Strategic Waste Management Plan 2023 - 2033

Shire of Chittering

May 2023

Acknowledgements

ASK Waste Management acknowledges the Traditional Owners of the land in which we work and live, and pays respects to Elders past, present, and emerging.

ASK also gratefully acknowledge the cooperation of the Shire of Chittering staff that provided information and assistance in the development of this report.

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Report produced by:
ALISON EDMUNDS

ASK Waste Management
PO BOX 401
Brunswick Heads
NSW. 2483
AUSTRALIA

0447 393363
admin@askwm.com
www.askwm.com

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EXECUTIVE SUMMARY

The Shire of Chittering (the Shire) engaged ASK Waste Management (ASK) to prepare its Strategic Waste Management Plan (SWMP).

This SWMP is informed by the DWER Waste Plan requirements together with the Shire's needs and objectives and provides an overarching strategic document to guide municipal waste service delivery to 2033.

The management of waste is not a static process and needs to continually evolve. This SWMP sets the future for contemporary waste management within the Shire. It provides a series of actions for implementation to:

- keep pace with better practice
- minimise waste to landfill
- increase resource recovery
- minimise impacts on health and the environment
- strengthen the financial sustainability of the services provided.

This plan will fit within the Shire's Integrated Planning and Reporting framework as an issue-specific informing strategy.

Existing services and infrastructure

The SWMP outlines the existing services, infrastructure and activities used to manage waste within the Shire and establishes baseline waste performance and profiles.

Assessment and Analysis

To inform the actions of the SWMP, assessment and analysis of various aspects of Shire operation was undertaken. The assessment outcomes are provided as an appendix in this report.

Actions for 2023-2033

An implementation plan has been developed to provide for sustainable management of waste in the Shire from 2023 to 2033. The key action areas include:

- Waste Services
  Reviewing options to increase resource recovery; assessing introduction of Food and Garden Organics collection and processing; and increasing the viability of the Shire's Containers for Charge refund point operation.
- Waste Infrastructure and Operations
  Progressively upgrading the Shires Waste infrastructure and operations to align with DWER licence conditions and better practice guidance where practicable. The rationalisation of the Shires landfills with the closure of the Bindoon Landfill and transition to a transfer station is recommended.
- Data, Information and Economics
  Developing the foundations for sound economic management of the Shires waste services is recommended and includes whole of life costing; reviewing fees and charges and free domestic disposal options; and assessing the viability of commercial waste acceptance.
- Behaviour Change Programs
  Providing ongoing education and engagement of the community to drive the behaviour change needed to minimise waste and increase resource recovery with the Shire.
- Regional Efficiencies
  Strengthening regional collaboration and coordination to increase the viability of municipal waste services provided within the region.

Implementation Schedule

A costed implementation schedule is included to provide input into annual operational business planning and budget processes.

Plan review

The plan should be treated as a dynamic document that is reviewed and amended periodically to ensure that it remains contemporary and relevant to emerging waste management issues and legislation.

1 INTRODUCTION

The Shire of Chittering (the Shire) engaged ASK Waste Management (ASK) to prepare its Strategic Waste Management Plan (SWMP) to set the future for contemporary waste management within the Shire. The Strategy was produced in line with the State's Waste Avoidance and Resource Recovery Strategy 2030 (WARR Strategy), relevant legislation, and the DWER Waste Plan Resource Kit.

1.1 PURPOSE OF THE WASTE STRATEGY

The purpose of the Strategic Waste Management Plan is to provide a framework for effective, efficient, and sustainable management of waste within the Shire from 2023 until 2033. The SWMP provides baseline information about waste quantities and services, analysis and assessment, and an action plan for implementation.

1.2 OBJECTIVES

In line with the purpose of the SWMP, the overarching objectives are as follows:

- Provide cost-effective and efficient services
- Provide a plan for the future
- Waste services to be at least cost neutral.

1.3 BACKGROUND TO STRATEGY

The Shire engaged a waste consultancy in 2014 to develop a Strategic Waste Management Plan to '*set a clear strategic direction for waste management services and infrastructure within the Shire that facilitates continual improvement.*' The plan provided a series of recommendations, including:

- Improved data collection
- Improved resource recovery and kerbside recycling collection services
- Cessation of landfilling at Bindoon Waste Management Facility a development of Community Recycling Centre on site
- Upgrading the community drop-off area at Muchea Waste Management Facility to provide a more efficient and safer facility
- Consideration of landfill opportunities, including establishing a lined landfill to provide a disposal location for other surrounding Local Governments and the Perth metropolitan area.

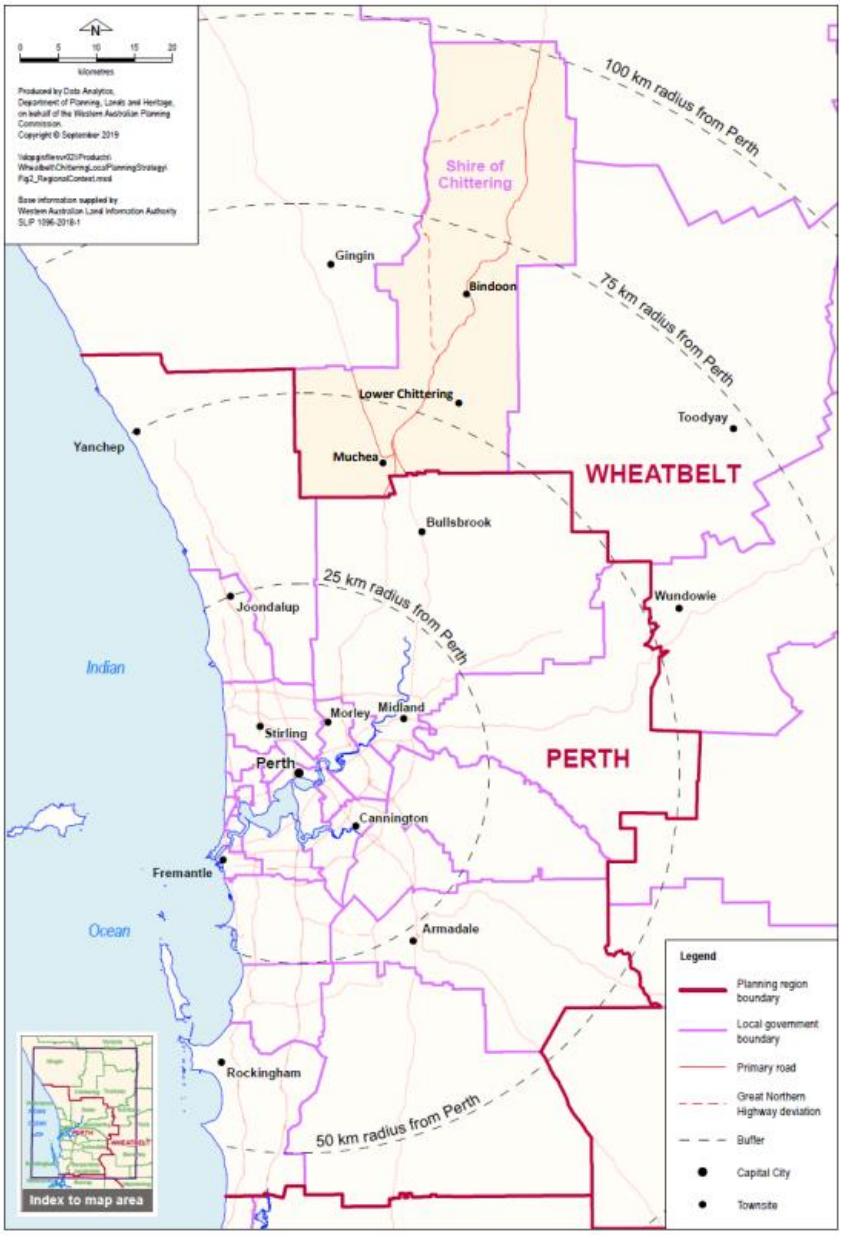
Many of the recommendations were not able to be actioned due to resource constraints. As a result, the Shire is seeking a new SWMP to reflect current operations and levels of resources available that will provide an achievable plan for the future.

1.4 SHIRE OVERVIEW

The Shire of Chittering is located 55kms north of Perth, covering an area of 1,220km^2. The Shire services the townsites of Muchea, Bindoon and Wannamal, along with the localities of Mooliabeenee, Upper Chittering and Lower Chittering. As of the 2021 Census, the Shire's population was 5,930 and is projected to grow to 7,610 people by 2031. The Shire's main population centres where the majority of the population reside includes; Lower Chittering (39%), Bindoon (22%), Muchea (18%) and Chittering region at 17% (Shire of Chittering, 2019).

The Shire abuts the Shire of Swan and the City of Wanneroo to the south, both of which are classified as within the Perth Metropolitan area boundaries (see **Figure 1.1**).

Figure 1.1 Shire of Chittering Regional Context



Solid waste generated within the Shire is managed through a number of municipal services including kerbside waste and recycling collection, public place bins, and litter and sanitation services. The key waste infrastructure comprises of two unlined landfills; Muchea and Bindoon, that have landfill cells for waste disposal, drop-off facilities for both waste and recycling streams, a reuse shop, and stockpiling of greenwaste and scrap metal.

The Shire Planning Strategy 2019 indicates that population growth is predicted in Lower Chittering and Bindoon,'… *increasing the generation of waste within the Shire and putting pressure on available landfill [air]space. Greater consideration needs to be placed on the Shires landfill [air]space and effort made to utilise it efficiently*.'

2 DRIVERS AND INFLUENCES

An important function of this Strategic Waste Management Plan (SWMP) is to interpret and incorporate relevant legislation and policy that may affect waste management within the Shire. The following section discusses the drivers impacting legislative policy frameworks that shape services provided by the Shire, now and into the future.

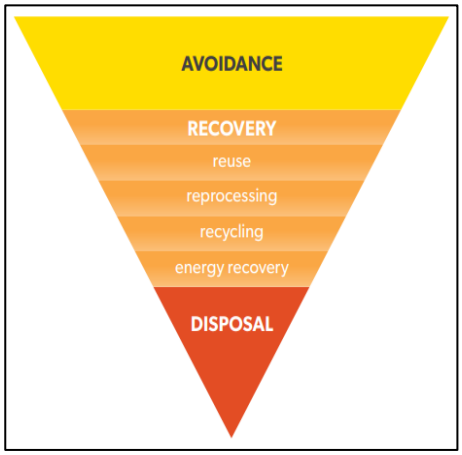
2.1 KEY PRINCIPLES

2.1.1 UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

Solid waste management is a universal issue. In 2015, countries worldwide, including Australia, adopted a set of goals to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years. Sustainable Development Goal 12 is focused explicitly on responsible consumption and production patterns. Australia's National and State waste and environment policy frameworks reflect these international obligations.

2.1.2 WASTE HIERARCHY

The waste hierarchy is a policy approach that rates waste management strategies in ascending order of their general environmental desirability. The waste hierarchy is used alongside other tools (including economic, social and environmental assessment tools) to inform decision-making. The waste hierarchy is embedded in legislation and policy across Australia.



The Western Australian Waste Strategy' *Waste Avoidance and Resource Recovery Strategy 2030'* (WARRS or State Waste Strategy) treats waste as a resource and implores Western Australians to adopt and implement the waste hierarchy, avoiding the generation of waste where possible, maximising the recovery of waste that is generated, and protecting the environment from the impacts of disposal. However, globally we are moving from the simple waste hierarchy to the circular economy principle.

2.1.3 CIRCULAR ECONOMY

A circular economy builds on long-standing sustainability concepts, including life cycle thinking and resource efficiency. A circular economy refers to the flow of materials and energy – it moves away from the linear 'take, make, use and dispose' model to one that keeps materials and energy circulating in the economy for as long as possible. The State and National Waste Policy embody a move to a circular economy. The globally accepted model to show the principles of the circular economy is shown in **Figure 2.1**. This demonstrates that the circular economy principles are being adopted along the whole supply chain from design, manufacture, procurement, use, repair, and end-of-life recovery.

Figure 2.2 shows the key differences between the linear and circular economy and how this approach involves all sectors and consumers rather than relying on the waste sector to recycle and recover what is possible at 'the end of the pipe'.

