

Waste and Resource Recovery Strategy 2017-26



Let's minimise our impact

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1 Executive summary

The *Waste and resource recovery strategy 2017–26* (WRRS) replaces the *Waste management strategy 2010–15* and the *Litter strategy 2012–17*. It is a roadmap for the future direction and actions of Council's waste and resource recovery services, waste related education and advocacy activities. It identifies the issues facing the municipality and sets out a plan for how we can keep services efficient and effective, minimise waste to landfill and other impacts on the environment, as well as keeping costs low.

The WRRS aligns with the objectives of Council's *Sustainable environment strategy* (SES), which falls under the Council Plan 2017.

Council's work and role in this area is also partly determined by relevant Victorian and Australian government policies, many of which have also been updated in recent years. The Victorian Government policy 'Getting Full Value' has turned the focus to thinking of waste as a resource to be extracted and reused or recycled where possible, bringing not just environmental benefits, but also financial and social. This policy recognises that to achieve this there needs to be more value placed on, and investment in regional infrastructure, which Council recognises and supports. Council's WRRS builds on the work outlined to be achieved in the region within the Metropolitan Waste and Resource Recovery Group's (MWRRG's) Implementation Plan.

The top priorities are:

- increased resource recovery with a particular focus on hard waste service, food within garbage waste, additional kerbside programs and e-waste
- achieving long-term secure landfill arrangements by reducing landfill and seeking alternative landfill treatment options
- addressing increasing issues of illegal dumping through improved services and compliance activities
- continuing to drive value for money within services
- appropriate consideration of waste provision within developments including increased higher density development, infill development and new Council facilities
- supporting the local community to be responsible and accountable for their waste generation and disposal practices.

Progress of previous strategies

Review of the *Waste management strategy 2010–15* and *Litter strategy 2012–17* showed that of the 69 actions, 63 were completed, and six are ongoing. Top achievements were:

- implementing the waste reduction rebate program
- expanding the green bin service to all parts of the shire
- contracting out the public place litter and recycling service for improved service delivery, and installing more public recycling services
- introducing new recycling streams within kerbside services – hard plastics, pots and pans, plant pots and flexible plastics, couches, TVs and computers
- developing and using education material for litter education and waste reduction messages
- establishing a commercially operated resource recovery facility in the shire.

Waste and resource recovery in Cardinia Shire

Council's waste and resource recovery services are funded through the garbage charge which is an annual charge set each year under the *Local Government Act [1989]* as part of Council's budget process. This charge is set on a fee for service basis. As many of the waste and resource recovery services are contracted services, costs are in many cases related to market forces and contract rates, and to a degree outside of Council's control. This puts ongoing challenges to Council to seek

efficiency opportunities and more effective ways of working to ensure the garbage charge increases are kept to a minimum.

Council provides significant waste services including residential kerbside services, commercial business services, public place litter services, processing services and more. Emphasis is placed on waste and resource recovery education relating to services, regional and local issues. In addition, significant input is made into the advocacy, development and implementation of key strategies and policies.

Challenges and opportunities

Many of the challenges that have existed in Cardinia Shire will remain into the future. Our population is growing rapidly. In 2017, Council was providing waste services to about 37,500 properties weekly, which is expected to increase to more than 53,000 by 2028. Household size is decreasing. Social research identified financial hardship as a significant social and personal issue for residents. These factors will impact on how services are planned and delivered. The rapid population growth, along with sparsely populated rural areas and some difficult access areas will continue to put pressure on the delivery and cost of Council's services. Council will need to continue to advocate to and engage with industry, other councils and the MWRRG to facilitate and keep abreast of the fast changing developments occurring in the industry, particularly in the area of technology. This will enable Council to be in an informed position to take up new opportunities as they arise and achieve the best outcome for the community.

A full list of challenges facing the Council is discussed in full detail in the WRRS. Many of these challenges also bring opportunities and exciting solutions. As Cardinia Shire's population grows, economies of scale are achieved with services and this allows Council to look at implementing service improvements or additional resource recovery opportunities without considerable price increases. The requirement to address the issue of landfill availability allows us to look at higher technology options and achieve better environmental outcomes over time.

