Esperance's
Waste Revolution

Shire of Esperance
We make it happen!

Community Waste Strategy

2018
2023


A Community that is a leading example for Waste Management
Natural Environment Goal - Strategic Community Plan 2017-2027

Contents

1. Introduction

Current consumption patterns, particularly in the developed world, are generating excessive volumes of 'waste' materials. Within Australia, the predominant treatment method for these materials has been landfill disposal. With an increasing global population and growing demand for resources, these traditional waste management practices are not sustainable. A fundamental change in current consumption patterns and waste management systems are required to ensure that our natural resources are preserved for future generations. This requires a move from the traditional 'wasteful' waste management practices to a sustainable circular economy.

Australia's growing economy and its increasing use of energy and other resources has brought prosperity and well-being to many Australians however, this has also brought numerous challenges. Australia is known to have one of the highest rates of waste generation per capita in the world[1]. Western Australia's (WA) waste production in 2014-15 was estimated at 6.2 million tonnes which equates to 2.4 tonnes per person. Only 42% of the 6.2 million tonnes was diverted from landfill[2]. This illustrates a significant opportunity for improved waste management practices which would result in more sustainable outcomes. During the same period the Perth Metropolitan Area sent approximately 2.3 million tonnes of waste to landfill[3]. The Shire of Esperance sent approximately 16,000 tonnes of waste to landfill in this period.

The Shire of Esperance has introduced a range of recycling initiatives over the years including commingled kerbside recycling however, like many other Local Governments within regional Australia, the Shire has a high reliance on landfill for the treatment of its waste. The Shire recognises the opportunity to improve its waste management practices to achieve more sustainable outcomes, which has led to the development of this Community Waste Strategy. It outlines how the Esperance Community, alongside the Shire, can reduce waste, have alternatives to landfill and support initiatives that reduces our reliance on waste producing products.

A community goal outlined in the Strategic Community Plan is for Esperance to be 'A community that is a leading example for Waste Management'. From this goal three outcomes were identified and will be supported by this strategy. These outcomes are to be a community that is empowered and motivated to minimise waste; be a responsible business community that actively supports community movement towards minimising waste and a community that actively avoids single use products.

2. Current Waste Management Systems

The Shire currently operates the Wylie Bay Waste Management Facility (the Wylie Bay WMF), which includes a Materials Recovery Facility (MRF) and a Class II (putrescible) landfill. The MRF processes recyclable materials collected through the fortnightly kerbside recycling collections ready for transportation to markets. The Shire also undertakes a range of other recycling activities at the Wylie Bay WMF including green waste mulching, construction waste processing and scrap metal stockpiling.

The landfill at Wylie Bay has been in operation since 1988 however, it is quickly approaching the end of its operational lifespan. The Shire is set to commence closure works at the landfill on a phased basis with the first phase of works to be completed in 2018.

To ensure that the Shire can continue to provide the critical community service of waste disposal, a Waste Disposal Strategy was developed in 2012 which recognised the need to establish a modern Waste Management Facility at a new location within Esperance.

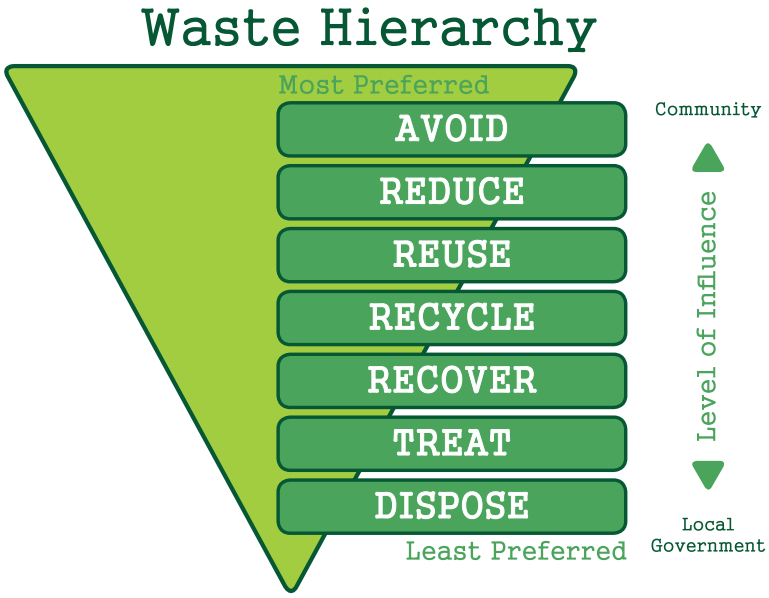
In April 2017, the Shire purchased Lot 12 Kirwan Road in accordance with Council Resolution S0417-061. The Shire is still committed to divert as much waste as possible from the new landfill across all levels of the Waste Management Waste Hierarchy.

