
TOTAL	\$167,673,510	\$138,770,817	\$3,014,772

Table 1: Summary of asset costs, values and expenses 21/22 Asset register. Source: Shire of Waroona.

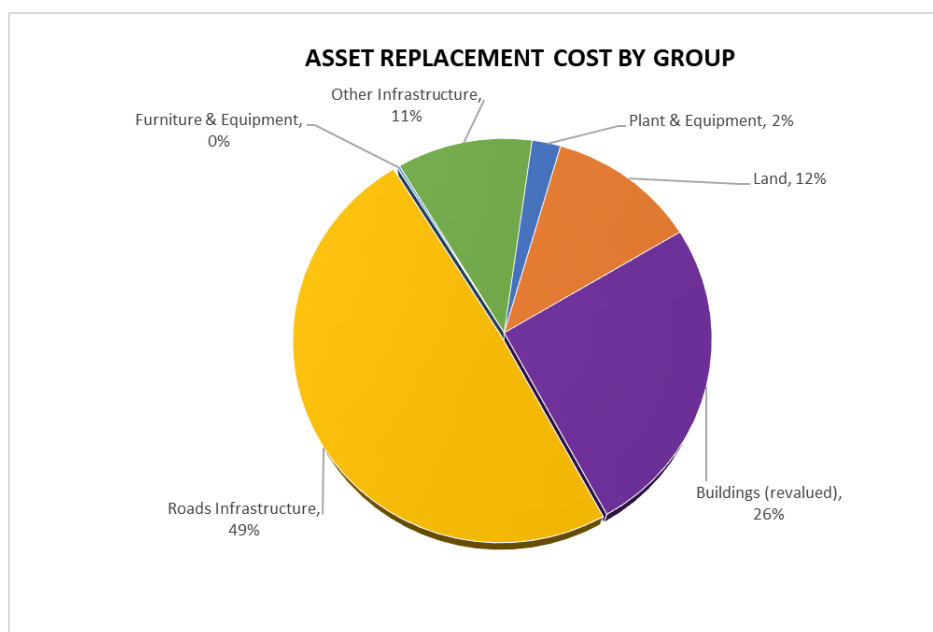


Figure 4: Graph of asset replacement costs by asset type in Asset Register. Source: Shire of Waroona.

Leased Assets

The Shire leases a number of land and building assets to third parties, predominantly community groups and sporting clubs.

Vested Land

The Shire has a number of Crown reserves for which it holds management orders. All improvements on vested land are accounted for in the appropriate asset register.

Theme One: 'Shire Council Strategic Environmental Management Objectives'

The first theme in the Environmental Management Portfolio is - 'Shire Council Strategic Environmental Management Objectives'.

Focus Areas:

The focus areas for this theme within the Shire of Waroona's Environmental Management Strategy are;

- a) decarbonisation, lowering carbon emissions and increasing offsets to achieve neutral carbon level in the community and region;
- b) revenue generating enterprises from Actuated Carbon Credit programs;
- c) achieving waste minimization targets through reducing reusing and recycling of inert waste;
- d) waste to energy and e-waste recycling programs; and
- e) reducing organisational and community consumption of water, fuel and energy resources.

Programs and initiatives

Each focus area has an objective, work program and initiatives. These include;

Decarbonisation:

Objective: To reduce carbon emissions and achieve carbon neutrality in the community and region.

Actions -

1. Conduct a greenhouse gas emissions inventory for the Shire.
2. Develop a Climate Action Plan to set emission reduction targets.
3. Promote energy efficiency and renewable energy adoption in the community.

Revenue generating enterprises from Actuated Carbon Credit programs;

Objective: To reduce carbon emissions and restore the natural environment, while generating income from Carbon Credits.

Actions -

1. Explore carbon offset projects such as reforestation and wetland restoration.
2. Participate in carbon credit markets to generate revenue.

Waste Minimization

Objective: To achieve waste minimization targets through the 3Rs - Reduce, Reuse, and Recycle.

Actions -

1. Support waste reduction campaigns and education programs.
2. Expand recycling and composting infrastructure and progress towards landfill closure.
3. Support businesses in adopting sustainable packaging practices.
4. Support and Establish recycling programs.
5. Promote the circular economy and local recycling industries.

Waste 2 Energy and e-waste recycling programs (rare earth recovery):

Objective: To achieve waste minimization targets through the 3Rs - Reduce, Reuse, and Recycle.

Actions -

1. Implement waste reduction campaigns and education programs.
2. Establish e-waste collection and recycling programs.
3. Promote the circular economy and local recycling industries.
4. Implement and support Waste 2 Energy initiatives.

Resource Efficiency:

Objective: To reduce water, fuel, and energy consumption in the Shire's operations and in the community.

Actions -

1. Retrofit Shire buildings with energy-efficient technologies.
2. Encourage water-saving practices in landscaping and agriculture.
3. Support community energy efficiency programs.
4. Invest in renewable energy for Shire facilities.
5. Support incentives for electric vehicle adoption.

Theme Two: Sustainable Business and Green Industry

The second theme in the Environmental Management Portfolio is – ‘**Sustainable Business and Green Industry**’.

Focus Areas:

The focus areas for this theme within the Shire of Waroona’s Environmental Management Strategy are;

- a) promoting and supporting the development of renewable energy and renewable energy facilities;
- b) supporting the development of green industries; and
- c) promoting and supporting the conversion of existing industries to renewable energy and environmentally friendly practices.

Programs and initiatives

Each focus area has an objective, work program and initiatives. These include;

Renewable Energy:

Objective: To support the development of renewable energy projects and facilities.

Actions -

1. Develop and implement Renewable Energy Facilities Policy and Guidelines.
2. Identify suitable sites for renewable energy projects and include in Planning Strategy and Scheme.
3. Facilitate permits and approvals for renewable energy installations.
4. Attract renewable energy companies to the Shire.
5. Encourage microgrid development for energy resilience.

Green Industry:

Objective: To support the development of renewable industries and eco-friendly practices.