Engagement and consultation process

As part of the strategy review and development, it was important to find out about the attitudes and behaviours of the community. In 2016, Council engaged a contractor to undertake a survey of 700 residents to gain an insight into their thoughts and priorities in relation to waste management issues and future options. The areas explored included hard rubbish, green waste, as well as littering, illegal dumping and Council provision of related education and information. The findings were then used along with the data, identified trends and issues, learnings and opportunities from industry, legislative requirements and other feedback to develop the action plan.

On development of the draft WRRS, Council put the strategy on public exhibition in July 2017. Stakeholders were able to provide feedback via written responses and also via a number of small surveys with voting and comments. This feedback was then considered prior to further review and adoption of the strategy in late 2017.

Proposed actions

Actions in the WRRS build on the successes of the previous strategy and take advantage of recent advancements such as newer technologies and improved markets for products, resulting in improved financial outcomes for resource recovery. Council has also identified areas where we would like to do better or deliver a response to an emerging or prevalent issue.

Section 14 contains the action plan, which sets out actions for the 2017–21 period. The actions are listed under the broad categories of Regional actions, Reducing waste, Green waste, Education, Litter and Illegal dumping, Leading the way, Advocacy, Waste-related education, Development, Contracts, Landfill Rehabilitation and Review.

As set out in the action plan, progress on the strategy will be measured annually. The Action Plan 2017–21 will be reported on and revised by end of 2021 to produce a new Action Plan 2022–26.

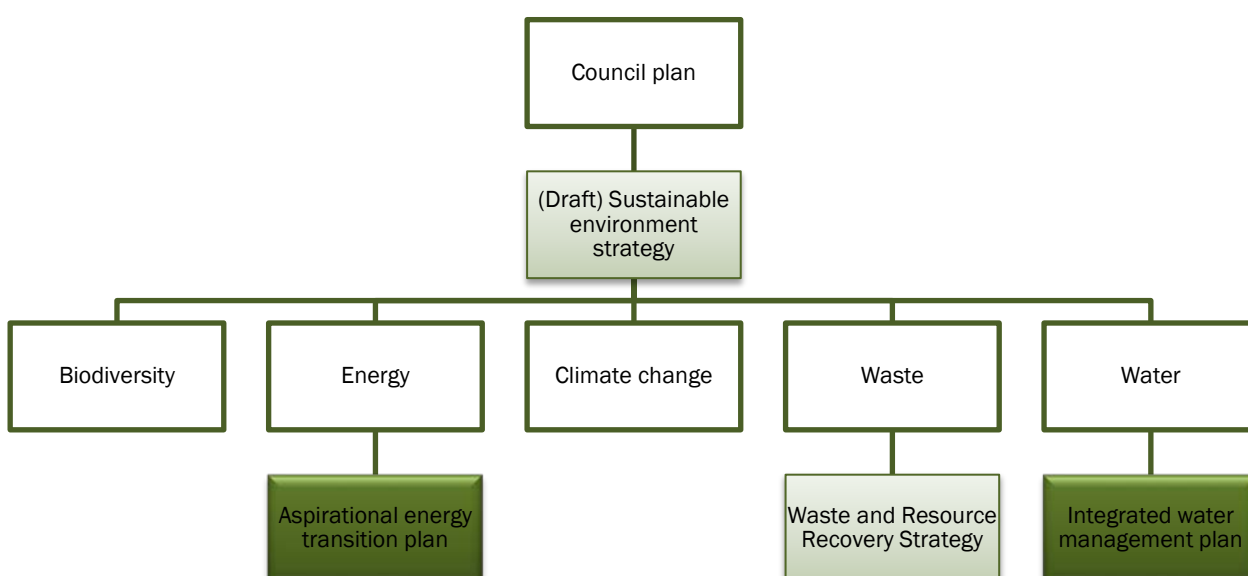
2 Introduction

The WRRS replaces the *Waste management strategy 2010–15* and the *Litter strategy 2012–17*. It is a roadmap for the future direction and actions of Council’s waste and resource recovery services, and waste-related education and advocacy activities. It identifies the issues facing the municipality and sets out a plan for how we can minimise waste to landfill and other impacts on the environment, as well as keeping the costs low.

