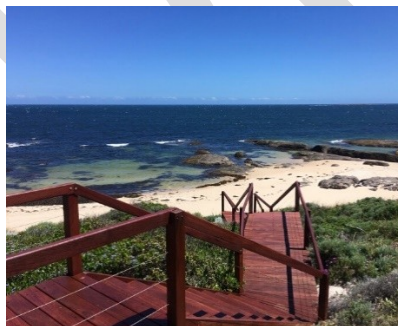




Draft Version 6

Environmental Sustainability Strategy 2026-2031



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Strategy Objectives

This strategy identifies achievable and practical actions over the next 5 years for the next phase of the Shire of Manjimup's (Shire) environmental sustainability journey. The strategy intends to outline Shire operational actions and priorities only and therefore is not a strategy for community activities. The actions have been carefully chosen to allow for generational change whilst keeping with in the Shire's core areas of responsibility and within the parameters of an affordable budget. External funding and internal investment will be needed to achieve the actions.

This strategy outlines the regional, state, and federal governing bodies initiatives that are making a positive contribution to environmental sustainability and does not intend to duplicate those measures. This document will assist the Shire in meeting community expectation in environmental sustainability, and it will also outline how the Shire provides the opportunity for the community to contribute.

This strategy is guided by the precautionary principle; *In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.* (Principle 15 of the Rio Declaration on Environment and Development, United Nations 1992).

The objectives of this Strategy are to:

- Demonstrate leadership in environmental sustainability,
- Collect and share environmental data to inform better decision making, and
- Invest in our economic and ecological assets to reduce expenditure and limit future liabilities.

Background

The unique population distribution of the Shire stretches the resources that are available for investment and management of environmental sustainability. The Shire measures 7082km², of which 82.7% of the land within the Shire is state forest, national park and reserve, with only 17.3% as private freehold land. (Shire of Manjimup Natural Environment Strategy 2008). Of the 1500ha the Shire manages, 1462ha (164 reserves) are bushland reserves. The Shire has four main population centres: Manjimup, Pemberton, Northcliffe, and Walpole. In addition to these town sites, the Shire also has seven other populated settlements (Deanmill, Jardee, Nyamup, Palgarup, Quinninup, Tone River and Windy Harbour) and many localities. According to the 2021 Census figures, 9,093 people live within the Shire boundaries. <https://www.abs.gov.au/census/find-census-data/quickstats/2021/LGA55180>

Over the last 10 years, there has been a tremendous amount of behavioural change in the community towards environmental sustainability. For example: banning single use plastics; water conservation; action on climate change; and the uptake of fossil fuel free energy sources. The Shire is entering a new phase in environmental sustainability where innovative technologies and best practice procedures are available for implementation that will enable the Shire to achieve the next level of behavioural change in our community and organisation.

Strategy Target Areas

This strategy identifies six target areas to achieve positive change in the Shire's environmental sustainability journey. The Environmental Sustainability Strategy (ESS) target areas are:

- Ecological Sustainable Development
- Adapting to Climate Change
- Protecting Biodiversity
- Reducing Waste
- Pest and Weed Management
- Community Engagement

The strategy actions the following United Nations Sustainable Development Goals; 3 – Good Health and Wellbeing; 4 – Quality Education; 6 – Clean Water and Sanitation; 7 – Affordable and Clean Energy; 9 – Industry Innovation and Infrastructure; 11 – Sustainable Cities and Communities; 12 – Responsible Consumption and Production; 13 – Climate Action; 14 – Life below Water; 15 – Life on Land; and 17 – Partnerships for the goals. The full list of Sustainable Development Goals is pictured in figure 1 below.

Figure 1: United Nations Sustainable Development Goals



Strategic Planning

The Shire's strategic direction in addressing and responding to environmental sustainability issues is well documented within the Strategic Community Plan 2021-2031 and the Corporate Business Plan 2022-2026. This strategy embraces that strategic direction and will guide future strategic planning.

In March 2026 the Shire endorsed the Community Blueprints for Manjimup, Northcliffe, Pemberton, Walpole and Quinninup that were developed under the Community Blueprints Project. Informed by a comprehensive community engagement program, the Blueprints translate local aspirations and insights into practical priorities to strengthen economic diversity, enhance social wellbeing, support environmental sustainability and build resilience to change.

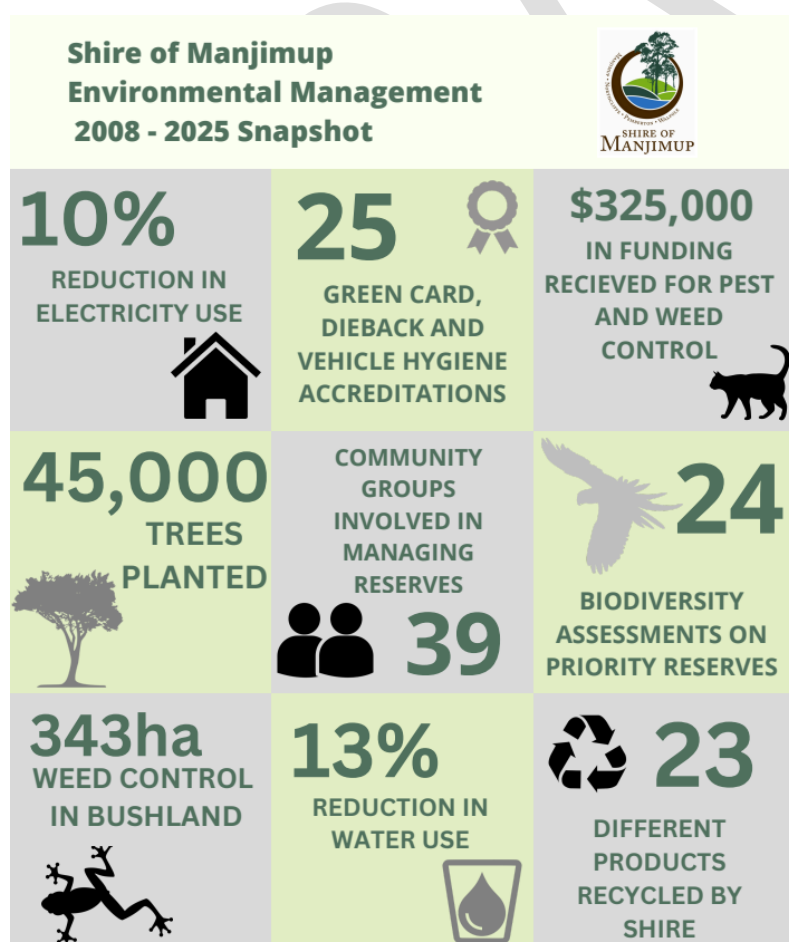
The Community Blueprints identified sustainable development, climate, biodiversity, waste, and pest and weed management as key priority areas the Shire could lead in to ensure environmental sustainability. This strategy references Community Blueprints and embeds their goals and aspirations into environmental sustainability plans.

The Shire, as committed in the Corporate Business Plan, undertook a review of the following environmental strategic planning documents between 2021 and 2023:

- 2008 Natural Environment Strategy
- 2008 Weed Strategy
- 2013 Environmental Management and Sustainability Strategy

In summary, the Shire has achieved the relevant commitments and recommendations the strategies listed above aimed for. This strategy replaces and builds on from the reviewed strategies to form one focused, more effective environmental sustainability management tool. A snapshot of the achievements from 2008 to 2025 is pictured below in figure 2.

Figure 2: Snapshot of achievements 2008 to 2025



1. Ecological Sustainable Development

Ecological sustainable development is the balance of the economic and ecological needs of the present without compromising the ability of future generations to meet their own needs. The Shire's long-term prosperity is intrinsically linked with the sustainable and equitable use of our natural resources.

The Shire considers ecological sustainable development principles from the *Biodiversity Conservation Act 2016* when designing, planning, and managing new development applications:

- a) *Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social, and equitable considerations,*
- b) *If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation,*
- c) *The present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations,*
- d) *the conservation of biodiversity and ecological integrity should be a fundamental consideration in decision-making, and*
- e) *improved valuation, pricing and incentive mechanisms should be promoted.*

Competing land uses can raise a conflict between economic needs and ecological aspirations. The community needs a balanced approach to allow for both aspects to be integrated into planning and design. Applications for development approval and other proposals are assessed in accordance with the principles and objectives of the Shire's Local Planning Scheme(s), the Shire's Local Planning Strategy, Local Planning Scheme and other relevant Shire and state policies, strategies, and documents. The Shire will request advice from relevant government departments to ensure decisions and conditions are appropriate for each application.

The natural resource material (economic) needs of the Shire include high quality water, clean air for communities, sustainable timber, access to basic raw materials, productive soils, and developable land (residential, commercial, and industrial etc.). The natural resource land (ecological) values of the Shire include biodiversity, natural landscapes, and cultural heritage values. Local knowledge and data are crucial for decision making and implementing the right measures. Staff are encouraged to report hazards and incidents that impact on ecological values.

The Shire applies the following controls in new developments to prevent or minimise environmental problems such as incompatible land uses:

- Landowners may need to submit additional information if there is a high likelihood that environmental impacts may result from the development.
- Restrictions are imposed if key biodiversity threatening processes are identified.
- Buffers are to protect environmental and community values.
- Landowners may need to contribute to an education programme to reduce on-site and off-site impacts of the development on the environment, natural resources, and natural systems.

Environmentally Sensitive Areas

The following Environmentally Sensitive Areas (ESA) are declared in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005, Government Gazette No. 55* under the *Environmental Protection Act 1986* in the Shire of Manjimup:

- World Heritage property as defined in section 13 of the *Environment Protection and Biodiversity Conservation Act 1999* of the Commonwealth (including Aboriginal Cultural Heritage),
- a defined wetland and the area within 50 m of the wetland,
- the area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located, and
- the area covered by a threatened ecological community.

Reserves that contain ESA's need to be treated more delicately and specific rules apply to activities in ESAs. The Department of Water and Environmental Regulation (DWER) ESA mapping outlines wetlands (does not include TEC's of threatened species habitats). Registered Aboriginal Cultural Heritage areas are mapped, though a quick reference guide would be helpful for internal planning. The Shire has documented all ESA values on each of its reserves except for road reserves. Documenting the ESAs on road reserves and making that information available to decision makers can help preserve the values of ESAs.

Sustainable Management of Water

Water is fundamental to human life and the environment. It drives and facilitates economic development and provides social opportunities. Water has a special cultural and spiritual value for Aboriginal people. The careful management of water resources, quantity and quality, is essential to support natural ecosystems as well as future growth and development. This strategy considers the following water resources:

- a. Watercourses, wetlands and dams (includes bed, banks etc.).
- b. Stormwater (and other surface waters).
- c. Aquifers, underground water, and other stored water (i.e. tank).

Under a changing climate, severe droughts are projected to occur more frequently and last longer, storm events are likely become more intense, and cool season rainfall is predicted to continue to decrease. This changing climate scenario will impact both the environment and the economy. For example, in 2019 the Shire received Commonwealth government funding to assist and support agricultural businesses to undertake pest control activities after a one in 20-year rainfall deficiency in the area.

The Shire follows Australian Standards, best practice guidelines and environmental legislation when approving development applications and Water Management Plans are implemented as needed. The Shire enforces compliance with water efficiency requirements of the Building Code of Australia in developments and urban designs.

Warren Blackwood Regional Water Supply Scheme

Manjimup town's main water supply is part of the Water Corporation's Warren Blackwood Regional Water Supply Scheme. The scheme uses water pumped from the Yarragadee aquifer and aims to ensure the long-term water security of Manjimup

town water supply. The other towns and settlements are supplied with water outside of this scheme, with some water being trucked in. Pemberton's drinking water is sourced from Lefroy Brook Weir, which is recharged by Big Brook Dam. The Shire advocates for the secure, sustainable supply of potable drinking water to all its communities.

Wetlands and Watercourses

There is a wide variety of wetlands and watercourses within the Shire. They include lakes, sumplands, damplands, palusplains, streams, creeks, brooks, rivers, floodplains, estuaries, and the marine environment. Wetlands support a high diversity of fauna, including migratory bird species that are protected by international treaties to which Australia is a signatory. The Muir-Byenup system is a designated wetland of international importance under the Ramsar Convention. The Shire ensures the provision of buffer zones around wetlands and watercourses to maintain or improve the ecological and physical function of water resources.

Stormwater

The Shire considers Water Sensitive Urban Design principles in storm water management infrastructure and design (Department of Water and Environmental Regulation, <https://www.wa.gov.au/government/document-collections/water-sensitive-urban-design-brochures>). The aim is to better manage stormwater quantity and quality by:

- Reducing the impacts of stormwater flows such as erosion and litter.
- Controlling or removing pollutants and nutrients before they impact streams.
- Biodiversity enhancement through the creation of new habitat areas and the use of native plants.
- Allowing water to be retained longer in the environment, whilst also allowing for adequate drainage.