The Shire is currently in the process of obtaining all relevant environmental approvals for the proposed Best Practice Environmental Management (BPEM) landfill at the site. This is a critical element in the Shire's waste management infrastructure network and will ensure that the Shire can provide its community with the high standard of waste disposal services for the foreseeable future.

2.1. Waste Management Hierarchy

The Waste Management Hierarchy is an internationally adopted principle and concept which lists waste management options in order of preference according to their sustainability and environmental outcomes. The waste management options in the waste hierarchy in order of preference include avoid, reduce, reuse, recycle, recover, treat and dispose.

A description of the various levels of the Waste Management Hierarchy and the community's current waste management activities for each are provided below.



2.1.1. Avoid, Reduce, Reuse

The most preferred practice in the Waste Management Hierarchy is waste avoidance and is associated with more sustainable design, production and consumption practices. Once waste is generated, the next step in the hierarchy is to minimise the quantity as much as possible. Due to their links with economic growth and consumerism, waste avoidance and reduction are the most challenging aspects of waste management.

Local Governments can support avoid, reduce and reuse levels of the hierarchy by providing education to the community and other waste generators on the benefits, which includes both financial and non-financial. Supporting non government organisation initiatives in this field is also a vital function, including encouraging businesses and community groups to lead projects that will reduce and improve waste management in Esperance. Local Governments are also able to facilitate reuse by establishing reuse shops at Waste Management Facilities to capture materials which would otherwise be processed at lower levels of the Waste Management Hierarchy, such as disposal.

Wylie Bay accepts a small quantity of reusable materials (such as furniture and bicycles) which are available for sale to the community at minimal cost. Reusable items are identified by gate staff upon inspection of loads and are presented at the drop-off site. Bicycles are collected periodically by a community member for repair and distribution to the community. Any items that are not sold within a reasonable timeframe are recycled or disposed of to landfill. The Shire recognises an opportunity to improve the reuse activities at Wylie Bay including the development of a designated Reuse/Tip Shop.

The Shire offers tours of the Material Recovery Facility (MRF) to provide members of the community including school groups a greater understanding of the Shire's recycling operations. The MRF includes an education centre where visitors are provided with information on the types of materials accepted for recycling and the MRF operations. The Shire also visits schools to provide education sessions on local recycling activities. Regular promotions are also run through its website, local radio and newspaper to encourage source separation of waste materials. There are also a number of community groups currently active within the Shire with an interest in environmental protection and sustainability, and websites utilised within the Shire to facilitate waste minimisation and reuse.

2.1.2. Recycle

Recycling is defined in the Western Australian (WA) Waste Strategy (2014) as "a set of processes (including biological) that converts solid waste into useful materials or products". Utilising recycled products in manufacturing has significant environmental benefits as it reduces the demand for raw materials. In WA, recycling has been widely adopted at a household level for packaging materials (paper, cardboard, glass, plastics and metals) and household hazardous wastes (oils, batteries and electronic wastes). There are however, significant opportunities to increase recycling in the Commercial and Industrial (C&I) and Construction and Demolition (C&D) sectors including initiatives such as green waste mulching and inert waste crushing. Inert wastes such as Construction and Demolition waste (C&D waste) are stockpiled on site until volumes become economically viable to reuse the material as road base on site.

Local Governments have a significant role to play in the implementation of recycling practices including in the collection, sorting and sale of materials, as well as education to encourage waste generators to utilise recycling systems. The Shire currently offers a range of recycling services including kerbside recycling service and satellite collections, recycling stations and bulk waste recycling including green waste, scrap metal and inert materials. Wylie Bay also includes a Materials Recovery Facility which processes the recyclable materials collected within the Shire. The Shire recognises that there are a range of additional activities that can be undertaken to improve the current recycling measures undertaken including a Community Recycling Centre and potential organics kerbside recycling service.