In expanding the term ‘waste’ to ‘waste and resource recovery’, Council is intending to consider not just how to dispose of collected material, but the modern and more sustainable approach of reuse, recycling and recovery of energy or other resources from what was once considered ‘waste’.

The WRRS aligns with the *Sustainable environment strategy* (SES), which falls under the Council Plan 2017.

Figure 1. How the WRRS aligns with Council's other strategies and plans.



Council's work and role in this area is also partly determined by relevant Victorian and Australian government policy, many of which have also been updated in recent years. The Victorian Government policy ‘Getting Full Value’ has turned the focus to thinking of waste as a resource to be extracted and reused or recycled where possible, bringing not just environmental benefits, but also financial and social. This policy recognises that to achieve this there needs to be more value placed in, and investment in regional infrastructure, which Council recognises and supports. Council’s WRRS builds on the work outlined to be achieved in the region within the MWRRG’s Implementation Plan.

Review of the *Waste management strategy 2010–15* and *Litter strategy 2012–17* showed that of the 69 actions, 63 were completed, and six are ongoing.

Top achievements were:

- implementing the waste reduction rebate program
- expanding the green bin service to all parts of the shire
- waste education and waste minimisation activities
- contracting out the public place litter and recycling service for improved service delivery, and installation of more public recycling services
- introducing new recycling streams within kerbside services – hard plastics, pots and pans, plant pots and flexible plastics, couches, TVs and computers
- developing and using education material for litter education and waste reduction messages
- efficient servicing of public place litter and recycling bins
- strengthening local laws.

Figure 2 shows the scope of the WRRS.

Figure 2. Scope of WRRS



Many of the challenges that have existed in Cardinia Shire will remain into the future. Rapid population growth, which includes a large proportion of families, along with sparsely populated rural areas and some difficult access areas, will continue to put pressure on the delivery and cost of Council's services. Council will need to continue to advocate to and engage with industry, other councils and the MWRRGs to facilitate and keep abreast of the fast-changing developments occurring in the industry. This will enable Council to be in an informed position to take up new opportunities as they arise and achieve the best outcome for the community.

Some of the challenges are:

- designing waste services that cater to the mix of land uses
- achieving cost-effective but equitable services across a large shire
- service pressures and planning of kerbside services because more residents move in each day
- historic lack of resource recovery and landfill facilities for the shire
- reliance on service providers for new innovations or technologies and limited competition in some service areas
- green waste production on semi and rural properties
- increasing incidence and costs of illegally dumped rubbish
- how to divert green waste from landfill to achieve environmental outcomes
- imminent closure of landfills in our region
- plan and development checking for adequate waste provision in new areas and properties for the future
- how to maintain high levels of understanding of good waste behaviours with transient population
- how to future proof services and embed good waste behaviours as new schools, Council buildings and facilities are established.

Many of these challenges also bring opportunities and solutions. As Cardinia Shire's population grows, economies of scale are achieved with services and this allows Council to look at implementing service improvements or additional resource recovery opportunities without considerable price increases. The requirement to address the issue of landfill availability allows us to look at higher technology options and achieve better environmental outcomes over time.

3 About Cardinia Shire

Cardinia Shire comprises 1,280 square kilometres of land situated 50 kilometres south-east of Melbourne. It is one of the largest metropolitan municipalities, in terms of geographical size, with a relatively low but fast-growing population.

Figure 3. *Map of 31 Metropolitan Melbourne councils.*



Cardinia Shire is divided into three wards, each with diverse physical characteristics.

- **Ranges Ward** includes Beaconsfield, Beaconsfield Upper, Emerald, Cockatoo, Officer, Pakenham Upper and Gembrook. This is typically referred to as the hills region which is characterised by larger blocks and properties, native forest with a history of bush fires and winding roads (some unsealed).
- **Port Ward** includes Koo Wee Rup, Bunyip, Nar Nar Goon, Tynong, Garfield, and Lang Lang. This southern region is the flat more agricultural area of the shire which reaches Bass Strait. This area is periodically prone to flooding.
- **Central Ward** covers Pakenham and is the traditional urban area experiencing rapid growth. In more recent years, growth has spread to other parts of Pakenham and Officer.