Water Conservation in Shire Facilities

The Shire endeavours to conserve water based on the Water Corporation Waterwise Program and has been progressively adapting Shire managed facilities to reduce water use in the following ways:

- Ongoing upgrades in sprinklers aiming to reduce water use.
- Watering of Pemberton Sports Oval using treated wastewater.
- Stormwater harvesting & storage and reuse of collected water.
- Encouraging water sensitive urban designs and the use of water tanks.
- Encouraging the reuse of domestic wastewater where appropriate.
- Participating in the Water Corporations Waterwise Councils program (Manjimup Regional Aqua Centre).
- Supported government initiatives such as showerhead replacements, cistern upgrades and scheme restrictions.
- Annual monitoring and reporting on water use.
- Waterwise principles used in new garden installations.
- Installation of sensor/automatic taps and low flush toilets at Public Toilets.
- Bush Fire Brigade Shed Water Tank installations.

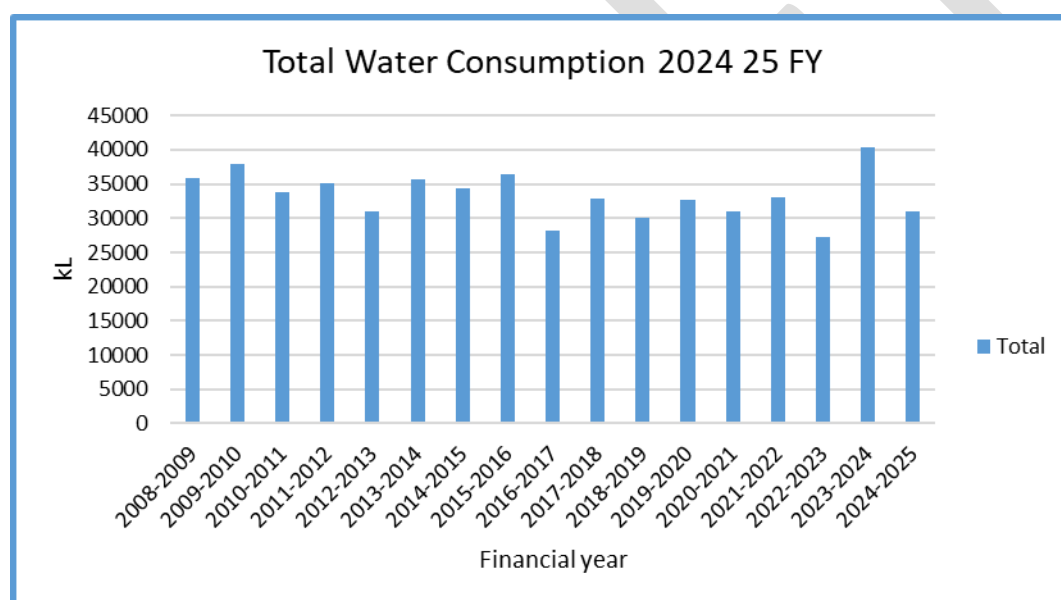
Waterwise Council

The Shire has signed the MOU to become a Waterwise Council. Once Water Corporation send back a signed MOU, an Action Plan can be created to take steps in conserving water. The Shire will have access to resources, tools and information that will allow for the next steps in sustainable water management. The objectives of the Waterwise Council Action Plan are to:

- Assess current water management activities across council operations.
- Identify opportunities to save water (leaking taps and applying timers).
- Set goals to improve water management outcomes.
- Provide a process for annual reporting on implementation of water actions.
- Work towards creating waterwise communities beyond water efficiency.

From 2008/09 FY to 2024/25 FY, the Shire of Manjimup's water usage decreased by 13%. Figure 3 below shows the water use over time.

Figure 3: Shire of Manjimup Water Usage



Improving Air Quality

The air we breathe affects our health, our quality of life, and our environment. Air pollution can cause heart and lung disease, cancer, and other health problems (Department of Climate Change, Energy, the Environment and Water 2024).

Source of Air Pollution	Type of Air Pollution
Bushfires	Can emit dangerous levels of smoke.
Development and Infrastructure	Cleared dry areas can emit dust under strong winds or soil movement.
Industry, Agriculture and Forestry	Practices of combustion and processing can emit particulate or chemical emissions.
Wood Heaters	Many in one area have a cumulative effect and emit a large amount of smoke

The Shire has been implementing controls to protect air quality by:

- Enforcing buffers where sensitive land use areas are adjacent to potential air pollution emissions.
- Encouraging alternative methods or best management practices for all activities with air emission impacts, such as domestic fires and burning-off practices in the agriculture and forestry industries.
- Encouraging design that integrates landscape and buildings to deliver positive environmental, social, and economic outcomes.
- Maximising the retention of significant trees and other vegetation within new subdivisions.
- Installation of air quality monitoring equipment on Shire's Administration Building (2023).

Urban Forest Strategy

Development in urban areas is causing further tree and vegetation loss within the Shire. Urban forests are considered green infrastructure that can provide a range of social, environmental, and economic benefits. An Urban Forest Strategy will investigate the current canopy coverage and identify opportunistic areas of that will benefit from beautifying, reducing heat islands and creating biodiversity linkages. The strategy could be based on the Department of Planning, Lands and Heritage's Perth and Peel Urban Greening Strategy once it is released.

An urban forest can be defined as the collection of trees and other vegetation that grows within an urban area or townsite. It is measured using trees and vegetation with reaches of over three metres in diameter. Urban forests make a significant contribution to the ecology of urban areas as they filter pollutants and increase biodiversity. Greener public spaces provide fauna habitat, stormwater management avenues and micro-climate benefits (by releasing water vapour known as evapotranspiration). The Shire experienced 51 days over 30 degrees in 2024, and climate change is predicted to increase temperatures by 5°C. Air temperatures are taken in the shade, therefore potentially on a 30-degree day, the unshaded air temperature may be 40°C degrees.

Preserving Soil and Land Quality

Soil and land resources are fundamental to sustaining terrestrial life and ecological processes. Australian land has been highly modified since European settlement through vegetation clearing, altered fire regimes, altered hydrology, pest animals, weeds, and climate change. Further degradation to the land is being undertaken through contamination, damaging farming practices, exposing acid sulphate soils and water extraction. The challenge now is to counteract degradation and restore soil health and landscape functionality, which in turn ensures the land can sustain environmental values and productivity.

The Shire aims to prevent further land degradation when assessing development applications. Management plans are implemented as needed. Development on cleared land is preferred over non cleared land. Areas with remnant vegetation are retained where possible to enhance soil and land quality, water quality, biodiversity, fauna habitat, landscape amenity values and ecosystem function. Potentially some uncleared areas zoned as agriculture could be rezoned to protect the vegetation.

Land Clearing

The clearing of native vegetation in WA is regulated under the *Environmental Protection Act 1986* (EP Act) and its subsidiary legislation. A clearing permit will need to be issued under the EP Act for clearing native vegetation in WA, unless exempt. DWER is the primary regulator that administers the clearing provisions of the EP Act.

The Shire aims to protect high conservation value vegetation and prevent land degradation. Conditional management plans are implemented as needed. The Shire has undertaken compliance activities and enforced the *Planning & Development Act 2005* in relation to unauthorised land clearing.

In all development, the Shire actively seeks opportunities for improved environmental outcomes. Revegetation conditions such as rehabilitation, restoration and enhancement activities are set as conditions to maintain ecological values or provide buffers. The quality of the revegetation can be determined at the planning stage by using best practice guidelines and introducing high quality standards. The Shire does not currently have standard or guidelines for revegetation, which results in revegetation being completed poorly.

Extractive Industries

Extractive Industries extract basic raw materials for the purpose of building roads and other infrastructure. Mining is not included as an extractive industry and is regulated by the Department of Mines, Industry Regulation and Safety. Environmental impacts arising from extractive industries include vegetation clearing and impacts to water, air, and land quality. The Shire controls these impacts by placing conditions on extractive industry activities. Local Planning Policy 6.1.9 Extractive Industries outlines how the Shire supports the establishment of extractive industries in an environmentally sensitive and sustainable manner with the following objectives:

- a. *protect the economic viability of the general farming areas, and*
- b. *retain the rural character of the area by preventing the operation of extractive industry activities in a manner detrimental to the area's amenity or environment.*

A 2021 review of extractive industries forms and guidelines has ensured that the Shire is getting adequate information to be able to make decisions on applications. Access to Basic Raw Materials is needed in the Shire and some Shire reserves are used for this purpose. The Shire maintains a register of all approved extractive industries. Auditing of activities are needed from time to time to ensure conditions are followed. Enforcement has been undertaken with some operations not meeting the conditions.

Protecting Aboriginal Heritage

Aboriginal heritage holds significant value to Aboriginal people for their social, spiritual, historical, scientific, or aesthetic importance within Aboriginal traditions, and provides an essential link for Aboriginal people to their past, present and future.

Aboriginal culture dates back some 60,000 years and is the oldest living culture in the world. Aboriginal heritage could include rock art, ancient caves or burial sites, waterways, ceremonial sites, scar trees, artefacts, engraving, fishing traps, grinding patches, historical associations, middens, mythological connection, and quarries.

WA was the first jurisdiction in Australia to recognise Aboriginal cultural sites and objects of significance and make specific provision for traditional use through the *Aboriginal Heritage Act 1972* which was amended in November 2023 after consultation.

The South West Native Settlement (Settlement) is the most comprehensive native title agreement negotiated in Australian history. It covers 200,000 square kilometres of the South West region. In 2022 the rights and obligations under the Settlement were transferred from the six traditional owner Agreement Groups to the Noongar Regional Corporations. The Noongar Corporations operating in the Shire of Manjimup are Karri Karrak Aboriginal Corporation and Wagyl Kaip Southern Noongar Aboriginal Corporation.

Reflect Reconciliation Action Plan

The Noongar people are the Traditional Custodians of the lands on which the Shire of Manjimup is located. There are three Noongar language groups that span this area being the Bibbulmun, Minang and Kaniyang. The Reflect Reconciliation Action Plan (RAP) outlines the formal adoption of the following acknowledgement of country:

The Shire of Manjimup respectfully acknowledges the Noongar people as the Traditional Custodians of the lands in which we work throughout the region, and we pay our respects to their Elders, past, present, and emerging.

One of the RAP actions is to consider opportunities and appropriate processes to involve Aboriginal people in sustainable natural resource management and in the protection and restoration of significant cultural locations, including totemic trees. Strategies for achieving this action have been included in the Ecological Sustainable Development Plan. An Aboriginal Cultural Heritage Register for Shire managed land has been started to allow for better management of those areas.

Protecting Non-Aboriginal Cultural Heritage

The *Heritage Act 2018* was introduced to recognise the importance of, promote understanding and appreciation of Western Australia's cultural heritage. The Shire of Manjimup's 2008's Municipal heritage Inventory compiles nearly 200 heritage places and serves as a guide for ongoing planning and management of the identified places, including landowners' obligations.

Our Ecological Sustainable Development Plan

Environmentally Sensitive Areas		
Action	Detail	Timeframe
Document ESA's values for Shire managed Road Reserves.	For example, Aboriginal Cultural Heritage, Threatened species and TEC's	2026 - 2027
Document Threatened flora locations on road reserves	GPS locations and detail collated	2027 - 2028
Delineate ESAs by site markers, unless confidentiality is required.	Start with Threatened Flora species as they are at most risk	2028 - 2029

Create mapping of ESA's and site markers	Shape files created and shared	2029 - 2031
Sustainable Management of Water		
Action	Detail	Timeframe
Aim to become a Gold Waterwise Council	Continue with Waterwise Council program.	2026 - 2031
Reduce scheme water use	Collate a list of Shire managed buildings and properties with and without water tanks	2027 - 2028
Identify shire managed buildings and properties that can be fitted with water tanks.	Based on water use and water need.	2028 - 2029
Training in water sensitive urban design	Seek opportunities for training for staff	Ongoing
Improving Air Quality		
Action	Detail	Timeframe
Collect data and report on tree canopy	Map tree canopy for each town site outlining current percentage	2026 -2028
Implement tree canopy planning	Map and report on areas likely to be retained, lost and or expanded into (Urban Forest Strategy)	2028 -2029
Investigate the potential of using technology to show community current air quality	To help inform the community with health concerns, the results could be shown on the website in real time	2029 - 2031
Preserving Soil and Land Quality		
Action	Detail	Timeframe
Develop standards for revegetation	Standards in soil preparation, ameliorants, revegetation species, and maintenance created	2026 -2028
Review Extractive Industry Register	Check that all locations with an approved development application to extract basic raw materials is up to date	2028 -2029
Review existing Shire gravel pits and reserves	Rehabilitate reserves with no basic raw material values	2029 -2031
Protecting Aboriginal Heritage		
Action	Detail	Timeframe
Ensure best practice protocols are used	Circulate new protocols as they emerge	Ongoing
Collate data on Aboriginal Cultural Heritage	Shire managed areas such as roads and bridges that need sensitive management due to Aboriginal Cultural Heritage	2026 - 2028

Encourage Aboriginal ecological knowledge sharing and stewardship	Partner with Aboriginal people, when possible, in land management	Ongoing
Protecting Non-Aboriginal Cultural Heritage		
Action	Detail	Timeframe
Undertake a review of the 2008 Local Heritage Survey (LHS)	Possibly include more significant trees	2026 -2027
Add GPS coordinates to the LHS	To allow for accurate record keeping	2026 -2027

DRAFT

2. Adapting to Changing Climate

Climate Change policy within Australia is informed by several international agreements, including but not limited to the Doha Amendment to the Kyoto Protocol in 2012 to reduce emissions and the Paris Agreement that Australia ratified in November 2016. The International Panel on Climate Change (IPCC) 2022 assessment report named Impacts, Adaption and Vulnerability details that:

- Climate change impacts and risks are becoming increasingly complex and more difficult to manage.
- An increase in climate events such as wildfire and storms on key infrastructure is leading to losses and damages and affect people, ecosystems, and economic activity.