2.1.3. Recover & Treat

Recovery of materials involves the physical, chemical or biological processing of waste to generate products or energy. In contrast to recycling, the products generated from recovery processes are not necessarily similar to the original waste materials such as the compost generated from processing organic waste. Recovery of waste is commonly undertaken at an Alternative Waste Treatment (AWT) facility.

A range of technologies are available which generate products and/or electricity or heat from a sorted or mixed waste stream. In the Strategic Waste Management Options (2016) report, the Shire assessed a range of recovery and Alternative Waste Treatment options. Treatment involves the processing of waste to alter its form and is commonly used in reference to reducing the hazardous properties of waste materials. The Shire currently offers a range of household hazardous acceptance and treatment options.

2.1.4. Dispose

The least preferred option of the Waste Management Hierarchy is disposal which typically involves the landfilling of waste. Currently waste disposal to landfill is the predominant method of managing waste across Australia. The disposal of waste to landfill results in a loss of materials and energy that could otherwise be recovered. However, it is inevitable that even in the most advanced waste management systems a small portion of waste will require disposal.

As mentioned previously, the Shire is in the process of establishing a new Best Practice Environmental Management standard landfill to ensure that this critical community service can be provided to the highest possible standard for the domestic and commercial communities of Esperance.

3. WA Waste Strategy

The WA Waste Strategy was developed pursuant to the State Waste Avoidance and Resource Recovery Act 2007 (WARR Act). The WA Waste Strategy aims to provide the required knowledge, infrastructure and incentives to change current behaviour to more sustainable waste management practices. The objectives of the strategy are:

- Initiate and maintain long-term planning for waste and recycling processing, and enable access to suitably located land with buffers sufficient to cater for the State's waste management needs;
- Enhance regulatory services to ensure consistent performance is achieved at landfills, transfer stations and processing facilities;
- Develop best practice guidelines, measures and reporting frameworks and promote their adoption;
- Use existing economic instruments to support the financial viability of actions that divert waste from landfill and recover it as a resource; and
- Communicate messages for behaviour change and promote its adoption, and acknowledge the success of individuals and organisations that act in accordance with the aims and principles in the Strategy and assist in its implementation.

In addition to the Strategic Objectives, the State Waste Strategy contains targets for the diversion of materials from landfill across the three key waste streams including the Municipal Solid Waste (MSW), Commercial and Industrial (C&I) and Construction and Demolition (C&D) sectors. The WA Strategy targets are listed in Table 3.1

Table 3.1: WA Waste Strategy Landfill Diversion Targets

Waste Stream	Region	2015	2020
Municipal Solid Waste	Metropolitan area	50%	65%
	Regional centres*	30%	50%
Commercial & Industrial	State wide	60%	75%
Construction & Demolition	State wide	55%	70%

* Note: Regional centres include Albany, Avon, Busselton, Geraldton, Greater Bunbury, Kalgoorlie, Karratha and Peel. Data sourced from the WA Waste Strategy

Esperance is not currently classified as a major regional centre within the State Waste Strategy and therefore the MSW targets are not applied to the Shire. However, recognising the Shire's commitment to diverting waste from landfill, the Shire proposes to adopt these targets. The Shire's activities in relation to Commercial and Industrial and Construction and Demolition waste are relevant as they will contribute to the State wide targets.

It is important to note these are the first targets to be established in WA on the diversion of waste from landfill. Recognising the opportunity and commitment for continuous improvement in greater recovery of materials it is anticipated that these targets will evolve in the future. This may included an increase geographical coverage in the legislative requirements associated with achieving the targets which is common in other developed countries.

4. Strategic Waste Management

A Strategic Waste Management Options Report (Strategic Options) was developed for the Shire in June 2016 to outline various strategic options which could be implemented to move towards a more sustainable waste management system. The Strategic Options presented were not considered in isolation but as part of an integrated system of Clusters, which group complimentary Strategic Options. Cluster 1 was related to green waste recovery and Cluster 2 was in relation to organic waste treatment.

The key ethos behind Cluster 1 is the source separation of green waste to maximise the proportion of waste diverted from landfill. In particular, the continuation and expansion of the Shire's existing collection systems including kerbside and satellite collections, recycling stations and community drop-off facilities.

