WARRNAMBOOL
CITY COUNCIL

Waste Strategy
2021 - 2025

Contents

Introduction

The Warrnambool community places great value on our environment. The community has made it clear that protecting our rivers, creeks and the ocean from pollution and litter is very important, as are waste management practices that aim to protect our environment.

Through the long-term community vision, Warrnambool 2040, Council has been asked to ensure waste management practices provide both economic and environmental benefits for Warrnambool, and that best value for residents in the form of financially sustainable waste management charges, is achieved.

These community priorities align with objectives in the Council Plan 2021-2025 and will further assist decision-making.

Council will demonstrate its commitment to sustainability by providing informed leadership, support and education. This Strategy provides the foundation for this commitment. Not-for-profit groups, volunteer community organisations, schools, residents and visitors are all critical to the Strategy's success through their formal and informal roles in resource recovery and waste minimisation.

Resource recovery and waste management involves the whole community. This strategy provides a vision for the future, and outlines practical steps to assist Warrnambool City Council (Council) to implement its Waste Strategy (the Strategy).

The waste hierarchy of avoid and minimise, reuse, recycle, recover, treat and dispose, underpins the Strategy and guides decision-making cognisant of policies of the Federal and Victorian governments. It documents the integral role that private enterprise plays in partnership with the public sector in the delivery of the Strategy and its objectives

Council will engage with the community in pursuing the objectives of the Strategy. The Warrnambool community has always had significant involvement in shaping waste management practices in the City.

Our local community has always held innovation in high regard and Warrnambool was among the first councils in Victoria to adopt the four bin system, which was rolled out in Warrnambool several years ahead of the deadline established in the Victorian Government's circular economy policy, Recycling Victoria: a new economy.

Local and global changes constantly impact on waste management, therefore this will be a dynamic document. Actions will be prioritised and reviewed annually against key objectives and performance measures, as part of Council's budget process.

A formal review of this strategy will occur every four years.

Local context

The Warrnambool municipality is 120 square km in area and situated in the Great South Coast Region of Victoria, 263 km south–west of Melbourne.

It contains the City of Warrnambool and the nearby towns of Allansford, Bushfield and Woodford. The City has a population of approximately 35,500 and this figure is forecast to approach 50,000 by 2035 (forecast ID).

Warrnambool serves as a regional centre for a population of approximately 120,000 people in the South West.

It contains the Deakin University campus, a TAFE college and a regional base hospital. The major employment sectors are health care and social assistance, retail trade, manufacturing, education and training, accommodation and food services and construction.

The Great South Coast region features some of Australia's most fertile agricultural land much of which is dedicated to dairy and beef production. Three major dairy manufacturers and a large meat processor are situated in and around Warrnambool, providing a major sources of employment.

There is a significant tourism industry, with a thriving visitor economy, spectacular coastline, ample holiday accommodation, whale watching and commercial and recreational fishing opportunities. In summer and during major events the population increases by around 20 per cent.

Waste Strategy objectives

In developing the Strategy, a series of high level objectives were developed to guide the direction of waste management in the Municipality. Specific actions to deliver on these objectives are outlined later in this document.

Council will:

1. Commit to waste management initiatives that achieve a combined economic and environmental benefit wherever possible.
2. Achieve zero waste to landfill by 2040.
3. Embrace the overarching need to minimise waste to protect the environment and reduce the cost of waste management to ratepayers.
4. Promote and advocate for the development of local recycling processing, to reduce reliance on metropolitan processors, and reduce transport costs and environmental impacts.
5. Work with neighbouring councils, businesses and the community to aggregate waste streams where possible, to facilitate new technologies in waste management, and realise the financial and other advantages of economies of scale.
6. Pursue external funding to facilitate waste management initiatives and programs.
7. Consult the community on changes to Council's waste management practices.
8. Recognise the regional role Warrnambool plays in waste management, including active participation in regional waste forums.
9. Introduce measures to reduce illegal dumping of rubbish.
10. Ensure waste management charges and service provisions to businesses are equitable and consistent.
11. Provide infrastructure that improves stormwater systems, to reduce adverse environmental impacts or litter in stormwater systems, and the environment
12. Develop programs in collaboration with community groups to reduce dog droppings in public spaces.
13. Work collaboratively with event organisers to reduce waste at public events.
14. Ensure night time kerbside collection is fit for purpose.
15. Seek opportunities to recycle and recover construction and demolition materials.
16. Encourage and support school and community groups to be involved in waste initiatives.
17. Adopt the state-wide Container Deposit Scheme, when it is introduced in 2023.
18. Meet responsibilities in relation to Braithwaite Street former landfill site, as required by the EPA Post Closure Pollution Abatement Notice.
19. Consider a weekly FOGO collection trial from September -April. Report findings to Council to determine the viability.
20. Review fortnightly glass collection after container deposit scheme is implemented.

Strategic framework

A substantial legislative and policy hierarchy underpins this Strategy and informs the objectives.

Federal

The Product Stewardship Act 2011 - provides the framework to effectively manage the environmental, health and safety impacts of products, in particular those impacts associated with the disposal of products.

The framework includes voluntary, co-regulatory and mandatory stewardship.

The National Waste Policy sets Australia's waste management and resource recovery direction to 2030.

The policy has five key principles:

- Avoid waste
- Improve resource recovery
- Increase use of recycled materials, and build demand and markets for recycled products.
- Better manage material flows to benefit human health, the environment and the economy
- Improve information to support innovation, guide investment and enable informed consumer decisions.

The policy also complements other government action to deliver greenhouse gas emission reductions, reduce energy and water use, support jobs and invest in future long term economic growth.

A strategy arising from the policy is the Product Stewardship Framework legislation. The Product Stewardship Act 2011 provides the framework to effectively manage the environmental, health and safety impacts of products, in particular those impacts associated with the disposal of products.

The framework includes voluntary, co-regulatory and mandatory stewardship.

Resource Recovery Initiatives to date include:

- National Television and Computer Recycling Scheme
- Product stewardship for end of life tyres
- Product stewardship for mercury containing lamps – FluoroCycle.

State

The Local Government Act 1989 assigns responsibility to councils for providing, (either directly or through contractors), the collection, transport and reprocessing or disposal to landfill of municipal solid waste for their communities. (This does not require local government to manage disposal facilities such as landfills).

The Environment Protection Act 1970 is important state legislation relevant to this Strategy, as it relates to:

Shared responsibility

- Protection of the environment is a responsibility shared by all levels of Government, industry, and the people of Victoria.

Product stewardship

- Producers and users have a shared responsibility with Government to manage the environmental impacts throughout the life cycle of the goods and services, including disposal.

Waste hierarchy

The belief that to attain sustainable practice, waste should be managed in the following order:

- avoid
- re-use
- recycle
- recovery of energy
- treatment
- containment
- disposal.

E-waste

- The management of e-waste in Victoria, through its goals of diversion from landfill, recovery and reuse of materials and reduction of harm to human health.

The Victorian Government has also developed various documents to provide strategic direction. The overarching strategic document is the State Waste and Resource Recovery Infrastructure Plan (SWRRIP) which was released by the Victorian Government in June, 2015. The SWRRIP provides a roadmap to guide the development of a system that will effectively manage the waste we generate, balancing the provision of this essential service and support for a viable resource recovery industry, with the need to protect the community, environment and reduce greenhouse gas emissions.

This plan is further supported by the:

- Victorian Organics Resource Recovery Strategy
- Collaborative Procurement Framework
- Victorian Market Development Strategy for Recovered materials
- Infrastructure Facilitation Framework
- Community and Business Waste Education Strategy

The Victorian Government has developed a performance reporting framework to ensure all councils are measuring and reporting on their performance in a consistent way. Indicators for waste management kerbside collection are included in the reporting framework. Sustainability Victoria and the EPA also have mandatory annual reporting requirements about waste management services, providing further benchmarking for council

Waste and Resource Recovery Groups

Warrnambool City Council is part of the Barwon South West Waste and Resource Recovery Group (BSWWRRG) established in 2014 under the Environment Protection Act (1970).

The group developed a Regional Waste and Resource Recovery Implementation Plan (RWRRIP) in 2017, to improve recycling rates, reduce waste to landfill, and plan for the region's future sustainability and infrastructure needs.

Of particular significance to this Strategy are the following priorities:
Priority action 1 – Facilitate behavioural change to improve source separation, participation rates, resource recovery and reduced contamination.

Priority action 2 – Facilitate the aggregation of material streams and/ or services through collaborative procurements to improve economies of scale and cost efficiencies.

Priority action 11 – Support the development of innovative and viable ways to increase recovery of priority materials including organics, wood/timber, plastics and textiles.

The BSWWRRG developed a Regional Education Strategy in 2018, which has guided the City's education program. Key strategies include:

- Raising community awareness of waste and recycling processes
- Emphasising the impact each individual can have on the success of a program
- Prioritising waste avoidance, sustainable practice, and product stewardship, over disposal.
- Adopting a regional approach towards waste management performance – working towards a shared goal for greater impact.

Standardised kerbside and public place recycling systems across the region are also viewed favourably, as this will afford synergies in raising awareness and promoting the message to the community.

Council was also an active participant in developing the BSWWRRG Local Government Program in 2018. The aim of this program was to identify regional issues and programs, where it was deemed beneficial for councils to pool funds and address issues on a regional basis. More recently, the BSWWRRG has been an important source of support and guidance to the Council around the implementation of the 4-bin system.