Actions -

1. Support incentives and grants for green technology development.
2. Identify suitable sites for green industry development and include in Planning Strategy and Scheme.
3. Advocate for sustainable manufacturing and production methods.
4. Support and Facilitate workforce training in eco-friendly practices.
5. Develop green industrial zones.

Conversion of existing industries:

Objective: To support the transition of existing industries to renewable and eco-friendly practices.

Actions -

1. Support incentives and grants for green technology adoption.
2. Collaborate with local industries to reduce environmental impact.
3. Promote sustainable manufacturing and production methods.
4. Facilitate workforce training in eco-friendly practices.
5. Promote solar panel installations in residential and commercial areas.



Theme Three: 'Other Agency and NGO Environmental Partnerships'

The third theme in the Environmental Management Portfolio is - 'Other Agency and NGO Environmental Partnerships'.

Focus Areas:

The focus areas for this theme within the Shire of Waroona's Environmental Management Strategy are;

- a) promoting and supporting local and regional environmental conservation restoration and protection that supports the retention, conservation and protection of Peel waterways as well as native flora and fauna:
 - including the species within the Northern Jarrah Forrest including rare and endangered endemic orchids, and Threatened Ecological Communities (TEC's) such as:
 - Tuart woodlands,
 - Banksia woodlands,
 - Northern Jarrah Forrest
 - Endemic Kingias,&
 - all three species of black cockatoos, possums, bats, frogs, snakes, and birds which are listed under Migratory Bird Agreements as well as Ramsar Wetland Agreements.
- b) promoting and supporting local and regional biodiversity and biosecurity; and
- c) promoting and supporting Coastal care and conservation including dune protection and restoration, managing vehicles accessing the beach.

Programs and initiatives

Each focus area has an objective, work program and initiatives. These include;

Environmental Conservation:

Objective: To support local and regional environmental conservation efforts.

Actions -

1. Collaborate with environmental organisations for conservation and protection projects and programs.
2. Support and collaborate on the restoration and protection of Peel waterways and native flora and fauna habitats.
3. Support conservation initiatives for rare and endangered and endemic flora and fauna, as well as habitats for black cockatoos, possums, bats, frogs, snakes, and migratory birds under agreements – including RAMSAR Listed Wetlands
4. Enhance conservation efforts and protection mechanisms in Tuart woodlands, Northern Jarrah Forest, and Banksia woodlands.

Biodiversity and Biosecurity:

Objective: To enhance local and regional biodiversity and address biosecurity challenges.

Actions -

1. Develop and implement biodiversity strategy and enhancement programs.
2. Support and collaborate with local biosecurity agencies to prevent and manage invasive species.
3. Monitor and manage pest species and diseases within Local Governments remit.
4. Policies and local laws to support biodiversity and biosecurity initiatives.

Coastal Care and Conservation:

Objective: To protect manage and restore the coastal environment.

Actions -

1. Implement dune protection and restoration programs.
2. Regulate vehicle access to beaches to minimize environmental impact.
3. Develop and enforce beach conservation policies and local laws.
4. Educate the community on coastal conservation.



Theme Four: 'Community Environmental Management and Sustainability'

The fourth theme in the Environmental Management Portilio is - '**Community Environmental Management and Sustainability**'.

Focus Areas:

The focus areas for this them within the Shire of Waroona's Environmental Management Strategy are;

- a) implementing and supporting local and regional water wise initiatives, including waterwise streetscape planning;
- b) implementing and supporting climate change mitigation and cooling programs including increasing urban tree canopy levels and replacing roadside lawn verges with native gardens;
- c) developing a local planning strategy, scheme and policy's that support the sustainable development of the built and natural environment. Conservation and protection of landscape and waterways as well as native flora and fauna, for future generations;
- d) the development and implementation of an eco-tourism strategy with trails and nature based recreation developments; and
- e) undertaking Bush Fire mitigation and vegetation management that protects the built and natural assets as well as conserves native vegetation.

Noting that the Shire of Waroona requires that all 'burning off' is conducted via, 'cool', controlled, low impact burns to preserve native flora and fauna, as well as tree canopy. Empirical evidence has clearly shown that 'hot' burns can kill off trees as well as native vegetation and fauna. Resulting in an increase in 'weed' and understory density and therefore increase future fuel loads. "Hot" burns, are considered 'clearing', which is 'works' under the planning regulations and requires a written approved development application. Where the burn area is in an area of native vegetation, mosaic style 'cool' burns are also mandatory.

Programs and initiatives

Each focus area has an objective, work program and initiatives. These include;

Water-Wise Initiatives:

Objective: To promote water conservation in the community.

Actions -

1. Encourage water-efficient landscaping and irrigation practices.
2. Support incentives for rainwater harvesting and greywater reuse.
3. Implement water-wise education programs.
4. Monitor and protect water catchment zones.
5. Develop and implement waterwise streetscape programs.

Climate Change Mitigation:

Objective: To mitigate the impacts of climate change and enhance urban greenery.

Actions -

1. Increase urban tree canopy through tree planting programs.
2. Support the replacement of roadside lawn verges with native gardens.
3. Develop and promote climate-resilient landscaping practices.
4. Engage in climate adaptation planning aligning the local planning policies, scheme and strategy.

Sustainable Development:

Objective: To support sustainable development in the built and natural environment.

Actions -

1. Develop a local planning strategy and policy that promotes sustainability, preserves remnant vegetation and water catchment zones through zoning regulations - including townscape revitalisation and planning, preserving remnant vegetation and water catchment zones as well as protecting the amenity of the Darling Scarp, Coastline and townsite areas;
2. Foster sustainable urban design and townscape revitalization.
3. Encourage sustainable building practices and materials.

Community Education and Eco-Tourism:

Objective: To provide community education and promote environmental values through eco-tourism and nature-based recreation.

Actions -

1. Develop eco-tourism trails and recreational facilities.
2. Promote local attractions, natural beauty, and wildlife.
3. Collaborate with tourism operators to enhance eco-friendly tourism.
4. Educate tourists on responsible nature engagement.