Cluster 2 involves the aerobic treatment of organic waste including both green waste and food waste separation. To obtain the food waste the Shire would be required to implement a source separated collection (third bin system) or extract the organic fraction from the refuse streams through a dirty MRF facility or similar. State policy heavily supports source separation achieved through a three bin system.

Although the proposed Clusters would assist in diverting waste from landfill, the report recognised that landfill is still required to play an important role in the Shire's Waste Management Services. It was also recognised that landfill will provide the foundation support for all future Clusters and Strategic Options that the Shire may adopt.

A variety of other AWT options were also considered during the study to help identify key strategies to assist the Shire in progressing towards a more sustainable waste management system. These included, but were not limited to combustion, gasification and pyrolysis. To determine the feasibility of these options a Strength, Weakness, Opportunity and Threats (SWOT) analysis was undertaken. The SWOT analysis recognised that critical support structures were currently absent within the Shire which rendered these options unviable. This is due to insufficient waste volumes, high cost of services and absence of markets, infrastructure and services.

Therefore, the key recommendations arising from the Strategic Options was for a Resource Recovery Strategy to be developed to divert significant quantities of material from landfill. The report also recommended that the Shire continue with the Landfill Site Selection Study and prioritises securing a suitable site for the critical community service of waste disposal.

5. Performance

To understand the community's current performance, the current waste generation volumes and recovery rates were assessed for 2016. Using this data, estimated projected waste volumes were also calculated over a twenty year period to assist in understanding the quantity of waste that will need to be managed in the future.

5.1. Current waste generation

All waste generated within the Shire is brought to the Wylie Bay Waste Management Facility and is processed by either recycling through the MRF, stockpiled on site for recycling or for future recovery/ treatment, used as landfill cover or disposed of to landfill. The total Municipal Solid Waste (MSW), Construction and Demolition (C&D) and Commercial and Industrial (C&I) waste recycled and disposed of during 2016 is shown in the following table.

Table 5.1: Total Waste Recycled in 2016 (in tonnes)

	Type	MSW	C&I	C&D	Total
Recycled	Dry Recyclables	466	200	-	666
	Glass	79	20	-	99
	E-Waste	14	-	-	14
	Mattresses	2	-	-	2
	Vehicles	-	-	-	-
	Steel	294	73	-	367
	Tyres	4	1	-	5
	Gas Bottles	-	-	-	-
	Construction & Demolition	-	-	2,181	2,181
	Waste Oil	-	8	-	8
	Total	**859**	**302**	**2,181**	**3,342**
Disposed	Clean Fill	-	-	3,913	3,913
	Green Waste	726	484	-	1,210
	Clinical Waste	-	35	-	35
	Quarantine Waste	-	4	-	4
	Asbestos	24	455	-	479
	Refuse	2,047	225	-	2,272
	Compostables	2,115	675	-	2,790
	Recyclables	2,661	1,145	-	3,806
	Total	**7,573**	**3,023**	**3,913**	**14,509**
Total Waste					**17,851**

The Shire received a total of 17,851 tonnes of waste in 2016 of which 3,342 tonnes was recycled and 14,509 tonnes was disposed to landfill. It is recognised, due to the absence of a weighbridge at the Wylie Bay WMF, the data collected to date has room for improvement however, this data provides a sound indication of the waste volumes received in the Shire.

5.2. Recovery

Recovery rate is defined as the proportion of total waste generated that is recovered, either through reuse, recycling or treatment, and is therefore diverted from landfill. The Shire's recovery operations currently include the MRF operations and stockpiling of other recyclables and Construction and Demolition waste. In 2016, the Shire achieved a recovery rate of 19% through the recycling and stockpiling of materials. The remaining 81% was disposed of to landfill.