Under the National *Climate Change Act 2022*, Australia has legislated our greenhouse gas emissions reduction targets to contribute to the global goal of keeping the average global warming level well below 2°C, and pursuing efforts to limit global warming levels to 1.5°C.

The WA State Government 2023 *Climate Adaption Strategy, Building WA's Climate Resilient Future*, carries an aspiration of net zero by 2050. The Climate Change Bill 2023 aimed to create new legislation which included the establishment of a target of zero net emissions by 2050, the bill has now lapsed.

The Shire's climate is similar to a Mediterranean climate; there may be enough water for current agricultural activities though drinking water for towns people is lacking. Predictions in a changing climate is that the Shire will become drier with less rainfall. Table 2 below outlines the current climatic conditions for each town (data derived from the Bureau of Meteorology).

Table 2. Summary of Shire of Manjimup Climatic Conditions per Town

Climate Conditions of Shire of Manjimup per Town (July 2025)		
Town	Temperature Range °C	Rainfall Range mm/yr.
Manjimup	42.7 to - 0.6	1761 to 549
Pemberton	43.2 to - 0.8	1711.9 to 669.1
Northcliffe	41.4 to -2	2115.2 to 796.3
Walpole (North)	40.7 to 2.6	1300.8 to 886.2

National Greenhouse and Energy Reporting Scheme

The National Greenhouse and Energy Reporting (NGER) Scheme is a national government initiative requiring companies that meet certain thresholds to report on greenhouse gas emissions, energy production and energy consumption. Scheduled changes in 2026 may require the Shire of Manjimup to undertake reporting in future.

Greenhouse Gas (GHG) emissions contribute to global warming, in 2023 Australia was the 15th highest emitter, contributing 1 percent of global emissions https://en.wikipedia.org/wiki/List_of_countries_by_greenhouse_gas_emissions. The Australian Government tracks the nation's GHG emissions through the National Greenhouse Gas Inventory, <https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-gas-inventory-quarterly-updates>. Table 3 below shows each type of GHG and its Percentage of use in Australia and its status.

There has been a shift towards a decrease in some emissions due to renewable energy uptake and changes in land management.

Table 3: Australia's Greenhouse Gas Emissions Status December 2024

GHG	%	Associated Activity	Status
Carbon dioxide (CO ₂)	64%	Energy, transport, agriculture, and industrial processes.	Decreasing
Methane (CH ₄)	29%	Agriculture (livestock), coal, oil and gas productions and waste.	Decreasing
Nitrous oxide (N ₂ O)	4%	Agricultural activities such as the use of synthetic fertilizers and biomass burning.	Decreasing
Other Gases (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride)	3%	Refrigerants in refrigeration and airconditioning equipment.	Increasing

Risk Management

The Shire has been developing and implementing climate change impacts and risk management strategies in support of National and State initiatives in climate mitigation/adaptation measures. For example, utilising the WALGA Climate Change Action Framework as a guide on climate action and collaborating regionally with the Warren Blackwood Alliance of Councils (WBAC) to seek funding and pool resources to implement climate actions. WBAC has adopted a Climate Change Declaration and Action Plan (Appendix1).

As part of a review of its 2021 Strategic Community Plan, the Shire undertook community consultation on climate change, and the responses have guided Shire planning with pragmatic climate change actions that are now embedded in both the Shire's Strategic Community Plan and its Risk Management Framework.

The Community Blueprints outline the role of local government in creating climate-ready resilient communities. This can be achieved through careful planning of resilient infrastructure and implementing policies that prioritise water, land care and environmental management. The Community Blueprints also outline the importance of coordinated bushfire readiness, with well-managed verges, fuel reduction, community education and strong support for volunteer emergency services in climate-ready resilient communities.

Climate Risk Assessment and Adaptation

A National Climate Risk Assessment has been completed, and a 2025 National Adaptation Plan has been released to replace the National Climate Resilience and Adaption Strategy 2021 – 2025. The plan outlines the process of adaptation planning, starting with an evidence-based risk assessment and then identifying priorities and actions to reduce the hazards with the greatest impact.

<https://www.dcceew.gov.au/sites/default/files/documents/national-adaptation-plan.pdf>

In the management of all risks that may affect the Shire and others, the Shire uses the international standards for risk management (ISO 31000 for Risk Management) and where possible is incorporated within the Shire's Integrated Planning Framework.

Considerations for climate risk assessment may also be guided by the following:

- International Standard ISO 14090 Adaptation to Climate Change, <https://www.iso.org/standard/68507.htm>
- Australia's Climate Compass, a focus on climate risk assessment for policy and programs, <https://www.dcceew.gov.au/sites/default/files/documents/climate-compass-climate-risk-management-framework-commonwealth-agencies.pdf>
- Australia's National Disaster Risk Reduction Framework, <https://www.homeaffairs.gov.au/emergency/files/national-disaster-risk-reduction-framework.pdf>
- Australian Standard AS 5334 Climate change adaptation for settlements and infrastructure, <https://www.standards.org.au/standards-catalogue/standard-details?designation=as-5334-2013>

The purpose of a climate risk assessment is to measure the impacts of a climate event such as loss and damage and then compare them to the cost of not putting adaptation strategies in place. When considering adaptation methods, it is possible that an action chosen may end up causing a larger environmental footprint than the original impact, deeming it a maladaptation. As most adaptations are an investment, due diligence is needed to ensure the adaptation saves money and does not require costly inputs over time.

Coastal Management

The Shire has around 140 kms of mixed tenure coastline, much of it not easily accessible. The Shire manages three key coastal/estuarine nodes which have the following Management Plans:

- Walpole Foreshore Management Plan 1994.
- Broke Inlet, Camfield Management Plan 2009 - 2029.
- Windy Harbour Management Plan 2007 – 2017.

Climate change impacts will affect both the constructed and natural environments in coastal areas. The State Planning Policy 2.6: Coastal Planning recommends local governments consider the estimates of 0.9m in sea level rise by 2110 be used as a guide when determining coastal risk. This is consistent with the latest projections provided in the Intergovernmental Panel on Climate Change (IPCC 2021) Sixth Assessment Report.

The Shire aims to protect coastal environments through responsible management such as safeguarding and enhancing areas of environmental significance and ensuring use and development is sustainable. The Shire considers conflicting uses such as industry, conservation, recreation, and tourism when approving development. Public access to the coast by foot, boat or vehicle for swimming, fishing and other recreation purposes is also an important consideration in coastal management.

Windy Harbour CHRMAP

A Coastal Hazard Risk Management Adaption Plan has been completed for Windy Harbour (WH CHRMAP). The plan has assessed the risk of current and future development in the WH settlement. Adaptations have been recommended to reduce the risk to some areas, with a planned retreat method preferred. Ongoing monitoring of the coastline and coastal infrastructure will help determine if further planning is needed.

Emergency Risk Management

The Local Emergency Management Committee (LEMC) advises and assists Shire in ensuring local emergency management arrangements are established. The committee is made up of Shire, Department of Primary Industries and Regional Development (DPIRD), Department of Communities, Department of Fire and Emergency Services (DFES), Department of Biodiversity and Conservation Attractions (DBCA), Police, SES, Hospital, and ambulance representatives. The Shire advocates to ensure these agencies are adequately resourced and other local groups are involved, engaged, and participate in emergency services and planning. The Shire has a Local Emergency Management Arrangement plan (LEMA) that outlines services and responsibilities in an emergency such as bushfire, storm, and electricity disruption. The Shire has budgeted services that are implemented during emergency events such as flash flooding, storms, and bushfires for community safety. The Shire's Emergency Evacuation Plan outlines the arrangements that are made for vulnerable members of the community. <https://www.manjimup.wa.gov.au/our-services/fire-and-emergency-management/emergency-management-arrangements>

Climate Change Impact Assessment

A Climate Change Impact Assessment is budgeted by Shire for the collection of data and to plan for improved energy use, water use, and community preparedness. This assessment will guide future decisions and directions needed to adapt to a changing climate. Understanding the risk to major facilities and the communities they support is needed to adapt to emergency events that are more prevalent in a changing climate such as bushfire, storm, and flash flooding.

Decreasing Fossil Fuel Use

Reducing the cost of electricity through reducing consumption was the first step in the Shire's carbon reduction journey. Annual monitoring and reporting of electricity use has shown that measures such as using energy efficient designs, appliances and fittings has reduced electricity use, even as new development is added.

The Shire enforces compliance with energy efficiency requirements of the National Construction Code in developments and urban designs, <https://ncc.abcb.gov.au/>. Incorporating both active and passive elements such as energy efficient building design, orientation of building lots for solar efficiency, and reducing electrical consumption by promoting best practice management techniques.

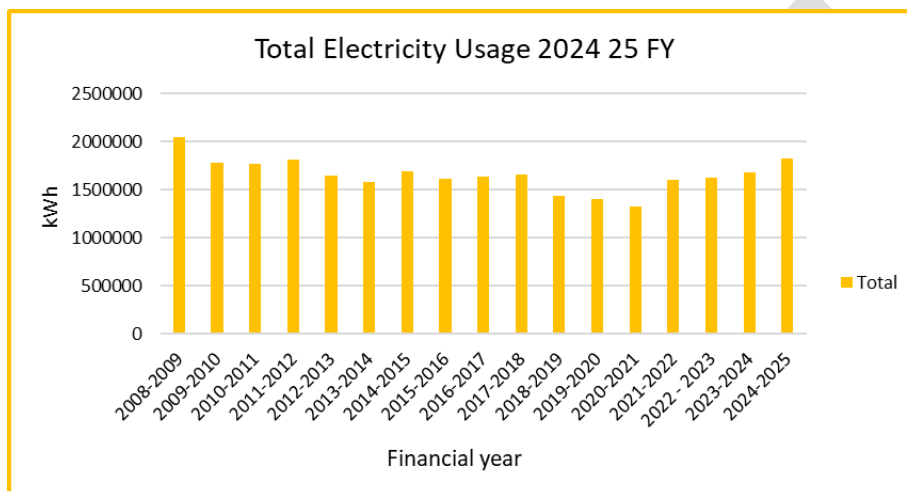
Decreasing Energy Use in Shire Facilities

The following has been achieved in decreasing energy use in Shire managed buildings:

- Ongoing upgrades to buildings include modifications such as air locking, sweep fans, LED lighting and energy efficient replacements in buildings and sports centres.
- Encouraging design features, development practices and behaviours that demonstrate best practice energy efficiency.

From 2008/09 to 2024/25 FY, the Shire's electricity usage decreased by 10%. The electricity usage does not include street lighting which is approximately 10% of the overall usage. Figure 4 below shows the Shire's electricity usage over time.

Figure 4: Shire of Manjimup Electricity Usage



Street Lighting

The Shire has 955 street lighting poles that use a range of different types of globes. Western Power is gradually replacing luminaires with light-emitting diode (LEDs) lighting as the luminaires fail. On average \$168,000 per year is spent by the Shire on street lighting. Transitioning to LEDs in streetlights has benefits such as reducing both energy costs and the hazardous substances present in older streetlight technologies.

Increasing the Use of Renewable Energy

Increasing the use of renewable energy will reduce greenhouse gas emissions. Renewable energy alternatives currently used by the Shire include solar panels, wind turbines, ground source heat pumps and passive solar design. An investment in battery storage is needed in buildings that have solar power to further reduce electricity costs and emissions. The Shire's transition to renewable energy sources can reduce future operating costs and encourage community investment of green products, services, and new industries that utilise biomass.

Increasing the use of Renewable Energy in Shire Facilities

The Shire has achieved the following in transitioning to renewable energy in Shire managed buildings:

- 2013 - Roof Structure Reports (completed by a Structural Engineer) to identify capacity of Shire buildings to hold solar panels.

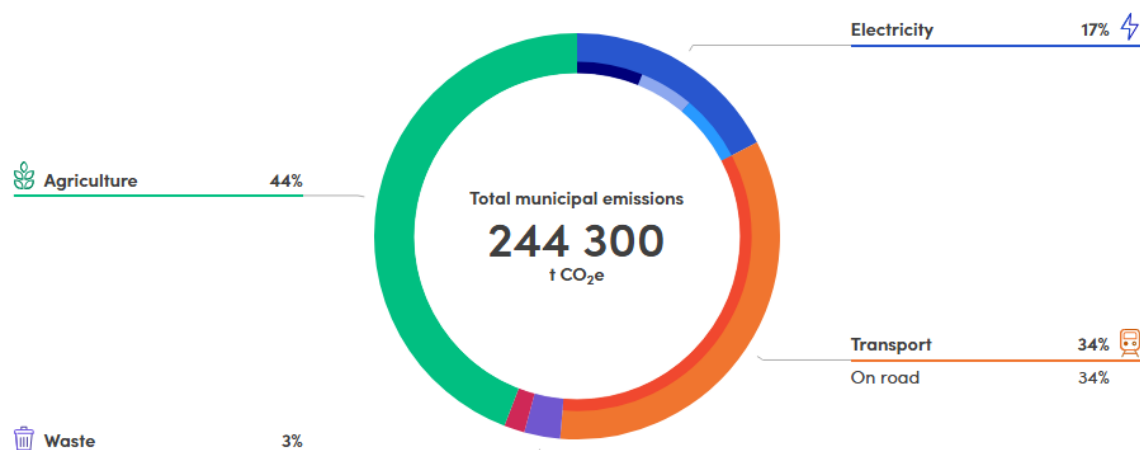
- Windy Harbour Council house/office and campground powered sites use a combination of solar and wind energy.
- Manjimup Regional Aqua Centre (MRAC) upgrades to pool & space heating for greater energy efficiencies through ground source heat pump installation.
- Landscaping in Linear Park fitted with solar powered lighting.
- Buildings fitted with solar power include Manjimup Regional Aqua Centre, Manjimup Wellness Centre, South West Energy Experience Building, Pemberton Sports Club, Northcliffe Family Centre, Walpole Recreation Building, Walpole Community Resource Telecentre, Walpole Town Hall, Shire Administration Building (2023) and Manjimup Depot (2023).
- 2025 Utilising Synergy's NaturalPower products, purchasing 100% renewable electricity. This increases the amount of renewable electricity demanded in the grid, which supports renewable electricity projects.