Bush Fire Mitigation and Vegetation Management:

Objective: To protect lives as well as both built and natural assets while conserving native vegetation.

Actions -

1. Develop and implement bushfire mitigation strategies and ongoing mitigation.
2. Support the BFB's and DFES in undertaking controlled burns and vegetation management for ecosystem health, based on current best practice information.
3. Collaborate with fire authorities for coordinated responses.
4. Support programs and projects to educate the community on bushfire preparedness.

Biodiversity Strategy for the Shire of Waroona

Biological diversity or “biodiversity” is the variety of life forms, including plants, animals, microorganisms and the ecosystems of which they are a part. Biodiversity encompasses all living things and, importantly, the functions and processes that link and sustain them. At a visual level, we see biodiversity in our local landscapes, natural systems, vegetation and wildlife. Biodiversity is part of all life on earth and is essential for life. It provides us with the foundation of our health and wellbeing as well as shaping our quality of life, providing recreation opportunity, economic sustainability, social values, visual aesthetics, amenity and by connecting us with our cultural history.

The Shire of Waroona recognises that all life has intrinsic value, is interconnected and that biodiversity and ecological integrity are part of the irreplaceable life support systems upon which the earth depends. Council is therefore committed to using its best endeavours to meet the needs of current and future generations through an integration of environmental protection, social advancement and economic prosperity.

The Shire of Waroona’s key objectives are:

1. To ensure an integrated proactive approach to managing population growth and providing a high quality sustainable built environment for future generations.
2. To ensure an integrated approach to protecting the natural environment that safeguards biodiversity and provides a sustainable natural environment for future generations.
3. To enhance the quality of community life in the Shire characterised by vibrant participation, cohesiveness, increased social capital and recognition of the need for social justice and community safety.
4. To foster economic prosperity in the Shire and South West Region.
5. To strengthen the Shire’s position as an innovative, independent local government achieving business excellence.

The Shire of Waroona strives to achieve these objectives by:

- Ensuring that the way we govern as a Council is driving the transition to a sustainable future;
- Leading by example and playing our part in solving the global challenges of sustainability;
- Valuing and protecting our environment and ensuring the sustainable management and use of natural resources;
- Planning and encouraging our community to reduce its ecological footprint and enhance its quality of life at the same time;
- Supporting our community to fully participate in achieving a sustainable future;
- Assisting business to benefit from and contribute to sustainability.

(sourced from Shire of Augusta Margaret River - <https://www.amrshire.wa.gov.au/environment-and-sustainability/sustainability/our-sustainability-statement>)

Actions:

The following steps outline the approach the Shire of Waroona will undertake to Protect and Enhance our existing Natural Assets, Waterways, Bushland, and Biodiversity.

1. Assessment and Mapping of Biodiversity

- Conduct a comprehensive biodiversity assessment and mapping exercise to identify key areas of biodiversity significance within the Shire of Waroona, including the Northern Jarrah Forest, Tuart woodlands, Banksia woodlands, Endemic Kingias, and other threatened ecological communities.

2. Conservation and Management of Priority Species

- Support the identifying and prioritizing of the conservation and management of key native flora and fauna species, including the three species of black cockatoos, possums, bats, frogs, snakes, and birds listed under Migratory Bird Agreements and Ramsar Wetland Agreements.
- Support the implementation of habitat restoration and protection measures tailored to the specific needs of each priority species, considering their ecological requirements and migration patterns.

3. Protected Areas and Reserves

- Establish and expand protected areas and reserves within the Shire of Waroona to safeguard critical habitats and ensure the preservation of biodiversity.
- Collaborate with landholders, conservation organizations, and government agencies to secure conservation easements and acquire land for these protected areas.

4. Community Engagement and Education

- Raise awareness and foster a sense of responsibility among the local community for the conservation of biodiversity.
- Raise awareness and foster a sense of responsibility among the local community for the conservation of the 'urban canopy' and verge vegetation to provide habitat for native flora and fauna, promoting "every tree matters" and "waterwise" initiatives.
- Support workshops, educational programs, and community events to inform residents about the importance of protecting native flora and fauna.
- Encourage citizen science initiatives to involve the community in data collection and monitoring efforts.

5. Threat Mitigation

- Develop strategies to mitigate potential threats to biodiversity, such as habitat loss, invasive species, pollution, and climate change.
- Implement measures to reduce human-wildlife conflicts, especially in areas where human activities overlap with critical wildlife habitats.

6. Sustainable Land Management

- Promote sustainable land management practices among landowners, farmers, and other stakeholders to minimize negative impacts on biodiversity.
- Encourage the adoption of eco-friendly farming methods and habitat restoration techniques.

7. Collaboration and Partnerships

- Collaborate with local, regional, and national conservation organizations, research institutions, and government agencies to share resources, expertise, and data.
- Engage in partnerships to fund and implement conservation projects.

8. Monitoring and Evaluation

- Establish a robust monitoring and evaluation framework to track the effectiveness of the biodiversity strategy.
- Regularly assess the status of priority species and ecological communities to make informed decisions about the need for adaptive management.

9. Policy and Legislation

- Advocate for the implementation and strengthening of policies and legislation that support biodiversity conservation at the local, regional, and national levels.
- Engage with policymakers to ensure that biodiversity concerns are adequately addressed in all relevant planning processes.

10. Sustainable Tourism

- Develop and promote ecotourism opportunities that highlight the Shire's unique biodiversity.
- Ensure that tourism activities are conducted sustainably and do not negatively impact native flora and fauna.
- By implementing this Biodiversity Strategy for the Shire of Waroona, the community can actively contribute to the retention, conservation, and protection of native flora and fauna, safeguarding the region's biodiversity for future generations.

Future Demand

The Environmental Management Strategy considers a 10 year planning horizon and therefore the factors that may influence the potential demand of assets must be recognised over this time. The ability to predict future demand for services enables the Shire to plan ahead and identify the best way of meeting that demand. This section identifies the effect of expected growth and consequent demand on the Shire's environmental assets and provides commentary on the varying factors that may be subject to change and affect the demand for services that rely on this network.