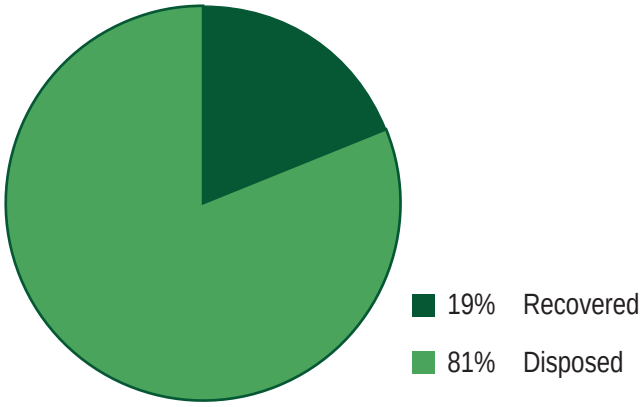


Diagram 1: Total Waste Recovery Rate

5.3. Projections

Based on the total waste accepted at the Wylie Bay WMF in 2016, estimated waste volumes were projected for the Shire over a 20 year period. Waste generation is assumed to increase according to a 1% annual population increase. This assumption is based on the growth rate extrapolated from the ABS population data recorded from 2006 to 2016. The total annual waste volume is estimated to increase from 17,851 tonnes to 21,782 tonnes in 2036 which equates to a total estimated increase of 3,931 tonnes - this is based on no waste reduction measures being implemented. The initiatives to see a reduction in single use products, education on avoidance and recycling and increased recycling/waste treatment opportunities should see the projected landfill figure reduced.

Esperance's Waste Revolution - Community Workshop July 2017

6. Targets

Based on the volumes of waste generated in 2016 and the Shire's current waste infrastructure, short term waste diversion targets were developed for 2020 and 2025. Long term aspirational targets were also set for the Shire beyond 2025. Waste diversion targets were developed for both MSW and total waste and are shown in the diagram below. The MSW waste diversion targets have been developed to align with the WA Waste Strategy targets. Although the WA Waste Strategy targets are not applicable to Esperance, the Shire has adopted these targets for MSW with the aim to go above and beyond expectations for regional areas not classified as major regional centres.

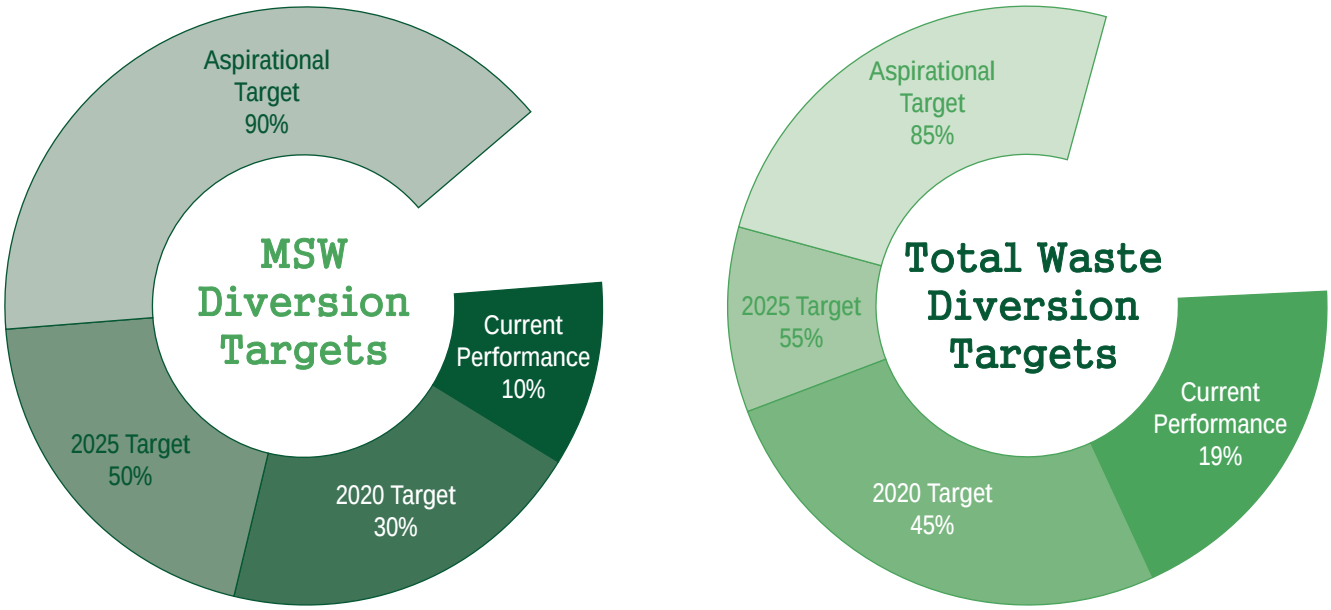


Diagram 2: MSW and Total Waste Diversion Targets

As shown in the diagram above the Shire currently diverts 10% of all MSW waste from landfill. The targets set for MSW aim to divert 30% of MSW from landfill by 2020 and 50% by 2025. A total of 19% of total waste which includes MSW, C&I and C&D is currently diverted from landfill. A target of 45% has been set for the diversion of all waste from landfill in 2020 and 55% in 2025.