Significant change occurred in Victoria's waste industry and related legislation, since the Strategy was last updated. Victoria, along with other states, exports large amounts of recyclable materials for processing overseas. In 2018, China, a major recipient of Victoria's recycling, introduced strict contamination limits for imported recyclables. This caused major disruption in recycling markets around the world, and the subsequent stockpiling of materials.

The "Recycling Crisis", as it came to be known, led to the development of the Waste Act and the Waste Authority – legislation and a governing body that will apply to the entire waste and recycling sector in Victoria.

In addition, Recycling Victoria: A new economy was introduced in 2020. This 10-year policy and action plan, sets out Victoria's recycling and waste minimisation goals for a growing population.

The policy includes changes to council kerbside recycling services, through the adoption of a four-bin service that includes:

- General waste service
- Comingled recycling
- Food and garden organics (FOGO) by 2030
- Separate glass service by 2027.

Warrnambool implemented a FOGO service in 2019, a glass-only collection service in May 2021 and transitioned to a fortnightly service across all four waste streams in July 2021.

Local

Council Plan 2021- 2025

The Strategy is in line with the objectives of the current Warrnambool City Council Plan, through its commitment to encouraging waste minimisation and sustainable practice through:

- Reduction, re-use and recycling of materials
- Adapting and changing behaviour towards the production of waste and contaminants in the natural environment
- Corporate sustainability practices
- Use of technological advancements for waste management
- Focus on water resource management and the reduction in physical waste in local basins.

Warrnambool 2040 Initiative

The Strategy supports the goals outlined in the Warrnambool 2040 (W2040), environmental priorities section.

Developed in 2020, this series of documents identify community aspirations for the future of the town.

Relevant objectives include:

- Informed behavioural change that supports waste reduction at all levels of Warrnambool's community.
- Warrnambool to become a 'closed loop economy' where goods and services are not wasted and instead reused efficiently.

- Encourage a change in consumer habits, including minimising unsustainable materialism and increasing reusing of goods.
- Combat environmental change through a redirect towards sustainable resources that avoid single-use plastics, and investing in subsequent industry needs.

The following are some of drivers behind the development of this Strategy:

- Green Warrnambool 2018 – Council's sustainability plan Green Warrnambool states that Warrnambool will be a "wise city that wastes not".
- Warrnambool residents will be "environmentally informed, ethically motivated consumers of goods and services. We will have zero recoverable waste being sent to landfill by conserving, avoiding, reducing, recycling and reusing resources at every opportunity. We will significantly reduced land, water and air pollution, including littering and we will no longer be a source of plastics entering the marine environment."
- Warrnambool Open Space Strategy 2014 – the purpose of this strategy is to provide an overarching framework to direct open space planning and management to 2026. It provides guidance on the provision of bins in council's public open spaces.

Local Laws

Council Local Laws that are relevant to the Strategy list resident's responsibility towards domestic and pet waste:

- A person is prohibited from having unsightly amounts of rubbish that may cause danger on their property.
- Occupiers of properties are responsible for ensuring domestic waste is collected in the kerbside service.
- Owners must be responsible for cleaning up animal litter and must be equipped to do so at all times that the animal is in their charge.
- Commercial and building related waste
- The waste accumulated from trades must be treated separately from domestic waste, in an approved skip.
- When carrying out building works, a purpose built facility must be on site to minimise discharges from going into the stormwater system.

Drivers for change

The waste hierarchy

The concept of a "waste hierarchy" that ranks ways of dealing with waste in order of preference has been almost universally adopted as a guiding management principle by governments internationally and in Australia.

The waste hierarchy sees avoiding the creation of waste as the most desired outcome, while landfill disposal is the least desired outcome.

Table 1: The Waste Hierarchy and its application in Warrnambool

Rethink (avoid) and Reduce	Council cannot control what households buy and dispose of but can provide education to encourage steps to reduce the creation of waste and put in place processes and systems, such as resource recovery to minimise waste to landfill.
Reuse	The reuse of materials that would otherwise end up in the waste stream can provide a variety of social and environmental benefits. E.g. the City can support and promote community based reuse organisations, such as WDEA
Recycle	Public place and kerbside recycling services provided by the City and other local recycling activities and services are a key way of reducing the economic and environmental impacts of managing waste.
Recovery	Energy from waste technology is still in the early stages of development in Victoria, but offers potential to reduce disposal rates in the future by recovering energy resources from materials that would otherwise be landfilled. Waste to energy technology also provides a renewable energy source. Some large landfills collect and utilise landfill gases to generate electricity and sell energy back into the grid. The City's former landfills were not large enough to justify the capital expense for landfill gas capture.
Treat and Dispose	Disposal is the least preferred option, however for the foreseeable future there will be residual and/ or hazardous wastes for which landfill remains the only or best option. While there are no potential landfill sites within the City, it is important for the Council to monitor availability and maintain cost effective access to landfill sites in the foreseeable future.

Costs

The Victorian Government objective to incentivise alternatives to landfill is driven by the landfill levy. The landfill levy is used as a mechanism to make resource recovery more feasible as an alternative to landfill.

In south-west Victoria there are significant costs associated with landfilling, including the construction and rehabilitation of landfills to Best Practice Environmental Management standards (BPEM), the cost of transporting waste to a landfill and the landfill levy.

Since 2010-2011, the cost of landfill gate fees has increased by 47%. This is due to both the increasing cost of the landfill levy and increasing requirements of the BPEM. This financial impact in itself is a significant driver for change, even before considering environmental or lost resource costs. It is also a factor leading to the closure of a number of landfills in Victoria.

Table 2: EPA Landfill Levy - Charges per tonne

2017 -18	2018-19	2019-20	2020-21	2021-22	2022-23
$31.71	$33.22	$33.03	$33.03	$52.95	$62.95

Table 3: Naroghid Landfill Gate Fees - Charges per tonne

2017-18	2018-19	2019-20	2020-21	2021-22
$114.28	$117.41	$120.32	$109.07*	$111.79

* Gate fees were reduced in 2020/21, as a result of lower overheads at Naroghid.

Reducing waste management costs in Warrnambool requires a multi-faceted approach.

- Community education about reducing or avoiding waste creation leading to behaviour change .
- Improving recycling by reducing contamination in the kerbside recycling bin.
- Improving and extending public place recycling.
- Raising awareness of recycling services provided in the City.
- Lobbying for stricter product stewardship policy to more options for recycling more products and materials, with the costs covered in product purchase price.
- Lobbying for a bigger share of the EPA landfill levy to return to the region to fund resource recovery innovation.

In the 2020-2021 financial year, the landfill levy component paid to the EPA for Warrnambool's landfill disposal costs was $180,730. Council needs to stay abreast of developments, innovations and technology in waste management and resource recovery, and may at some point be in a position to lock in a gate fee for a period of time for the foreseeable future.

This would provide surety in a volatile market, however it must not detract from council's overall vision of avoiding waste and reducing waste to landfill. Council must not surrender ownership of the waste without careful consideration; in the future waste may become more of a resource and commodity. Rateable properties are levied a Waste Management Charge which includes supply of bins, fortnightly collection of 140 litre garbage, 80 litre glass, and 240 litre FOGO and comingled recycling bins. This service also includes disposal to landfill, transport and sorting of recyclables collected, education, promotion, community engagement, and bin repair and replacement.

This Waste Management Charge also contributes to:

- maintenance and upgrade of stormwater protection;
- footpath and street sweeping;
- litter collection in the CBD, parks, reserves, and illegal dumping clean-up;
- EPA compliance and environmental monitoring of Braithwaite Street closed Landfill site and any related works;
- regional projects through the BSWWRR Local Government Program;
- rubbish, recycling and green waste disposal generated by council operations, including innovations for increased resource recovery of material generated through these operations; and,
- corporate administration/management.

Council will continue to advocate to receive a fair share of grants from the Sustainability Fund, to assist Council in addressing waste management issues.

Reducing Greenhouse Gas

Council's Green Warrnambool plan include's a goal for Warrnambool to have zero net greenhouse gas emissions by 2040.

The most significant action taken so far to reach this target was the introduction of the Food Organics Garden Organics (FOGO) kerbside collection to Warrnambool in 2019. Greenhouse gases produced by food waste in Australian landfill each year are equivalent to the emissions of Australia's steel and iron ore industries combined. (www.watchmywaste.com.au/food-wastegreenhouse-gas-calculator)

Greenhouse gases trap heat in the atmosphere, slowing the rate at which it escapes to space; they act like a blanket insulating the Earth. Landfilling of FOGO generates methane gas, a potent greenhouse gas that traps heat more effectively than carbon dioxide.

The waste sector accounts for 3 per cent of total net greenhouse gas emissions from human activity in Australia. Around 76 per cent of waste sector emissions come from methane released from food and green waste breaking down in landfills. (April 2010, Report to Dept. of EWHA, Climate Change and the Resource Recovery and Waste Sectors).

Based on current kerbside waste generation figures, and taking into account collection, processing and landfill emissions, the continued diversion of FOGO materials from landfill bins, could reduce local greenhouse gas emissions by more than 4,000t annually. This would increase again if processing facilities were upgraded from open windrow to aerated static pile or in-vessel (enclosed) composting systems. (Review of Joint Waste Services, MRA 2017 Population Growth, Development and Future Waste Projection).

Population Growth

In the decade to 2016, the city's population grew by an estimated 3,300 people, however the annual amount of waste generated through kerbside collection did not increase significantly over that time.

The city's population, currently 35,500, is predicted to approach 50,000 by 2035. An increase of 15,000 people over 20 years should see a significant increase in waste generation, however this has the potential to be offset by improved diversion rates, where residents are recycling more material.