Figure 2.1 Circular Economy model (Ellen Macarthur Foundation)

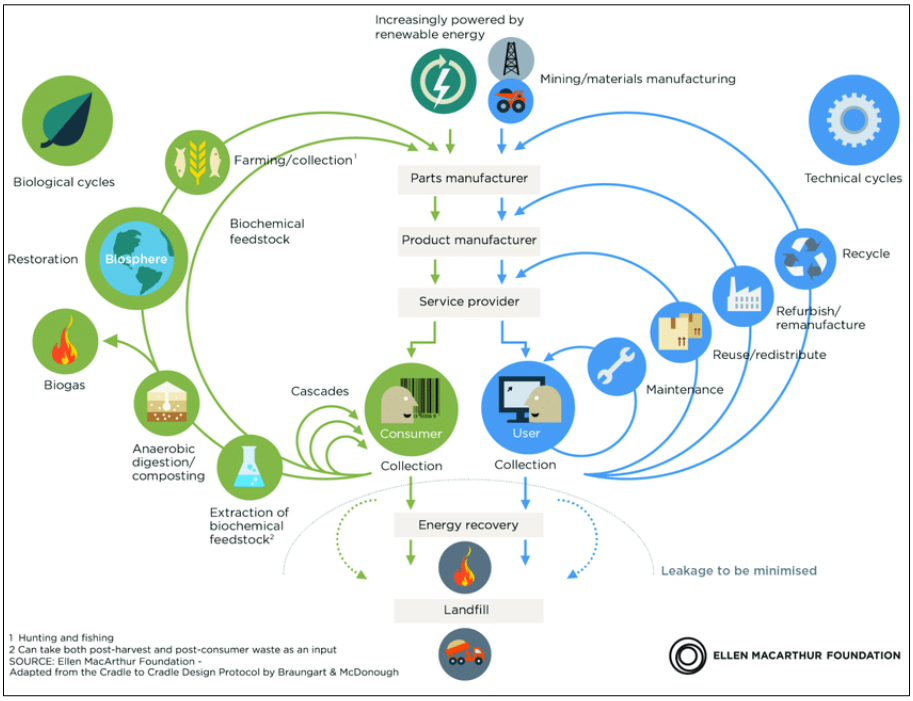
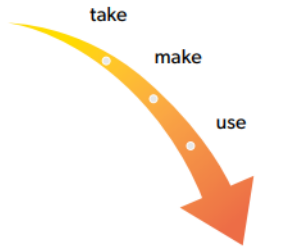


Figure 2.2 Circular economy vs current approach (WARR Strategy 2030)

Current approach	Circular economy
	
Linear flow of materials – 'take, make, use and dispose' model.	Circular flow of materials – materials sorted and retained in the economy for as long as possible.
Limited use of renewable materials and energy.	Preference for renewable materials and energy.
Significant volumes of materials disposed of and lost to the economy. Loss of embodied materials, energy and water.	Materials recovered as high up the waste hierarchy as possible. Embodied materials, energy and water retained in the economy. Organic materials re-enter and regenerate the environment safely (for example, as compost).
Materials managed locally and globally.	Preference to manage materials locally to reduce the costs and impacts of transport, and to provide local employment and investment opportunities.
Economic value of materials, employment and investment not fully accounted for.	Economic value of materials, employment and investment accounted for.
Limited focus on life cycle thinking.	Products designed and manufactured to minimise environmental impact through whole of life.

2.2 KEY OUTCOME AREAS

Drivers and influencers on waste legislation and policy directions can be grouped into six key outcome areas and can be used to drive strategic waste planning and decision-making. These key outcomes are as follows:

- **Avoiding waste generation:** options for managing waste services in a way that encourages the avoidance of waste generation should be considered.
- **Increasing recovery:** waste services should be managed in a way that aims to increase recovery and decrease contamination.
- **Minimising residual waste:** waste services should be managed in a way that aims to reduce the amount of residual waste that they generate and the amount of residual waste disposed of to landfill; recover energy only from residual waste.
- **Removing organics from landfill:** local governments should be moving toward providing consistent three-bin kerbside collection systems that include separating FOGO from other waste categories.
- **Implementing better practice:** waste services should be moving towards better practice as per guidelines, where available.
- **Protecting health and the environment**.

These key outcome areas are discussed below, with highlighted text boxes starting each section to summarise potential impacts on future service delivery within the Shire of Chittering.

2.2.1 AVOIDING WASTE

The State Waste Strategy places an increased expectation for local government to educate communities on waste avoidance behaviours, provide services, and develop mechanisms and platforms that enable the community to adopt avoidance behaviours and explore re-use and low-waste alternatives.

Waste avoidance is simply avoiding the production of waste. It is often associated with the terms 'waste reduction', 'source reduction' and 'waste minimisation'. It is the most preferred option in the waste hierarchy. The goal is to maximise efficiency and avoid unnecessary consumption through behaviours such as:

- Selecting items with the least packaging or that require the fewest resources to produce
- Avoiding disposable goods or single-use materials
- Buying recycled, recyclable, repairable, refillable, re-usable or biodegradable products.

The WARRS and the National Waste Strategy (*National Waste Policy 2018: Less waste, more resources*) both incorporate waste avoidance as a key principle to enable Australia to transition to a circular economy, with targets set to reduce per capita waste generation by 2030.

Whilst waste avoidance is largely driven by purchasing behaviour; it relies on high levels of awareness and motivation by consumers, both individuals and organisations, about reducing the impacts of purchasing decisions. Education is critical to increase awareness of waste avoidance and to support waste avoidance behaviours.

2.2.2 INCREASING RECOVERY

- Increased material recovery is a requirement of State, National and Global waste strategies.
- The Shire of Chittering does not currently need to meet specific targets for increased resource recovery but rather contributes toward the State-wide targets.
- There will be increased capacity for recycling focus materials (FOGO, waste paper, cardboard, tyres, single and mixed plastic) with the development of new processing facilities within Western Australia.

- Legislative and policy frameworks are being developed to build confidence and increase demand for recycled products.
- There is potential for increased funding availability for recycling infrastructure in regional and remote areas.
- If the landfill levy area were extended to the Shire, disposal costs to the landfill would increase by at least $70 per tonne. The Shire currently landfills approximately 3,000 tonnes per annum.
- Future landfill bans may impact service configuration and infrastructure requirements to collect material previously destined for landfill.

Increasing resource recovery is a key principle embedded in both State and National waste policy. Recovery targets are mandated across Australia, with the WARRS targets for municipal solid waste (MSW) at 70% in the Perth and Peel regions and 60% in major regional centres by 2030.

These targets are supported by legislative, economic and policy drivers shaping the service types and infrastructure requirements to sort, process and remanufacture materials and increase material recovery across Australia.

A key policy driver in WA is the levy on all waste generated or landfilled in the Perth metropolitan region. The waste levy generates government revenue, and 25% of this is used to fund Department Water and Environmental Regulation (DWER) staff and programs which support the waste strategy. A review of the levy's geographic extent is underway. This review could lead to the levy area being increased and could include the Shire of Chittering.

Markets for recycled materials are needed for recycled products. The WARRS focuses on re-using, reprocessing and recycling materials with the greatest potential for increased recovery, including construction and demolition waste, food and garden organics, metals, paper and cardboard and plastic.

WA needs to increase its waste processing infrastructure to achieve the targets. The state government is funding programs to promote local infrastructure for recovery with an emphasis on focus materials and developing a legislative and policy framework to build confidence and increase demand for recycled products. The Federal government has also invested $190 million into the 'Recycling Modernisation Fund' to support the states and territories (as part of the National Partnership on Recycling Infrastructure) to increase the capacity of recycling facilities around the country. Current projects in WA include:

- Western Australian and Australian Governments are jointly contributing $30 million ($15 million each) towards a new $86.6 million Suez and Recycling and Recovery/Auswaste pulp mill in Perth.
- $35 million will leverage investments across eight new projects processing approximately 140,000 tonnes of Western Australian plastic and tyre waste annually.

2.2.3 MINIMISING RESIDUAL WASTE

- Disposal of residual waste incurs costs and is a high environmental risk due to unlined landfills.
- There is a significant need to increase the efficiency in managing material resources.
- It is estimated that approximately 30% of Shire residents have no kerbside recycling, increasing the Shire's residual waste generation and disposal to landfill.
- There is no FOGO service provided in the Shire, significantly increasing the Shire's residual waste generation and disposal to landfill.

Residual waste is material that cannot be viably recycled or re-used; therefore, it is either incinerated or landfilled. Both options pose environmental risks, result in lost materials and resources, which increases requirements for extraction of finite materials, and stalls the circularity of material

flows. Residual waste is generally the most expensive option, and challenging for the landfill or incinerator to be fully compliant and meet best practice operations.

The State Waste Strategy requires waste services to be managed in a way that aims to:

- Reduce the amount of residual waste that they generate
- Reduce the amount of residual waste disposed of to landfill
- Recover energy only from residual waste.

Consistent with the waste hierarchy and circular economy, the strategy recognises that material recovery is preferable to energy recovery, and energy recovery is preferable to landfill.

2.2.4 REMOVING ORGANICS FROM LANDFILL

- State, National, and Global waste strategies require increased organics recovery.
- Currently, most food and organic waste generated within the Shire is sent to landfill.
- The Shire is not mandated to provide FOGO. However, the Shire may need to provide FOGO collections in future iterations of the WARRS.
- There is increasing capacity for FOGO processing with the development of new facilities.
- Legislative and policy frameworks are being developed to build confidence and increase demand for FOGO products.
- There is funding to offset the establishment of the FOGO collection service available from the Waste Authority.
- Establishing a FOGO service will reduce the amount of residual waste sent to landfill.
- Landfilling FOGO will be more expensive to recovery if the landfill levy area is expanded to include the Shire.
- Eliminating FOGO from landfill reduces methane emissions and represents an opportunity for the Shire to contribute to reduced impacts on climate change.

Approximately 50% of the municipal waste stream comprises food and garden organics. Once in a landfill, this material produces a mixture of methane and carbon dioxide. Organic waste sent to landfill generates about 3% of Australia's greenhouse gas emissions (AWE, 2020). Landfilling organic wastes can also contribute to a range of other environmental impacts, such as odour and the production of landfill leachate, which directly impacts the environment in unlined landfills.

By diverting organic waste from landfill, organic waste can be transformed into a resource that improves agricultural soils, boosts the economy and creates jobs. According to the Australian Organics Recycling Association, an additional 2,682 jobs would be created in Australia if 80% of organic waste was diverted from landfill (AWE, 2020).

The National Waste Policy and National Food Waste Strategy mandates halving organic waste sent to landfill by 2030, aligning Australia with global directions and the United Nation's Sustainable Development Goal 12.3.

A headline commitment in the State Waste Strategy is the implementation of a consistent three-bin kerbside collection system, which includes the separation of food organics and garden organics (FOGO) by all local governments in the Perth and Peel regions by 2025. Implementing FOGO systems will increase the recovery of material collected through kerbside services. The State Government supports the implementation of FOGO systems by applying financial mechanisms to make it a cost-competitive option for local governments.

The State Government supports markets for FOGO-derived products and provides funding for the planning and delivering of FOGO services through the *Better Bins Plus: Go FOGO* funding program.

2.2.5 PROTECTING HUMAN HEALTH & ENVIRONMENT

- Globally, environmental standards for landfill facilities are becoming more stringent.
- The Shire landfills are not sited, constructed or operated in line with better practice and will negatively impact the environment.
- Better practice standards will likely mandate improvements for all landfills within WA to reduce environmental emissions. This will increase operational costs and complexity for the Shire.
- The current liabilities of landfill site closure are less if they are closed at current minimum standards as opposed to potential future standards.
- Minimising the number of Shire landfill sites will lessen cost liabilities and environmental impacts.
- As long as landfilling remains part of the Shire waste management strategy, best practice measures should be adopted to minimise environmental risks.

Disposal of materials to landfill is the least preferred management option; however, landfills will continue to be required in the future to manage those wastes that cannot currently be practicably removed from the waste stream or in areas where other waste management options are not achievable. Impacts shaping the future drivers of landfill operations are discussed below.

Leachate emissions

Many materials that end up as waste contain toxic substances. Leachate is the liquid formed when waste breaks down in the landfill, and water filters through that waste. In unlined landfills, leachate can seep into the soil and groundwater, contaminating local groundwater and surface water. Therefore, best practice measures, including the need for an engineered landfill liner system, leachate management and collection system and implementation of a groundwater monitoring network, are likely to be required in the future for all landfills to mitigate impacts on groundwater.

Greenhouse gas emissions from landfills

Landfills are one of the primary sources of methane emissions contributing to Global Greenhouse Gas Emissions (GHG) and the largest contributor by comparison to other waste processing options, including Material Recovery Facilities, organics processing and Energy from Waste Facilities (Waste Authority, 2021).

Methane and carbon dioxide are produced from the anaerobic decomposition of organic materials in a landfill. Methane is 84[1] times more potent than carbon dioxide, meaning that every tonne of methane emitted traps as much heat in our atmosphere as 84 tonnes of carbon dioxide.

Progressive capping includes gas capture systems and is often employed at landfills to capture atmospheric emissions from decomposing organic material. Landfills not operating at this better practice level will release methane and carbon dioxide directly into the environment.

Greenhouse emissions from EfW

When organic matter (the combustible part of waste) is burned, it emits carbon dioxide. However, this is still an improvement over landfill, where it also generates methane. Consistent with the waste hierarchy and circular economy, the WARRS recognises that material recovery is preferable to energy recovery, and energy recovery is preferable to landfill. Energy recovery should only come from residual waste.

Landfill licencing/regulatory requirements

[1] Methane is commonly cited as 25 times more potent than carbon dioxide. But this is true only when the impacts are stretched out over 100 years. When the impact is considered over 20 years, methane is a 84 times more powerful than carbon dioxide. This is because methane only lasts in the atmosphere for 8 to 12 years before it breaks down into more benign components. (Waste 360, 2017)

Waste infrastructure, including the Shire's landfills, is governed by an operating licence issued by the Department of Water and Environmental Regulation (DWER) to manage and mitigate environmental impacts. Licences are periodically reviewed by DWER to ensure conditions reflect best practice or changes in DWER minimum standards. The Bindoon landfill facility operates under minimal conditions.

Currently, there are no minimum standards or regulatory requirements for landfills within WA to be lined to reduce leachate impacts on the environment or capped to reduce methane and carbon dioxide emissions. Better practice approaches for landfills are referred to in the State Waste Strategy and are yet to be defined, but the Waste Authority advice is these will be developed as a priority. Once these approaches are developed, site operational licences will likely be progressively upgraded to reflect these requirements.