Decreasing Emissions

Shire and community emissions are reported annually by the government on the snapshot climate website, <https://snapshotclimate.com.au/locality/municipality/australia/western-australia/manjimup/>. Figure 5 below shows that agriculture (including on-farm transport) is our largest emissions emitter by sector.

The States Department of Primary Industries and Regional Development has led the development of Sectoral Emissions Reduction Strategy to reduce emissions and transition the agricultural economy to net zero emissions by 2050. Agricultural industries can be difficult to abate due to emissions coming from livestock. Innovative technologies in cattle seaweed feed and carbon sinking are the most likely pathways for this industry. There is potential to adapt current transport vehicles and infrastructure to renewable fuel sources such as Biodiesel (which can be used in some existing diesel vehicles) and Green Hydrogen (similar infrastructure to gas). These may still produce emissions but will reduce the dependency on fossil fuels. <https://www.wa.gov.au/service/environment/environment-information-services/sectoral-emissions-reduction-strategy>

Figure 5: Shire of Manjimup and community emissions snapshot for the 2023/24 Financial Year



Increasing Pedestrian movement

Pedestrian movement reduces the use of cars and the pollution emitted by cars. The Shire encourages the increase of pedestrian movement by:

- Providing undercover areas (important aspect for our Shire due to the rain).
- Improving pathways, where budgets allow.
- Planning for pedestrian use (Local Bicycle and Footpath Plan 2017 – 2027)
- Ongoing creation and upgrades of pedestrian linkages and trail networks (Deanmill Heritage Trail, Linear Path, Heritage Park).
- Encouraging public transport, town bus, buses to Perth etc, buses from towns to Manjimup.

Electric Vehicles

According to the State Electric Vehicle Strategy, the adoption of electric vehicles powered by renewable energy will be fundamental to reducing greenhouse gas emissions in the transport sector, https://www.wa.gov.au/system/files/2020-11/State_Electric_Vehicle_Strategy_for_Western_Australia_0.pdf. The Shire has invested in two hybrid vehicles. The Shire will need to plan for the use of electric vehicles by identifying charging locations in admin and depot areas with suitable electric feed.

The Shire has been working with agencies to install electric vehicle charging stations in appropriate areas for community use. The first charging station in the Shire was installed by RAC at Karri Valley Resort, now 11 tourist-based businesses have installed electric vehicle chargers. The Shire of Manjimup has installed charging stations in Pemberton, Manjimup (Johnston Crescent), and Pioneer Park (Walpole) with plans for Walpole Community Centre installation underway.

Our Climate Change Adaption Plan

Risk Management		
Action	Detail	Timeframe
Seek funding to implement measures in WH CHRMAP	Long term planning and asset protection	2026 -2028
Undertake a Climate Change Impact Assessment	Collate long term projected climate data and plan for improved energy use, water use, and community preparedness	2026 - 2027
Utilise Climate Change Impact Assessment data to inform Shire Policies and Plans	Specifically, the Local Emergency Management Arrangements plan	2028 - 2031
Utilise WALGA Climate Change Action Framework	Undertake an emissions inventory	2028 - 2029
Utilise WALGA Climate Change Action Framework	Use the Marginal Abatement Cost Curve (MACC) Tool to identify cost effective carbon abatement options	2028 - 2031

Decreasing Fossil Fuel Use		
Action	Detail	Timeframe
Implement further energy improvements in Shire assets	Seek funding to install solar infrastructure or replace streetlight bulbs	Ongoing
Identify Shire buildings that will be next to install solar and battery storage	Build a business case for increased solar and battery storage	2026 - 2028
Identify operations where fossil fuels can be decreased	Build a business case for transition of operations to non-fossil fuel energy	2026 -2028
Support the transition to renewable energy	Make modifications and vehicle fleet changes where possible	Ongoing
Improve pedestrian linkages to encourage use	Identify areas to ecologically beautify within pedestrian linkages with native vegetation	2028 - 2031
Increase capacity of electric vehicle usage	Seek funding to plan and install infrastructure for electric vehicles	2026- 2031

3. Protecting Biodiversity

Within the Shire are extremely rich, diverse, and unique biodiversity assets that are internationally recognised. In 2000 the South West of WA was identified as a biodiversity hotspot by Conservation International. Biodiversity hotspots are defined as regions “where exceptional concentrations of endemic species are undergoing exceptional loss of habitat” (Myers et al., 2000).

The Shire aims to maintain biodiversity assets by reducing the impacts from threatening processes on threatened fauna critical habitats and retaining vegetation where possible. Climate change can lead to changes in vegetation patterns due to reduced rainfall and more frequent and hotter wildfire. Small patches of remnant vegetation are more likely to become degraded over time due to higher exposure to threatening processes. Threatening processes include the loss, change and fragmentation of habitat; the effects of invasive plants, animals and diseases; and direct effects of human activities, <https://www.dcceew.gov.au/sites/default/files/documents/overview.pdf>.

Biodiversity assets support our economy in many ways including through tourism, agricultural pollination and honey production. Biodiversity assets also have health, amenity, recreation, scientific and educational values. The Shire has local planning policies to ensure biodiversity asset protection is considered and is integrated in land use planning. The Shire has been protecting biodiversity assets by applying the following actions:

1. Identifying reserves to prioritise for protection.
2. Preserving remnant vegetation of excellent condition.
3. Regeneration of disturbed areas.
4. Retention of significant trees and other vegetation.
5. Revegetating cleared areas.

Responsible Land Management

Of the 1,500ha the Shire manages, 1,462ha (164 reserves) are bushland reserves. The Shire relies on external funding to adequately manage the large areas; this also involves partnering with community groups such as Warren Catchments Council (WCC) to undertake protection works. The Shire has demonstrated responsible management of bushland reserves by partnering with the community to leverage funding for management in the following areas since 2008:

- 2008 – 2009 Biodiversity Assessments completed (19 bushland reserves 588ha).
- 2010 DEC: Streamlining in Mottram Street Reserve.
- 2012 – 2015 State NRM Program Mottram Street Reserve: returning significant stream and forest reserve towards their natural state.
- 2014 – 2016 South West Catchments Council: Broke Inlet Foreshore Revegetation Project.
- 2014 – 2017 Offset revegetation maintenance and assessments.
- 2016 – 2017 Green Army Program: restoration activities in Mottram Street Reserve, Broke Inlet and Windy Harbour.
- 2016 – 2017 WCC: Environs Project
- 2016 Coastwest: Windy Harbour New Access Point Project.
- 2018 South West Catchments Council: Victorian Tea Tree Eradication Project.

- 2018 Walpole Foreshore Boardwalk and Landscape Concept Plan
- 2019 WCC: Improving the Biodiversity of the Warren Region.
- 2019 State NRM Program: Protecting Threatened Flora in the Shire of Manjimup.
- 2019 Small Environments Program
- 2019 – 2021 Department of Agriculture and Water: Sustainable Strategic Pest Management for the Shire of Manjimup Community Project.
- 2019 – 2023 WCC: Citizen Science Monitoring - Windy Harbour Foreshore.
- 2020 - 2023 Windy Harbour Weed Management – Windy Harbour Reserve funded.
- 2021 Northcliffe Forest Park Management Plan.
- 2021 Heritage Park weed control plan.
- 2022 WAPC: Windy Harbour Coastal Hazard Risk Management and Adaption Plan (WH CHRMAP) -
- 2022 WCC: Kin Kin Blackberry Project.
- Ongoing – Installation of road signs to advise of fauna in area.
- 2024 WALGA Biodiversity Assessment Project (5 bushland reserves 159ha).
- 2024 WALGA Roadside Biodiversity Values Project
- 2024 – 2026 State NRM Program: Empowering the Community to Manage Threatened Species Habitats.
- 2024 Priority Vegetation Complex's Reference Report.

Ecological Fuel Hazard Reduction

The Shire is responsibly managing fuel hazards in its reserves to minimize the risk of serious fire threat to ecosystems, human life, and property. The 2020 – 2025 Fuel Hazard Reduction Plan outlines the areas that will have mitigation activities applied. The Shire seeks to use environmentally sustainable measures to reduce bushfire risk, whilst maintaining vegetation health and ensuring biodiversity assets are protected. Most Australian vegetation structures are fire responsive and need fire to recycle nutrients and regenerate. Best practice mitigation treatments used include:

- Mosaic burning, burning in strategic patches to reduce disturbance area.
- Mechanical works such as slashing (preferred around townsites to reduce smoke pollution and health impacts).
- Raking around large trees and keeping fire below 10m to avoid the burning of tree canopies.
- Constructing / creating strategic firebreaks.
- Burning between 5 to 10 years at times appropriate for the location.
- Undertaking weed control in mitigation areas to reduce regrowth by disturbance stimulated weeds.

Sensitive reserves such as the Northcliffe Forest Park or Windy Harbour Reserve present complex challenges in planning for fuel hazard reduction. The reserves have high biodiversity values that could be negatively impacted by prescribed burning, on the other hand, they could sustain more severe environmental impacts caused by a large wildfire if no burning is undertaken. Fuel hazard reduction is a priority in reserves located near settlements and townsites.

Promoting the Use of Local Native Plants

The use of local native plants in gardens and landscaping can provide much needed habitats for animals. The intrinsic values of biodiversity, including our sense of place, are of high ecological and cultural significance. Although the use of exotic species may add colour and structure, they provide a sterile platform that does not support biodiversity. The Shire has been promoting the use of local native plants by:

- Using native species in offset plantings and landscaping.
- Waterwise initiatives.
- Providing a local native plant lists for landscaping in Bushfire prone areas.

Threatened Flora, Fauna and TEC's

The *Biodiversity Conservation Act 2016* (BC Act) allows for the listing of native animals (fauna), native plants (flora) and Threatened Ecological Communities (TEC) as threatened because they are under risk of extinction or collapse (<https://bio.wa.gov.au/guide/conservation-status-definitions>). There are 122 threatened species and TEC's known to occur within the boundary of the Shire, this strategy only addresses the species known to occur on Shire managed land. Advice from DBCA should be sought early on to ensure projects in reserves are well planned.

Critical Habitats for Threatened Fauna Species

Threatened species habitats can include townsites and urban areas. For example, the Western Ringtail possum is attracted to gardens because they provide additional resources like water and food, especially in dry times.

Recovery plans outline critical habitats and actions to ensure threatened fauna species can survive extinction and 'recover' to a healthy level. The critical habitats that are needed by threatened species are listed in table 4 below.

Table 4: Shire of Manjimup threatened species and critical habitats in order of listing.

Threatened Species	Critical Habitats as per Recovery Plan
Western Ringtail Possum (WRP) (<i>Pseudocheirus occidentalis</i>) – Critically Endangered	Natural areas known to occupy WRP or previously occupy WRP, also linkages between these sites
Woylie (<i>Bettongia pencillata ogilbyi</i>) – Critically Endangered	Natural areas known to occupy Woylie or previously occupy Woylie, also linkages between these sites
Australasian Bittern (<i>Botaurus poiciloptilus</i>) - Endangered	Known breeding and foraging areas. Extensive areas of water plants, especially rushes, reeds, and sedges (minimum 3ha)
Baudins Cockatoo (<i>Zanda baudinii</i>) - Endangered	Known breeding, drinking, and roosting in natural areas
Numbat (<i>Myrmecobius fasciatus</i>) - Endangered	Natural areas known to occupy Numbats or previously occupy Numbats, also linkages between these sites. Need termites and Eucalyptus vegetation

Carnaby's Cockatoo (<i>Zanda latirostris</i>) - Endangered	Known breeding, drinking, and roosting in natural areas
Black-stripe Minnow (<i>Galaxiella nigrostriata</i>) - Endangered	Fresh water lakes, streams, and rivers (non-saline) known to occupy the Black-stripe Minnow
Walpole Burrowing Crayfish (<i>Engaewa walpolea</i>) - Endangered	Walpole natural areas where soil is moist and a shallow, very accessible water table exists
Chuditch (<i>Dasyurus geoffroii</i>) - Vulnerable	Natural areas known to occupy Chuditch or previously occupy Chuditch, also linkages between these sites
Quokka (<i>Setonix brachyurus</i>) - Vulnerable	Natural areas known to be occupied by Quokka or previously occupied by Quokka, also linkages between these sites
Forest Red-tailed Black Cockatoo (<i>Calyptorhynchus banksii naso</i>) - Vulnerable	Known breeding, drinking, and roosting in natural areas
Western Mud Minnow (<i>Galaxiella munda</i>) - Vulnerable	Fresh water lakes, streams, and rivers (non-saline) known to occupy the Western Mud Minnow
Carters Freshwater Mussel (<i>Westralunio carteri</i>) - Vulnerable	Fresh water lakes, streams, and rivers (non-saline) known to occupy the Carters Freshwater Mussel
Muir's Corella (<i>Cacatua pastinator pastinator</i>) - Conservation Dependant	Natural areas known to occupy Muir's Corella or previously occupy Muir's Corella also linkages between these sites. Needs to breed isolated from other corellas to retain pure genetics

In Shire reserves are critical habitats for migratory birds. To ensure their conservation the Australian Government has fostered international cooperation through a range of important agreements, including bilateral migratory bird agreements with Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA), the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), the Ramsar Convention on Wetlands, the Agreement on the Conservation of Albatrosses and Petrels (ACAP), and through the East Asian - Australasian Flyway Partnership (Department of Climate Change, Energy, the Environment and Water 2024).