This increase in population will bring a number of challenges in resource recovery and waste management, including:

- alternative options for collection from multi-unit dwellings;
- increasing landfill costs;
- potential increased demand for public place bins; and,
- local landfill space decreasing, potential to have to look further afield for landfill services – increased waste transport costs.

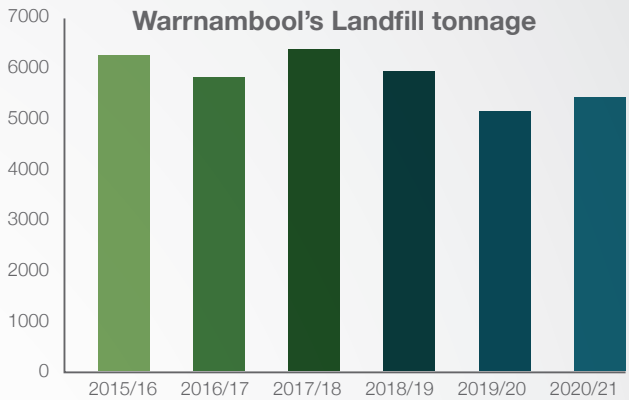

Chart 1: Warrnambool's annual landfill tonnage

Service provisions

Council is currently responsible for:

- domestic waste and recycling kerbside collection and disposal/ recovery of materials;
- street and footpath cleaning;
- stormwater protection;
- public place bins including waste and recycling bins (includes the CBD, foreshore, Lake Pertobe, parks, gardens and recreation reserves);
- promotion of commercial and community group based recycling services;
- partnering with and hosting programs such as “Detox Your Home” – annual mobile collection of household chemicals;
- permanent Detox Your home site at the Cleanaway transfer station; and,
- managing past legacies (closed landfills).

Kerbside collection

Currently households in Warrnambool are serviced by a four bin system. Each service is provided to residences between the hours of 10pm and 10am.

As of June 2021, all collections became fortnightly. Council provides the following through the kerbside service.

Table 4: Warrnambool’s Kerbside Collection Service

Landfill	FOGO	Comingled Recycle	Glass
140 litre Red-lidded bin	240 litre Green-lidded bin	240 litre Yellow-lidded bin	80 litre Purple-lidded bin

The council’s waste and recycling kerbside collection is currently carried out by Wheelie Waste, under a contract that commenced on July 1, 2019. This is a seven-year contract with the option of extension. The contract includes collection from over 16,000 tenements. This figure grows at approximately 20 new tenements per month.

In May 2021, a 80L purple -lidded glass-only bin was introduced to the kerbside service. The glass is collected, sorted and crushed for use in local construction projects. The service aims to separate glass fines (small fragments of glass that contaminate other types of recycling), from the rest of the comingled recycling stream. Separating the materials at the kerb results in a higher quality and more valuable recycling load, at the processing stage. An average of 90 tonnes of glass is collected through the kerbside service each month.

The FOGO kerbside collection is performed by Warrnambool Green Waste. The contract commenced in May 2019.

Community consultation and the results of the Regional Kerbside Waste Audit 2018, organised by the BSWWRR group, highlighted the economic and environmental benefit, and the community interest in adding a Food Organics Green Organics (FOGO) collection to Warrnambool’s kerbside service.

The audit identified an average of 2.9kg of potentially-recyclable food and garden waste per household, per week was being lost through the landfill collection. This was equivalent to 41.8 per cent of the entire load, each week that could have been diverted from landfill and composted.

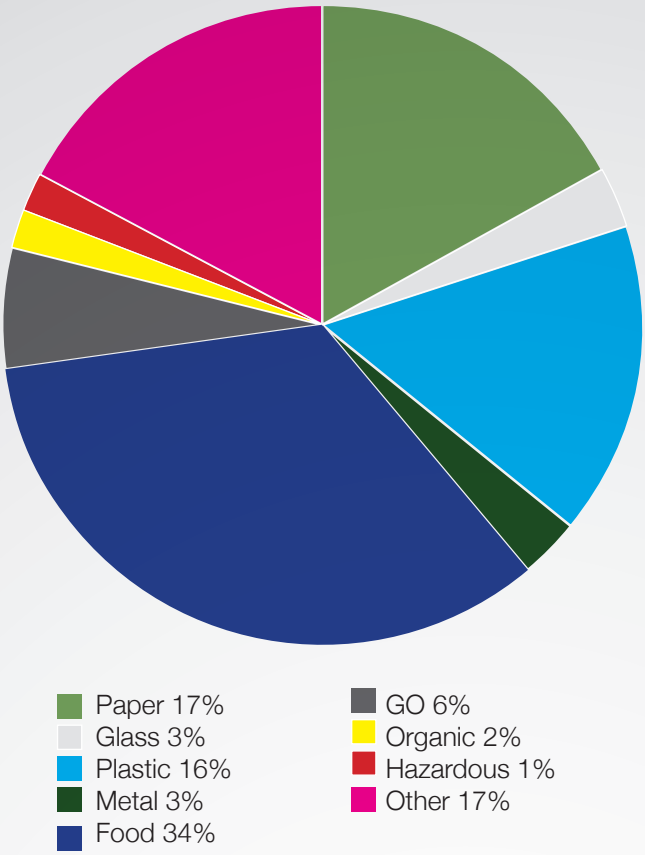

Chart 2: Warrnambool's Waste Stream Composition by weight
Source: Regional Kerbside Waste Audit 2018.

Along with the 240L kerbside FOGO bin, households were provided with a kitchen caddy and an annual supply of compostable caddy liners.

In the first year of the municipal-wide FOGO service 800 tonnes of food waste was diverted from landfill.

At the time, landfill gate fees were $149.63 per tonne. Green waste gate fees were $23.60 per tonne. This was equivalent to a saving of more than $100,000 in landfill acceptance and processing fees. Landfill gate fees have steadily increased every year since. The total charge (EPA levy plus a gate fee) for landfill in the 2021-2022 financial year is $170.04 per tonne.

The quantity of material being placed in FOGO bins has steadily increased. Council's 2021 FOGO Waste Audit reported an average collection of 13.68kg of FOGO per household, per fortnight.

From a sample of 136 bins, with a total presentation of 1.86 tonnes, 74.5 per cent was garden waste, 23 per cent food waste and 1.1 per cent contamination.

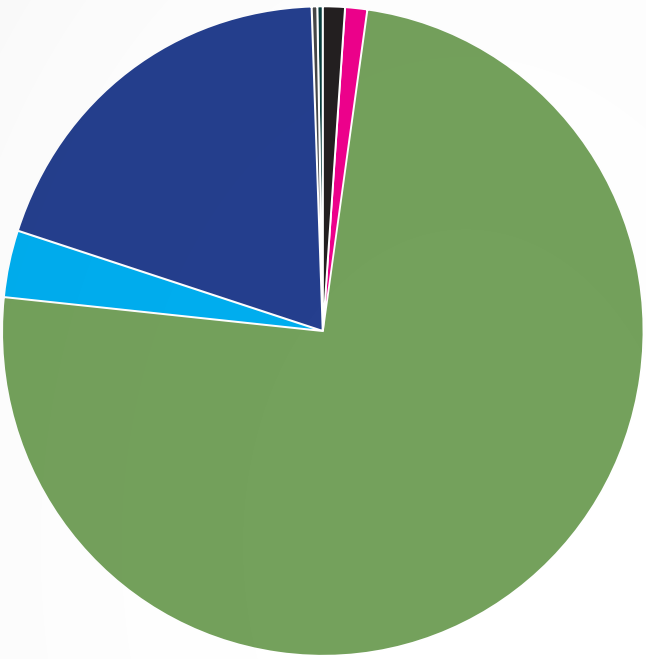

Chart 3: Warrnambool's FOGO Stream Composition by weight
Source: The Warrnambool City Council FOGO Waste Audit 2021

The service is also offered to interested businesses and schools, for tearoom quantities of waste. Fortnightly collection, and a limit of one bin per address, typically deems the kerbside service inadequate for commercial quantities of food waste.

Technology

As of late 2021 there were over 60,000 kerbside bins in use across the municipality.

A requirement of the four bin rollout plan was the capacity to register each bin to a specific Warrnambool address. Individual Radio Frequency Identification Devices (RFID) were installed in every new bin, along with a scannable QR code, listing the registered address.

The technology has a range of benefits, for the contractor, council, and residents. Data can be accessed via the Council's Waste Collection Data Management system (WCDM). The system serves as a real-time record of bins in the community. The new technology is useful for tracking missed collections and contractor performance, reducing the number of lost and stolen bins, and confirming waste service entitlement.

The waste and recycling contractor have installed in-vehicle cameras, which can be used to verify collection, identify bin presentation and missed bins, and more proactively reduce contamination.

The repair and maintenance costs of kerbside bins are included within the contract fee. The cost of bins to new dwellings is included in the Waste Management Charge, and amortised over the life of the contract.

Kerbside recyclables – transport and acceptance

Kerbside recyclables are deposited at Barton's Waste transfer station in Warrnambool. The recycling is then bulk-hauled to a VISY Material Recovery Facility (MRF) in Springvale.

Once recyclables are collected at the kerbside they become the property of the contractor. However, through the current contract, council must sight the agreement between the MRF and the contractor. This provides certainty as to the destination of Warrnambool's recyclables.

Over the past five years the value of recyclables fell significantly. In 2017, transportation costs were offset by the value of the recyclables once delivered to the MRF. In the 2020-2021 financial year however, with stricter contamination limits in place, and increases in gate fees, the transportation and acceptance of recyclables costs the Council $315,252 ($126,101 in transportation; $189,151 in processing fees).