Long term liabilities

Once the landfill ceases to dispose of waste, it must still be managed to prevent any environmental impact until the waste within the landfill has sufficiently decomposed or stabilised such that it no longer presents a risk to the environment. The standard industry period for post-closure management and monitoring of a putrescible landfill is about 20 - 30 years.

2.2.6 IMPLEMENTING BETTER PRACTICE

- Ensuring all waste facilities adopt better practice approaches by 2030 is a target of the Waste Strategy.
- Better practice requirements are likely to increase costs to the Shire.
- Better practice requirements, if implemented, will meet the objectives of the State and National Waste Policy.

Better practice approaches are integral to the achievement of all of the WARRS goals. Better practice is defined by the Waste Authority '*as the practices and approaches that are considered to be outcomes-focused, effective and high performing, which have been identified based on evidence and benchmarking against comparable jurisdictions*.' Several Waste Authority better practice guidelines already exist, and the Waste Strategy highlights many others that will be developed (**Table 2.1** below).

Table 2.1 Current Waste Authority Better Practice guidelines (DWER, 2020)

Guideline Title	Situation of Guideline
Drop off facilities and services	Under development
Kerbside waste services: Better Bins Kerbside collection (3 bin system)	Released
Vergeside waste services	Under development

Better practice guidelines will inform local governments about preferred systems to achieve the targets of Waste Avoidance and Resource Recovery Strategy 2030.

3 EXISTING INFRASTRUCTURE, SERVICES AND ACTIVITY

The following section provides an overview of baseline waste data for the Shire in line with the DWER waste plan requirements and outlines the Shire's current waste performance regarding the Waste Strategy 2030.

3.1 WASTE AND RECYCLING PERFORMANCE

3.1.1 POPULATION DATA

The Shire's population reported for the 2021 Census was 5,930 (ABS, 2023).

3.1.2 WASTE GENERATION RATES

Solid waste generation rates estimate the amount of waste created by residences or businesses over a certain amount of time (day, year, etc.). Waste generation includes all materials discarded, whether or not they are later recycled or disposed of in a landfill. Knowledge of the generation of solid waste is important in the planning, designing, and operating of solid waste management systems.

Solid waste is categorised into three categories:

- **Municipal Solid Waste (MSW)** – is primarily waste collected from households through kerbside waste and recycling collections. It includes biodegradable materials, recyclable materials such as bottles, paper, cardboard and aluminium cans, and a wide range of non-degradable materials, including paint, appliances, old furniture and household lighting (National Waste Report, 2010). Municipal waste may include waste from small commercial premises or other similar activities where this is collected as part of the standard local government service (DWER census glossary).
- **Commercial and Industrial Waste (C&I)** – is waste produced by institutions and businesses, including schools, restaurants, offices, retail and wholesale, including manufacturing (WARR 2030).
- **Construction and Demolitions Waste (C&D)** – is waste produced by demolition and building activities, including road and tail construction and maintenance and excavation of land associated with construction activities (WARR 2030).

Prior to the project, the Shire collected only basic waste data. In November 2022, the Shire implemented a new gatehouse data collection system (Cooee – Waste Facility Data Solutions) to enable more accurate quantification of waste sources, types, and amounts received. The data was collected over a four-month period and extrapolated to represent a 12-month period.

Based on this extrapolation of the data collected, the annual quantity of solid waste generated in the Shire is approximately 6,100 tonnes. Waste composition across the three key waste types is estimated to be; 89% MSW, 0.1% C&I and 11% C&D, as shown in **Table 3.1**. The Shire's total waste generation rate is estimated at 1,033 kg per capita.

Table 3.1 Estimated tonnes of waste and percentage breakdown generated

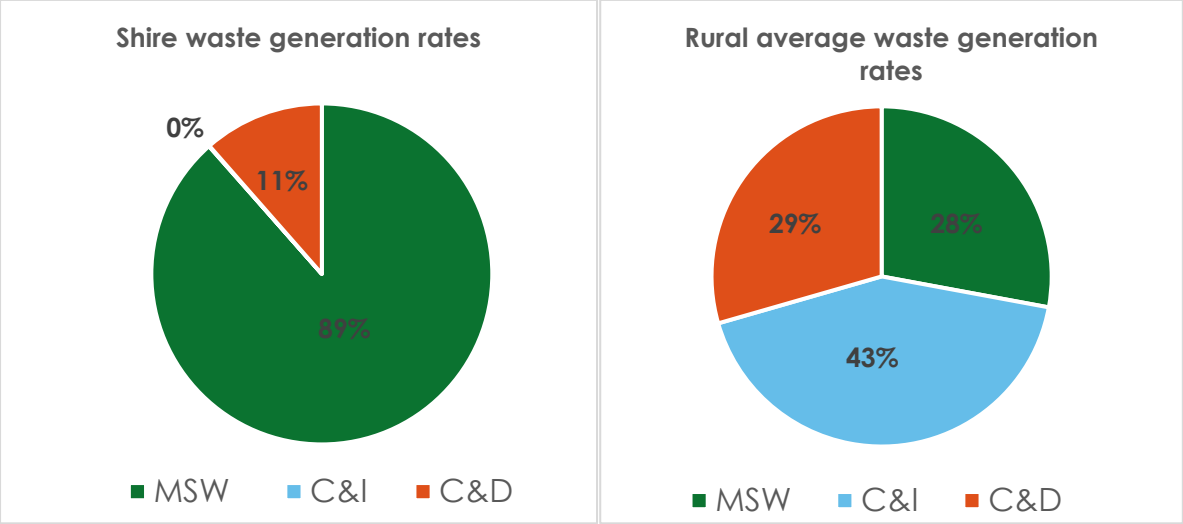
Estimated tonnes of waste per year (rounded to nearest 100 tonne)			
MSW	C&I	C&D	Total
5,400	3	700	6,100
89%	0%	11%	100%

The Shire's waste generation rates have been benchmarked against the State rural average values (2018 - 2019). A breakdown of the State averages, together with the Shire's rates, are shown in **Table 3.2.** The percentage contributions by waste stream for the Shire and Rural average is provided in **Figure 3.1**.

Table 3.2 Rural average waste generation rates and Shire of Chittering rates

Waste Stream	Rural averages (18/19)		Chittering	
	Kg per capita	% breakdown	Kg per capita	% breakdown
MSW	635	28%	917	89%
C&I	970	43%	1	0%
C&D	670	29%	115	11%
Total	**2,275**	**100%**	**1,033**	**100%**

Figure 3.1 Percentage breakdown by material stream



The proportions of each waste stream generated within the Shire are very different to the average proportions for rural Western Australia. The results also show the Shire's total waste generation rates are much lower, possibly due to commercial waste not being accepted in the Shire.

3.1.3 WASTE DISPOSAL RATES

Waste disposal rates within the Shire were calculated at 720 kg per capita. These rates have been benchmarked against the WA rural averages. The percentage and weight per capita by waste stream disposed are shown in **Table 3.2.**

Table 3.3 Rural average waste disposal rates and Shire of Chittering rates

Waste Stream	Rural averages (18/19)		Shire of Chittering	
	Kg per capita	% breakdown	Kg per capita	% breakdown
MSW	470	34%	604	84%
C&I	543	40%	1	0%
C&D	356	26%	115	16%
Total	**1,369**	**100%**	**720**	**100%**

In comparison to the rural average (18-19), the following is noted:

- MSW disposal rates are proportionately higher than the state average by 134 kg/capita or 28.5%. This variation may be a reflection of the free domestic disposal provided to the Shire's

residents, as commercial waste may be brought to the facilities by local businesses and declared as 'domestic waste' at the gatehouse to avoid the payment of gate fees.

- C&I and C&D rates are significantly lower. It is likely that this is because the Shire does not accept bulk loads of commercial waste at the two landfills.
- If the Shire were to accept commercial waste, the quantity of waste landfilled could increase by approximately 3,800 tonnes per annum.

3.1.4 RECOVERY RATES

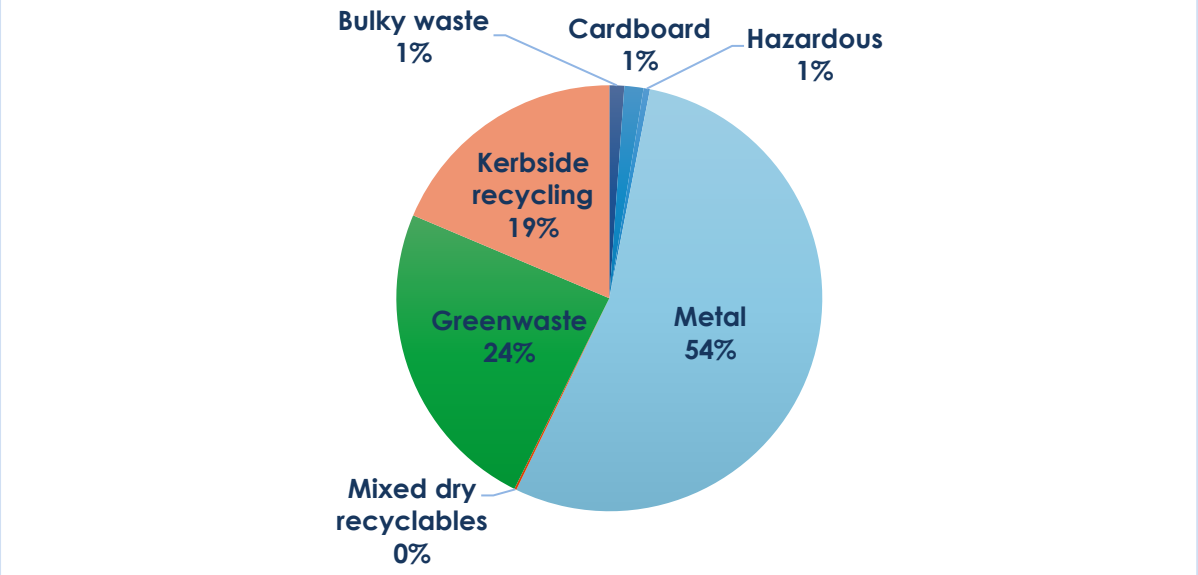
The Shire offers numerous resource recovery options for the community. The estimated quantity of total waste recovery in 2022/2023 was approximately 1,900 tonnes. This represents an average total recovery rate of 30%. The total per capita recovery rate based on this data is 314kg per year.

Table 3.4 Shire of Chittering recovery rates

	MSW	C&I	C&D	Total
Estimated tonnes of waste recycled	1,859	3	0	1,862
Estimated percentage recovered from landfill of total waste received	30%	0%	0%	30%
Estimated recovery from landfill per capita (kg/person)	314kg	0kg	0kg	314kg

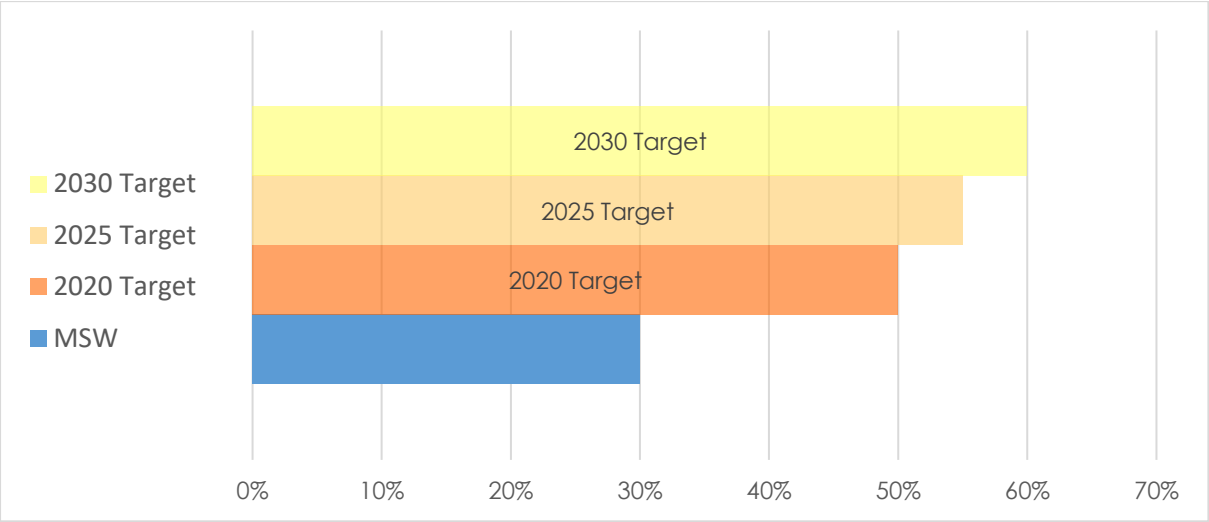
The materials recovered consisted of metal, greenwaste, kerbside recycling, hazardous (waste oil, batteries), bulky waste (e-waste, furniture) and cardboard. **Figure 3.2** provides the percentage breakdown by material stream.

Figure 3.2 Percentage recovery by waste stream



The WARRS includes a target to increase MSW material recovery to 50% by 2020, 55% by 2025 and 60% by 2030 for major regional centres. The Shire is not defined as a major regional centre within the WARRS and these targets do not apply. However, DWER expects local governments to be working towards these recovery targets. **Figure 3.3** shows the Shire's resource recovery rate compared to the WARRS targets set for major regional centres.