Drivers affecting demand include political factors, economic factors, social factors, changes in demographics, changes in technology, new assets from growth, legislation changes, tourism growth and climate change.

Political Factors

Local government policy changes, as well as State government service reallocation, can often affect the demand for community services, including environmental management. These services then often require infrastructure and compliance services to support them. Whilst several policies could potentially affect demand, it is thought that those concerning infrastructure funding would potentially have the greatest impact on the Shire.

For example, a cut in funding would place more pressure on municipal revenue to maintain biosecurity and public facilities in natural areas. This could result in lower levels of service being delivered to the community. Conversely, increases in funding could also have a distinct effect, as they often require construction of new assets.

Economic Factors

The Shire currently features a relatively small residential population, with the majority of residents located in Waroona. The economic base of the Shire is strongly influenced by alumina refining at Wagerup, with other important industries including agriculture, mining, manufacturing and aged care service.

Predicted growth in the Peel region will see increased demand for new infrastructure, and greater wear on existing infrastructure as the population expands, as well as impacts on the natural environment. This will likely result in higher costs to the Shire as asset lives will be reduced, and the costs of administering sustainable environmental services increases.

Social Factors

The last national census revealed that the population of the Shire is 4,148. It is expected to increase to 4,340 by 2021, 4,485 by 2026, and 4,700 by 2031, at an annual growth rate of approximately 0.85%. The WA Planning Commission predicts that the population will increase to 18,230 by 2050.

The statistical data suggests that an 8% population growth will occur in the Shire of Waroona over the life of this asset management plan. Therefore, it is expected that due to an increase in population, there will be an effect on existing infrastructure and service demand. This may result in assets not providing an appropriate level of service to the community if it is not managed correctly.

Demographic Change

Factors affecting demand for infrastructure include population growth, changes in demographics, seasonal factors, vehicle ownership, customer preferences and expectations. If the Shire does not plan for population growth and manage the future urban form of the Shire, growth pressures and unfavourable patterns of development can have serious impacts on the community. These include a lack of access to essential infrastructure and services and increased response times for emergency services.

Age Group	2016		2031		Difference between 2016 and 2031
	#	%	#	%	#
0 – 4	223	5.4	320	6.8	+97
5 – 9	254	6.1	290	6.2	+36
10 – 14	296	7.2	260	5.5	-36
15 – 19	245	5.9	240	5.1	-5
20 – 24	178	4.3	230	4.9	+52
25 – 29	177	4.3	260	5.5	+83
30 – 34	220	5.3	270	5.7	+50
35 – 39	217	5.3	270	5.7	+53
40 – 44	227	5.5	270	5.7	+43
45 – 49	296	7.2	270	5.7	-26
50 – 54	326	7.9	230	4.9	-96
55 – 59	311	7.5	250	5.3	-61
60 – 64	304	7.4	300	6.4	-4
65 – 69	295	7.1	310	6.6	+15
70 – 74	179	4.3	300	6.4	+121
75 – 79	186	4.5	240	5.1	+54
80 – 84	102	2.5	205	4.4	+103
85+	96	2.3	185	3.9	+89
TOTAL	4,148	100.0	4,700	100.0	+552

Table 2: Comparison of ages between 2016 and 2031. Source: WA Planning Commission.

With an increase in the number of retirees moving to the area and the increase in life expectancy, the ageing population is expected to increase the Shire's need for appropriate facilities and infrastructure to cater for this age demographic. This may necessitate significant upgrade or development of infrastructure, as well as possible greater maintenance requirements. An ageing population will mean a greater need for aged care facilities and disability access. Increase in age of population will also require improvements to public transport infrastructure and services.

Changes in Technology

Changes in material and construction techniques could lead to improved service levels and asset standards, and ultimately reduced maintenance requirements. However, it is difficult to predict whether newer materials, construction and maintenance techniques will affect demand.

New Assets from Growth

The new assets required to meet growth will be acquired from land developments and constructed by the Shire. Acquiring these new assets will commit the Shire to fund ongoing operations and maintenance costs for the period that the service provided from the asset is required.

Legislation

The Shire is bound to meet a range of legislative requirements which if altered, could affect the Shire's management obligations. A current legislative driver of change is the amendment of the *Local Government Act 1995*. The Act promotes integrated planning and ensures that long term financial planning, asset management planning and workforce planning become standard business practices for all local governments. This means that a majority of WA local governments will have to notably improve their current practices and processes, which the Shire is currently working towards.

Tourism Growth

Tourism can have a significant effect on assets. An increase in tourism will result in higher utilisation of assets, and this in turn would mean the Shire will incur higher costs for asset maintenance, upgrade and replacement.

Climate Change

There is increasing evidence that the Earth's climate is changing, which will have direct and indirect impacts on assets. This could be from a range of factors including changing climatic conditions, increasing rainfall, rising sea levels, and fluctuations in seasons.

Demand Planning

Demand management actively seeks to modify customer demands for services in order to:

- Optimise the utilisation / performance of existing assets;
- Reduce or defer the need for new assets;
- Meet the organisation's strategic objectives;
- Deliver a more sustainable service; and
- Respond to stakeholder needs

It is vital to the success of this strategy that demand factors be analysed comprehensively, and their impact quantified in terms of the following:

- The effect of the growth of the asset network;
- Any possible future need to increase or decrease infrastructure; and
- The implementation of non-asset solutions, such as managing demand.

In addition to the factors mentioned above, risk affects demand for services and consequently the following must be taken into account:

- The methodology and accuracy of forecasts;
- The currency of forecasts;
- The uncertainty of forecasts; and
- Any unforeseen natural factors.

The forecasts for the Shire of Waroona indicate steady population growth in the area. This growth trend is expected to cause an increase in the asset base due to the creation of new assets, as a result of increased demand.

Demand Management Strategies

Demand management strategies provide alternatives to the creation of new assets through modifying customer demands. A key long-term strategy is to manage demand so that there are funds in place for the renewal, operation and maintenance of future services. Demand management practices include non-asset solutions, insuring against risks and managing failures.