Specially Protected and Priority Species

Species listed as a Specially Protected or Priority Species are not at risk of extinction or collapse, though may decline due to threatening processes. Quenda for example is a Priority 4; it is also considered a keystone species meaning they have ecological importance and can be an indicator of environmental health.

Specially Protected and Priority Species that occur on Shire managed land include; Tammar Wallaby (P4), Western Brush Wallaby (P4), Rakali (P4), Hooded Plover (P4), Australian Little Bittern (P4), Masked Owl (P3), Black Bittern (P2), South-Western Brush-Tailed Phascogale (CD), Peregrine Falcon (OS), Crested Tern (MI), Osprey (MI), Caspian Tern (MI).

Threatened Ecological Community

An ecological community is a naturally occurring assemblage of plants, animals or other organisms that occur in a particular habitat and have special biodiversity conservation value. A threatened ecological community (TEC) is an ecological community that is at risk of being destroyed. There are currently no threatened ecological communities in the Shire (only priority TEC's).

Priority Biodiversity Reserves

Each bushland reserve in the Shire contains feeding habitat trees for all three nationally significant and threatened black cockatoos. There are no known Black Cockatoo breeding areas in Shire reserves, though there are recorded roosting areas. Given the Shire does not currently have the resources to actively manage every bushland reserve, identifying Priority Biodiversity Reserves will allow attention to the reserves with the highest conservation values. The Shire collects biodiversity data and undertakes annual assessments of the Priority Biodiversity Reserves to evaluate pest, weed, disease and land management issues.

Priority Reserves Criteria

The following criteria will determine the Priority Biodiversity Reserves:

- Contains over 15ha of vegetation (preferably at least 100m wide).
- Contains vegetation in Very Good to Pristine condition (Keighery 1994).
- Contains threatened species critical habitat, i.e., Breeding areas or Threatened Flora that has been reported to DBCA.
- May also contain other high conservation values such as wetlands and riparian vegetation, priority vegetation complexes, provides ecological linkages, and contains Aboriginal Heritage.

The Shire has undertaken 24 biodiversity assessments on Shire managed reserves (747ha) to determine 14 reserves with high conservation values to prioritise for protection. It has also assessed road reserves and have prioritised road reserves with high conservation value. Table 5 below shows the Shire's Priority Biodiversity Reserves and their conservation values.

Table 5. Shire of Manjimup Priority Biodiversity Reserves. Listed in order of reserve size.

Priority Biodiversity Reserves			
Reserve	Ha	Conservation Values	Documents
Northcliffe Forest Park - R23740	244	• Threatened flora. • Threatened fauna: Western Ringtail Possum, Quokka, Western Mud Minnow, Black-stripe Minnow, Carters Freshwater Mussel	• 2008 Biodiversity Assessment • 2021 Northcliffe Forest Park Management Plan
Windy Harbour Reserve R38881	189	• A Class Reserve. • Threatened fauna: Western Ringtail Possum, and Quokka • Threatened flora	• 2008 Biodiversity Assessment

			• 2007 – 2017 Windy Harbour Management Plan • 2025 WH CHRMAP
Cup Road Reserve R10559	44	• Threatened fauna: Western Mud Minnow, and Numbat • Significant Aboriginal Cultural Heritage site	• 2024 Biodiversity Assessment
Broke Inlet, Camfield – R19787	40	• Threatened flora	• 2008 Biodiversity Assessment • 2009 – 2029 Broke Inlet, Camfield Management Plan
R10391 Mordalup Lot 12884	37	• Threatened fauna: Western Ringtail Possum • Environmental Sensitive Area • Significant Aboriginal Cultural Heritage site	•
Karinda Road Reserve - R29688	35	• Threatened fauna: Western Ringtail Possum • Threatened flora	• 2024 Biodiversity Assessment
Rea Park/Collier Street R19552	34	• Threatened fauna: Western Ringtail Possum	• 2008 Biodiversity Assessment
Walpole Foreshore complex (includes R36421, R34162, R29345, R27029, and R39210)	25	• TEC • Threatened fauna: Quokka, and Western Ringtail Possum • Environmental Sensitive Area • Significant Aboriginal Cultural Heritage site	• 2021 flora and basic fauna survey • 2016 Walpole Foreshore Reserve landscape and Boardwalk Concept Plan • 2008 Biodiversity Assessment • 1994 Walpole Foreshore Management Plan
Deanmill Heritage Trail R34161	23	• Linkage vegetation for Western Ringtail Possum	• 2024 Biodiversity Assessment
Corbalup Road Reserve R7738 (near Seaton Ross Road)	22	• Threatened fauna: Numbat. • Wetland (<3ha)	• 2024 Biodiversity Assessment
South Quinninup Reserve 13499	21	• Threatened fauna: Quokka	• 2008 Biodiversity Assessment
R11081 (Lot 503, Between Deeside and	19	• Boonwiup Pool (Aboriginal Heritage Registered site)	• 2008 Biodiversity Assessment

Perup Rd, Muir Hwy).			• 2008 Aboriginal Heritage Assessment
Mottram Street Reserve 24937, 21374	16	• Threatened fauna: Western Ringtail Possum, and Black Cockatoo Roost • Significant Aboriginal Cultural Heritage site	• 2019 Mottram Street Reserve Management Plan (Draft). • 2008 Biodiversity Assessment
Black Georges Rd Reserve – R9616, lot 13324	16	• TEC • Linkage vegetation to Western Ringtail Possum, Numbat, Woylie and Chuditch habitat	• 2008 Biodiversity Assessment
Road Reserves	n/a	• High conservation value roads (over 30)	• 2005 Roadside Vegetation and Conservation values • DBCA Threatened Flora Management Plans on Road Reserves (4)

Management Plans

The management and rehabilitation recommendations in management plans are reviewed and implemented as time and budget allows. Management plans are an effective mechanism to protect the biodiversity in reserves with high conservation values. Road reserves with threatened flora or TEC's are also under Management Plans guided by DBCA protocols. The Shire has been developing and actioning priority biodiversity reserve management plans as listed in table 5 above. They contain recommendations to manage habitats of threatened species known in the reserve.

Re-evaluating Land Zoning

Shire reserves that are high in biodiversity assets should be zoned as environmental conservation reserves to ensure adequate management. In some cases, to adequately protect the conservation values, the land should be vested with the Conservation Commission. Table 6 below shows proposed changes to zoning.

Table 6: Proposed Reserves for Re-evaluation of Zoning

Proposed Reserves for Re-evaluation	
Reserve	Existing Zone
Northcliffe Forest Park - R23740	Parks and Recreation
Mottram Street Reserve - R24937, R21374	Parks and Recreation
Karinda Road Reserve - R29688	Parks and Recreation
South Quinninup Reserve - R13499	Gravel & Parkland Rehabilitation

Our Local Biodiversity Plan

Responsible Land Management		
Action	Detail	Timeframe
Review planning policies	Ensure policies are up to date with current legislation and regulations	Ongoing
Ecological Land Management	Create resources that allow for better planning in reserves to protect ESA's (threatened species and TEC's)	2026 -2027
Promote the use of local native plants	Seek opportunities to encourage all areas including new developments to use local native flora	Ongoing
Recommend local native plants to be used in Shire policies and plans	Specifically in a future Urban Forest Strategy	Ongoing
Priority Biodiversity Reserves		
Action	Detail	Timeframe
Continue collating conservation values for reserves	Encourage citizen science activities to monitor threatened species	Ongoing
Undertake biannual assessments of Priority Biodiversity Reserves	Assessments on threats and species for management	Ongoing
Renew Road Reserve assessments	2005 Roadside Vegetation and Conservation values updated	2026 - 2027
Draft Management plans for Priority Biodiversity Reserves	For example, Mottram Street Reserve	Ongoing
Promote the priority Biodiversity reserves	Through media highlight the conservation values of the reserves	Ongoing
Review and update 2008 - 2009 Biodiversity assessments	Include new species data	2026 - 2031

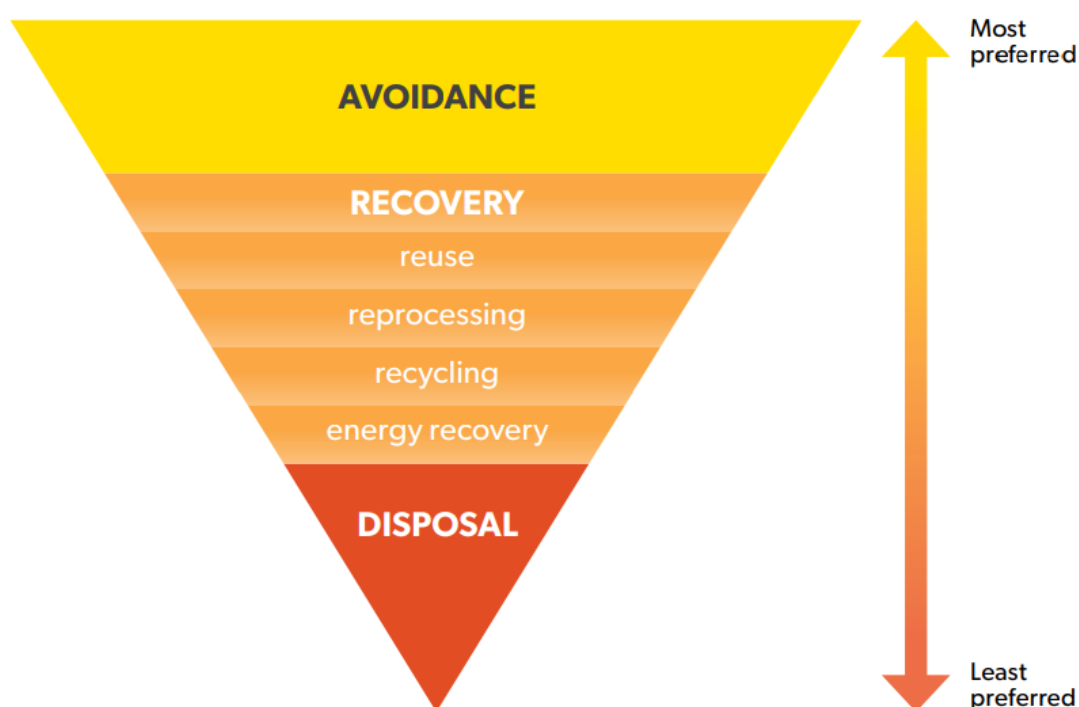
4. Reducing Waste

If waste is not reduced, reused, or recycled in some way, it ends up in landfill and has the potential to emit methane gas into the atmosphere and contaminate the groundwater. As plastics breakdown they release heavy metals and other toxins that are harmful for human health. Reducing waste also reduces the cost of processing waste and administering landfill facilities.

The WA Government *Waste Avoidance and Resource Recovery Strategy 2030* (WARR Strategy 2030) aims to transform the State into a “circular economy” by avoiding waste through better design, increasing material recovery, and encouraging practices that protect the environment.

The WARR Strategy 2030 puts forward a “waste hierarchy” (figure 6 below) which ranks waste management options in order of general environmental desirability, where waste avoidance is the most preferred option and disposal (to landfill) the least. It is used alongside other tools (including economic, social and environmental) to inform decision making. The waste hierarchy is consistent with the goals of the circular economy model.