Figure 3.3 Shire MSW recovery rate (blue row) compared to WARR Strategy recovery targets

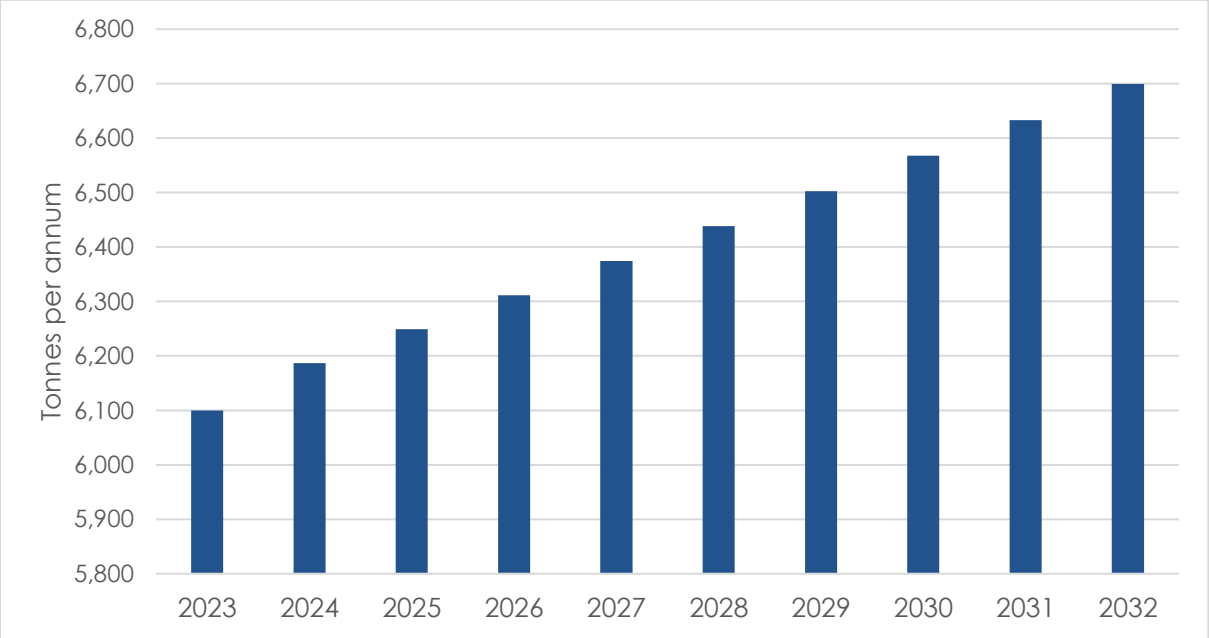


3.1.5 WASTE GENERATION PREDICTIONS

Waste generation projections have been produced for the next 10 years based on an average growth rate of 1.06%, as stated in the Shire of Chittering Local Planning Strategy (2019). For this projection, it has been assumed that over the 10-year project, waste generation per capita will, on average, remain constant and that there will be no increases in commercial waste acceptance within the Shire.

The projection estimate results show approximately 6,700 tonnes per annum of waste being generated by 2032. This is an increase of 9.3% or 600 tonnes from the estimated average waste generation per annum for 2022-23 of 6,100 tonnes per annum. **Figure 3.4** provides the total annual waste generation projection until 2032. If commercial waste were to be accepted, assuming rural averages, there would be approximately 15,000 tonnes generated in the Shire by 2032.

Figure 3.4 Total waste generation predictions within the Shire to 2032



3.2 INTEGRATED PLANNING AND REPORTING

Integrated planning and reporting (IPR) guide the Shire's strategic direction and planning and gives local governments a framework for establishing local priorities and linking them with operational functions.

The Shire of Chittering Strategic Community Plan 2022 – 2032 includes waste-related outcomes under '*Objective 2: Natural Environment'*. The Environmental outcome of '*Sustainable Lifestyles*' and '*Environmental Protection'* are supported by a number of strategies, including:

- Improved waste management and recycling practices
- Ensure water security and quality
- Protection of wildlife and nature from pests, weeds, destruction and contamination

This Strategic Waste Management Plan will fit within the Shire's IPR framework as an issue-specific informing strategy. The strategy actions will be included as part of the annual corporate business plan (CBP) review, and new expenditures required to implement actions will be incorporated into the Shire's CBP, long-term financial plan, and annual budgets as appropriate.

3.3 WASTE SERVICES

Waste services provided by the Shire include kerbside collections, drop-off facilities, public place bins, litter and illegal dumping, and the management of waste created by local government service provision. They are summarised in **Table 3.5**. These services can avoid waste generation, recover materials from waste, and protect human health and the environment from the impacts of waste. Maximising the efficiency of these services also ensures they are delivered with minimal impacts on Shire funding reserves.

3.3.1 FREE DISPOSAL

There is unlimited free disposal of domestic waste for residents. By showing proof of residency, residents can access Shire landfills for free to dispose of general household waste, bulk household waste and recyclables. This does not apply to commercial waste. It is the responsibility of the generator to declare whether waste for disposal is commercial or domestic. There is currently no auditing of usage of the free disposal allocation undertaken.

Table 3.5 Shire Chittering waste services detail

Service	Type	Details	Notes/information/observations
Kerbside collections	Waste	240L MGB weekly kerbside waste collection service Bin collection includes domestic, commercial premises and public place bins Provided under contract (AvonWaste)	Weekly collections carried out on Wednesday, Thursday, Friday by Avon Waste All waste from collection disposed at Muchea landfill Bins are property of the Shire Approx. 2152 domestic and commercial services Approx. 130 tonnes per month collected Collection contract cost basis is per service Cost of service (including recycling) $334 per annum (22/23) Approx. 20-30% of the Shire provided with no access to kerbside service due to large distances between properties
	Recycling	240L MGB fortnightly kerbside collection service Service is mandatory in town centres Bin collection includes domestic, commercial premises and public place bins Recyclables taken to South Metropolitan Regional Council material recovery facility Provided under contract (Avon Waste)	Fortnightly collections carried out by Avon Waste Mandatory 2 bin collection (i.e. waste and recycling) Approx. 2119 domestic and commercial services Approx. 29 tonnes collected per month Loads comingled with other Shires and not delivered individually to SMRC, hence data based on recycling product audits
	FOGO	Nil	Key headline target of WARR Strategy for metropolitan area
	Bulk waste	Nil	No collections
Drop off (Bindoon and Muchea landfill)	Reuse and Recycle area	Provided at Muchea landfill	Reuse shop was previously in an enclosed shed on site, however this was reconfigured as a CDS refund point for the Shire. Reuse materials now stored in an open-sided roofed structure, with some materials stored outside of this area due to size constraints. Shire reports shop is popular, but time-consuming for staff. Income return is low.
	Mixed waste	Waste disposed directly at tip face at both facilities	Customers have access to the tip face Numerous active cells evident at Muchea Includes acceptance of dead animals

Service	Type	Details	Notes/information/observations
	Construction and demolition	Not accepted at either Facility	Small amounts of commercial waste are accepted at a commercial gate fee rate Large commercial loads are not accepted at either Facility Decision made approx. 6-8 years ago as a means to conserve airspace at the Muchea facility
	Cardboard	Collection bins provided for cardboard at both facilities	Bins collected by Avon Waste when required at no charge Shire used to bale and transport cardboard to recycling companies in Perth, however was deemed unviable by the Shire and the practice ceased
	Car batteries	Collection point provided at both facilities	Batteries placed on wood pallet and sold to scrap metal merchants
	E-waste	Collection point at both facilities	Removed by an E-Waste recycler once the skip bin is full There is a small administration charge for this as the company is subsidised by the Government for E-waste Additional charges for contaminates such as wooden speakers or microwaves placed in the E-Waste bin
	Waste Oil	Collection point provided at both facilities	Placed into a 2000 litre storage tank or larger drums in a bunded under-cover area Waste oil is collected by oil recycling company Wren Oil There is an administration charge for the oil removal
	Scrap metal	Collection area provided	Collected on average every 12 months Large stockpiles on both sites Heavy gauge steel, copper and electric motors are separated into bins by landfill staff. Scrap steel recovery provides the main recycling income for the Shire Whitegoods to be degassed or fees apply
	Tyres	Not accepted	No more than 100 tyres to be stockpiled on site under Muchea licence conditions
	Greenwaste	A collection point for clean greenwaste (branches, leaves) provided at both facilities	Greenwaste mulched every two years or as required by contractor Mulch used for cover around landfill Greenwaste has high levels of contamination Fires in mulch piles not uncommon Mulch sold at $13.75m^3$
	CDS containers	Refund point at Muchea Aluminium can collection point at BLRC	Refund Point run three days per week, requiring a minimum of two staff at the Muchea Landfill Landfill operations closed during the week for CDS operations, however both CDS and landfill open on Sunday.

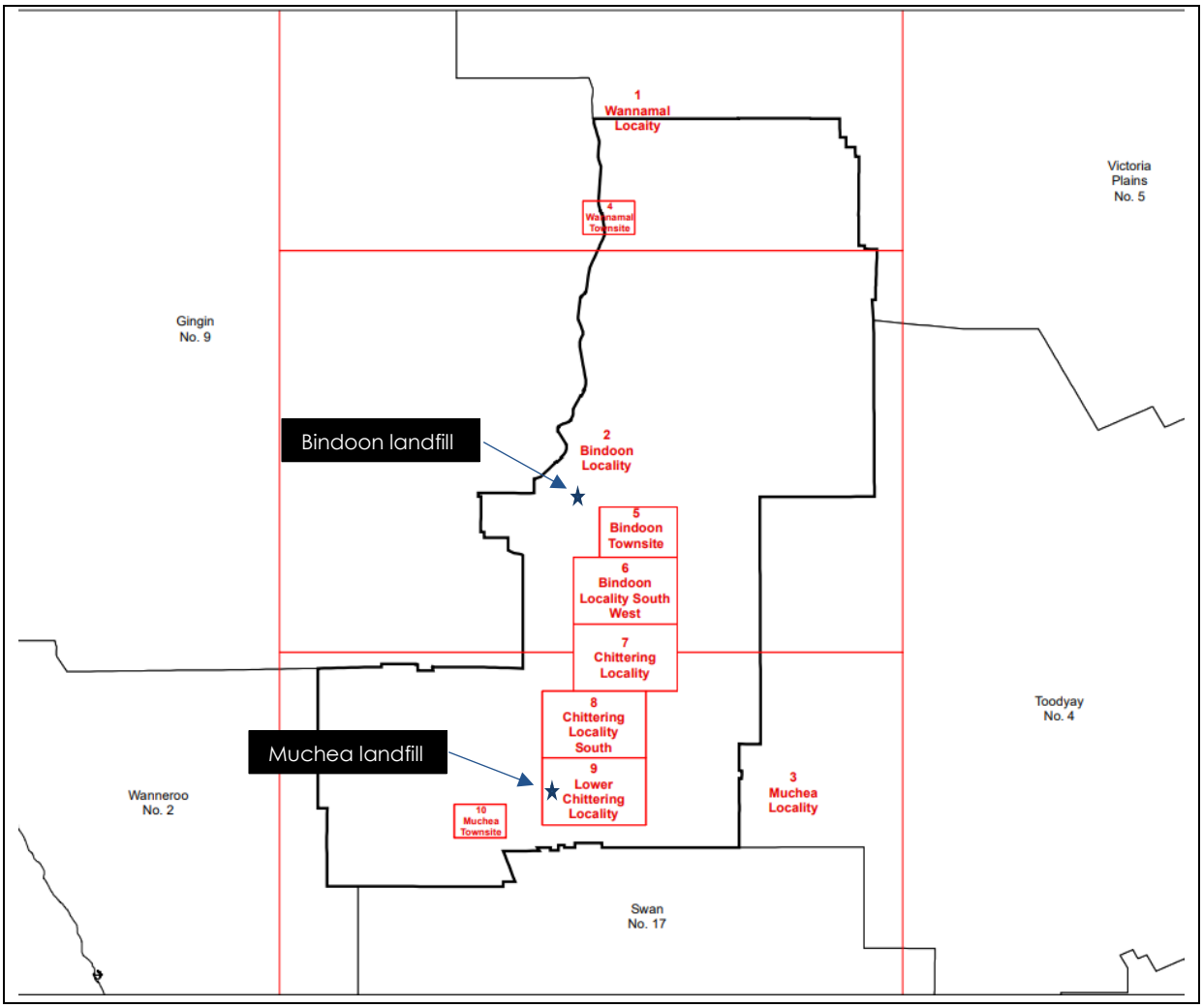
Service	Type	Details	Notes/information/observations
		CDS donation collection point provided at BLRC	Staff that run refund point are also responsible for landfill operations Handle of average 25,000 cans per week (range 41,000 – 7000) (2022 data) Earn approx. $76,000 per annum handling fee (2022 data)
	Asbestos	Only accepted at Bindoon landfill	Accepted by appointment Accepted in accordance with licence conditions
	Fluorescent tubes	Collection point provided at both facilities	Collected by LAMP Recyclers
	Mobile phones	Collection point provided at both facilities	Collected for recycling by Total Green Recycling
	AAA & AA batteries	Collection point provided at Shire Library	Collected for recycling
	Glass	Collection bins provided for glass	Due to contamination levels, it is rejected by recyclers Currently stockpiled and then crushed for use as cover as required
	DrumMUSTER	Drop of point provided for eligible agricultural and veterinary chemical containers at Bindoon	Serviced by CLAW Environmental
Public Place	Waste	Waste bins are provided in strategic locations within the Shire	Bins serviced by kerbside contractor Approx. 114 waste bins
	Recycling	Waste bins are provided in strategic locations within the Shire	Bins serviced by kerbside contractor Approx. 45 recycling bins
	Litter and illegal dumping	Shire is responsible for investigation, clean up and enforcement of littering and illegal dumping incidents on Shire owned/managed public reserves, vacant lots and roadside verges	Litter, illegal dumping, and amenity maintenance not identified as an issue of significance within the Shire Shire rangers undertake enforcement, and works department undertakes clean-up if required
Local government waste	Greenwaste inert waste	Waste generated from Shire operations and services	Inert waste disposed of to landfill Greenwaste stockpiled

3.4 WASTE INFRASTRUCTURE

The Shire has two Category 64 landfill facilities within the Shire, the Bindoon Landfill and Recycling Centre (BLRC or Bindoon Facility) and the Muchea Landfill and Recycling Centre (MLRC or Muchea Facility).