Effective strategies maximise the utilisation of existing assets through consolidating services or disposing of assets that are surplus to requirements, and are discussed in later in this strategy.

The Shire of Waroona may need to carefully analyse and establish alternatives to the use of traditional assets in some circumstances where the relative demand cannot justify the replacement of some assets.

Risk Management

The Shire of Waroona is committed to identifying, measuring and managing risks in order to capitalise on opportunities and achieve the objectives of the Council's strategic plans.

To achieve this, the Shire has adopted a risk management framework aligned to AS/NZS ISO 31000.2018 Risk Management – Principles and Guidelines. The framework, which is comprised of a Risk Management Policy and Strategy, provides a coordinated and systematic process for managing risks, integrating risk management into everyday decision making and business planning.

A Business Continuity Plan also compliments this framework, ensuring that the Shire can continue to provide essential services to stakeholders in the event of a crisis or major incident.

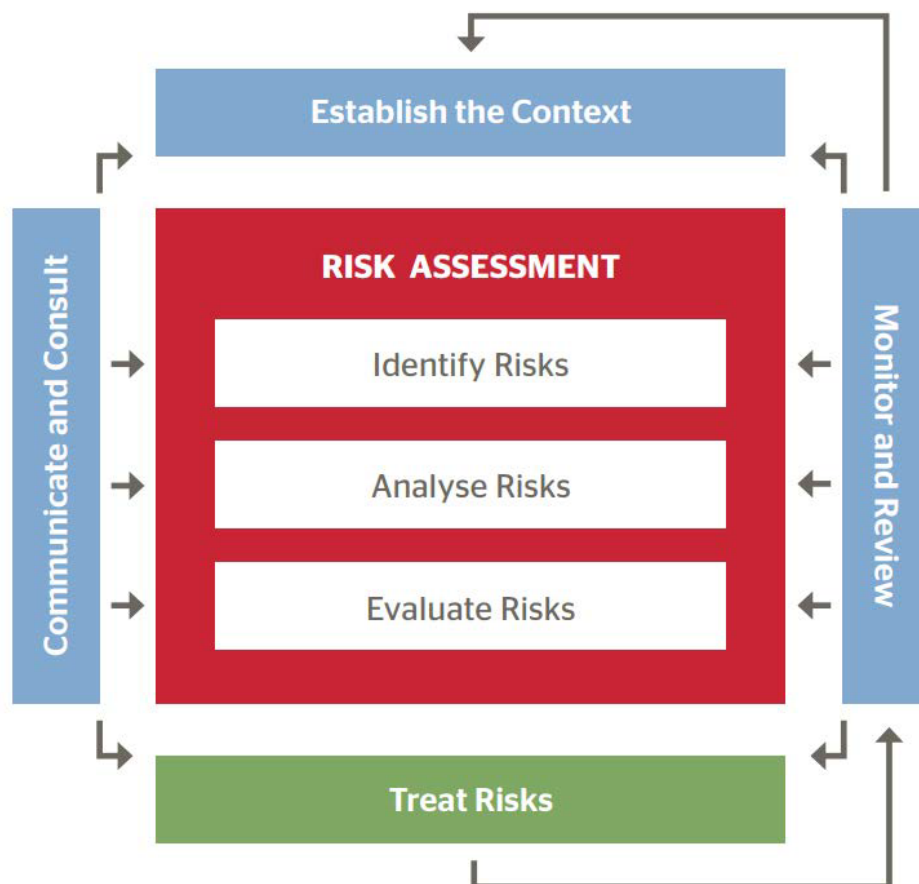


Figure 3: Risk Management Framework. Source: AS/NZS ISO 31000.2018 Risk Management - Principles and Guidelines.

Risk Management Guide

The following guide summarises the Shire's risk management framework

Risk Management Guide



Introduction to Risk Management

The Shire of Waroona has adopted an organisational enterprise risk management approach. Risks must be managed during day to day operations to ensure objectives are achieved and exposure to liability is minimised. Effective management of risk provides assurance to stakeholders that there is:

- A reduced likelihood of litigation
- Adequate controls to regulate the Shire's risk exposure
- Protection of the community's health and safety
- Strategies in place to minimise disruption to core services

Responsibilities

The adopted Risk Management Policy ensures an organisational approach through the delegation of responsibility to all levels.

Council: Provision of adequate resources to implement risk process and strategies.

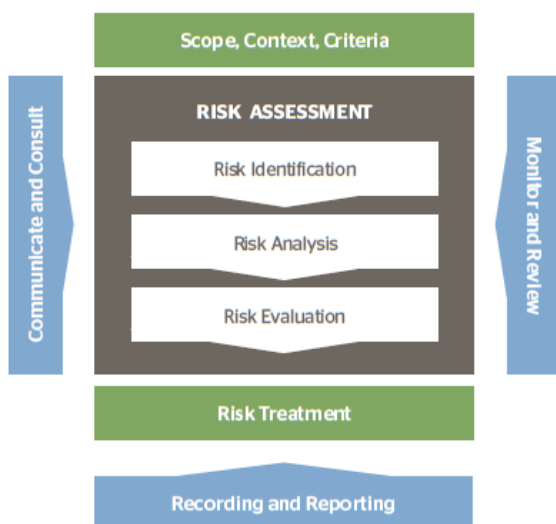
CEO and Executive: Recommending the risk tolerance level of the Shire to Council. Establishment of a Risk Management Committee. Ensuring the development and management of the Shire's risk.

Managers: Identifying and assessing all potential risks within their area.

All Staff: Active participation in the risk management program. Conducting risk assessments during the performance of their daily duties.

Risk Framework

The Shire of Waroona has embraced risk management through a Risk Management Policy, procedures and reporting mechanisms. Risk management processes are guided by ISO 31000:2018. The following diagram illustrates the full risk management cycle according to this standard:



Risk Control Rating

Excellent: Doing more than would reasonably be expected under the circumstances.

Adequate: Doing what would be reasonably be expected under the circumstances.