Figure 6 – Waste Hierarchy (source Waste Authority WA)



Waste Avoidance

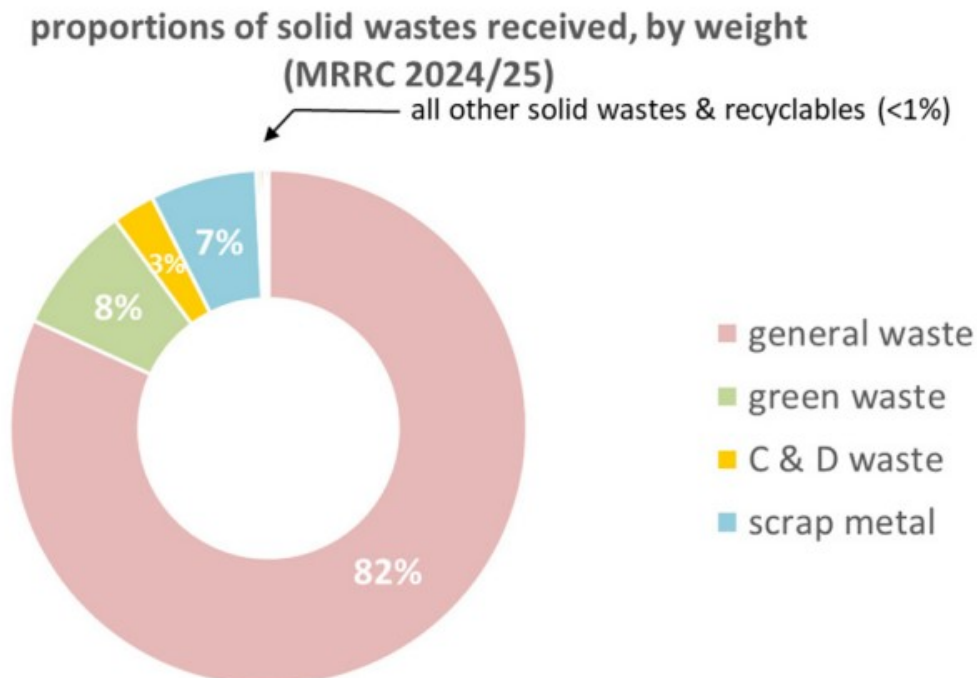
When considering how waste can be reduced, the most effective way is to follow the waste hierarchy and first develop strong waste avoidance strategies to bring about broad behavioural change. The next step by preference is to apply the suite of actions which recover resources from waste: these are reuse, reprocess, recycle and recover energy (in that order)."

Waste reduction will provide ongoing benefits including long-term cost savings and more efficient use of the time required to manage waste.

The Shire of Manjimup endeavours to educate its social and commercial communities through various short-term and ongoing campaigns which inform waste generators about better practice, for example the safe disposal of batteries, and the benefits of the Containers for Change refund scheme. At the same time, the State government continues to implement its own, complementary, initiatives aimed at avoiding waste or reducing waste to landfill, for instance the single-use plastics bans and the ban on disposing e-waste to landfill. The Shire's waste management operates within these State parameters as it continues to seek ways to increase resource recovery, which in turn will lessen our environmental impacts

The Shire operates a licensed landfill and controlled liquid waste facility at the Manjimup Recycling and Refuse Centre (MRRC) and three registered transfer stations (Northcliffe, Pemberton, and Walpole). They are managed by separate independent contractors. A small, registered refuse pit at Windy Harbour is operated and managed by the settlement Caretaker. The total volume of waste received at the MRRC in the 2024/25 FY was 37,065 m³, the proportions (by weight) of waste received is illustrated in figure 7 below.

Figure 7: Proportions of solid wastes received MRRC 2024/25 (source SoM annual report 2024/25)



Low Waste Events

The Shire has utilised the Western Australia Local Government Association (WALGA) guideline *Better Practice Waste Management for Public Events 2025* to inform its own *Shire of Manjimup Low Waste Events* protocol. This document provides guidance to event organisers in following the waste hierarchy (where *avoid* and *reuse* are most applicable to events), in source-separation of their event waste streams (to maximise *resource recovery* and minimise contamination), and in implementing systems that are easy to apply and therefore likely to succeed at community events.

Event organisers applying for Shire approval of their events are required to provide basic details of their event waste management plans.

A 'hydration station' drinking water point, available from the Shire, provides a means of refilling water bottles, in turn reducing the demand for single-use disposable plastic water bottles at events. Containers for Change bins are provided by the Shire for event organisers to collect eligible containers, both as a way to minimise waste through improved source separation and recovery of resources, and as a means of fundraising for their community group or cause.

Recover Value and Resources from Waste

Many waste products can be viewed as resources. The Shire encourages the reuse of waste products where possible and actively seeks opportunities for reuse. Resources which have been reused by the Shire include timber materials (wooden outdoor furniture in Brockman Street), sleepers used for streetscaping along the Linear Park, construction and demolition waste crushed and used for hardstand and track base within the MRRC, and garden green waste mulched and sold to the public by the MRRC contractor. Community-led initiatives include drop-off points for reading glasses to be redistributed, and various swap, share and garage sale efforts. Community led initiatives include drop off point and swap and share programs.

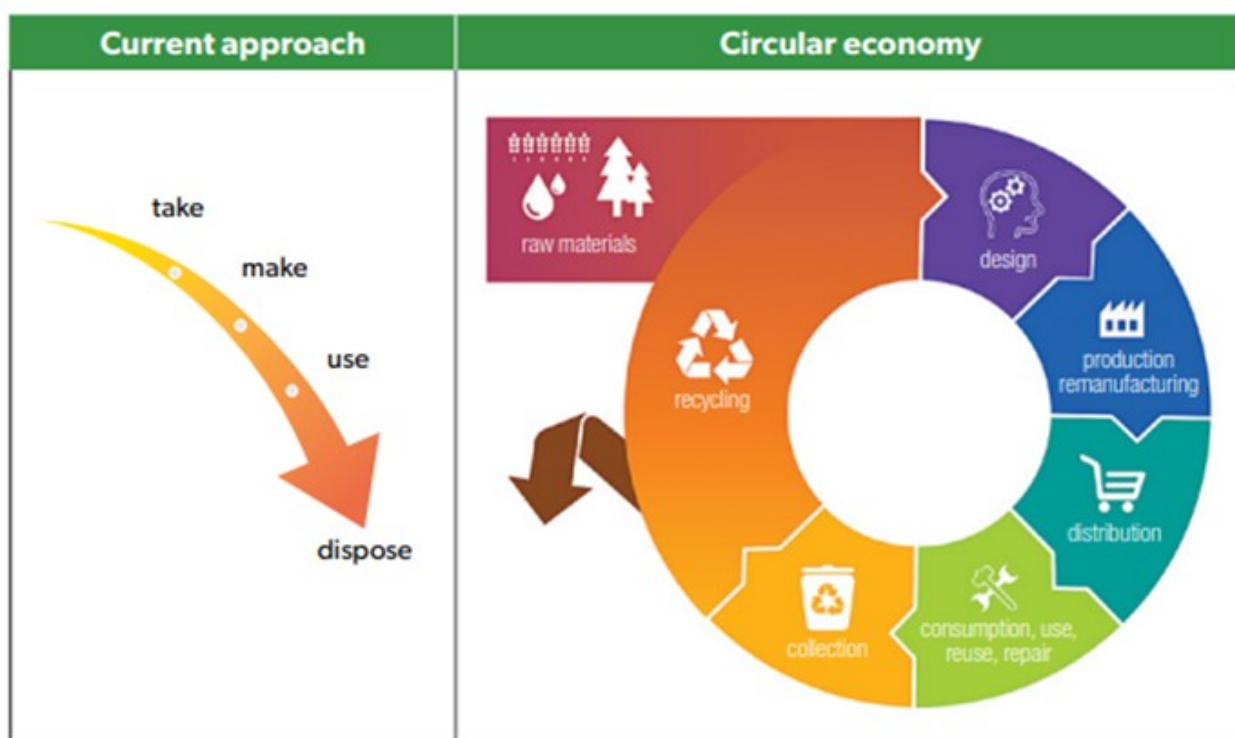
Transition to a Circular Economy

Across Australia, the waste sector contributes more than \$10 billion a year to the economy. At the same time, materials worth hundreds of millions of dollars are lost to landfill each year (ABS, 2014). The current economic model of take, make, use, and dispose of in landfill system is considered linear.

The environmentally sustainable approach of a circular economic model aims to keep resources in use and valuable for as long as possible. It uses technology, innovation, and design initiatives to keep waste out of landfill or reduce pollution. The circular economic model can also create local jobs and sustainable industries. Collaboration is key to the transition to a circular economy. No single organisation, area, region, or country can transition alone.

Figure 8 below shows an example of transitioning from a linear economy to a circular economy model.

Figure 8: Transitioning to a circular economy (source WA Government Waste Avoidance and Resource Recovery Strategy 2030)



Investigating Resource Recovery Options

The Shire wrote a letter of support for the private enterprise, Verge Enviro Ltd.'s application under the Native Forest Transition: Community Small Grants Fund to investigate local resource recovery options. The Diamond Resource Recovery Facility Feasibility Report 2025 was produced from the funding which provides insight into the opportunities and challenges, markets and economics of local resource recovery options.

Recovering Value from Food Organics and Garden Organics

Recovering value from organic wastes can make useful material available for agricultural, domestic gardening and energy industry applications.

However, systematic collection of organic waste from towns or other population bases requires a convenient receptacle system, a reliable transport system, a licensed facility with the required infrastructure, and significant efforts to remove contamination prior to processing (composting etc). Providing each of these may generate significant time and financial costs. Finally, without reliable and financially viable markets, the risk of oversupply of the organic feedstock and subsequent stalling of the entire process is very high and the consequences very complex.

Because transport, handling and de-contamination costs are reduced, and end-of-process market constraints virtually eliminated, the lowest-cost and most efficient way to recover value from food and garden organic waste may be in domestic or community level small-scale processing, mulching, and composting enterprises.

The most economic and efficient way to handle organics is in local small-scale composting, mulching, and processing enterprises. Large towns and cities need to facilitate the transport and decontamination of organics prior to processing which can be timely and expensive.

The Shire encourages recovery of value from food and garden organic waste by various means including providing worm farms and compost bins at cost price and making green waste disposal free-of charge at waste facilities.

Sustainable Purchasing

Purchasing decisions can impact positively or negatively on the environment, society, and the economy. The Shire supports local sustainable industries by purchasing local sustainable products to help generate a circular economy. Initially, to minimise resource consumption, consideration is made as to if the purchase is needed, or if there are internal resources that could be used instead. The commitment to sustainable procurement is detailed in 2.3.5 Purchasing Policy for the Shire.

For example, our purchasing preferences are:

- The raw materials for the product is harvested sustainably or is made from a recycled product.
- It is made using sustainable methods.
- Product can be reused or recycled.
- Is energy efficient and/or water efficient.
- Has low ecological impacts and economic costs over a long lifespan.
- Is reliable, durable, and where possible easily upgraded or updated.
- Purchase locally made and supplied products.

Purchasing Recycled and Recyclable Products

Materials and products can be considered a part of the circular economy if they are made from previously recycled materials, or are themselves recyclable, or both.

The Shire of Manjimup is making ongoing efforts to increase its use of recycled and recyclable materials and products. An example of the Shire's procurement of a product made from recycled materials is its use of photocopy paper which is certified by the Forest Stewardship Council as having been made from a mix of materials including recovered used paper. The Shire also takes care to collect its used printer cartridges and e-waste which are both recyclable products. This service is also provided for all residents and businesses in the Shire via drop-off points at waste facilities."

Recovering Recyclable Resources

While low in the order of waste hierarchy preferences, recovering value by recycling resources is still a critical measure, largely because of the volume of waste material which is readily available if a convenient system to collect it is put in place.

The Shire of Manjimup provides a yellow-lid kerbside bin to each household and opt-in commercial premises within the Prescribed Waste Collection Areas in which to collect their 'commingled household recyclables'. Bulk commingled household recyclables drop-off bins are provided for the same purpose at waste facilities for rural residents and businesses. The Shire's waste collection contractor collects the

commingled recycling and transports it to Perth where it is sorted in a Materials Recovery Facility (MRF) to remove contamination and produce market-ready single material bales of up to 99.95% purity. On arrival at the MRF, contamination accounts for around 25% of the volume of collected material. The key useful material streams are HDPE and PET plastics, aluminium, steel and tin, paper and cardboard. Glass is removed from the collection early in the process so as to minimise glass shard contamination of the softer materials. An ongoing aim of the Shire is to reduce the overall contamination level of our collected commingled recycling to significantly less than 25%.

Shire of Manjimup waste facilities also accept other bulkier materials for dispatch to recycle processing in one form or another. Around 20 different material types are accepted, of which about a dozen are accepted free-of-charge, including most e-waste, batteries, fluorescent light tubes, scrap metal, garden green waste, empty agvet drums and used motor oil. Suitable furniture and garden items may be accepted free of charge and resold (made available for reuse) via the Tip Shops on site. Tipping fees are charged to cover the higher processing costs of refrigerators, mattresses and used tyres.

The 'Containers for Change' container deposit scheme operates a refund point in Manjimup and mobile collection services in Pemberton and Northcliffe. The Shire has fixed a number of 'Container Exchange Points' (CEPs: large baskets and small cradles) to various prime position street and public bins in each of the four towns. CEPs provide an effective and convenient means for the public to donate their unwanted eligible beverage bottles and cans to any person or entity willing to make the small effort to return them to a Containers for Change refund point.

Community Recycling

Although this is less structured there is a large range of recycling happening in the community that is outside of the Shire's operations. The community are partnering with organisations like Planet Ark and Terracycle to recycle plastics, coffee machine pods, stationery items and much more.

Protect the Environment by Managing Waste Responsibly

Litter and illegal dumping can significantly damage our environment. Therefore, it is important that waste and especially hazardous waste enters the correct system so that it can be properly managed in appropriate facilities. Preventative measures are needed to ensure waste is not littered or dumped in the environment. The Shire reduces waste entering the environment by providing and maintaining 175 public rubbish bins. The Shire enforces compliance of littering and illegal dumping under the *Litter Act 1979*.