Based on 2021 ABS data, the Bindoon facility services an estimated population of 1,562 (Wannamel, Bindoon and Mooliabeenee) and the Muchea Facility service an estimated population of 4,363 (Chittering, Lower Chittering and Muchea). There is approximately a 30km travel distance between the two Facilities connected through Great Northern Highway. The Muchea Facility is relatively close in proximity to several metropolitan better practice landfills (i.e. lined with leachate and landfill gas management systems), including Tamala Park (43km) and Redhill Waste Management Facility (40km).

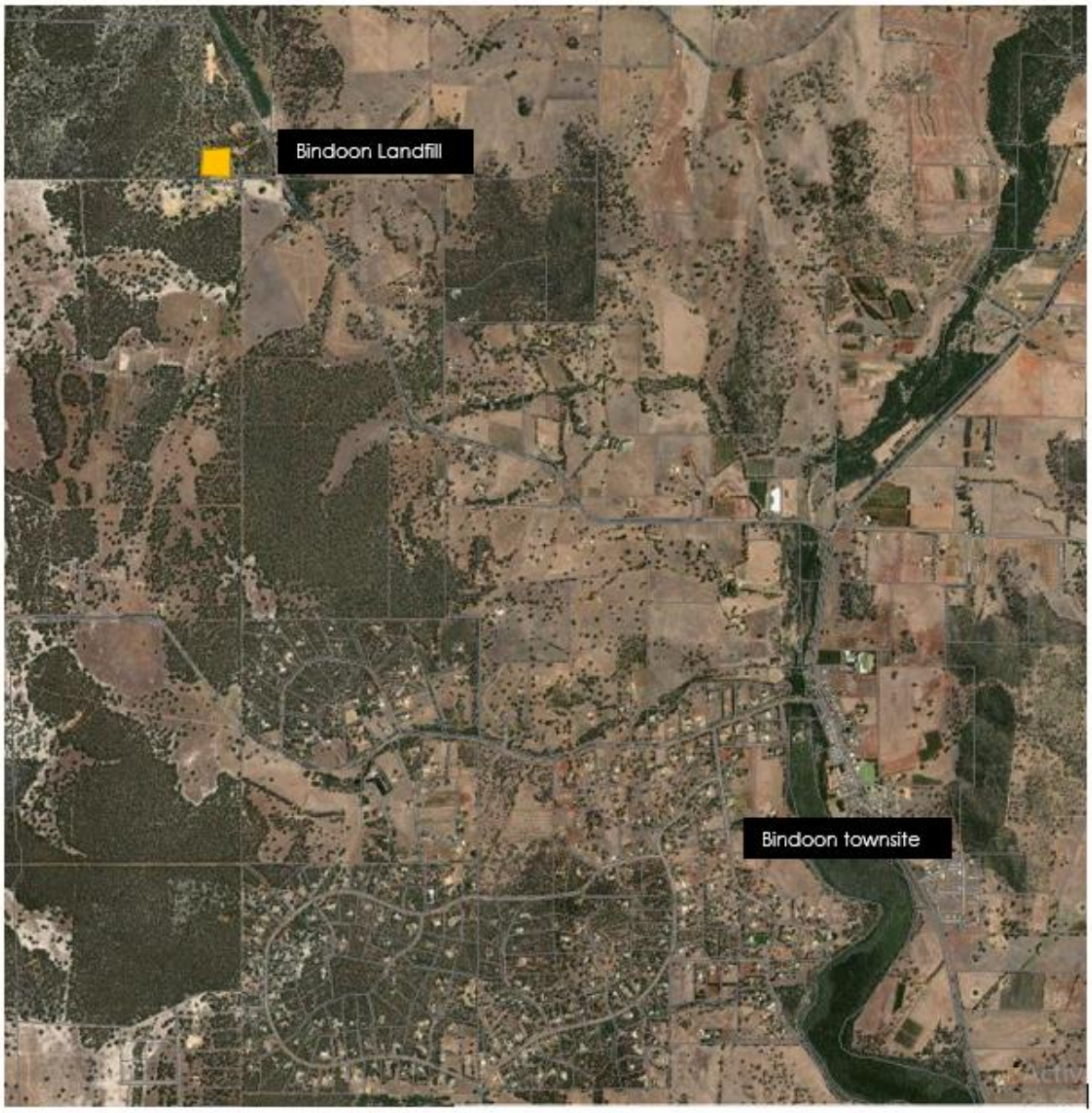
Figure 3.5 Location of Shire waste facilities



3.4.1 BINDOON LANDFILL & RECYCLING CENTRE

The Bindoon Landfill and Recycling Centre (BLRC) is located on Mingah Road in Mooliabeenee. The BLRC is approximately 6km north-west of Bindoon townsite, as shown in **Figure 3.6**.

Figure 3.6 Map showing location of Bindoon Landfill and Recycling Centre



3.4.1.1 Site Description

The site covers an area of approximately 23 hectares, of which 2.6 hectares are used for landfill purposes. The unused area of the site is proposed to be developed into light industry (Shire, 2017). The site is used to supply sand for cover operations at the Landfill. The Shire advises this resource, however, has a limited supply and, once depleted, soil for cover and capping will need to be imported to the site, thereby increasing the cost of the facility operations.

A natural gradient runs through the site in a north-south direction at an estimated 1(v):20(h) slope. Shire records indicate that historically, waste has been filled in lifts commencing parallel to the southern boundary of the site and moving in a northward direction. Waste is advised to be placed loosely without compaction and is periodically covered with sand. The southern and south-western side slopes of the landfill have steep slopes with gradients of approximately 1(v):3(h).

There are no groundwater boreholes located within the BLRC site boundary, so data in relation to groundwater beneath the site is limited.

The BLRC attributes are contained in **Table 3.6** below. An aerial overview and images of the Facility is shown in **Figure 3.7.**

Table 3.6 BLRC attributes

Address	Lot 101 Mingah Road MOOLIABEENEE, WA
Environmental Protection Licence	L9160/2018/1
Licence Class	Category 64: more than 20 tonnes per year but not more than 5,000 tonnes per year
Period of use	Unknown
Site Area	23.64 hectares of which 2.6 hectares is used for landfill operations (as of 2017)
Site security	Entrance gates and perimeter fence
Opening hours	Three days a week: Sunday, Tuesday and Saturday. Opening hours 10am – 3pm
Licence waste types accepted	Inert waste type 1, inert waste type 2, putrescible waste, Special waste type 1, Special waste type 2 Commercial and large loads of demolition waste not accepted at this landfill.
Infrastructure on site	Toilet block/crib room and recycling shed, waste oil disposal facility, drummuster compound.
Cell construction	Above ground cells
Remaining capacity	Most of the site looks to have already been used for landfilling. The Shire estimated in 2017 that the current area used for landfill has a life expectancy of approximately 2 years or less. Landfilling is still occurring in 2023. (From Shire operations manual 2017)
Roads	Gravel roads
Equipment	None stored on site, however access to front end loader and two trucks
Utilities	There is no power on site. A rainwater tank supplies water to the toilet. Potable water is bought in by staff (water bottle).
Landfill Closure Management Plan	No final landform or closure plan developed
Residential receptors	~425m east, ~425m south-east, ~825m south of landfill boundary

Figure 3.7 Images of Bindoon Landfill and Recycling Facility (2022)

3.4.2 MUCHEA LANDFILL AND RECYCLING FACILITY

The Muchea Landfill and Recycling Centre is located on Wandena Road in Muchea. The Facility is approximately 6.5km north-east of the Muchea townsite, as shown in **Figure 3.6**.

Figure 3.8 Map showing the location of Muchea Landfill and Recycling Centre

The site covers an area of 11.8 hectares, and Shire records indicate a life expectancy of 30 years (2017, Shire Landfill Site Operations). Before the site was established as a landfill and recycling centre, it was a clay and gravel quarry. In 2014 the Shire purchased the southern portion of the site (approx. 3 hectares) for future landfilling purposes.

The landfill is located in a Special control area under the Shires Town Planning Scheme, and it incorporates a surrounding buffer exclusion zone for all development within a 500 m radius of the landfill site. A livestock sale yard is located 600m south-west of the premises, and a residential subdivision is approximately 500m to the east.

DWER records indicate that the main soil types in the area are clayey sand and laterite deposits. The site elevation is between 120m and 140m Australian height datum (AHD). Three groundwater monitoring bores were installed in 2015, with monitoring indicating that groundwater was between 9m – 14m below ground level. Based on the groundwater data collected at the time, the overall flow direction is inferred to be south-west.

The MLRC attributes are contained in **Table 3.6** below. The facility layout is provided in **Figure 3.9.**

Table 3.7 MLRC attributes

Address	536 Wandena Road, LOWER CHITTERING WA 6084
Environmental Protection Licence	L6845/1997/1
Licence Class	Category 64: 5000 Tonnes per annual period Category 62: 2000 Tonnes per annual period
Period of use	1970
Site Area	11.8 hectares of which the area used for landfill is unknown, however based on previous records is estimated to be less than 5 hectares

Site security	Entrance gates, boom gate, perimeter fence, CCTV
Opening hours	Five days a week: Sunday, Monday, Wednesday, Friday and Saturday Opening hours 10am – 3pm
Licence waste types accepted	Inert waste type 1, Clean fill, inert waste type 2, putrescible waste, Special waste type 1, CDS materials, Hazardous waste, Greenwaste Commercial waste and large loads of mixed demolition waste not accepted
Infrastructure on site	Toilet and office, two recycling sheds, waste oil disposal facility, three groundwater monitoring bores
Cell construction	Below and above-ground trenches
Remaining capacity	Shire reports indicate approximately 25 – 30 years
Roads	Gravel roads
Equipment	Caterpillar 963C traxcavator (not operable). New machine on order and due later in year. Carting of fill for cover by Shire staff using Shire machinery when available.
Utilities	There is no power on site. A 5kva diesel generator is used for power supply. Three rainwater tanks supply water to the site. Potable water is bought in by staff (water bottle).
Landfill Closure Management Plan	No final landform or closure plan developed
Residential receptors	~580m north-east (single dwelling)
Surrounding landuse	• Farmland to the north, east and west • Operational clay quarry to the south • The site is situated within a designated buffer reserved for the Western Australia Meat Industry Association's (WAMIA's) Muchea Livestock Centre which is located to the south-west of the site

Figure 3.9 Layout of the MLRC

3.5 POLICIES AND PROCUREMENT

DWER waste plan requirements necessitate metropolitan local government policies, and procurement strategies integrate waste management and resource recovery considerations through all facets of local government services and activities to contribute to the WARR Strategy objectives. **Table 3.8** details the Shire's current policies and procurement initiatives in relation to DWER's better practice guidance.

Table 3.8 Shire of Chittering policies and procurement relating to waste

Activity	Detail	Provided	Discussion
Contracts	The Shire currently has numerous contracts for provision of waste services	Yes	Kerbside waste and recycling collection (domestic, commercial and public place)
Local Laws and polices	Waste Local Law	Yes	Waste Local Laws made under the WARR Act 2007 improve the management and control of waste disposal. WALGA have developed a model local law template for use by Local Government.
	Emergency waste management plan	No	The development of waste contingency plans in case of disruption or disaster will assist the Shire in ensuring timely, appropriate and coordinated responses to emergency situations. Given the small size of the Shire and its close location to the metropolitan area, this is not seen as a priority for the Shire.
	Waste management plans (Development Applications)	Yes	WALGA have developed a model local planning policy, planning conditions flow chart, and guidelines for waste management plans to assist local government. These guidelines demonstrate how the Local Planning Development Approval process can assist in meeting the Shire's objectives for waste management.
	Litter and illegal dumping strategy	No	The Shire does not have a comprehensive litter strategy, although given the small size of the Shire, and lack of identified issues, it is not seen as a priority.
Land use planning instruments	Waste considered in local planning strategy	Somewhat	Considered within the Scheme, however, no specific actions. *'The generation of waste will increase, putting pressure on available landfill space. Greater consideration needs to be placed on the Shire's landfill space and efforts made to utilise it efficiently. The Shire currently operates landfill sites at Bindoon and Muchea. Both are Category 64 - Class 2 Putrescible landfill sites.'*
	Local Planning Strategy identify current and future waste facility site	Somewhat	Current sites are identified, however, no future sites as yet.
	Local Planning Strategy identify buffers around existing and/or future sites to avoid land use conflict	Yes	500m buffer

Activity	Detail	Provided	Discussion
	Local Planning Schemes reflect the Planning and Development (Local Planning Schemes) Regulations 2015	Yes	Resource recovery facilities, waste disposal facility and waste storage facility are defined as land uses and included in the zoning table (as per Planning and Development (Local Planning Schemes) Regulations 2015).
Procurement	Sustainable procurement policy	Yes	Contained within Policy 2.12 'Purchasing' *'Practically, sustainable procurement means the Shire shall endeavour at all times to identify and procure products and services that:* • *Are environmentally sound in manufacture, use, and disposal with a specific preference for products made using the minimum amount of raw materials from a sustainable resource, that are free of toxic or polluting materials and that consume minimal energy during the production stage;* • *Products that can be refurbished, reused, recycled or reclaimed shall be given priority, and those that are designed for ease of recycling, re-manufacture or otherwise to minimise waste.'*
	Regional Procurement	No	No formal policy, however the Shire may be able to improve financial outcomes by pursuing regional procurement where practicable for provision of some waste services.