Inadequate: Doing less than would reasonably be expected under the circumstances.

Risk Management Process

1 | Establish the Context

Define the subject of the risk assessment, i.e. the activity, strategy, service, function etc. and determine the level of context, i.e. Strategic, operational or project. Identify the stakeholders who should be included and/or consulted during the risk assessment.

2 | Identify Risks

What can happen that could:

- Impede the achievement of the organisation's objectives
- Cause a stakeholder to lodge a complaint or initiate legal action
- Result in a financial loss
- Comprise the safety or health of the community
- Damage the environment now or in the future

Where and when could these events occur?

Why and how could they happen?

3 | Analyse Risks

Evaluate existing controls:

- Are there any current practices that might prevent the risk from occurring or lower the consequence of that risk?

Determine the consequence and likelihood of the risk occurring after any current controls.

Assess the overall risk level using the risk matrix.

4 | Evaluate Risks

With regard to the organisational risk tolerance level, decide if further treatments are necessary to reduce the risk to an acceptable level.

5 | Treat Risks

- Identify options for treating risks with negative outcomes
- Assess risk treatment options
- Prepare and implement treatment plans

6 | Monitor and Review

Record the risk management process, monitor and review regularly to ensure that the treatments are still effective and are still within the risk tolerance level.

Shire of Waroona's General Categories of Risk

Category	Possible Risk Area
Financial	Projects going over budget, legal costs, insurance claims, overpayments, inappropriate use of resources
Environmental	Regulatory compliance, contamination, inadequate environmental practices in processes and procedures
Operational	Adverse effects on core business, business continuity, human resource risks, loss of knowledge
Reputational	Public perception, poor customer service, sub standard works, corruption, misuse of confidential information
Health	Exposure to health risks, injuries to the public within Council buildings or on Council property
Project	Delays start or completion, variations to scope or budget, insufficient funds

Reviewed December 2020

Consequence Rating

Level	Description	Financial Impact	Health	Reputation	Operation	Environment	Project
1	Insignificant	Less than \$10 000	Near miss/negligible injuries or health effect	Low impact, low profile, minor complaint	Little impact - objectives still achieved with minimum extra cost or inconvenience	Contained, little and reversible impact managed by on site personnel	Insignificant impact on the project. It is not possible to measure the impact on the project as it is minimal
2	Minor	\$10 000 to \$50 000	Minor injury or health effect/First aid treatment	Heightened concern by community, several complaints	Inconvenient delays - partial achievement of objectives with some compensating action taken	Contained, minor damage or contamination that is reversible and managed by on site personnel	<5% deviation in scope, scheduled end-date or project budget requiring manager approval
3	Moderate	\$50 000 to \$250 000	Moderate injury or health effect/Medical treatment	Low level local news profile	Significant delays to major deliverables - additional costs required and/or time delays to achieve objectives. Adverse impacts on KPIs and targets	Contained, significant contamination and damage that is reversible, managed by on site personnel	5-10% deviation in scope, scheduled end-date or project budget requiring senior management approval
4	Major	\$250 000 to \$1 million	Serious health effect, death or extensive injuries	Major coverage in local media, low profile in state media	Unable to achieve corporate objectives or statutory obligations resulting in significant visible impact on service provision such as closure of facilities	Uncontained, significant contamination and damage that is reversible but requires third party assistance, minor breach of legislation	10-25% deviation in scope, scheduled end-date or project budget requiring restructuring of project and senior management or Council approval
5	Catastrophic	More than \$1 million	Multiple deaths or severe permanent disabilities	High state or national news profile	Organisation unable to function	Extensive contamination and damage that is irreversible, major breach of legislation	>25% deviation in scope, scheduled end-date or project budget requiring the project to be deferred or redeveloped

Level of Risk (Risk Matrix)

Level	Description	Probability
5	Almost Certain	Expected to occur in most circumstances > More than once per year or greater than 90% chance
4	Likely	Will probably occur in most circumstances > At least once per year or between 60% and 90%
3	Possible	Should occur at some time > At least once in three years or between 30% and 60%
2	Unlikely	Could occur at some time > At least once in ten years or between 5% and 30%
1	Rare	May occur, only in exceptional circumstances > Less than once in fifteen years or less and 5%

Level of Risk (Risk Matrix)

		Consequence				
		Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	Almost Certain 5	M (5)	H (10)	H (15)	E (20)	E (25)
	Likely 4	M (4)	M (8)	H (12)	H (16)	E (20)
	Possible 3	L (3)	M (6)	M (9)	H (12)	H (15)
	Unlikely 2	L (2)	M (4)	M (6)	M (8)	H (10)
	Rare 1	L (1)	L (2)	L (3)	M (4)	M (5)

L Low M Moderate H High E Extreme

Risk Acceptance Criteria

Risk Level	Descriptor	Action Required	Criteria for Risk Acceptance	Review Frequency		Risk Owner	
				Strategic/Operational	Project Risks	Strategic/Operational	Project Risks
Low	Acceptable	Accept the risk	Risk acceptable	Annual	If the scope/context changes	Operational Manager	Project Manager
Moderate	Monitor	Monitor the risk but consider risk treatments	Risk acceptable with adequate controls	Semi-annual	If the scope/context changes	Operational Manager	Project Manager
High	Treat	Treat the risk. Reduce either the likelihood, consequence or both by improving existing controls or adding new controls	Risk acceptable with excellent controls	Quarterly	Monthly	Executive Management	Steering Committee where relevant or Project Director
Extreme	Treat	Treat the risk. Reduce either the likelihood, consequence or both by improving existing controls or adding new controls	Risk only acceptable with excellent controls and all treatment plans to be explored and implemented where possible	Monthly	Monthly	CEO	Steering Committee where relevant or Project Director

Sustainability Principles

When assessing risks and making land use decision, based on the “Natural Step Framework”, risk framework, sustainability principle will be applied to any action by asking –

Q: is this action going to do harm to the environment in any of these four ways?