Management of landfill at MRRC is governed by conditions in the premises licence, under the Environmental Protection Act 1986, which serve to protect the environment from the impacts of the site operations and the waste being managed there. Old, discontinued practices, or poorly executed operations, can leave costly legacies for the environment and for the Shire.

Landfill operations are today restricted to only the licensed landfill area within the MRRC premises, and smaller, old and disused refuse pits and dumping grounds will gradually be permanently sealed and rehabilitated.

Keep Australia Beautiful

The Walpole Tidy Towns (WTT) community group has nominated and won a number of awards under the Keep Australia Beautiful Council WA Tidy Towns Sustainable Communities Awards program over several years, the most recent being their award for Environmental Education (with the Walpole Primary School) in 2023.

The Shire provides financial support annually to the WTT, helping to offset their costs. The Shire also provides litter bags and collection tools in support of several community individuals and groups in their regular or one-off litter retrieving efforts along some rural road reserves. Many of these efforts are registered with the KAB 'Adopt a Spot' program.

Our Waste Reduction Plan

Reduce Waste		
Action	Detail	Timeframe
Review the Shire of Manjimup Low Waste Events guide	Ensure the guide contains up-to-date and better practice information useful to event organisers in pursuing the aim of reducing waste	2026 - 2028
Recover Value and Resources from Waste		
Action	Detail	Timeframe
Transition to a Circular Economy	Develop understanding of the scope of the Circular Economy and of the real opportunities it may provide. Work with senior management and Council to develop a SoM Circular Economy Strategy.	Ongoing
Further avoid waste generation by pursuing, promoting and encouraging the objectives of the WARR Strategy 2030.	Ensure the Shire's own waste objectives align with those of the WARR Strategy 2030. As opportunity arises, educate various sectors of the community about how they can act to help fulfil the Strategy's objectives.	Ongoing
Protect the Environment by Managing Waste Responsibly		
Action	Detail	Timeframe
A preferred Waste Management option implemented at Windy Harbour to replace refuse pit.	Improvements implemented	2027 - 2028
Windy Harbour refuse pit area rehabilitated	Environmental damage minimised	2028 - 2031

Continue to adhere to all conditions of the MRRC premises licence in order to protect the environment from landfilling operations.	Ensure conditions are understood by all stakeholders; ensure adequate funds are available to operate to the required standards of environmental protection	ongoing
Continue to refine and manage the distribution, regular servicing, and maintenance of street and public litter bins and Container Exchange Points.	Annually review the location of street and public bins in each town to ensure the community and visitors has an effective network of options for acceptable disposal of their litter.	ongoing

5. Pest, Weed and Disease Management

The Shire aims to improve pest, weed and disease management on Shire managed land and advocate for better coordination on other lands. As pests, weeds and disease do not adhere to property boundaries, the Shire works in partnership with the community. The purpose of having a robust and effective strategy for pest, weed and disease management in the Shire's reserves is to reduce the:

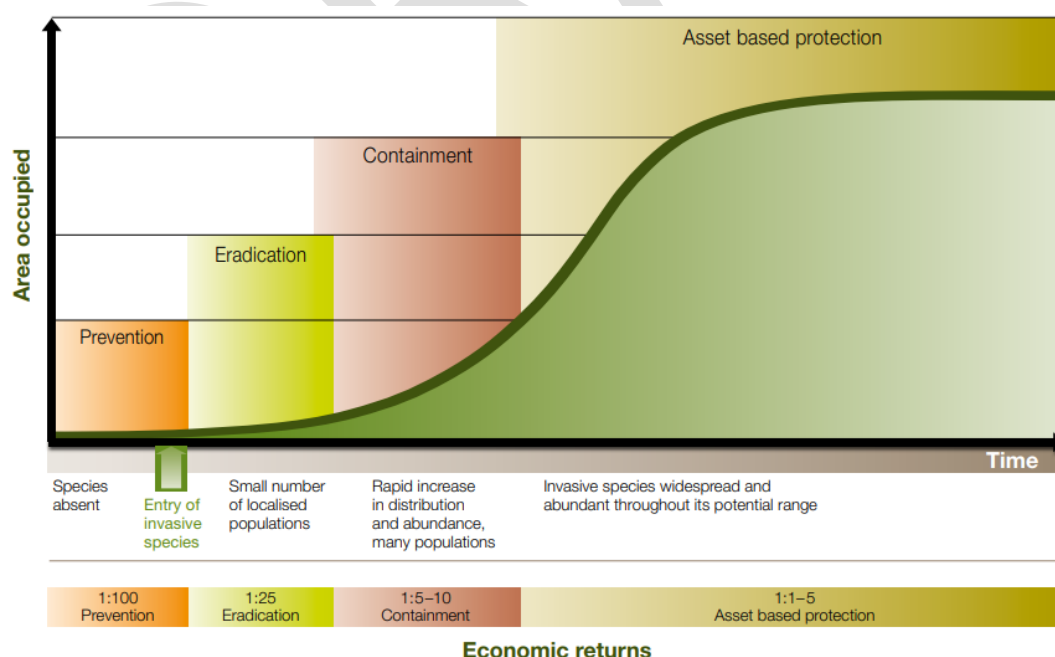
- high-cost legacy of control,
- burden on future generations,
- environmental impacts, and
- social impacts associated with control.

Taking Appropriate Action

The Shire considers what action is appropriate when considering controlling pests, weeds, and disease prior to allocating resources for the activity. The scale of the control activity depends on the possibility of success and the urgency of the action. Figure 9 below shows the most cost-effective time to tackle invasive species is when pests are first introduced and are not yet widespread. Weed mapping in the Shire has shown that new invasive species are recorded by officers each year adding to the control cost burden.

A changing climate is likely to benefit invasive species and increase the prevalence of new incursions. It is impossible to control all over the pests, weeds and disease all the time. Prioritizing species that are manageable and have a high likelihood of eradication success will bring value for money. Funding is pursued to control invasive weeds in priority biodiversity reserves.

Figure 9: Invasion curve from entry to widespread and the cost saving ratios of control activities.



Source: *Invasive Plants and Animals Policy Framework 2010*, Department of Primary Industries, Victoria

Declared Pests

The management of declared pests is known as biosecurity and aims to prevent and eliminate species where possible. The *Biosecurity and Agriculture Management Act 2007* (BAM Act), the regulatory framework for WA's declared pests is currently in review.

The DPIRD is the lead agency with responsibility for declared pests and gives each species with a control category to inform land managers on control priorities. They also undertake surveillance to identify new incursions and manage eradication and containment programs.

Declared pests often harbour harmful diseases that can cause impacts on agricultural industries and significant flow on effects to the local economy and community. The Shire aims to mitigate impacts of declared pests by controlling them on Shire managed land as required and as budget allows. Other initiatives include:

- Collaborating with stakeholders to promote cross boundary control.
- Sharing DPIRD biosecurity alerts on website.
- Supporting community led control.
- Recommending DPIRD's MyPestGuide app or website reporter form for identifying possible biosecurity threats (<https://www.dpird.wa.gov.au/online-tools/mypestguide/>).

Polyphagous Shot-Hole Borer

The Polyphagous Shot-Hole Borer (*Euwallacea fornicatus*) is a declared species (Declared Pest, Prohibited - s12 (C1 Prohibited)). It is an invasive beetle species that infests a wide range of trees, causing damage by boring into the wood and spreading pathogenic fungi. A Quarantine Area in Perth is in place with rules applied to the movement of wood or plant materials. The pest is likely to spread over time and could impact the Shire environmentally and economically, planning is needed to prepare for worst case scenario.

Myrtle Rust

Myrtle Rust (*Austropuccinia psidii*) is a declared species (Declared Pest, Prohibited - s12 (C1 Prohibited)). It is a serious disease that infects and kills many plants belonging to the Myrtaceae family including eucalypts, bottlebrushes, paperbarks and peppermint trees. If this pest was to get established in Western Australia, it would be disastrous for the ecosystem.

Integrated Weed Management

Integrated weed management (IWM) is a term used that describes several tactics that if all used together can give the most effective control of invasive weeds. There are economical and productivity benefits for adopting IWM. It includes many simple and cost-effective management changes that could lead to a reduction of herbicides and resistance can be avoided.

The Bradley Method is considered best practice in bush land reserves where large-scale chemical or mechanical methods cannot be used. The Bradley Method undertakes timely weed control in small areas in and around healthy native vegetation

so that each area is re-colonised by the regeneration of native plants, replacing the weeds (other methods leave gaps for weeds to regrow).

The Bradley method follows three main principles:

1. Secure the best areas first. They are the easiest to work with the best results. They are the core areas that can then be expanded.
2. Minimise disturbance to the natural conditions (e.g., minimise soil disturbance and off-target damage).
3. Don't over clear – let the regeneration of the bush set the pace of clearance.

Timing is also an important consideration. Undertaking weed control after a burn can be effective and controlling a weed at the right time within its reproduction cycle as well.

Integrated Pest Management

For each pest that is under control in the Shire, the national threat abatement plans are used for best practice methodology. Each pest also has a national model code of practice and standard operating procedure for the humane capture, handling, or destruction of the feral animal.

Priority Bushland Weeds

There are 22 weed species considered priority weeds in Shire bushland reserves. A total of 70 species of weed are annually mapped and strategically controlled when opportunities arise, and budget allows. Table 7 below notes the species, and the number of Shire managed locations that they have been found.

Weed Mapping and Control Records.

The Shire maps and keeps GPS location records for invasive weed incursions. The community is encouraged to contribute to this mapping by using the free app, iNaturalist. These records also are added to the national database Atlas of Living Australia. The Shire has produced a control record for each of the priority weeds listed in table 7 below. The Priority Reserves should be mapped for the priority weeds and then followed up biannually to eradicate new incursions.

Table 7: List of Priority Weeds and number of existing locations on Shire reserves

Shire of Manjimup Priority Weeds		
Eradicated Species	Locations	Progress – Annual Checks
Cotton Bush	1	<i>Gomphocarpus fruticosus</i>
Paterson's Curse	0	<i>Echium plantagineum</i>
Sharp Rush	0	<i>Juncus acutus</i>
Targeted Weeds	Locations	Progress – Mapping and Control in all areas where possible
Taylorina	2	<i>Psoralea pinnata</i>
Asparagus fern	2	<i>Asparagus scandens</i>
Cape Tulip	3	<i>Moraea flaccida</i>
Tambookie Grass	3	<i>Hyparrhenia hirta</i>
Kanuka	3	<i>Kunzea ericoides</i>

Perennial Veldt Grass	8	<i>Ehrharta calycina</i>
Sydney Golden Wattle	<100	<i>Acacia longifolia</i>
Mountain Cedar Wattle	10	<i>Acacia elata</i>
Blackberry	<200	<i>Rubus anglocandicans</i>
Weeds under asset-based control.	Locations	Progress – Mapping and Control in Priority Biodiversity Reserves
Arum Lily	11	<i>Zantedeschia aethiopica</i>
Victorian Tea Tree	<100	<i>Leptospermum laevigatum</i>
Pampas Grass	20	<i>Cortaderia selloana</i>
African Lovegrass	<120	<i>Eragrostis curvula</i>
Watsonia	<200	<i>Watsonia meriana and bulbilifera</i>
Montepellier Broom	<100	<i>Genista monspessulana</i>
Dolichos Pea	20	<i>Dipogon lignosus</i>
Bridal Creeper	50	<i>Asparagus asparagoides</i>
Butterfly Bush	50	<i>Polygala myrtifolia</i>
Kangaroo Apple	19	<i>Solanum laciniatum</i>
Lavender	30	<i>Lavandula sp.</i>
Flinders Range Wattle	40	<i>Acacia iteaphylla</i>

Eradicated species

There are a few weed species in the Shire that have not yet established, and eradication is still possible. These weeds are the highest priority; control will reduce the costly legacy for the Shire and community.

There have been biosecurity alerts with weed species found in the Shire, though there have been no incursions on Shire managed land. These include Pokeweed (*Phytolacca americana*), Common marsh Bedstraw (*Galium palustre*), Ragwort (*Senecio jacobaea*).

Targeted Weeds

The targeted weeds may be possible to eradicate in the Shire over the next 10 years if adequate resources available, including community partnerships that enable landscape scale control. Some reserves have weed management programs that outline the targeted weed for that reserve, where it is and how best to treat it.

Weeds Under Asset-based Control

Weeds under asset-based control are widespread in the Shire and are unlikely to ever be eradicated. These weeds will be controlled in Priority Biodiversity Reserves, as detailed in their management plans. There is a potential to collaborate with biochar or other resource recovery industries to remove weeds for their organic matter value.

Shire of Manjimup - Weeds Not to Be Planted List

The Shire's Weeds Not To be Planted list is intended to be used by developers and land managers to guide species selection when planting. The list has the legislated weed status. In Environmentally Sensitive Areas, the Shire recommends only local native plants are planted (grows naturally within 200km).

The list (Appendix 2) reflects the following weed priorities:

1. DPIRD – Western Australian Organisms List – categorised pest plants under the Biosecurity and Agriculture Management Act 2007 (BAM Act).
2. DPIRD – Environmental Weeds Risk Assessment List.
3. WONS – Weeds of National significance.
4. DBCA – Warren Region – Alert list – not yet in the Region – highest priority pest plants.
5. DBCA - Warren Region - Environmental Weed List – existing invasive plant with an ecological impact.
6. Local priority weeds – nominated by the Manjimup Weed Action Group.