Figure 4. Council ward map



Cardinia Shire is one of 10 ‘interface councils’ around the perimeter of metropolitan Melbourne where urban and rural areas meet.

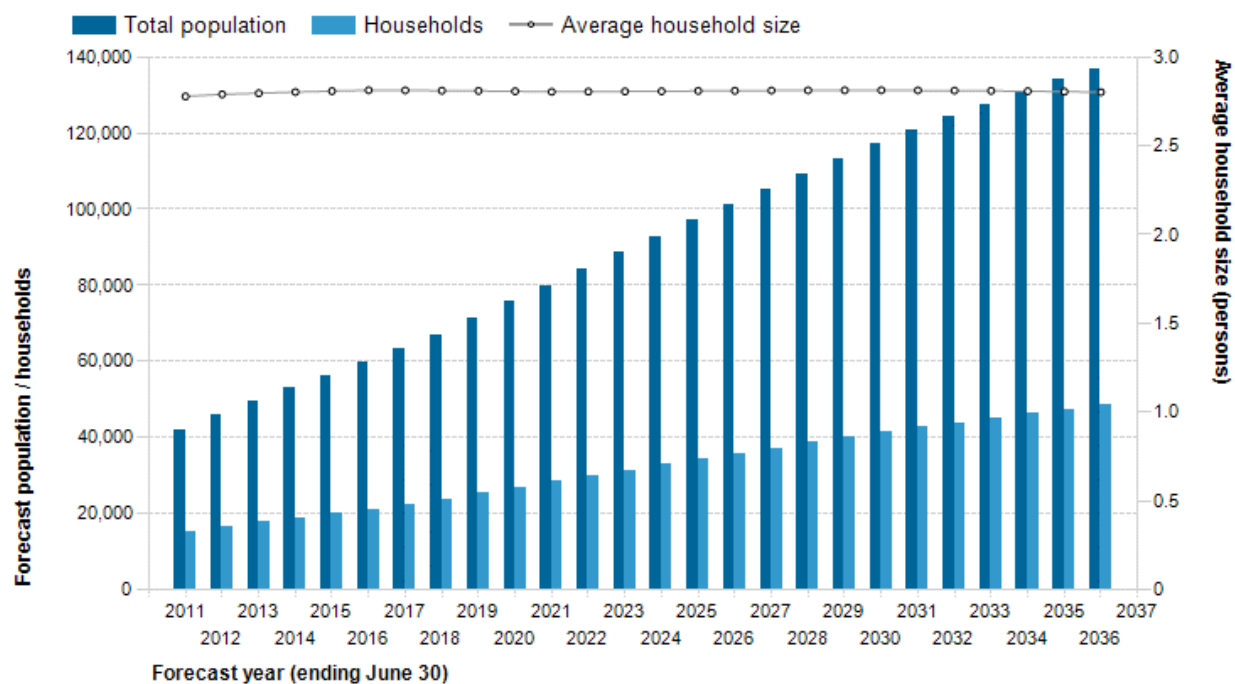
The Princes Highway and Gippsland railway corridor runs east–west through the centre of Cardinia Shire and provides key road and rail links between Melbourne and West Gippsland. The western end of this corridor comprises about 10 per cent of Cardinia Shire’s land area and is the main area of growth, containing Beaconsfield, Officer and Pakenham. It is estimated that more than 63,000 people live within the growth areas (2017).

Outside this growth area, Cardinia Shire’s large rural population resides in 27 townships; this dispersed population provides unique service provision challenges for Council. The northern part of the shire is set in the foothills of the Dandenong Ranges, and includes Bunyip State Park and Cardinia Reservoir. Koo Wee Rup swamp and Westernport Bay are significant features of the southern part of Cardinia Shire.

Our population is growing rapidly, and this is predicted to continue (Figure 5). In 2017, Council was providing waste services to about 37,500 properties weekly, and this is expected to increase to more than 53,000 by 2028. Household size is also decreasing.

Figure 5. Cardinia Shire forecast population 2011–36 including households and average household size. Provided by Forecast id October 2017.