Sustainability Principle ...
Ensuring the Tasks or Activities <u>do not</u> result in systematically increasing:
1. concentrations of substances [taken] from the earth’s crust
2. concentrations of substances produced by society [that are not organic and / or cannot be recycled]
3. degradation of [native flora, fauna, and or ecosystems and or landscapes, including townscapes and urban canopy] by physical means [or result in their decline]
4. [social or economic injustice] and in that society, there are no structural obstacles to people’s health, influence, competence, impartiality and meaning.

If the answer is Yes to any of these four questions –

Then avoidance or mitigation strategies, must be developed and assessed by the Shire of Waroona’s environmental and development team prior to any activity occurring. The principal-based risk assessment also aligns with the Shire of Waroona’s existing Risk Framework.

Program Actions

REF	Theme	Details of Actions	Actions Taken – as at 9/10/2023
T1A	Decarbonisation	Conduct a greenhouse gas emissions inventory for the Shire.	Commenced reviewing the WALGA template. Will develop a plan and delivery project.
T1A	Decarbonisation	Develop a Climate Action Plan to set emission reduction targets.	Have started reviewing practices and working on planning options.
T1A	Decarbonisation	Promote energy efficiency and renewable energy adoption in the community.	
T1B	Revenue generating enterprises	Explore carbon offset projects such as reforestation and wetland restoration.	
T1B	Revenue generating enterprises	Participate in carbon credit markets to generate revenue.	
T1C	waste	Support waste reduction campaigns and education programs.	
T1C	waste	Expand recycling and composting infrastructure and progress towards landfill closure.	
T1C	waste	Support businesses in adopting sustainable packaging practices.	
T1C	waste	Support and Establish recycling programs.	
T1C	waste	Promote the circular economy and local recycling industries.	
T1D	waste	Support waste reduction campaigns and education programs.	
T1D	waste	Establish e-waste collection and recycling programs.	
T1D	waste	Promote the circular economy and local recycling industries.	
T1D	waste	Implement and support Waste 2 Energy initiatives.	
T1E	Resource Efficiency	Retrofit Shire buildings with energy-efficient technologies.	
T1E	Resource Efficiency	Encourage water-saving practices in landscaping and agriculture.	
T1E	Resource Efficiency	Support community energy efficiency programs.	
T1E	Resource Efficiency	Invest in renewable energy for Shire facilities.	

T1E	Resource Efficiency	Support incentives for electric vehicle adoption.	
T2A	Renewable Energy:	Develop and implement Renewable Energy Facilities Policy and Guidelines.	Shire Renewable Energy Facilities Policy and Guidelines have been implemented.
T2A	Renewable Energy:	Identify suitable sites for renewable energy projects and include in Planning Strategy and Scheme.	
T2A	Renewable Energy:	Facilitate permits and approvals for renewable energy installations.	Shire Renewable Energy Facilities Policy and Guidelines have been implemented.
T2A	Renewable Energy:	Attract renewable energy companies to the Shire.	CEO and Shire President advocating for district.
T2A	Renewable Energy:	Encourage microgrid development for energy resilience.	
T2B	Green Industry	Support incentives and grants for green technology development.	
T2B	Green Industry	Identify suitable sites for green industry development and include in Planning Strategy and Scheme.	
T2B	Green Industry	Advocate for sustainable manufacturing and production methods.	
T2B	Green Industry	Support and Facilitate workforce training in eco-friendly practices.	
T2B	Green Industry	Develop green industrial zones.	To be included in new Local Scheme & Strategy
T2C	Conversion of existing industry	Support incentives and grants for green technology adoption.	
T2C	Conversion of existing industry	Collaborate with local industries to reduce environmental impact.	
T2C	Conversion of existing industry	Promote sustainable manufacturing and production methods.	
T2C	Conversion of existing industry	Facilitate workforce training in eco-friendly practices.	
T2C	Conversion of existing industry	Promote solar panel installations in residential and commercial areas.	
T3A	Conservation Partnerships	Collaborate with environmental organisations for conservation and protection projects and programs.	The Shire partners with a number of environmental organisations.
T3A	Conservation Partnerships	Support and collaborate on the restoration and protection of Peel waterways and native flora and fauna habitats.	The Shire partners with a number of environmental organisations.

T3A	Conservation Partnerships	Support conservation initiatives for rare and endangered and endemic flora and fauna, as well as habitats for black cockatoos, possums, bats, frogs, snakes, and migratory birds under agreements – including RAMSAR Listed Wetlands	The Shire partners with a number of environmental organisations.
T3A	Conservation Partnerships	Enhance conservation efforts and protection mechanisms in Tuart woodlands, Northern Jarrah Forest, and Banksia woodlands.	The Shire partners with a number of environmental organisations.
T3B	Biodiversity and Biosecurity	Develop and implement biodiversity strategy and enhancement programs.	Developed
T3B	Biodiversity and Biosecurity	Support and collaborate with local biosecurity agencies to prevent and manage invasive species.	The Shire partners with a number of environmental organisations.
T3B	Biodiversity and Biosecurity	Monitor and manage pest species and diseases within Local Governments remit.	The Shire partners with a number of environmental organisations.
T3B	Biodiversity and Biosecurity	Policies and local laws to support biodiversity and biosecurity initiatives.	
T3C	Coast Care & Conservation	Implement dune protection and restoration programs.	The Shire undertakes dune protection works and partners with a number of environmental organisations.
T3C	Coast Care & Conservation	Regulate vehicle access to beaches to minimize environmental impact.	A management option study has been undertaken. This will be reviewed and presented to Council for their consideration.
T3C	Coast Care & Conservation	Develop and enforce beach conservation policies and local laws.	The public place local law addresses these matters and has been implemented. These regulations are enforced by Ranger Services.
T3C	Coast Care & Conservation	Educate the community on coastal conservation.	The volunteer Rangers and other groups deliver ongoing public information and education.
T4A	Water Wise	Encourage water-efficient landscaping and irrigation practices.	
T4A	Water Wise	Support incentives for rainwater harvesting and greywater reuse.	
T4A	Water Wise	Implement water-wise education programs.	
T4A	Water Wise	Monitor and protect water catchment zones.	
T4B	Climate Change Mitigation	Increase urban tree canopy through tree planting programs.	
T4B	Climate Change Mitigation	Support the replacement of roadside lawn verges with native gardens.	
T4B	Climate Change Mitigation	Develop and promote climate-resilient landscaping practices.	
T4B	Climate Change Mitigation	Engage in climate adaptation planning aligning the local planning policies, scheme and strategy.	To be included in new Local Scheme & Strategy