Long term aspirational targets have also been set for both MSW and total waste beyond 2025. An aspirational target of 90% diversion for MSW and 80% for total waste may be possible by the utilisation of Waste to Energy technologies. At present this is not feasible due an absence of key infrastructure, high costs, access to markets and lack of tonnages. However, this may be achieved in the future with the advancement of technologies and the right setting for the adoption of this technology within the Shire.

It is anticipated that these diversion targets will be reviewed following the improvement of data collection through the installation of a weighbridge at the Wylie Bay Waste Management Facility. The Shire's performance will be regularly monitored to ensure these targets are being achieved.

7. Communication & Education Plan

Every Esperance resident can take action in reducing our waste to landfill. The volume of waste we generate and how we dispose of it has a direct impact on the amount of waste we need to manage as a community. Education and promotional programs aim to enhance the community's understanding of the importance of waste management and work towards achieving long term behaviour change that will reduce waste to landfill and increase recycling, reuse and other waste diversion methods.

The WA Waste Authority has outlined key messages[4] that will promote better waste management practices in Western Australia. These messages aim to foster engagement and behaviour change individuals and communities across the State. These key messages will drive the Shire of Esperance Waste Communication and Education Plan, they are:

- Your actions make a difference - everyone can chose to do the right thing and adopt smarter waste management practices
- Put it in the right bin - everyone needs to be involved and correctly separate waste into the right bin
- Accept and take responsibility - it's time for everyone to accept and take responsibility for their waste and must take action to avoid and minimise waste
- Driving smarter waste management – support the community, business and industry to improve waste management in Esperance
- Waste recycling has true value - reusing and recycling is good for the environment and has positive economic benefits.

The objectives of the Waste Communication and Education Plan will be to increase waste awareness across all target groups and encourage their participation. This includes delivering programs that support waste reduction, recycling and reuse for householders, businesses and community groups. Additional objectives will be to reduce contamination in kerbside waste and recycling collections and provide information on ways food waste and single use products can be avoided.

The development of a strong and sustainable communication and education plan requires all target groups be acknowledged as having different needs which impact on the type of programs suitable for each group. The target groups identified in the Esperance Shire are listed below and will be expanded on in the Waste Communication and Education Plan:

- Residential Households
- Primary and Secondary Schools
- Community Groups
- Tourists
- Businesses
- Internal - Shire

7.1. Communication & Education through the Waste Hierarchy

A waste communication and education plan should offer multiple options to service the various target groups in our community. These options need to be adaptable to incorporate changes in legislation while also remaining aware of new campaigns that could benefit Esperance. A diverse communication and education plan will allow people to understand the different ways they can reduce or best manage their waste. The Waste Hierarchy below provides examples of options that will be investigated and implemented through a comprehensive communication and education plan.

AVOID

- Encourage waste avoidance for households and businesses
- Refuse single use products (straws, takeaway coffee cups, plastic bags)
- Avoid buying beyond your needs
- Promote incentives for individuals and businesses to operate within the waste hierarchy goals

REDUCE

- Promote programs to reduce food waste
- Develop & support programs to increase business and community group waste management efficiencies
- Promote & Support waste reduction programs for individuals and businesses

REUSE

- Promote & Support State and national programs that promote Reuse (ie Garage Sale Trail, Plastic Free July, responsible cafés)
- Formalise the Esperance Tip/Reuse Shop
- Support local buy/sell/trade/swap options

RECYCLE

- Promote current recycle practices and contamination and highlight ways these can be improved
- Highlight positive case studies
- Educate and promote new recycling programs and initiatives
- Provide & Promote collection points for recyclables in Public Spaces

RECOVER TREAT

- Investigate and promote programs that encourage source separation
- Maintain and Extend Partnerships with key organisations to support initiatives in targeted areas – e-waste, globes, batteries, mobile phones
- Educate on illegal dumping & inappropriate waste disposal & Enforce Penalties where necessary

DISPOSE

- Minimise waste going to landfill - Educate on alternatives – "separate and save – sort your trailer before going to the tip"
- Keep prices down for diverted waste streams – green waste, C&D etc.
- Promote 'Where does it end up?'