Manjimup Weed Action Group

Manjimup Weed Action Group (MWAG) was established in 1998 to build a coordinated partnership involving the community, state government agencies and industry, to protect natural and economic assets through weed management. MWAG is an example of collaboration resulting in best practise management with on ground activities and the pooling of resources. The Shire contributes to the group by taking the minutes and shares information on weed management with stakeholders.

Bushland Pests

Pests such as Foxes, Feral Rabbits, Feral Pigs, and Feral Cats are an ongoing concern in natural areas. Control is undertaken where possible as budgets allow. Goats, Deer, and horses cause a large amount of environmental damage, though are not commonly found on Shire land.

Feral Bees

The European honeybee (*Apis mellifera*) is an exotic species that was introduced to Australia over 180 years ago to assist with pollination and provide honey. Managed honeybee hives are kept commercially, but feral bees have become an increasing threat to native hollow-dwelling fauna, particularly black cockatoos. Feral honeybees also pose a risk to managed hives as they carry mites and fungal diseases. The WA Museum is collating information on feral beehive locations to understand the extent of the problem. The Shire has been contributing to this database.

Feral Cats

Feral cats are recognised as a declared pest and considered to be different to domestic cats. Feral cats are usually found in large bushland areas and avoid humans. The Shire actively manages domestic cats, which can cause environmental and health problems when they stray from their registered property. This can also prevent domestic cats from turning into feral cats. In 2020 a Cat Local Law was established in the Shire, and signage was installed in problematic reserves.

Rats and Mice

Second generation rodenticides harm native wildlife as well as their intended target of introduced rodents. Wildlife such as owls (and other birds of prey), Quenda, and Chuditch can survive secondary poisoning if first-generation rodenticide (active

ingredients Warfarin and Coumatetralyl) is used by pest controllers. To encourage the use of first-generation baits, if baiting is needed, the Shire could become an Owl friendly Shire and promote appropriate control methods.
<https://owlfriendly.org.au/rodent-control/>

Diseases Affecting Biodiversity

Diseases like Marri Canker, Armillaria Root Disease, and the amphibian chytrid fungus have the potential to affect native flora and fauna on a large scale. Monitoring and prevention are the most effective ways to ensure biodiversity is protected.

Phytophthora Dieback

Phytophthora dieback is a plant disease affecting native ecosystems and farming areas. The main species responsible, *Phytophthora cinnamomi*, is a microscopic, soil-borne organism that was introduced into WA in the early 1900s. It has infected hundreds of thousands of hectares in the South West of the State. The impacts on the landscape it invades are permanent and irreversible. Over sixty species of native and non-native Phytophthora have been detected in WA. Humans have the potential to spread dieback further through the disturbance and movement of infected soils. The Shire has run Greencard (dieback and vehicle hygiene) training to employees the community to raise awareness and educate them on how to keep dieback out of uninfected areas.

Our Pest and Weed Management Plan

Declared Pests		
Action	Detail	Timeframe
Collaborate with Community to manage Declared Pests	Partner and support community initiatives to manage Declared Pests	Ongoing
Bushland Weeds		
Action	Detail	Timeframe
Support MWAG in weed management	Attend meetings and share information	Ongoing
Undertake Weed Mapping in Priority Reserves	Mapping of Priority Weeds and biannual checks for Priority Reserves	2026 - 2028
Improve Weed Recognition	Create information that can be used for internal training	Ongoing
Improve Weed Management	Create Weed Management Plans for Priority Reserves	2029 - 2031
Liaise with Fire Control Officer to incorporate weed management in fuel reduction activities	Visit recently burnt areas to check for weed recruitment and advise on weed management in fuel reduction locations	Ongoing
Support the development of a biochar or other resource recovery industry	Collaboration to facilitate removal of weeds in reserves	2027 - 2031
Bushland Pests		

Action	Detail	Timeframe
Raise awareness of pest species and control methods	Share resources provided by State Government	Ongoing
Use Owl friendly rodenticide	Review Rodenticide practices, make changes where needed	2026 - 2027
Diseases Affecting Biodiversity		
Action	Detail	Timeframe
Undertake dieback education programs	Seek funding for Greencard accreditation	2026 - 2027
Start a Myrtle Rust monitoring program	Monitoring of plants purchased from nurseries for disease and in field observations	2026 - 2027
Create a Management Plan for Polyphagous Shot-Hole Borer	Plan for monitoring and local eradication techniques	2026 - 2027
Undertake a Polyphagous shot-hole borer education	Update website and share information from DPIRD	Ongoing

6. Community Engagement

The Shire has raised environmental sustainability awareness, encouraging partnerships that lead to community wide communication and resource sharing. Community engagement is needed for behaviour changes in ecological sustainability. The next level of community engagement will involve the following:

- Increase community awareness and participation to ensure there is a local approach environmental sustainability issues.
- Provide accurate information to allow for informed decision-making.
- Develop effective partnerships with community stakeholders.
- Encouraging the community to align their goals with Shire goals to achieve a shared success.
- Providing data and statistics to inform the community on Shire activities.
- Encouraging behavioural change to embed environmental sustainability values within the Shire operations and the community creating a long-term cultural shift.
- Involving staff, contractors and Councillors training to embed values in the organisation.

Communication Tools

The following communication tools are used by Shire to inspire, educate, and inform the community and ensure our messaging is broadly received; newspapers, community newsletters, website, antenno app, social media, staff snapshot, and email networks. Other opportunities for community education are embedding the environmental sustainability messages in other communications such as letters and advice.

Sustainability Advisory Committee

A Sustainability Advisory Committee was established in 2023 to provide advice to Council regarding strategic policy direction with the aim of promoting sustainability outcomes that are environmentally responsible, socially, and culturally sound and economically viable. This Committee though disbanded in 2025, achieved the following:

- Initiated becoming a Waterwise Council and adopting the implementation of water sensitive urban design within Shire Operations. Members also undertook community engagement at the Warren Regional Show.
- Considered the Warren Blackwood Alliance of Councils Climate Action Plan and recommended a review of emergency preparation documents.
- Expressed the need to build capacity and better manage sustainability issues.
- Investigated a range of waste issues, aiming at circular economy initiatives and applied for a grant to educate and engage the community in recycling.
- Recommended Co-ops to address food security and food miles.

Involve Community Stakeholders

The Shire has a good community stakeholder network and partners with community members, groups (Landcare, schools, scouts, community gardens etc.), and agencies, including government departments such as DBCA and DPIRD, that are actively contributing to delivery of environmental sustainability initiatives in our area.

Citizen Science

Community involvement is essential for capturing local information that is needed for future planning. The newly established Friends of Windy Harbour will extend the current activities. The following citizen science programs are supported by the Shire:

- Western Ringtail Possum Tally,
- Great Cocky Count,
- Windy Harbour Coastal Monitoring, and
- Biodiversity mapping through INaturalist app.

Education and Training

The Shire has been providing and supporting community environmental education programs. For example:

- 2005 - 2025 Ribbons of Blue Program
- 2011 to 2024 - Partnering with East Manjimup Primary in the Mottram Street Reserve streamline rehabilitation program. Installed interpretative signage for reserve visitors.
- Providing technical advice on environmental assets to educational organisations when requested.

Sustainably Built Homes and Businesses

Information is needed to guide the community in building sustainably and highlight which features can be easily approved, for example wider eaves, water tanks, composting toilets, solar panels, wind turbines, sewage alternatives, alternative building materials, grey water systems, roof colours, and cat enclosures.

Community Consultation

The Shire has been collaborative and have consulted extensively with the community on environmental sustainability issues through community surveys, workshops, townscape committees and education initiatives. In the 2021 Community Survey, 325 people responded to the survey and 70 people participated in the Climate Change Consultation Workshops.

The WH CHRMAP has enabled consultation about the Shire's coastal areas and the types of values the community holds in terms of environment, recreation and development.

Support Community NRM Stewardship

The Shire supports community stewardship where appropriate, and as budgets allow. Natural Resource Management (NRM) from community stewardship supports Shire activities through low-cost technical and labour contributions. The Shire provides financial and in-kind support to community groups to undertake NRM stewardship activities. Sustainability learning and resources hubs help the community understand and care for its environment. The establishment of a sustainability hub will build local stewardship and provide environmental information.

Shire Volunteers

The Shire has been building a team of environmental volunteers registered to assist in the maintenance of natural areas. “Friends of” groups that are registered to work in a particular reserve can create custodianship and ongoing community management for our reserves.

Community Gardens

Community gardens are an example of environmental sustainability hubs. They help address issues such as food security, can reduce food miles and can be models for improved water and other resource efficiency. There are community gardens in Manjimup, Walpole, and Quinninup that are located on Shire managed land. There are Community gardens in Pemberton and Northcliffe that are on privately managed land.

Landcare Committee

Landcare is a unique grass-roots movement that started in the 1980s to tackle degradation of farmland, public land, and waterways. The Shire has a strong history of supporting and partnering with the local Landcare Committee, Southern Forests Community Landcare (SFCL). Previously known as Warren Catchments Council, the partnership projects are outlined in the Responsible Land Management Section. The Shire is within the nationally recognised South West Landcare Region that is currently administered by the South West NRM (SFCL is an association member and is the only operating Landcare organisation within the Shire).

Community Energy Projects

Although it is a State responsibility to provide communities with affordable, unpolluting energy, some communities are trying to fast track the process and set up their own community projects. Community batteries are being installed by Western Power, State and federal initiatives such as solar banks are being rolled out in high population areas.

There are examples of small community hubs achieving collective savings in money and emissions by adapting local infrastructure to supply alternative energy locally. Local government can support these initiatives by offering technical assistance or by earmarking land that can be used for community energy projects and encouraging the activity in the area. For example, the Pemberton Energy Group is conducting a feasibility study for a community energy project in the town of Pemberton.

Walpole is connected to the Interconnected System. The 125km long feeder line from Albany is impacted frequently by storms etc, causing power outages. Once installed by Western Power, pumped hydro facility will operate as a microgrid to supply Walpole during outages for up to two days. Just like traditional hydro-electric systems, water is pumped from a lower area to a higher area, the ‘storing’ of water in the higher dam acts as a battery.

Our Community Engagement Plan

Involve Community Stakeholders		
Action	Detail	Timeframe
Promotion of citizen science opportunities	Great Cocky Count, Birds in backyards, Western Ringtail Possum Tally, Taronga Blue	Ongoing
Share good news stories	Use media to highlight positive actions and detail contributing factors	Ongoing
Sustainable Buildings	Investigate the information needed to help inform community on sustainable building solutions	2026 - 2027
Support Community NRM Stewardship		
Action	Detail	Timeframe
Support the establishment of a Sustainability Hub	Encourage community investment in a sustainability hub and support as budgets allow.	Ongoing
Support Shire Volunteers	Build capacity of Shire Volunteers and create Friends of Groups for reserves	Ongoing
Support Community Gardens	Support where possible community garden initiatives	Ongoing
Support and partner local NRM organisations	Co-fund where possible Landcare initiatives	Ongoing
Support Community Energy Projects	Support where possible community energy initiatives	Ongoing

7. Conclusion

The Shire of Manjimup has developed this Environmental Sustainability Strategy to identify achievable and practical actions for the next phase of the Shire's environmental sustainability journey. The strategies objectives aim high to address the Shire's needs in Ecological Sustainable Development, Adapting to Climate Change, Protecting Biodiversity, Reducing Waste, Pest, Weed and Disease Management, and Community Engagement.

Competing land uses can raise a conflict between economic needs and ecological aspirations. The Shire's long-term prosperity is intrinsically linked with the sustainable and equitable use of our natural resources. Better planning will protect Environmentally Sensitive Areas, improve water management and air quality, preserve soil and land quality whilst also protecting Aboriginal Heritage.

In a changing climate the Shire will need to adapt as impacts and risks become increasingly complex and more difficult to manage. Climate events such as wildfire and storms on key infrastructure are leading to losses and damages and affect people, ecosystems, and economic activity. By managing these risks, investing in adaptation, and reducing the fossil fuel use, climate change impacts can be reduced in communities and natural environments.

Within the Shire are extremely rich, diverse, and unique biodiversity assets that are internationally recognised. The Shire aims to maintain biodiversity assets by reducing the impacts from threatening processes on threatened fauna critical habitats and retaining vegetation where possible. Biodiversity assets support our economy in many ways including through tourism, agricultural pollination and honey production. Biodiversity assets also have health, amenity, recreation, scientific and educational values.

If waste is not reduced, reused, or recycled in some way, it ends up in landfill and has the potential to emit methane gas into the atmosphere and contaminate the groundwater. The Shire can reduce waste through waste avoidance, transition to a circular economy, whilst protecting the environment by managing waste responsibly.

The Shire aims to improve pest, weed and disease management on Shire managed land and advocate for better coordination on other lands. The Shire works in partnership with the community to reduce the burden of pest, weed and disease on future generations and reduce the environmental impacts.

The Shire has raised environmental sustainability awareness, encouraging partnerships that lead to community wide communication and resource sharing. Better community engagement leading to community involvement is needed for behaviour changes in ecological sustainability. Ongoing collaboration and consultation are planned to support community stewardship and growth in community led environmental initiatives.

8. Appendix

1. Warren Blackwood Alliance of Councils Climate Change Action Plan.
2. Shire of Manjimup - Weeds Not to Be Planted List.