T4C	Sustainable Development	Develop a local planning strategy and policy that promotes sustainability, preserves remnant vegetation and water catchment zones through zoning regulations - including townscape revitalisation and planning, preserving remanent vegetation and water catchment zones as well as protecting the amenity of the Darling Scarp, Coastline and townsite areas;	To be included in new Local Scheme & Strategy
T4C	Sustainable Development	Foster sustainable urban design and townscape revitalization.	To be included in new Local Scheme & Strategy
T4C	Sustainable Development	Encourage sustainable building practices and materials.	To be included in new Local Scheme & Strategy
T4D	Community Education & Eco-tourism	Develop eco-tourism trails and recreational facilities.	
T4D	Community Education & Eco-tourism	Promote local attractions, natural beauty, and wildlife.	
T4D	Community Education & Eco-tourism	Collaborate with tourism operators to enhance eco-friendly tourism.	
T4D	Community Education & Eco-tourism	Educate tourists on responsible nature engagement.	
T4E	Bush Fire Mitigation and Vegetation Management	Develop and implement bushfire mitigation strategies.	The Shire undertakes bush fire mitigation works on an ongoing basis.
T4E	Bush Fire Mitigation and Vegetation Management	Support the BFB's and DFES in undertaking controlled burns and vegetation management for ecosystem health, based on current best practice information.	
T4E	Bush Fire Mitigation and Vegetation Management	Collaborate with fire authorities for coordinated responses.	
T4E	Bush Fire Mitigation and Vegetation Management	Educate the community on bushfire preparedness.	
BDS1	Assessment and mapping	Conduct biodiversity assessment and mapping exercise to identify key areas of biodiversity significance within the Shire of Waroona, including the Northern Jarrah Forest, Tuart woodlands, Banksia woodlands, Endemic Kingias, and other threatened ecological communities.	Some GIS mapping is in place. In addition mapping has been completed detailing the % of vegetation types remaining in the Shire and their locations.
BDS2	Conservation and Management of Priority Species	Support the identifying and prioritizing of the conservation and management of key native flora and fauna species, including the three species of black cockatoos, possums, bats, frogs, snakes, and birds listed under Migratory Bird Agreements and Ramsar Wetland Agreements.	

BDS2	Conservation and Management of Priority Species	Support habitat restoration and protection measures tailored to the specific needs of each priority species, considering their ecological requirements and migration patterns.	
BDS3	Protected Areas and Reserves	Establish and expand protected areas and reserves within the Shire of Waroona to safeguard critical habitats and ensure the preservation of biodiversity.	
BDS3	Protected Areas and Reserves	Collaborate with landholders, conservation organizations, and government agencies to secure conservation easements and acquire land for these protected areas.	
BDS4	Community Engagement and Education	Raise awareness and foster a sense of responsibility among the local community for the conservation of biodiversity.	
BDS4	Community Engagement and Education	Support workshops, educational programs, and community events to inform residents about the importance of protecting native flora and fauna.	
BDS4	Community Engagement and Education	Encourage citizen science initiatives to involve the community in data collection and monitoring efforts.	
BDS5	Threat Mitigation	Develop strategies to mitigate potential threats to biodiversity, such as habitat loss, invasive species, pollution, and climate change.	
BDS5	Threat Mitigation	Implement measures to reduce human-wildlife conflicts, especially in areas where human activities overlap with critical wildlife habitats.	
BDS6	Sustainable Land Management	Promote sustainable land management practices among landowners, farmers, and other stakeholders to minimize negative impacts on biodiversity.	
BDS6	Sustainable Land Management	Encourage the adoption of eco-friendly farming methods and habitat restoration techniques.	
BDS7	Collaboration Partnerships and	Collaborate with local, regional, and national conservation organizations, research institutions, and government agencies to share resources, expertise, and data.	
BDS7	Collaboration Partnerships and	Engage in partnerships to fund and implement conservation projects.	
BDS8	Monitoring and Evaluation	Establish a robust monitoring and evaluation framework to track the effectiveness of the biodiversity strategy.	
BDS8	Monitoring and Evaluation	Regularly assess the status of priority species and ecological communities to make informed decisions about the need for adaptive management.	
BDS9	Policy and Legislation	Advocate for the implementation and strengthening of policies and legislation that support biodiversity conservation at the local, regional, and national levels.	

BDS9	Policy and Legislation	Engage with policymakers to ensure that biodiversity concerns are adequately addressed in all relevant planning processes.	
BDS10	Sustainable Tourism	Develop and promote ecotourism opportunities that highlight the Shire's unique biodiversity.	
BDS10	Sustainable Tourism	Ensure that tourism activities are conducted sustainably and do not negatively impact native flora and fauna.	
BDS10	Sustainable Tourism	By implementing this Biodiversity Strategy for the Shire of Waroona, the community can actively contribute to the retention, conservation, and protection of native flora and fauna, safeguarding the region's biodiversity for future generations.	

REF:

- <https://walga.asn.au/policy-advocacy/our-policy-areas/environment/climate-change/templates-and-tools>
- Shire of Waroona Strategic Community Plan.
- Shire of Waroona Corporate Business Plan.
- Shire of Waroona Renewable Energy Policy & Guidelines.
- WALGA Carbon Assessment Guidelines & Template.
- Shire of Wyndam – biodiversity policy
- City of Bunbury – biodiversity strategy
- Chat GPT 2023
- <https://www.amrshire.wa.gov.au/environment-and-sustainability/sustainability/our-sustainability-statement>