Waste disposal - disposal sites

All kerbside garbage is consolidated in Warrnambool then transported to the Corangamite Regional Landfill at Naroghid, which is owned and operated by Corangamite Shire.

Warrnambool City Council and Corangamite Shire entered into an agreement in April 1999, which set out the conditions under which the relationship operates. The council pays the landfill gate fee directly to Corangamite Shire which includes the EPA levy.

The fee is based on the tonnage delivered across the weighbridge at the landfill site which is 65km from Warrnambool.

The estimated life of the Naroghid site is 55 years at current volumes.

An EPA licensed landfill at Pomonal Road, Stawell, operated by Cleanaway, is the disposal site used by two South West municipalities. The site is licenced to accept municipal waste, commercial and industrial, asbestos and category C soil.

This site is about 190km from Warrnambool.
The costs for establishing and operating a licenced landfill are considerable. The timeframe and regulatory hurdles for the establishment of a new landfill are a disincentive to the establishment of any new site.

Over recent years, the region's smaller unlicensed municipal landfills have closed, along with some larger, licensed sites. There are now few options for landfill disposal within the region.

It is essential that Council manages its relationship with licenced landfill operators, and works to reduce the volumes of material going to landfill, by increasing recycling diversion and continuing to remove organics from the waste stream.

Council has received a ministerial exemption for the depositing of garbage at Corangamite Regional Landfill.

Transporting waste for disposal

Council's kerbside collection contractor is responsible for collection and delivery of the waste to the nominated landfill.

Collection vehicles deposit the material at Barton's Transfer Station before it is transported in B-double trucks to the Naroghid landfill.

Kerbside collection trucks generally have a capacity of 14 cubic metres, while B-double trucks have a capacity of 150 cubic metres. Transferring waste from collection trucks to B-double trucks creates efficiencies and results in fewer trucks on the highway.

Street cleaning

An important element of Council's waste management activities is the regular street cleaning program.

Street and footpath sweeping also provides a cost-effective maintenance regime for these assets, as the accumulation of soil and silt affects the performance of roads and footpaths.

Grass can grow on accumulated soil or silt left on roads or caught in cracks. In turn the grass roots penetrate between the concrete edge of the kerb and the edge of the seal, lifting the seal and allowing water in. Once water penetrates the seal, it causes a weak spot to develop in the surface and ultimately failure, such as a pothole, will occur.

Blocked gutters can also lead to the flooding of property and the resources required to dig out blocked side entry pits (gutters) are significant as this must be done by hand.

Effective and timely road and footpath sweeping can significantly reduce the amount of waste entering the environment, and in Warrnambool's case this will usually mean the marine environment.

Street sweeping involves the mechanical sweeping of selected roads, car parks and other hard standing areas. This includes kerb stops, kerb and channel, traffic islands, roundabouts and carparks.

Council's road sweeper commonly operates on a Monday to Friday, 4am to 12:30pm. At weekends it operates in commercial areas for four hours each day. Adopted performance standards require the CBD to be cleaned daily, Raglan Parade monthly, and other streets twice a year. Frequency is impacted by annual budget decisions, with some residential streets being swept once a year. Pathway sweeping is undertaken to remove litter, dirt, loose stones and debris from footpaths in the city centre.

Council's footpath sweeper operates from 5:30am to 11:30am Monday to Friday, and for four hours each Saturday and Sunday. Emptying of Council managed cigarette butt bins is also undertaken by the footpath sweeper operator. There are also privately maintained cigarette butt bins in the City.

Stormwater protection

The protection of the marine environment from waste pollution is of critical importance. Litter entering the drainage system will ultimately pollute these environments and cause considerable damage to marine life.

While education, better kerbside bin design and street litter bin design can all assist, a further level of protection is necessary. There are currently a total of 24 in-line stormwater drainage litter traps throughout the municipality.

A number of different types exist, ranging from end of pipe outfall nets and in-line baskets to sophisticated gross pollution traps (GPT). These require regular cleaning, particularly after heavy rainfall. Presently, this specialised equipment is not available locally and has to be sourced from Geelong.

Past education programs regarding stormwater protection have included stencilling of stormwater pit lids and cigarette butt campaigns. Council has also worked with the Plastic Free Alliance, comprising many local environmental groups including Fishcare South West, Friends of the Merri Marine Sanctuary (FOMMS), and Beach Patrol to raise awareness about the impact of single use plastics, such as plastic bags, plastic straws, cotton buds, and plastic water bottles on our marine environment.

Council will continue to install drainage system litter traps where appropriate, and work to progressively improve stormwater quality. Specialised litter traps, such as GPTs, are very expensive to install. Priority will be given to resourcing and developing maintenance programs for existing litter traps, so they can function optimally.

Work will also be carried out to improve kerbside and public place bin design, and to increase infringements against litterers. Council will continue to support the work of environmental and community groups who are raising awareness of the problem, and will continue involvement in the Plastic Free Alliance and support development of a Boomerang Bag initiative in Warrnambool.

Public place bins

Council provides a comprehensive network of public place bins across the city's streets and open spaces.

Council performs over 1,400 rubbish bin collections weekly, from the city's 422 waste bins. Public place recycling bins currently number 117, but this number is growing, with council installing recycling options where possible at waste bin locations. The latest recycling rollout involved 61 recycling stations installed at all of the 15 recreation reserves across the city.

As there are already a significant number of public place bins serviced across the city, not all public places are allocated a bin. The Open Space Strategy provides the decision-making framework for the installation of public place bins.

Due to the significant staffing resources of emptying and maintaining public place bins, public places are prioritised based on their usage and categorisation. According to the strategy, public spaces categorised as Local or Neighbourhood parks are not allocated a bin. The expectation is that these spaces are used by locals or neighbours who are able to take their rubbish and recycling home.

Council provides a number of dog waste bag dispensers along the foreshore to encourage residents to pick up after their dogs. This is not an established behaviour or cultural norm in Warrnambool, and dog droppings left behind in public spaces are a common occurrence.

Domestic animal excrement is normally acceptable in FOGO collection. Defining precincts where public place bins are provided for specific users could be given consideration, for example bins for tourists travelling in campervans. These tourists are not currently catered for, and while it is expected that they will take their waste to a transfer station this may not be a realistic expectation.

Council will review resources assigned to the collection and maintenance of public place bins, and adjust where this can be justified.

Council will also commit to repairing and maintaining public place bins in good and workable condition on an ongoing basis.

Commercial waste

Council does not directly manage any commercial waste, except for tearoom waste and recycling from some businesses external to the CBD.

This tearoom waste is collected as part of the kerbside collection, and these businesses receive the same service as households.

The intent of this is not for Council to manage the 'business' type waste, but to provide an easy to use and cost effective method for businesses dealing with small amounts of nonindustrial or non-hazardous waste.

Council is striving to improve communication with businesses to increase promotion of local recycling services.

Detox Your Home

This service provides a safe, free and easy-to-use way for residents to dispose of common households chemicals.

It is dangerous to put chemicals in the regular rubbish bin, as they may explode, ignite or leak. Pouring chemicals down the drain will pollute waterways, potentially contaminating drinking water supply and making rivers and beaches unsafe for swimming.

Council will work with Sustainability Victoria (SV) to ensure this annual collection continues in the future, as a valuable service to our community.

Cleanaway currently hosts a Detox Your Home permanent site. This service is funded by SV and is supported and promoted by Council. This site accepts low toxicity, high density products such as batteries, and paint, E-waste and fluorescent lights, for no charge to households.

Businesses are charged a fee for disposing of these products at the site. Some businesses believe that this charge is prohibitive, and opt to deliver material to a landfill. As the permanent site is ultimately funded by taxpayers, it raises the possibility that Sustainability Victoria could review covering the cost of businesses using this site to recycle materials used in their operations.

Council will also continue to support and promote Detox Your Home and encourage businesses to use the service. Council will work with Sustainability Victoria to ensure this program continues.

DrumMuster

DrumMuster provides Australian agricultural and veterinary chemical users with a collection scheme, funded by levies imposed on the sale of farm chemicals and collected by AgStewardship.

The scheme has proven successful over a number of years in removing a large number of containers from the waste stream, and reducing the amount of illegal and inappropriate disposal, while recycling significant amounts of metal and plastic.

Warrnambool's local DrumMuster Agent Cob and Co has recycled over 35,000 drums since inception.

Commercial waste services

There are a number of commercial waste services operating in Warrnambool.

These services form an important part of the local waste and resource recovery management sector. They allow for the management of most waste streams from commercial, industrial, construction and private sectors.

Recycling opportunities have increased significantly in Warrnambool over the past five to 10 years, providing the potential for cost savings and environmentally responsible processes for businesses.

Council's Warrnambool Recycling & Disposal Services Directory provides a comprehensive snapshot of recycling services available locally, regionally and further afield, where there are no options closer to home.

The directory is updated annually to take into account changes in recycling markets and residents' inquiries

Receiving and sorting material (waste and recycling) transfer stations

Warrnambool is home to three transfer stations and a resource recovery business:

Cleanaway – 355 Koroit St, Warrnambool

Cleanaway hosts the Detox Your Home Permanent site and is open to the general public seven days a week.