8. Actions

To guide the community towards advancing its waste management systems to achieve the relevant waste diversion targets, the following key actions have been devised.

Aspects	Strategy	Actions	Potential for community involvement	Date for Implementation
Avoid, Reduce & Reuse	Reuse Shop	Progress a dedicated Reuse Shop at the Wylie Bay Waste Management Facility where reusable materials are accepted and presented for sale	Medium - High	Early 2020
	Disposal Items Ban	The Shire to support and/or advocate state programs banning single use items across the State	Medium - High	Mid 2018
	Communication & Waste Education Plan	Develop the CWEP in collaboration with a Community Waste Action Group established by the Shire to work with the responsible officer on community waste minimisation initiatives.	High	Early 2018
	Leading example of waste avoidance & minimisation	Develop a Policy for the Shire on avoiding, reducing and reusing waste.	Low	Early 2018
Recycle & Recover	Resource Recovery Project	The Shire release an Expression of Interest (EOI) on all potential Resource Recovery services and opportunities (such as Third Bin Organics Recycling and Waste to Energy technologies) to divert significant volumes of waste from landfill	Low	Early 2018
	Community Recycling Centre	The Shire to develop a state of the art Community Recycling Centre at Wylie Bay for the community to drop off recyclables, Green-waste, scrap metals and household hazardous waste	Low - Medium	Early 2020
	MRF Extension	The Shire to consider expansion options of the Wylie Bay Materials Recovery Facility to allow for greater volumes of materials to be processed	Low	Early 2020
Treatment/ Disposal	New Waste Management Facility	The Shire to continue to progress the development of a best practice landfill facility to ensure that this critical community service can be provided to the community	Low	Ongoing
	Community Drop Off	The Shire to develop a state of the art drop off area at Wylie Bay to dispose of waste in a safe and environmentally friendly manner	Medium	Early 2020
Waste Data	Performance Monitoring and Diversion Target Review	Undertake regular performance monitoring to assess progress in relation to achieving the waste targets	Low - Medium	Ongoing
	Composition Audit	Undertake a compositional audit to gather accurate data on types and volumes of waste generated	Low	Mid 2018
	Weighbridges	Installation of a Weighbridge(s) at Wylie Bay and/or the proposed Waste Management Facility to improve waste data gathering and reporting	Low	Early 2020
Education	Waste Education and Promotion	Devise and implement a Waste Education Strategy across all levels of the Waste Hierarchy and to support future sustainable waste management practices	High	Ongoing
	Community Participation	Community actively avoids single use products and minimises waste	High	Ongoing
Administration	Review	The Shire to review the Waste Strategy and associated Targets within 3 years	Low	Early 2021

9. Glossary of Terms

Best Practice Environmental Management (BPEM) Landfill Standards

The Victorian State Government EPA has adopted a Best Practice Environmental Guide for the Siting, Design, Operation and Rehabilitation of Landfills, last updated in 2015. A copy can be found here http://www.epa.vic.gov.au/~/media/Publications/788%203.pdf

Commercial and Industrial (C&I)

The solid component of the waste stream arising from commercial, industrial, government, public or domestic premises (not collected as Municipal Solid Waste).

Construction and Demolition (C&D)

The solid inert component of the waste stream arising from the construction, demolition or refurbishment of buildings or infrastructure but does not contain Municipal Solid Waste or Commercial and Industrial Waste.

Materials Recovery Facility (MRF)

A depot/shed for the treatment of waste for resource recovery, other than a composting depot.

Municipal Solid Waste (MSW)

The solid component of the waste stream arising from mainly domestic premises, including waste from council operations, received via the kerbside collection and received directly from the public.

State Waste Avoidance and Resource Recovery Act 2007 (WARR Act)

The primary objective of the WARR Act 2007 is to contribute to sustainability, and to the protection of human health and the environment. It is also designed to help Western Australia to move towards a waste-free society by


Ampol Oils

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