3.6 BEHAVIOUR CHANGE PROGRAMS

The Waste Authority defines behaviour change programs and initiatives as activities that:

- Increase awareness, skills and knowledge
- Provide consistent messaging
- Help people to use waste infrastructure
- Encourage the adoption of specific, positive waste behaviours and attitudes.

Communication and engagement with waste generators underpin many local government's waste management activities and are vital to driving behaviour change needed to achieve the objectives and targets of the WARR Strategy.

Waste education programs and initiatives within the Shire are implemented generally on an ad hoc basis in response to problems and issues encountered. There is no specific waste education position or funds provided within the Shire.

Given the significant role the Shire's waste generators play in minimising waste, and the recovery of materials, ongoing waste education is vital to ensure the Shire achieves the best possible outcomes in relation to waste management and resource recovery.

3.7 DATA AND INFORMATION

Data and information provide the key foundation for effective planning, monitoring, management and decision-making with waste management and resource recovery. **Table 3.8** details the Shire's waste data and information. Due to the small size and limited finances, and technical waste management expertise, the Shire only has limited access to appropriate waste data and information to guide strategic waste planning in the Shire.

Table 3.9 Shire of Chittering waste data and information

Source	Details	Information
Waste data collection and reporting	Accurate data is required to comply with mandatory reporting requirements under WARR Regulations. Accurate data will also be needed to track progress towards achievement of the WARR Strategy targets. The waste data from the Facilities is captured on simple excel spreadsheet.	Waste data capture methods should be reviewed to ensure they are consistent with mandatory reporting requirements under WARR Regulations. Options to improve waste data collection to be considered.
Waste composition data	Kerbside audits provide information on waste composition, including amount, type and proportion of materials in the general waste stream. The Shire has not conducted kerbside waste audits.	Informs development of waste and recycling initiatives. Assists in determining the viability of recycling services.
Whole of life (WoL) operational costs for waste facilities	Full cost of waste services, facility operations, capping liabilities and asset renewal has not been calculated. All waste management costs relating both domestic and commercial wastes need to adequately cover for the life of the asset, or alternative revenue streams secured for any shortfalls quantified.	In terms of economic understanding, Shires are effectively 'operating in the dark' as they are lacking financial data for the true cost of waste disposal and airspace. This has operational and long-term financial impacts, which can lead to avoidable costs being incurred and limits the ability to assess the feasibility of potential resource recovery initiatives.
Financial analysis	Waste disposal at the Shire facilities for domestic waste is free. Currently (22/23 budget) expenditure exceeds income by approx. $261,000. Rubbish collection charges do not appear to include appropriate recovery of costs associated with disposal of waste collected. Landfill and Recycling facility Maintenance Rate is charged at $60 per property ($180,000 income across all properties) and appears to cover operational costs.	Free waste disposal options do not support or encourage a waste avoidance culture. It is inequitable as people producing the waste do not generally pay for its disposal, with costs incurred by the Shire in handling the waste being covered through a blanket fee applied to all ratepayers. Shire fees and charges could be reviewed to assess any cross-subsidy and move to user pays principle. Consider introducing fees for waste disposal to help the Shire transition from all users pay to polluter/user pays principle. Review kerbside rubbish rates to ensure full costs are recovered.
Community opinion	Community opinion should be considered for the development of waste management strategies, plans and resource recovery measures for the Shire	Community opinion is not currently known.

3.8 REGIONAL WASTE MANAGEMENT

The Shire participates in the Avon Regional Organisation of Councils (AROC). AROC is a regional grouping of six local governments including Dowerin, Goomalling, Victoria Plains, Northam and Toodyay. It was formed in 1999.

A Strategic Waste Management Plan 2015-2020 was developed for the group in 2015. Key priority areas identified in the plan included:

- Waste management activity coordination and leadership
- Data collection

- Increasing recycling activities and participation
- Landfill management
- Community education
- Increased participation in recycling activities.

The group was to use the five-year period to firmly establish the regional cooperation between the participants and implement effective waste management operations and shared contracts/activities. It was also noted that the individual group participants required political and financial support from their individual councils in order to achieve noticeable improvements in waste management activities within the shires and the region.

Feedback from the Shire indicated very few of the actions were implemented due to insufficient human and financial resources and a lack of regional coordination.

There is no regular collaboration and coordination of Shires in the region on waste management.

3.9 BETTER PRACTICE APPROACHES

The achievement of better practice forms part of the WARR Strategy targets for the three headline objectives, including:

Avoid: all waste is managed and/or disposed of using better practice approaches.

Recover: all waste facilities adopt resource recovery better practice.

Protect: all waste facilities adopt environmental protection better practice.

Due to its small size, the Shire does not implement any current Waste Authority better practice initiatives.

The Waste Authority is currently developing better practice guidance to support local government adoption of better practice. The better practice guidance, once developed, may have relevance to the Shire's existing services and facilities.

4 ACTION PLAN

This Strategic Waste Management Plan (SWMP) provides a series of actions and tasks that support achievement of the Shire's aims and objectives (**Section 1.2**). The action plan has been developed with consideration of the Shire's resources and is appropriate for a rural Shire with a small population.

Tasks for implementation have been grouped into five categories. Each task includes:

- Findings: A brief description of the findings discovered during the development of the SWMP.
- Issues: The implications that are brought about by the findings.
- Implementation: Key activities required to implement the task.
- Cost: Estimated cost to implement the task and potential funding sources.
- Target: A measurable target that will be obtained through implementation of the task
- Priority: Prioritised as either short (one – two years), medium (three – five years) or long term (five years +).
- Link to WARR Strategy 2030: Link to the key outcomes of Avoid, Protect, Recover

The five categories are listed and defined below.

Waste infrastructure and operations

To protect the environment, waste infrastructure and operations need to be managed to comply with better practice standards, DWER licence conditions and the relevant regulations. The use of better practice will assist in minimising the risk of environmental damage or pollution, extending the life of the Shire's landfill and reducing costs. Actions include:

- Address Licence non-compliance
- Develop and implement a LCMP for the MLRC
- Develop a LCMP for the BLRC to facilitate the landfill closure
- Develop Facility Management Systems
- Define, design and construct Transfer Stations
- Optimise landfill efficiencies at Muchea landfill
- Address infrastructure implications of Waste Strategy Better Practice

Waste services

Through these services the Shire can avoid waste generation, recover more materials from waste, and protect human health and the environment from the impacts of waste. Actions relating to the Shire waste services include:

- Undertake a feasibility assessment for the collection and processing of FOGO
- Undertake a review of the kerbside contract and pursue regional procurement
- Review options to increase resource recovery streams
- Review of Containers for Change refund point operation

Data, information and economics

Data and economic information provide the key foundation for effective planning, monitoring, management and decision making in relation to waste management and resource recovery. Actions include:

- Undertake financial review and whole of life costing
- Review Shire position on free domestic disposal
- Review Shire position on commercial waste acceptance
- Alignment with Strategic Community Plans and operational business plans and budgets

Regional approaches

Strategies and actions to strengthen regional collaboration in the delivery of waste management services and improve waste management practices across the region. Actions include:

- Regional coordination & cooperation
- Regional procurement

Behaviour Change

Communication and engagement with waste generators underpin many local government waste management activities and is vital to driving behaviour change needed to achieve the objectives and targets of the WA Waste Strategy 2030. Actions include:

- Education and awareness

4.1 WASTE INFRASTRUCTURE AND OPERATIONS

4.1.1 ADDRESS LICENCE NON-COMPLIANCE

TARGET: Address the compliance and safety risks from the waste sites by Dec 2023. **Approximate costing: Unknown** Link to WARR Strategy 2030: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
Based on the audit there are a number of key risks to compliance with the operational licences for each Facility and potential safety risks identified.	Licence non-compliance is an offence under the Environmental Protection Act. Impacts on the environment are increased through licence non-compliance. Safety risks present public liability and occupational health and safety exposures to the Shire.	The Shire addresses the non-compliant licence issues and safety risks on each site as discussed in **Appendix A** of this report.	1. Review non-compliance issues with each site. 2. Implement controls.	Unquantifiable and dependent on Shire actions to rectify the issues.

4.1.2 DEVELOP A LCMP FOR THE MLRC AND PROGRESSIVELY CAP

TARGET: Develop a LCMP for the MLRC by June 2024.
Approximate costing: $15 - $20K for LCMP **Link to WARR Strategy 2030**: Protect

Findings	Issues	Recommendations	Implementation	Cost
The MLRC is uncapped. There is no plan for progressive cell development and ultimately closure. Capping costs are not incorporated into Fees and Charges for use of the Facility.	Landfill closure management plans (LCMP) are required from the first day of operation until site closure and into post closure monitoring. A LCMP is needed to provide: • an estimate of landfill life and closure timeframes • a final landform design to guide site development (limits site 'sprawl' and ad hoc cell development) • cap design and materials needed (e.g. quantity of soil • information on emissions management required as the site develops (stormwater, landfill gas) • estimate costs for closure and Bill of Quantities Uncapped areas increase the volume of leachate generated, increasing the risks to groundwater and surface water, migration of landfill gas, stability risks, erosion issues and odours which can be costly to manage. The cost of closure should be covered as part of fees and charges or the Shire will face a significant unfunded cost for site closure.	Develop and implement a LCMP for the MLRC.	1. Secure budget for development of a LCMP. 2. Procure services to develop a LCMP for the Facility Site. 3. Implement the Landfill Closure Management Plan once developed. 4. Ensure the phased development and capping across the site is planned, costed and included in future budgets. 5. Ensure site closure costs are considered when setting annual fees and charges.	Approx. costs for LCMP produced by a consultant: $15K - $20K The estimated cost of the rehabilitation and closure works for the existing landfill footprint will be calculated as part of the LCMP development

4.1.3 DEVELOP A LCMP TO FACILITATE CLOSURE OF THE BINDOON LANDFILL

TARGET: Develop a LCMP for the BLRC by Dec 2023.
Approximate costing: LCMP $15K **Link to WARR Strategy 2030**: Protect

Findings	Issues	Recommendations	Implementation	Cost
The Shire may decide to close the Bindoon landfill in the short to midterm and convert to a Transfer Station to transfer waste off site. The Bindoon Landfill is uncapped and there is no LCMP developed for the site to guide landfill closure.	Landfills cannot be closed 'overnight' and must be planned. A LCMP guides closure requirements and timeframes and includes: • Final landform design • Cap design requirements • Emissions management requirements (stormwater, landfill gas) • Post closure monitoring requirements • Costs for closure and soil requirements	Develop and implement a LCMP for the Bindoon landfill based on the anticipated closure timeframes required. Closure timeframes are linked to the decision regarding the future direction of the BLRC.	1. Council to decide on whether to proceed with establishment of transfer station and closure of the landfill and required timeframes. 2. Obtain suitable resourcing for development of the LCMP. 3. Develop RFQ for services. 4. Develop LCMP document based on timeframes required (action 1) 5. Review and adopt LCMP. 6. Implement LCMP.	Approx. costs produced by a consultant: $15K - $20K The cost of the rehabilitation and closure works for the existing landfill footprint will be calculated as part of the LCMP (estimated to be approx. $1.5M - $2M).