It accepts:
- Co-mingled recycling
- Cardboard and paper
- E-waste (TVs, phones, computers and monitors)
- Fluro Lights
- Clean fill (any combination of soil, sand, bricks, concrete, tiles and rocks)
- Green waste
- Timber
- Plaster
- General waste
- Mattresses
- Tyres (all sizes)
- Oil
- Polystyrene
- Scrap metal
- Whitegoods
- Batteries

Warrnambool Transfer Station / Barton's Waste Collection – 20 Harrington Rd.

Open to the general public seven days a week.

It accepts:
- General waste
- Green waste
- Oil
- Bricks, soil, concrete (clean fill)
- Recyclables (bottles, paper, cardboard, glass, plastic, cans)
- Mattresses
- Scrap metal

Westvic Waste and Recycling – 3 Hammond Place

Westvic is open to the general public seven days a week.

It accepts:
- Building & Construction Waste
- Car batteries
- Cardboard
- Comingled recyclables (yellow top bins) - aluminium cans, paper, plastic and glass bottles
- Green waste
- eWaste
- Household rubbish
- Motor oil
- Scrap metal
- Soil and clean fill
- Whitegoods.

Cob and Co Recycling – 25 Dickson St

Cob and Co Recyclers accepts:
- Lead acid batteries
- Chemical drums (DrumMuster agent)
- Aluminium cans and scrap
- Iron and steel
- Paper and cardboard – commercial quantities only
- Plastics – "Bulka" bags.

Reuse and resource recovery facilities and services

Warrnambool's reuse and resource recovery facilities and services are provided through a variety of options.

In the absence of a dedicated facility there is an ever expanding jigsaw of services provided by many organisations.

These services include:
- Transfer stations
- Metal merchants
- Recyclers of plastics
- Charity Bins and Opportunity shops
- Disability Enterprises
- Supermarkets
- Detox Your Home
- MobileMuster
- Community organisations; Warrnambool Community Garden, Unpackaged and SWAPIT
- Cartridges 4 Planet Ark
- REDcycle
- Terracycle
- Seal the Loop
- Garage sales
- Car boot sales
- Warrnambool Buy /Swap/Sell Facebook page

E-waste

Western District Employment Access (WDEA), provides electronic waste (e-Waste) recycling for Warrnambool and the south west region.

E-Waste consists of old, end-of-life or discarded appliances or electrical devices. It includes computers and accessories, mobile phones, televisions and other electrical appliances.

WDEA offers meaningful employment opportunities for people with a disability. Workers at WDEA help to disassemble electrical items. These components are then sorted, packed and sent to factories across Australia for repurposing. WDEA is part of the National Television and Computer Recycling Scheme (NTCRS), through its The National E-Waste Alliance (NEWA) membership.

The NEWA exists to better enable Australian Disability Enterprises (ADEs) to create financially viable, sustainable e-Waste recycling businesses, whilst providing ongoing employment. NEWA establishes markets for the e-Waste product with buyers who are certified or able to prove their downstream markets. Under the NTCRS this movement of e-Waste commodity is very closely monitored and subject to international laws.

The BASEL Convention – of which Australia is a signatory, prevents the movement of e-Waste to non OECD countries, where strict environmental standards are not maintained. NEWA is able to provide full reporting on commodity movement.

E-waste can be sorted, packed and recycled. WDEA provides a valuable recycling service for local businesses, and recycle 225 tonnes of e-Waste from the south west region each year. WDEA is an integral part of recycling solutions for Warrnambool, creating a viable option for safe and environmentally sound recycling of electronic items. The council will continue to promote and support Western District Employment Access and other not-for-profits offering recycling services.

Managing past legacies

Council records dating back to 1910, show that over the years many waste disposal sites have operated throughout Warrnambool.

Sites have included Ryot Street, Levys Point, Fletcher Jones Quarry site, Macdonald Street (trotting track), Harris Street, the Warrnambool Cricket and Recreation Reserve, and the Fitzroy Road quarry.

These sites are now considered inert and many have become valuable community assets in the form of sports grounds, habitat, and areas of recreation. Council's most recent landfill site is known as Braithwaite Street. The site was used as a landfill for the disposal of domestic garbage, putrescible waste, solid inert waste and limited prescribed waste, from 26 March 1982 to 25 August 1999.

After its closure, the EPA issued a Pollution Abatement Notice (PAN) for the rehabilitation and aftercare management of the site. The site has been rehabilitated, and Council has complied with all aspects of the after-care management plan and EPA requirements.

An updated Post-Closure PAN was issued by the EPA in 2017, to address environmental risks and impacts. The PAN requirements include monitoring, and the prevention of escaping landfill gases, the monitoring and collection of leachate (liquid arising from garbage decomposition), and the continuation of environmental audits.

The drainage line that runs through the middle of the landfill to a sump at the toe of the landfill, collects leachate. This leachate is then pumped back onto the cap of the landfill via a solar pump, where it is irrigated onto the cap. This system works well, except during inundation of the floodplain at the toe of the landfill. Works to separate the floodwaters from the leachate sump will occur in the near future.

Ten bio-filters have been installed at the site to reduce the concentration of methane as it escapes to the atmosphere. Bio-filters are attached to landfill gas vents, monitoring bores, and old fire hydrant sites. The science is simple but ingenious. Methanageous bugs live in organic mulch matter that is kept damp. In the presence of methane, these bugs digest the methane and convert it to a less potent greenhouse gas.

Council is also required to provide the EPA with an annual statement of compliance concerning each of the PAN requirement. It is expected that a Post-Closure PAN will remain in place until such time as there is no evidence of any landfill gas or leachate being generated by the site.

Council will continue to carry out its responsibilities at the Braithwaite Street former landfill site, as required by the EPA Post Closure Pollution Abatement Notice, until such time as the site is deemed inert. There is an adjoining wetland which plays a locally important environmental role, and should not be developed or used for grazing.

Education and awareness programs

The Warrnambool City Council currently develops and provides awareness and education material for the community via print, radio, posters, fridge magnets and social media, and the Council's website.

An annual recycling calendar is produced and typically focusses on improving recycling and decreasing contamination. The calendar has taken on different

forms including the Sustainability Calendar, DL brochures, A5 cards with magnets for the fridge and a comprehensive resource recovery and waste disposal booklet.

Education and awareness programs are often delivered in partnership with community groups. Warrnambool Community Garden hosted the Dirty Weekend over a six year period, and continues to provide workshops educating the community about composting, worm farming and other waste reduction and recycling initiatives, primarily related to food waste.

The Plastic Free Alliance is another example where the council has worked with local environmental groups, (including Fishcare South West and Friends of the Merri River Marine Sanctuary) to run events and work with schools to raise awareness of the impact of single-use plastics on the marine environment.

Council has partnered with the Regional Waste Management Group and other South West councils on several projects and campaigns. This helps achieve economies of scale when running education messages through the media. It also ensures consistent messaging across councils. The role of the regional group is considered essential in this area. Education has a critical role in the success of behaviour change initiatives (such as reducing contamination rates in kerbside collection, waste avoidance, service changes and litter reduction programs.)

Education is key to ensuring the success of any changes to the kerbside collection service. The council currently invests about $30,000 annually in waste education and awareness programs.

This budget also funds small infrastructure grants for schools and organisations for recycling and waste avoidance initiatives. Resource recovery and waste education in schools is currently carried out through the Healthy Moves program. This program works with all primary schools, to facilitate sustainable transport behaviours in students. The program provides excellent networking opportunities for waste minimisation initiatives in schools, and has provided the council with an opportunity to promote and educate students about sustainability.

The 2020 Healthy Moves Workshop, saw students from 10 Warrnambool primary schools developing plans for sustainable transport events at their school.

Council provides support to secondary schools on an ‘as needs basis.’ Secondary schools education and engagement would benefit from a more strategic approach. Council could also review support of the AussiVic Resourcesmart Victorian Government sustainability program in schools.

Council needs to review its current Waste and Litter Education Strategy and develop a program for implementation over the life of the plan.
Information and needs will also be fed into the regional education strategy, partnering in regional campaigns to gain cooperative benefits.

Education and awareness campaigns can be for the provision of basic information or for specific and targeted campaigns. Sustainability Victoria provided funding in 2016 to devise a project to work with the international worker audience in Warrnambool to improve resource recovery.

The project involved developing communication material in different languages and facilitating a focus group where the participants were interviewed about the waste management systems in operation in their home countries.

This provided valuable information for working with this group and valuable learnings about not making assumptions about any audience. This project is ongoing with the next step to involve developing a video in different languages about the kerbside collection, and posting this on relevant social media platforms.

Data will be important in providing valuable information for the direction of the plan. Regular kerbside and public place bin audits will be undertaken to inform the plan. The development and implementation plan will address specific campaigns and the most appropriate method of delivering these. The plan will also allow for flexibility when grant opportunities arise in this area, and provide a program for ongoing and regular education in some areas such as the correct use of kerbside recycling and FOGO bins.

Managing other waste streams

Hard waste or bulky items

Hard waste is the non-putrescible waste that is too large to fit into a garbage bin.

Examples include furniture, household appliances, metals, old white goods, old tools and car parts.

Opportunity shops must be acknowledged for their part in receiving and recycling hard waste and clothing. Warrnambool boasts seven opportunity shops in its CBD, and the Big R's Shed, in the industrial estate.

Established in 2019, this not for profit enterprise is owned and operated by WDEA. It offers an important service to the community, through the resale of second-hand goods, including electrical, sporting, homewares and furniture, and employment opportunities for people with disabilities. This site diverts hard rubbish from landfill.

There is a swapping cooperative established at the Baptist Church in the CBD, which provides an outlet for the swapping of children's clothing, toys and equipment. Most of these outlets are associated with charities, and the shops provide funding for the charity.