4.1.4 DEVELOP FACILITY MANAGEMENT SYSTEMS

TARGET: Progressively develop the required information to guide Facility operations.
Approximate costing: Dependent on number of Plans produced (approx. $80K MLRC, $40K BLRC) **Link to WARR Strategy 2030**: Recover, Protect

Findings	Issues	Recommendations	Implementation	Cost
There is a lack of supporting management information to guide Facility operations. Layout at the MLRC appears to have been developed in an ad hoc manner and presents challenges with its design and layout. There was a lack of a documented Operational Management Plan (OMP) on roles and responsibilities for staff at both Facilities. Landfill development at the MLRC appears to be adhoc. Processes on a waste site can present a significant fire risk and present specific issues for firefighters. The fire risks at each Facility have not been through a risk assessment process.	Without a Facility Management System the Shire has little ability to direct and oversee its' operational management and strategic development. A Facility Management System ensures each Facility is run efficiently and effectively, is safe for staff and users, minimises its impact on the local environment, does not cause a nuisance for neighbours and is developed in line with Shire strategies and legislative requirements.	The Shire develops relevant documents to guide Facility operations and management including but not limited to: • Site Masterplan showing key infrastructure, and progressive development stages. (MLRC) • Operational Management Plan (OMP) to guide operations, describe the level of performance expected and practices for managing, operating and monitoring the Facility. (MLRC, BLRC) • Landfill Sequence Plan (LSP) to provide details for year-to-year landfill sequence operations. (MLRC, not for BLRC as assumed landfill will be closed) • Fire Management Plan (FMP) to assess, mitigate and manage fire risks on site. (MLRC, BLRC)	1. Secure budget for development of the required plans. 2. Procure services to develop plans. 3. Implement the Plans once developed. 4. Review and update Plans on a periodic basis.	Approx. costs produced by a consultant: • Site masterplan $8K-12k • OMP $15K-$25K • Fill Sequence Plan $15K – $20K • FMP $10K - $15K

4.1.5 DEFINE, DESIGN AND CONSTRUCT TRANSFER STATIONS

TARGET: Define, design and cost a preferred transfer station layout by June 2024.
Approximate costing: $30k - $40K (design only) **Link to WARR Strategy 2030:** Recover, Protect

Findings	Issues	Recommendations	Implementation	Cost
The site audit identified a number of legislative, safety, public liability and environmental risks with the MLRC site layout and operation. The outcomes of feasibility assessment for the design, construction and operation of a transfer station at the BLRC show an increase in annual costs by less than 10% (based on model assumptions). The MLRC is anticipated to have a long operational life supporting investment in better practice infrastructure.	There are numerous advantages to establishing a transfer station including: • Reducing impacts on the environment from landfill operations (if closing the Bindoon landfill) • Reducing cost liabilities moving forward by minimising the number of Shire landfill sites • Long term waste disposal security is retained through the MLRC • Progressing towards better practice • Reducing the risk of injury for customers and staff • Reducing the complexity and technical oversight required (a transfer station is less complex to operate and maintain as opposed to a landfill) • Increasing source separation opportunities and resource recovery • Improving site traffic flows • Improving operational efficiency for the storage and handling of material streams • Improving site amenity, cleanliness and customer experience. The ongoing costs of a Transfer Station are significantly impacted by the design of the Facility including the type of infrastructure and plant required to service the facility. There are numerous design options available. The design and layout have long term implications on customer satisfaction, cost, operational flexibility and risk structure for the Shire.	The Shire defines, designs and constructs Transfer Stations for the BLRC and MLRC facilities.	1. Review and assess design options and define preferred choice. 2. Determine timeframes for development and construction. 3. Undertake detailed design and costing. 4. Develop tender documentation. 5. Tender for construction. 6. Construct. 7. Operate and maintain the facility including development of supporting management plans (See **Action 4.1.4**), staff training, community education and engagement.	Approx. costs: • Design options assessment $10K • Detailed design and costings $20K per annum • Construction costs will be dependent on design • Operation and maintenance costs will be dependent on design

4.1.6 OPTIMISE LANDFILL EFFICIENCIES AT THE MLRC

TARGET: Implement processes to optimise landfill operations at the MLRC **Approximate costing:** Dependent on actions undertaken **Link to WARR Strategy 2030**: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
The landfill capacity at Muchea is not being efficiently managed through a lack of compaction and multiple active cells. The facility does not have reliable plant for optimal waste disposal operations. Landfill staff are skilled plant operators; however, they have no prior experience of waste disposal operations nor adequate training.	The most valuable commodity in a landfill is airspace. The efficiency of Facility operations, including plant type, cell filling sequence and methods, waste compaction and use of cover material and methods is paramount to ensuring the airspace is optimally utilised and the operational life maximised.	Implement better practice landfill operations to optimise remaining operational life at the MLRC.	1. Document required landfill operational processes. 2. Train staff on procedures to be implemented. 3. Secure appropriate plant to meet the facility needs. 4. Minimise the use of cover materials and/or use alternate daily cover materials. 5. Develop a landfill sequence plan to guide and optimise development of the Facility.	Approx. costs produced by a consultant: Documented procedures (within OMP **Action 4.1.4**) Training $10k pa Compactor $750k - $950k Excavator $300k - $500k ADC options $100k Landfill Sequence Plan (see **Action4.1.4.**)

4.1.7 ADDRESS INFRASTRUCTURE IMPLICATIONS WITH WASTE AUTHORITY BETTER PRACTICE

TARGET: Assess services against better practice guidance once released and upgrade to meet better practice requirements as budgets allow. **Approximate costing:** depend on scope **Link to WARR Strategy 2030**: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
Infrastructure for the collection of recoverable material is currently provide at both waste sites and will be provided as part of the proposed Transfer Stations. The WARR Strategy 2030 requires all waste to be managed and/or disposed using better practice approaches.	Low recovery rates for materials increases consumption of landfill airspace. Disposal of recyclable material negates the environmental benefits that can be gained. Waste Authority better practice drop off guidelines are not yet released.	Adopt better practice guidance once released and where practicable. Upgrades to infrastructure will need to be designed, planned, budgeted and constructed.	1. Review better practice guidance material once released. 2. Assess proposed facilities against the DWER better practice guidance. 3. Assess implications and cost for upgrades to service delivery and infrastructure. 4. Determine service upgrades and establish budgets. 5. Upgrade services to meet better practice guidance.	Audit and assessment can be undertaken internally or alternatively provided by a consultant. Costs will depend on the scope of work. Costs for upgrades will be dependent on contents of better practice guidance.

4.2 WASTE SERVICES

4.2.1 UNDERTAKE A FOOD AND GARDEN ORGANICS (FOGO) SERVICE FEASIBILITY ASSESSMENT

TARGET: Assess the feasibility of a kerbside FOGO collection and processing service by 2025.
Approximate costing: $25k-$40K **Link to WARR Strategy 2030**: Recover, Protect

Findings	Issues	Recommendations	Implementation	Cost
There is no FOGO service within the Shire. The Shire has a low recovery rate and is below the 2020 Waste Strategy target for MSW recovery. The Shire will need to increase resource recovery services to align with the WARRS requirements. The local compost industry and markets are not understood.	FOGO collection is mandated in the Perth and Peel regions. Rural local governments are expected to be aligning services with the WARRS outcomes. As FOGO decomposes anaerobically in a landfill it creates leachate and methane impacting on the environment. Approximately 45% of the waste in the domestic kerbside bins is food and garden organics (FOGO). A FOGO service can be a cost effective way to divert a significant portion of the MSW waste stream. However, if there is not already a market for compost in the Shire, it would require a sustained effort to determine the potential market and then develop the market for the compost.	Assess the viability of FOGO collection and processing in the Shire, considering: • DWER Composting facility guidelines • Quantities • Economics • Community opinion • Processing options • Markets	1. Undertake a feasibility assessment for the potential collection and production of FOGO derived compost. 2. Review the outcomes of the feasibility assessment. 3. Council to adopt preferred approach. Appropriate budget funding is to be secured through this process. 4. Develop a project plan for implementation of the preferred approach. 5. Implement the preferred approach.	Feasibility assessment could be undertaken internally or via an external consultant ($25k - $40k). Internal resourcing will be required to progress outcomes of assessment. Funding for implementation will depend on scope of chosen approach.

4.2.2 KERBSIDE CONTRACT REVIEW AND REGIONAL PROCUREMENT

TARGET: Review contract cost options and investigate the potential for regional procurement of the kerbside collection service

Approximate costing: Unknown **Link to WARR Strategy 2030:** Recover, Protect

Findings	Issues	Recommendations	Implementation	Cost
A kerbside waste and recycling service is provided by a third party. The contract is costed on a per service basis. Kerbside services are not procured regionally.	The Shire will be paying increased amounts for kerbside collection based on a price basis per service and opposed to per bin lifted. The small population size and limited economies of scale increases the unit rate of collection.	The Shire reviews the contract cost provisions for incorporation into a new contract for use upon expiry of the existing contract. The Shire investigates the potential to procure kerbside services on a regional basis either with the AVON group of Councils or the Shire of Gingin. Regional procurement does not require a single contract to be signed by all Councils, rather it involves similar services being advertised as part of the same package with a request made to tender applicants that they also provide pricing based on being awarded contracts for all Councils.	1. Review and develop new contract provisions. 2. Investigate options for regional procurement. 3. Tender for provision of services.	Costs associated with procurement of services absorbed as part of Shire operational costs.

4.2.3 REVIEW OPTIONS TO INCREASE RESOURCE RECOVERY

TARGET: Review options to increase resource recovery by Dec 2025 **Approximate costing:** Unknown **Link to WARR Strategy 2030**: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
The Shire has a low recovery rate and is below the 2020 Waste Strategy target for MSW recovery. The Shire is not mandated to meet these targets but maybe required to in future iterations of the Strategy. Rural local governments are expected to be aligning services and performance with the WARR Strategy targets.	The current resource recovery rates indicate the Shire will not align with state targets. The minimisation of waste disposal provides a number of benefits to the Shires and the community. Reducing the quantity of waste landfilled preserves available airspace and increases the operational life of the landfills. It also reduces the pollution risk from the facilities, while the recycling of materials preserves resources and is aligned with targets in the State's Waste Strategy.	An analysis of resource recovery options is required to determine optimal services that will achieve a 60% recovery rate by 2030 and beyond. The assessment needs to include a cost-benefit analysis of each service option. Services could include: • FOGO kerbside service • And other options as determined by the Shire	Undertake a detailed analysis of resource recovery options to determine the optimal infrastructure and services required to achieve a 60% recovery rate by 2030 and beyond. This assessment will ensure the Shire will recover sufficient material to meet the waste targets at the lowest cost to the community.	This task can be undertaken using internal resources or alternatively provided through an external consultant. Approx. costs will depend on the range of options considered and consultation ($20k - $35k)

4.2.4 REVIEW OF CONTAINERS FOR CHANGE REFUND POINT OPERATION

TARGET: Review operation of the Refund Point by June 2024.
Approximate costing: $15-25K **Link to WARR Strategy 2030**: Recover, Protect

Findings	Issues	Recommendations	Implementation	Cost
The Shire has entered into a contract agreement for the provision of a stationary parttime Refund Point (RP) as part of the Containers for Change, Container Deposit Scheme. The Agreement expires in 2025. The operation of the Refund Point is problematic due to: • Large workloads (processing on average approx. 25,000 containers a month) • Limited resources with competing priorities (two staff only that are also required to run the landfill on a Sunday) • Lack of appropriate infrastructure (shed hot, limited space for operations, problems with queuing) • Backlog of material due to delays in offsite transport • Location not ideal (out of town centre requiring customers to make special trip to the landfill) • Income potentially not covering expenditure impacting on viability • Limited education and awareness provided to the community.	The there is a need to understand the true costs of the service, assess its financial sustainability and assess options available to the Shire as to whether to continue the service in its current form or to make changes to increase its viability, accessibility and usability.	The Shire completes a review and assessment of the CDS refund point prior to the expiry of the current contract agreement in Oct 2025. At that point the Scheme operator may extend the contract term by two years. The Shire may or may not accept this extension and will depend on the outcome of the review.	The review and assessment should include: • Whole of life costs associated with refund point infrastructure and operation • Staffing requirements based on throughput volumes • potential number of eligible containers generated vs amounts being handled • options to increase operational efficiency including: collection, sorting and counting systems, payment methods, storage areas and container infrastructure, logistics optimisation, customer access and experience, OHS risks, administration processes. • Options to increase return rates • Other Refund Point outlet options including an automated reverse vending machine (including costs, leasing options and ongoing maintenance requirements) • RP location assessment (optimum location for a RP to ensure viability of service	This task can be undertaken using internal resources or alternatively provided through an external consultant. Approx. costs will depend on the scope ($10k - $15k)

4.3 DATA, INFORMATION AND ECONOMICS

4.3.1 UNDERTAKE FINANCIAL REVIEW AND WHOLE OF LIFE COSTING

TARGET: Undertake a financial review and implement outcomes by Dec 2024

Approximate costing: $15k - $25k dependent upon scope. **Link to WARR Strategy 2030:** NA

Findings	Issues	Recommendations	Implementation	Cost
The Shire is seeking waste costs to become at least neutral. Domestic waste disposal is free for residents. Commercial waste is not accepted, minimal income is received through gate fees for use of the Facilities. The full cost of waste services, facility operations, capping liabilities and asset renewal has not been calculated. The 22/23 waste budget predicts waste expenditure to exceed revenue by approximately $250,000. Shires fees are structured where each ratepayer is charged regardless of amount disposed or usage of the Shires waste facilities. The Shire's long term financial plan (LTFP) has not been reviewed to ensure sufficient funds and/or funding sources have been identified to cover future capital costs.	The Shire lacks financial data for the true cost of waste disposal and airspace through the life of the Facility. All waste management costs need to adequately cover the life of the asset. The current fee structure is inequitable as people producing the waste do not generally pay for its disposal nor does it encourage people to avoid waste generation or recycle waste as they are charged the same regardless of their individual actions taken. There are large capital works required (including closure of both landfills and transfer station development) and reserves should be accrued to fund these or alternative revenue streams secured for any shortfalls quantified.	Undertake a financial analysis including: • A whole of life (WoL) financial assessment to determine the true disposal cost. • Review of Shire fees and charges to assess any cross subsidy and move to user pays principle. • Review capital works expected within the life of the SWMP and assess alignment with the Shires current LTFP. The analysis will provide the Shire with valuable information in which to set gate fees, guide fees for waste services delivered and inform long term financial planning.	1. Undertake financial analysis. 2. Review outcomes to inform gate fee structures and kerbside collection rates. 3. Inform the community of any intended increases and the rationale for the increases. 4. Update LTFP to ensure sufficient funds and/or funding sources have been identified for future capital works.	Process can be completed in-house or alternatively via an external consultant. Approx. costs $15k - $25k dependent upon scope.

4.3.2 REVIEW FREE DOMESTIC DISPOSAL

TARGET: Review free domestic disposal in the Shire by Dec 2024 **Approximate costing:** Unknown **Link to WARR Strategy 2030:** Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
Domestic waste disposal is free for residents. MSW disposal rates in the Shire are proportionately higher than the state average by 134 kg/capita or 793 tonnes per annum. The Shire is seeking waste costs to become at least neutral.	Free waste disposal options do not support or encourage a waste avoidance culture. It is inequitable as people producing the waste do not generally pay for its disposal, with costs incurred by the Shire in handling the waste being covered through a blanket fee applied to all ratepayers. The higher disposal rates in the Shire is likely to be attributed to commercial waste being brought to the facilities by local businesses and declared as 'domestic waste' at the gate house to avoid the payment of gate fees. If the proportion of the waste streams received reflected the typical values and the 25% of the commercial waste currently received as free domestic waste attracted a gate fee, an additional revenue of approximately $400K per year could be received.	Review free domestic disposal options to increase the equity of waste charges within the Shire with costs being covered by those that generate the waste. Options to increase equity could include: Implementing an amended tip pass system. • Providing free access for those without a kerbside collection to dispose of the equivalent of 52, 240L MGB. • Providing ratepayers with a kerbside collection a limited number of free passes to dispose of greenwaste or bulk waste, after that point customers are charging for use of the facility. • Removing free access for those with a kerbside service.	1. Establish the full cost of waste disposal and airspace construction (per tonne) (**Action 4.3.1**). 2. Review and assess options for domestic waste disposal. 3. Determine preferred position. 4. Implement outcome.	Financial review costs included in **Action 4.3.1** Staff time in review options and preparing Council repots

4.3.3 REVIEW COMMERCIAL WASTE ACCEPTANCE

TARGET: Commercial waste acceptance feasibility is completed by Dec 2024. **Approximate costing:** Internal staff time **Link to WARR Strategy 2030:** Nil				
Findings	Issues	Recommendations	Implementation	Cost
Large loads of commercial waste are not accepted at the Shire waste sites. The airspace availability at Muchea is unquantified.	Most landfill capital costs are fixed. Accepting more waste will spread those fixed costs over more waste, thereby increasing the economies of scale and potentially generating a profit. Better practice landfill standards once released are likely to increase operational costs for the Shire requiring higher waste volumes to achieve operational viability.	The feasibility of commencing commercial waste acceptance should be assessed.	1. Develop a LCMP for the Facility to quantify airspace availability. 2. Undertake a feasibility assessment (including potential tonnages to be handled, gate fees structures, operational expenditure implication and impacts on airspace consumption). 3. Determine preferred position. 4. Implement preferred position.	Approx costs: LCMP costs included in **Action** Error! Reference source not found. Feasibility assessment can be undertaken internally or by consultant. Approx cost $10K.

4.3.4 ALIGNMENT WITH STRATEGIC COMMUNITY PLANS AND OPERATIONAL BUSINESS PLANS AND BUDGETS

TARGET: Vertical alignment of operational activities, financial planning and strategic goals within the Shire in relation to waste services. **Approximate costing:** Internal staff time **Link to WARR Strategy 2030:** Avoid, Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
Waste plans fit within the local government integrated planning framework as an issue-specific informing strategy. As such the Shire of Chittering SWMP will need to be linked to the Shire's Strategic Community Plans (SCP) and annual Corporate Business Plans (CBP)/ Operational plans.	There is a risk that without inclusion actions required within the plan will not be progressed, funded or have resources allocated to achieve the outcomes required.	The SWMP is endorsed by Council to inform Strategic community planning goals and annual corporate and operational plans and budgets.	1. The SWMP is presented to Council for adoption. 2. The strategy actions are included as part of the corporate business plan (CBP) and Long term Financial Plan and expenditure required to implement actions incorporated into annual budgets.	Internal staff time in preparing Council reports and budgets

4.4 REGIONAL APPROACHES

4.4.1 REGIONAL COLLABORATION

TARGET: Form a Waste Officers Advisory Group by Dec 2025
Approximate costing: Internal staff time **Link to WARR Strategy 2030:** Avoid, Recover, Protect

Findings	Issues	Recommendations	Implementation	Cost
The Shire participates in the Avon Regional Organisation of Councils (AROC). A Strategic Waste Management Plan 2015-2020 was developed for the group in 2015. Feedback from the Shire indicated very few of the actions were implemented due insufficient human and financial resources and lack of regional coordination of the actions required to be implemented. There is currently no regular collaboration and coordination of Shires in the region on waste management.	A lack of regional collaboration on waste management can: • Increase costs of services due to the limited economies of scale achieved. • limit opportunity for joint procurement to reduce costs. • Result in limited information sharing and problem solving. • Limits access to regional funding streams. • Restrict avenues for recycling streams	Establish an Officers Group that meets regularly (at least quarterly) to discuss waste management and resource recovery matters. A regional group will require an initial additional effort from the member LGAs, the long-term benefits would include improved efficiency, collaboration and delivery of waste services across the region. This is an opportunity which, if actioned, could assist in reducing capital expenditure and increase the economic feasibility of recycling and recovery programs in the region.	1. Seek approval from Shire Executive/Council for the Shire to lead the establishment and ongoing operation of an AVON waste officers advisory group. 2. Obtain interest from AVON member Councils to participate in group. 3. Formulate group charter and objectives. 4. Form group and commence regular meetings. Meetings can be undertaken in person or via teleconference with agendas particularly focussing on the following: • Identifying potential regional projects/collaboration opportunities • Progressing regional initiatives and plans • Sharing experiences and solutions of environmental compliance issues with waste sites • Planning waste management goods and services procurement • Regional waste education and engagement opportunities	The costs relate to internal Shire resources for the additional time spent progressing and participating in the group. The cost of individual waste projects will depend on each project's scope.

4.4.2 REGIONAL PROCUREMENT

TARGET Implement ongoing regional procurement initiatives **Approximate costing**: Internal staff time **Link to WARR Strategy 2030**: Avoid, Protect, Recover				
Findings	Issues	Recommendations	Implementation	Cost
The small population size increases the unit cost of many waste services provided by the Shire.	The Shire lacks the economy of scale necessary to make many waste management services and initiatives viable.	The Shire should implement actions to take advantage of the economy of scale offered by regional procurement. Services that can potentially be procured on a regional basis include: • Kerbside collections • Waste site infrastructure, plant and equipment • Landfill management • Groundwater monitoring and reporting • Scrap metal collection • Greenwaste reprocessing/greenwaste processing • Tyre collection • Training and professional development • Technical and specialist advice	Implementation of an ongoing regional procurement process should include the following: • Waste officer meeting agendas focussing on regional waste management procurement opportunities (**Action 4.4.1**). • Advertising for the collection of recyclable material (e.g. scrap metal) on a regional basis, as this will allow for more cost-effective collection and ensure materials are collected from all facilities in the region. • Aligning contract commencement and completion dates across the region (this should commence by developing a document that lists the start and completion dates of all waste management related contracts across the region). • Reviewing each LGA service requirements and assessing where there is alignment that would suit regional procurement	Most of the initial costs would relate to internal administration and liaison via the officers group. However, the on-going savings relating to cost and efficiency from procuring services and materials at a regional level could be significant.

4.5 BEHAVIOUR CHANGE

4.5.1 EDUCATION AND AWARENESS

TARGET Implement ongoing waste engagement and education **Priority:** HIGH **Link to WARR Strategy 2030**: Avoid, Protect, Recover				
Findings	Issues	Recommendations	Implementation	Cost
Waste education within the Shire is implemented on an adhoc basis in response to problems and issues encountered. There is no specific education program or resources to undertake this task. The Shire's recovery rates are low. The State Waste Strategy places an expectation for local government to educate communities on waste avoidance behaviours, resource recovery and explore re-use and low-waste alternatives.	There is a need to educate and involve the community (residential and commercial) about waste management and resource recovery in line with the WA Waste Strategy 2030 objectives and outcomes. The Shire should focus on effectively communicating why it is important to act in more sustainable ways and supported with measures of success. Unless the community understand the reasons for their actions, and can see genuine and attainable results, there is little motivation for changes in behaviour. Waste generators also play a significant role in determining resource recovery rates achieved by the Shire. This will be influenced through the participation in recycling services provided and the amount of contamination within collected materials. Education, engagement and positive promotion of services will play a key role in influencing the Shire's performance.	Develop and implement a method suitable to the Shire to enable ongoing engagement and education with the community on waste and recycling. An education levy added to kerbside service fees could provide a specific fund for education and awareness activities.	The Waste Authority is responsible for developing and implementing strategies and programs to improve communication, engagement and education on waste avoidance behaviours and resource recovery state-wide. Some of these measures could be used to inform Shire programs including the 'WasteSorted' toolkit.	Staff time and resources to provide ongoing engagement and education to the extent determined appropriate by the Shire. An education levy could be used to offset the costs associated with this action. The WasteSorted Community Education Grants administered by the Waste Authority provide funding of up to $25,000 per project to improve waste behaviour in ways that support the aims of the WARRS.

5 IMPLEMENTATION, MONITORING AND REVIEW

5.1 IMPLEMENTATION SCHEDULE

The SWMP is focused on the next ten years. A basic implementation schedule and approximate costs per action for annual operational business planning and budget processes is provided in **Table 5.1.**

5.1.1 MONITORING AND REVIEW

Ideally, progression of initiatives should form part of the Shire's Strategic Community Plans, with actions being incorporated into annual Corporate Business Plans and reported annually to the community.

In addition to monitoring of initiatives, the plan should be treated as a dynamic document that is reviewed and amended periodically to ensure that it remains contemporary and relevant to emerging waste management issues and legislation. The Shire should complete updates of the plan on a five-yearly basis, or more frequently if required.

Table 5.1 Summary of actions and costs

Task Title	Action	2023-24	2024-25	2025-26	2026-27	2027-28	28+	Notes
		Short term		Medium term		Long term		
Waste Infrastructure and Operations								
Address Licence non compliance	**4.1.1**	x	x					Unquantifiable and dependent on Shire actions to rectify the issues
Develop and implement a LCMP for the MLRC	Error! Reference source not found.	x	x	x	x	x	x	LCMP $15 - $20K, Closure costs calculated in LCMP, Design and develop LCMP 23-24 Implement LCMP 2024 onwards
Develop a LCMP for the BLRC to facilitate the landfill closure	**4.1.3**	x	x	x				LCMP $15 - $20K, Landfill closure timing and costs unknown at this point (estimated $1.5M - $2M) Design and develop LCMP 23-24 Implement 2024 onwards
Develop Facility Management Systems	**4.1.4**		x	x	x			Dependent on number of Plans produced (approx. $80K MLRC, $40K) Staged development to allow for budget constraints
Define, design and construct Transfer Stations	**4.1.5**		x	x	x			Costs unknown at this point 2024-2025 Design for both MLRC, BLRC 2025 -2026 Construct BLRC 2026 – 27 construct MLRC
Optimise landfill efficiencies at Muchea landfill	**4.1.6**	x	x	x	x	x	x	Timing ongoing, costs dependent on actions undertaken
Address infrastructure implications of Waste Strategy better practice	**4.1.7**							Timing and costs unknown at this point
Waste Services								
Undertake a feasibility assessment for the collection and processing of FOGO	**4.2.1**		x					$25K - $40K
Kerbside contract review and regional procurement	**4.2.2**							Dependent on current contract period and expiry dates

Task Title	Action	2023-24	2024-25	2025-26	2026-27	2027-28	28+	Notes
		Short term		Medium term		Long term		
Review options to increase resource recovery streams	**4.2.3**			x				Approx. costs will depend on the range of options considered (estimated between $20k - $35k)
Review of Containers for Change refund point operation	**4.2.4**		x					Costs will depend on the review scope ($10k - $15k), must be undertaken in time for contract agreement expiry in 2025
Data, Information and Economics								
Undertake Financial review and whole of life costing	**4.3.1**	x						$15k - $25k dependent upon scope
Review Shire position on free domestic disposal	**4.3.2**	x						Staff time
Review Shire position on commercial waste acceptance	**4.3.3**	x						Staff time
Alignment with Strategic Community Plans and operational business plans and budgets	**4.3.4**	x	x	x	x	x	x	Internal staff time in preparing Council reports and budgets, timing is ongoing
Regional Approaches								
Regional collaboration	**4.4.1**	x	x	x	x	x	x	Timing is ongoing, costs associated with resourcing of actions
Regional Procurement	**4.4.2**	x	x	x	x	x	x	Timing is ongoing, costs associated with resourcing of actions
Behaviour Change Programs								
Community education and engagement	**4.5.1**	x	x	x	x	x	x	Timing is ongoing, costs associated with internal resourcing of action or external grant funding

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APPENDIX A – ASSESSMENT & ANALYSIS SUPPORTING REPORT