A major problem however, is the dumping of items at these premises that cannot be resold. This creates an ongoing burden for these charities, with a number facing disposal costs of around $20,000 annually.

WDEA installed a number of clothing and toy bins across the City. This material is sold to Southern Cross Recyclers (SCR) who on-sell it to markets across the world.

Mattresses are accepted at most transfer stations for a fee. Some transfer stations recycle the mattress, others are disposed of to landfill. Opportunity shops may also accept and even collect mattresses that are in good condition

Garage Sales form a robust and vibrant city-wide method for the recycling of hard waste and other household items. On any given Saturday morning across the municipality there are 10-20+ garage sales occurring (usually more in spring and early summer).

The Garage Sale Trail is a nation-wide initiative which was trialled in Warrnambool in 2015. It was not a successful event due to the already healthy local garage sale industry. However, the council will support and promote these type of reuse events wherever possible and keep abreast of initiatives such as the Garage Sale Trail, if relevant opportunities arise.

Social media is also responsible for an increase in hard waste recycling in the City. Facebook pages such as Warrnambool Buy Swap Sell are facilitating the diversion of a significant amount of material from landfill, and also providing an income for sellers of items. Council is also aware of Reuse or Tip shops operating in other municipalities.

These facilities seem to work best when they are situated at a transfer station or landfill, as the items can be assessed prior to disposal and any items identified as saleable can be recovered before reaching the disposal site.

The Eaglehawk Eco-Centre in Bendigo, is a successful business diverting much hard waste from landfill. However, there are a number of unsustainable tip shops in operation that have become a burden on the local council's finances.

An interesting model is in operation at the Anglesea Landfill, whereby community groups run the shop on a roster basis, similar to the warehouse/supermarket barbecue model. This seems to work well in this community, however it requires a paid staff member and support from Council to ensure a sustainable business. This council is interested in exploring a sustainable model but lack of a site at a transfer station is another barrier to establishing this type of operation successfully.

The approach to hard waste management by councils varies considerably. The modern version of the hard waste service that many councils are moving to is a fee for service program. This is seen as more equitable as it does not distribute individual costs over the rate base.

Hard waste is disposed of illegally more prolifically in some areas of Warrnambool than others. Council removes these items on an ad-hoc basis, but consideration could be given to a more sustainable and proactive approach to dealing with the problem.

Council previously considered hard waste collections, however in consultation with the community, the majority of residents were unwilling to pay for the service.

Council will identify if there is a need to work with relevant stakeholders to develop a proactive approach to managing the habitual dumping of hard waste in specific neighbourhoods within the municipality.

Construction and demolition waste

The transfer stations in Warrnambool accept and manage most of the construction and demolition waste generated in the town, some of which is landfilled and some recycled.

Some industries recycle waste materials generated through their own operations for reuse, such as concrete.

Council operations invest a percentage of the savings made through recycling into further recycling innovations. An example of this is the sifting of material collected through road sweeping. The rubbish is sorted from the organic material, which is then mulched and used as fill. This has led to significant savings in landfill costs, and better environmental outcomes.

Council engineers are currently researching methods of recycling the material that is recovered during road rehabilitation projects. It is envisaged that this material will be reused in other pavement works in the future, reducing the amount of virgin material that is required for this work.

Council will continue to seek opportunities to recycle and recover construction and demolition materials where there are environmental and financial benefits.

Litter and illegal dumping

Littering and illegal dumping is an issue of concern, given the number of environmentally sensitive areas, waterways and the marine environment in Warrnambool.

Illegal dumping hot spots are often locations that are environmentally important.

Council treats littering and illegal dumping seriously, and local laws officers investigate all complaints and information received. Legal action has been taken in the past where offenders have been identified and prosecuted. The EPA act provides for significant penalties.

The community can assist council by reporting, and where possible identifying offenders. Council will undertake training opportunities and trial strategies to deter illegal dumping.

Events such as Clean Up Australia Day, help to highlight the issue of dumping and littering, encouraging feelings of community ownership of these natural areas, whilst assisting with the physical removal of rubbish.

Council will continue to coordinate Clean Up Australia Day events, and encourage and support schools and community groups to take part in smaller-scale clean ups throughout the year.

A vision for the future

Avoid

Avoiding waste generation in the first instance is the best way for the City of Warrnambool to reduce its environmental impact, adapt to climate change, and future-proof ratepayers against the rising cost of landfill disposal.

Avoiding and reducing waste does not necessarily equate to a reduction in consumerism and overall economic growth.

Avoiding waste means being smart about purchases and being a responsible consumers who consider some or all of the following:

- Unnecessary packaging
- Using reusable bags when shopping
- Shopping at a local market
- Grows some of their own food
- Composts / worm farms
- Plans meals to avoid food waste
- Uses leftovers in other dishes
- Frequents retail outlets which focus on sustainability and buys gifts and products made from recycled materials
- Aims to live plastic-free
- Frequents opportunity shops.

Reduce and reuse

The Warrnambool Community Garden, Unpackaged, SWAPIT and Loop Studio are four local community organisations dedicated to the reduction and minimisation of waste.

The Community Garden and HUB are living examples of projects which promote sustainable living.

The Garden runs workshops on many different topics related to sustainable lifestyles and welcomes members of the public to these events. At the Garden, the HUB and the new shelter exemplify sustainable building principles, including orientation of the buildings, building materials, and even a worm composting toilet on-site.

All organic material generated at the site is composted or fed to the numerous chickens, the chicken manure and compost are used on the gardens, contributing to the bountiful crops harvested from the individual and community plots. Vegetables from the community plot are shared with the community during cooking lessons and community lunches.

The Community Garden also partners with other organisations to help reduce and avoid waste in the broader community. Water authority, Wannon Water, collects food scraps from its offices which are composted at the Garden. Another initiative is live Christmas tree recycling. This is a free service where residents drop their trees off for free at the garden, where they are chipped by Council and the mulch is then used at the garden.

Unpackaged Food Co-operative runs every Friday afternoon from the Uniting Church located in Warrnambool's city centre. It is operated voluntarily on a roster basis. It was created so that food and other goods could be purchased collectively without unnecessary packaging. Where possible, items are bought in bulk, are Australian made or Fairtrade, organic and purchased locally. Members bring their own containers and purchase the bulk goods, which are weighed to determine price.

SWAPIT is a children's clothing exchange operated via

the Baptist Church which now has over 200 members. SWAPIT uses a token system, whereby parents can exchange clean clothes and children's furniture, for other items previously exchanged. SWAPIT is also run entirely by volunteers.

Council has an important role in this space, in terms of educating the community about ways of avoiding waste, and promoting waste avoidance initiatives and campaigns. Also partnering with organisations to run workshops and working with schools and businesses to educate and assist them to understand their role in this journey.

The council also actively supports the Ban the Bag campaign and The Plastic Free Alliance; community groups working collaboratively to reduce the amount of single use plastics consumed and ending up in our waterways.

Recycle

In 2017, the waste and recycling industry came under heavy media scrutiny.

A number of problems were highlighted and governments moved quickly to address issues by developing guidelines for the management and storage of recyclable and waste materials. The result of the media exposure revealed Australians were interested in how their recycling was processed.

In the 2020-2021 financial year, the Warrnambool community generated 5432 tonnes of putrescible waste through kerbside collections, and 6279 tonnes of FOGO, 3153 tonnes of recycling, and 413 tonnes of glass were collected. This represents a 64% Diversion Rate.

The most recent, all-stream kerbside audit was conducted in 2018, as part of the BSWWRRG Regional Kerbside Waste Audit. The audit sampled waste and recycling bins from 128 tenements in Warrnambool, recording weight, composition and contamination levels. Results were presented individually by council, in comparison with each other, and collectively as a performance indicator for the region.

Despite the audit taking place prior to the introduction of the FOGO service in Warrnambool, the results are still relevant today, and served as a key driver for the introduction of the FOGO service in 2019.

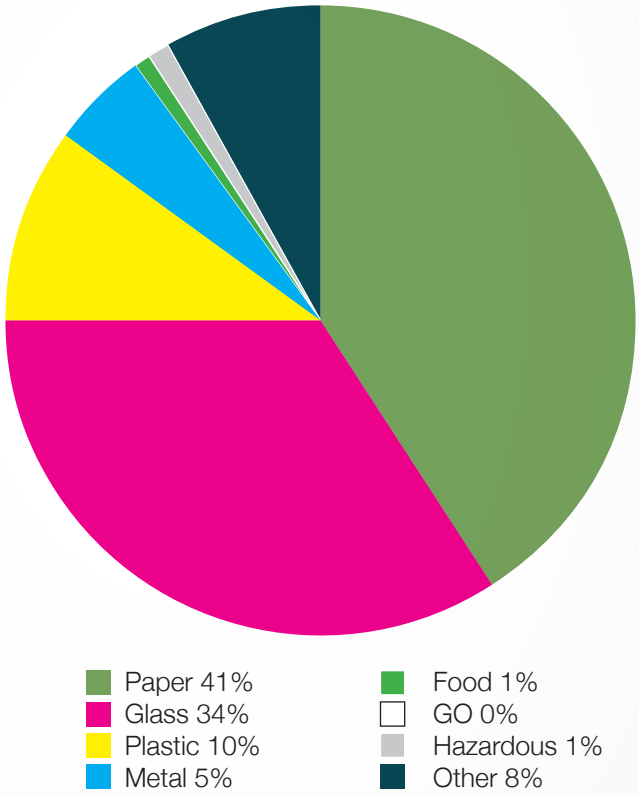

Chart 4 : Warrnambool's Recycling Stream composition by weight
Source: BSWWRRG Regional Kerbside Audit 2018

As mentioned earlier, a separate FOGO audit was performed in 2021, (Council FOGO Waste Audit 2021). Of the 1.86 tonnes collected, by weight, 74.5% was garden waste, 23% food waste and 1.1% contamination. Council would like to see an increase in the amount of food waste in the stream, as it made up 34% of the general waste composition in the 2018 audit. Plans for a targeted food waste campaign are underway, aimed at increased food waste inclusion and keeping contamination rates low.

A follow –up, all-stream regional kerbside audit was conducted in December 2021. The results of the audit were yet to be released at the time of the Strategy's publication. These results will provide valuable information on Warrnambool's landfill and recycling performance, gains and losses since the last audit, and highlight areas where education is most needed.

Organics

Within the total volume of organics, garden organics represent a significant but variable component of the residual waste stream.

The volume of garden organics naturally fluctuates seasonally, typically peaking in spring early summer and autumn.

Recycle and disposal - next practice kerbside collection

Council was concerned with the wind blown litter caused by overflowing garbage bins and bins blowing over during extreme weather events.

A rubber lid latch was made standard on the new comingled recycling bins distributed through the city in 2020. The latch reduces wind-blown litter, by keeping lids closed until they are emptied.

A split system collection vehicle, with separate hoppers for waste and recycling is used in the outer regions of Warrnambool – (Bushfield and Woodford). The advantages of this system is that only one vehicle moves past a property in an evening, improving efficiency, and minimising disturbance to the resident. An educational campaign was launched at the start of their use to address misconceptions in the community that materials weren't being recycled properly.

Multi-unit dwellings or high density living is increasing in Warrnambool, therefore the kerbside collection must adapt, and provide flexible options for these types of developments. Many of these higher density developments can be problematic to provide efficient waste services, as roads do not have sufficient width and turning room for garbage trucks to enter and manoeuvre.

Council will require developers to carefully consider the layout of new developments and give consideration to access roads and storage locations for bins, or skips. This will assist with reducing the number of bins being placed on the roadside, which can create safety, health and amenity issues such as blown litter.

Permit conditions requiring a Waste Management Plan, will be included in planning and subdivision permits, for higher density, multi-unit developments, and subdivisions generally. This will require approval prior to the commencement of the development and the permit being issued.

Council will reserve the right to not collect from a development where waste management has not been adequately catered for.

Warrnambool has had in place a night time collection for over 30 years, which is met with majority community acceptance. Council believes that the benefits of this arrangement are increased safety, efficiency of collection and improved amenity. The collection trucks are able to undertake their work without having to negotiate vehicle traffic, pedestrians and cyclists. This provides a safer and more efficient collection run. There are also 14 schools across Warrnambool with numerous school crossings. It is of benefit to the Warrnambool community for students to be travelling to school without garbage trucks on residential streets. There have been a number of accidents involving pedestrians, cyclists and garbage trucks in other municipalities.

Recover - new technologies

Waste management and resource recovery activities are being impacted by technological advances which are providing greater efficiencies and will ultimately change many of the current practices.

As Smart Cities thinking becomes more normalised, the use of smart technology in our bins and trucks could revolutionise waste minimisation and recycling in Warrnambool.

Collection systems are now using smart chip technology embedded in kerbside bins which can contain information about the bin ownership and service entitlement.

Systems also exist that provide for a truck's bin lifting arm to weigh the material being collected, which along with chip technology enables a pay by weight system. Improved and innovative information technology is assisting record management and information flow and storage. Advances in truck design are enabling larger transfer volumes to be moved longer distances to disposal at material sorting sites. Moving floor and compaction design will improve transport efficiency.

Improved technology in recyclable material sorting facilities is enabling a greater range of materials to be sorted, and improving the viability of recycling the material. Reuse options such as using polystyrene in lightweight concrete, pavers and surf board manufacture have been assisted by technological innovations.

Landfill operations are also impacted where the use of improved cell liners and the capture and conversion of gas to electricity are examples. Landfill gas and leachate monitoring systems are becoming more sophisticated and a requirement in operating recently closed licenced landfills.

Investigations and trials are being undertaken on a number of waste to energy technologies, which if successful could be used on an individual industry application, or by communities where appropriate.

Waste to energy is prevalent in some areas of the world, and is already in operation in some industries in Australia. In the past there were difficulties establishing waste to energy solutions using municipal waste. These included a lack of significant drivers (landfill levy is too low, European Union landfill levies are significantly higher and their policy and legislation around landfill bans and waste reduction are significantly stronger).

Emerging technologies will be required if Council is to achieve zero waste to landfill by 2040.

This aspiration is bold, and will require significant investigation and collaboration with industry specialists, such as Deakin University,the business community, major waste producers in Warrnambool, and importantly the wider community.

It is likely that aggregation of waste streams from these sources will be required to capture sufficient tonnages of landfill waste to ensure a new technology is financially viable.
There is an opportunity for Council to show leadership in this area, by leading this project for the region,to aggregate waste streams.

In this rapidly changing area, waste is now a commodity and a waste to energy project is an option that should be investigated by Council. The waste hierarchy must also be considered. If recycling and reuse are higher ends than recovery, then once all of the recyclables and organics are removed from the municipal waste, in an ideal world, there would not be much residual waste left. There is also research being undertaken to develop "in vessel" technology for the processing of mixed organics, both domestic and commercial into a valuable compost resource.

Opportunities for regional cooperation and economies of scale

A number of opportunities exist for improved regional cooperation, resulting in consistent standards, policies and education across the region, as well as opportunities for financial benefits arising from economies of scale.

The state and regional plans and the Council Plan all highlight joint procurement as a high priority, where it makes sense.

Council's membership of the Barwon South West Waste and Resource Recovery Group facilitates such opportunities. Community education is a critical ingredient in resource recovery and waste management. Newspaper and television exposure across the region is more cost effective when undertaken on a regional basis.

It is valuable to have common standards such as kerbside bin sizes, lid colours and acceptable deposited material standards. Joint procurement of products such as bins, kitchen waste caddies and liners also offers potential savings from economies of scale.

The joint tendering of service provision such as kerbside collection, landfill provision, recyclables sorting and purchase and organics processing, are potential areas for regional cooperation. Purchasing of radio and/or television air time for education and program marketing is also an area suitable for joint procurement initiatives. The council has participated in preliminary discussions with Corangamite and Moyne Shires in relation to joint procurement options. There are many challenges, particularly in relation to timing of existing individual council contracts, and the structure of the regional cooperation model.

Council will continue to explore opportunities for regional cooperation and the realising of financial and social advantages through economies of scale.

Rethink plastic bag use - reduction or plastic bag-free

Warrnambool is surrounded by waterways, and within its boundaries; a Southern Right Whale nursery, the Merri Marine Sanctuary and Middle Island, an important breeding site for Little Penguins.

There have been many documented instances of the deadly impact of plastic bags on marine life. The Council therefore strongly supports the reduction in the use of plastic bags in the Warrnambool community. Plastic bags are also a contaminant in both kerbside recycling and organics collection bins. Plastic bags take many years to break down in the waste stream and in the environment.

The Victorian Government introduced a ban on thin plastic or single-use plastic bags in 2019. The response from retailers and the community has been largely positive, with many retailers providing reusable fabric bags, recyclable paper carry bags, and sturdier reusable plastic bags for a fee.

REDcycle is a soft plastic recycling initiative that was introduced in 2011. Based on a product stewardship model, this partnership between manufacturers, retailers and consumers, aims to reduce the amount of plastic packaging going to landfill.

Soft plastics cannot be recycled through the kerbside service. Major supermarkets now act as collection points for these materials, such as: biscuit packets, bread bags, cereal bags, pasta, frozen food bags and old reusable bags.

The plastic is collected, sorted, and repurposed into recycled-plastic products, like outdoor furniture, bollards, and signage.
www.redcycle.net.au

Treat and dispose - landfill bans

In recognition of the growing amount of e-waste in landfill, and the hazardous and valuable nature of these materials, the Victorian Government banned all e-waste from landfill on July 1, 2019.

Other landfill bans are also a possibility in the future, as an added legislative measure to reduce waste to landfill and to keep undesirable or valuable materials out of landfill. Bans are also used as a mechanism to drive markets, for example, in areas of the United States and Europe organics are banned from landfill to drive the waste to energy industry.

Container Deposit Scheme

As part of the Victorian Governments response to the Recycling Crisis, and Recycling Victoria: A new economy policy, a Container Deposit Scheme (CDS) will be introduced by 2023.

The program will work like those in other Australian states, where the cost of recycling the containers is embedded in the purchase price, the on-going costs are covered by the beverage supplier, the Government will assist businesses with initial start-up costs, and a variety of vending machines, and refund points will be established across the community, to make the return of recyclables convenient for the consumer.

The scheme aims to address beverage related litter, which makes up nearly half of Victoria's litter, improve recycling rates, and reduce the need to use virgin materials for container manufacturing.

Source: www.vic.gov.au/container-deposit-scheme

Product stewardship

The Australian Packaging Covenant (APC) is a sustainable packaging initiative which aims to change the culture of business to design more sustainable packaging, increase recycling rates and reduce packaging litter.

The APC is an agreement between government and industry to find solutions to address sustainability issues. Through the APC, industry agrees to take a leading role in managing the impact of its packaging.

Organisations sign the Covenant to signal their commitment. An example of the APC's endeavours is a current collaboration to reduce coffee cup impact. The aim of this project is to improve recyclability of multi-material products such as disposable coffee cups. Whilst the intent of the APC is excellent, it is voluntary for many manufacturers to sign-up. It is also unlikely that many manufacturers will change without a harder line approach (eg: legislation) if the company's bottom line may be affected.

Council believes that product stewardship should be mandatory across a much broader range of products. MobileMuster and Cartridges for Planet Ark are examples of successful programs, where recycling of the product is paid for at the point of purchase.

Fluorocycle is also a great initiative, aiming to facilitate companies to take responsibility for products that are part of their business model and profit. Paying for recycling when disposing of a product however still allows for the consumer to make a choice – To pay or not to pay?- To recycle or not to recycle? Paying for recycling at the point of purchase alleviates any need for the consumer or business to put the bottom line before the preferred environmental outcome.

Measuring performance

There are a number of criteria to consider when measuring the performance of Warrnambool in relation to waste and resource recovery.

Waste minimisation

Measured by:
- Annual waste generation comparison measured in kilograms generated per tenement.
- Adoption of campaigns such as 'Ban the Bag', Boomerang Bags.

Resource recovery

Measured by:
- Captured for Council's kerbside collection through Diversion Rate. Sustainability Victoria (SV) and the EPA require mandatory local government reporting about waste management services and data on the amount of material that is diverted from landfill

Diversion Rate

Calculated by adding together the total tonnage of material collected through the kerbside collection of each council, then dividing it by the amount of material that is recovered or diverted from landfill.

SV publish an annual report comparing local government diversion rates across the state.

Ongoing performance can be measured by:
- Comparison of annual WCC Diversion Rate against similar Council's averages and all councils' averages – LGRF.

Presence of litter in the City, and the community's perception of this. Measured by:
- Number of customer complaints re: litter in parks, open spaces, illegal dumping.
- Number of litter fines issued in a given timeframe.
- Use of VLAA litter tool in litter hotspots before and after any litter campaigns.

Contractor's internal performance
Measured by:
- Audits of internal processes
- Number of complaints.

Reduction in greenhouse gas emissions.
Measured by:
- Waste to landfill figures.
- Improvements in technology and fuel usage of collection and transport vehicles.
- Reduction in transport kilometres due to improvements in collection scheduling and joint procurement.
- Increase in number of bio filters processing landfill gas from 2017 levels.

Number of people visiting the waste page on council's website. Measured by:
- Number of webpage hits

Increase in number of public place recycling bins. Measured by:
- Increase from 2017 levels.
- Capturing public place recycling material data.

Contamination in kerbside bins. Measured by:
- Kerbside bin audits

Residents' satisfaction with the kerbside collection service. Measured by:
Annual independent community satisfaction surveys conducted for all Victorian councils. The telephone surveys measure community views about their council's performance in a number of areas, including waste management and environmental sustainability.

Respondents are also asked how they rate these issues in importance against other services provided by councils. The survey is conducted by the Department of Environment, Land, Water and Planning. Local residents and ratepayers in each municipality over 18 years of age are selected at random. Findings are compared against those of similar councils and state-wide averages.

Warrnambool's 2021 performance index score was 82, up from 79 in 2020. This score is on par with state-wide and regional centre averages. In terms of performance in waste management, Warrnambool has an index score of 71, up from 66 in 2020. This is above the state-wide and regional center average of 69.

Performance against the criteria listed in this section will be reported annually to Council.

What we will do

Council commits to the following actions over 2021-2025

1. Commit to waste management initiatives that achieve a combined economic and environmental benefit wherever possible.

Action

1.1 Identify waste management practices and systems that reduce costs and improve environmental outcomes.

2. Achieve zero waste to landfill by 2040.

Action

2.1 Investigate new technologies that produce electricity and/or other commodities, in preference to sending waste to landfill.

2.2 Continue to divert materials from landfill via the FOGO and recycling service, and promote the use of compostable packaging.

2.3 Reduce contamination rates in Warrnambool, by undertaking regular waste stream audits, to identify fluctuations in contamination levels, and key areas of concern.

2.4 Work in collaboration with the Cloth Nappy Library, parents groups, and the community to promote the use of cloth over disposal nappies.

3. Embrace the overarching need to minimise waste to protect the environment and reduce the cost of waste management to ratepayers.

Action

3.1 Undertake relevant education programs in consultation with the community.

3.2 Continue to support community-driven initiatives that provide alternatives to plastic bag use, including the Boomerang Bag initiative.

3.3 Promote and support Western District Employment Access, and other not-for-profits working in the recycling sector, through the annual updating of the Recycle Directory.

3.4 Maintain fortnightly garbage collection.

4. Promote and advocate for the development of local recycling processing, to reduce reliance on metropolitan processors, and reduce transport costs and environmental impacts.

Action

4.1 Promote Warrnambool as a potential site for local recycling processing.

5. Work with neighbouring councils, businesses and the community to aggregate waste streams where possible, to facilitate new technologies in waste management, and realise the financial and other advantages of economies of scale.

Action

5.1 Identify councils with a shared interest in collaborative procurement opportunities.

5.2 Maintain relationships with regional councils, for future collaboration and consultation opportunities.

6. Pursue external funding to facilitate waste management initiatives and programs.

Action

6.1 Actively pursue external funding as grant opportunities become available.

7. Consult the community on changes to Council's waste management practices.

Action

7.1 Undertake community consultation in relation to significant changes to Council's waste management practices, to inform waste programs.

7.2 Develop and deliver educational programs to maintain and improve waste management in the municipality.

8. Recognise the regional role Warrnambool plays in waste management, including active participation in regional waste forums.

Action

8.1 Continue to assist neighbouring councils with their transition to the 4-bin system, by sharing resources and information.

8.2 Provide a leadership and advocacy on regional waste matters

9. Introduce measures to reduce illegal dumping of rubbish.

Action

9.1 Investigate and implement closed circuit television in illegal dumping hot spots.

9.2 Take enforcement action and issue fines, where perpetrators of illegal dumping can be identified.

9.3 Undertake community awareness and education campaigns in relation to illegal dumping

9.4 Work with the EPA to educate, inform and report illegal dumping

10. Ensure waste management charges and service provisions to businesses are equitable and consistent.

Action

10.1 Prior to commencement of a new kerbside collection contract, conduct a review of commercial waste management services, in consultation with businesses and other stakeholders.

10.2 Engage with businesses to increase promotion of local recycling services and opportunities for waste reduction, and circular economy thinking.

11. Provide infrastructure that improves stormwater systems, to reduce adverse environmental impacts or litter in stormwater systems, and the environment

Action

11.1 Identify stormwater systems requiring improvement to manage litter, and plan for delivery in line with the annual budget process.

11.2 Upon the completion of the "drain buddies trial", evaluate the effectiveness of the infrastructure, to reduce litter in stormwater reaching the environment. Give consideration to adopting the scheme across the municipality.

12. Develop programs in collaboration with community groups to reduce dog droppings in public spaces.

Action

12. 1 Increase infrastructure and signage where appropriate for the disposal of dog droppings in open space areas, where possible.

12.2 Conduct regular patrols by local laws officers in open space areas to reduce dog droppings.

12.3 Conduct on-going education campaigns, to reduce dog droppings in public open spaces.

13. Work collaboratively with event organisers to reduce waste at public events.

Action

13.1 Promote the zero waste event plan.

13.2 Promote and advocate for compostable packaging at events.

13.3 Ensure public place bins are fit for purpose, adequate to serve the needs of the community, and economically sustainable.

14. Ensure night time kerbside collection is fit for purpose.

Action

14.1 Consider the appropriateness or otherwise, of the night time collection in future kerbside collection contracts.

14.2 Undertake community and stakeholder consultation as part of this strategy, on the night time collection, to inform future kerbside collection contracts.

15. Seek opportunities to recycle and recover construction and demolition materials.

Action

15.1 Collaborate with the construction industry for a reduction of waste, and improved methods of disposal and resource recovery.

16. Encourage and support school and community groups to be involved in waste initiatives.

Action

16.1 Continue to support the Big R sustainable reuse shed in Albert Street, for the reuse of large hard rubbish items.

16.2 Work with Sustainability Victoria (SV) to ensure the Detox Your Home annual collection continues.

16.3 Support and promote the Detox Your Home permanent site in Warrnambool, and encourage businesses to use the service.

16.4 Continue to coordinate Clean Up Australia Day events.

16.5 Support and promote the benefits of the Cloth Nappy Library to reduce disposable nappy use.

17. Adopt the state-wide Container Deposit Scheme, when it is introduced in 2023.

Action

17.1 Make preparation for the scheme within the municipality.

17.2 Upon adoption of the Container Deposit Scheme, review glass kerbside collection frequency.

18. Meet responsibilities in relation to Braithwaite Street former landfill site, as required by the EPA Post Closure Pollution Abatement Notice.

Action

18.1 Undertake ongoing monitoring in consultation with the Environment Protection Authority (EPA).

18.2 In the Councils annual budget, make provisions to ensure the closed landfill meets its legal requirements.

19. Consider a weekly FOGO collection trial from September -April. Report findings to Council to determine the viability

19.1 Gather the required information, including cost and benefit of a 6-monthly, weekly FOGO collection, between September and April. Report to Council for decision to proceed.

19.2 If approved in principle by Council, undertake community consultation and report results to Council.

20. Review fortnightly glass collection after container deposit scheme is implemented

20. 1 When the container deposit scheme is implemented, review fortnightly glass collection, and consider reducing to monthly.