Growth Area Subregion



Analysis of age groups in Cardinia Shire shows children aged 0–4 accounts for 8.2 per cent of the population. Parents and homebuilders aged 35–49 account for one fifth of the population (20.8%). This fact, together with the extent of financial hardship as a significant social and personal issue, impacts on how services are planned and delivered in the shire.

4 Vision

Through implementation of this strategy, Council aims for Cardinia Shire to be a shire where:

Waste and resource recovery services will be appropriate, provide value for money and produce improved environmental benefits and amenity for our community. Council will collaborate with others in the region to advocate for and facilitate improved services and outcomes for our diverse and distinctive Shire.

The top priorities are:

- increasing resource recovery with a particular focus on hard waste service, food waste within garbage bins, additional kerbside programs and e-waste
- achieving long-term secure landfill arrangements by reducing landfill and seeking alternative landfill treatment options
- addressing increasing issues of illegal dumping through improved services and compliance activities
- continuing to drive value for money within services
- appropriate consideration of waste provision within developments, including increased higher density development, infill development and new Council facilities
- supporting local communities to be responsible and accountable for their waste generation and disposal practices.

5 What is within Council's control and influence

A number of challenges to reducing waste to landfill and increasing resource recovery exist, and many of these factors fall outside Council's control. To continue to provide efficient and cost-effective services, factors such as technological advances, resource recovery infrastructure, market changes and pricing come into play. For maximum effectiveness, it is important for Council to focus on the areas inside its control while keeping abreast of industry developments and issues, taking up new opportunities that arise, and participating in consultation and advocacy opportunities.

Table 1. Factors inside or outside Council's control and advocacy opportunities.

Outside control	Inside control	Advocacy opportunities
Technologies available within industry to process certain items	Design, implementation and delivery of waste services	Product stewardship program
Market forces and pricing	Influence community engagement and behaviour	New infrastructure
Consumer demand for products	How future development considers waste and resource recovery provision	New legislation
Packaging of products and built in lifespan	Bin infrastructure decisions	Discussions with industry on Council needs and requirements
EPA levy	Selection of options for resource recovery opportunities and services	
Geographical size of Cardinia Shire and higher service costs incurred	Participating in joint procurement to secure larger regional facilities	

6 Waste and resource recovery services

Council's waste and resource recovery services are funded through the garbage charge which is an annual charge set each year under the *Local Government Act [1989]* as part of Council's budget process. This charge is set on a fee for service basis. As many of the waste and resource recovery services are contracted services, costs are in many cases related to market forces and contract rates, and to a degree outside of Council's control. This puts ongoing challenges to Council to seek efficiency opportunities and more effective ways of working to ensure the garbage charge increases are kept to a minimum.

6.1 Residential kerbside services

Table 2 shows the kerbside services on offer to residents and the frequency of the service.

Table 2. Structure of residential kerbside services

Garbage	Recyclables	Green waste	Green and hard waste
Weekly collection	Fortnightly collection	Fortnightly collection	Biannual service
Universal service	Universal service	Voluntary service	Universal service
120L or 80L bin size	240L bin size	240L bin size	2 cubic metres allowance
Additional bins available for extra charge	Additional bins available for extra charge	Additional bins available for extra charge	Additional allowance for green waste collection available for extra charge

All recyclables collected as part of the recycling bin service are sent for sorting and recovery at the sorting facility. Green waste is sent for composting and beneficial uses. Garbage is sent to landfill.

Responsibilities for service delivery and strategy fall to different teams in Council.

Table 3. Responsibilities of services in Council by team

Service	Team
Residential kerbside services	Waste Management
Disposal and processing contracts	Waste Management
Additional waste and recovery services	Waste Management
Street sweeping and hot spot cleansing	Operations
Illegal dumping services	Operations and Waste Management
Illegal dumping and littering investigations	Compliance services
Waste and resource recovery education	Waste Management
Public place litter and recycling services, including event services	Waste Management
Strategy development, service planning and advocacy	Waste Management

Most services are delivered by contract, for which the services and contract dates are shown.

Table 4. Waste and resource recovery services contracts

Service	Contractor	Start	Length (yrs)	End	Extension options (yrs)
Garbage collection	Cleanaway	October 2011	7	October 2018	2
Recycling collection	Cleanaway	October 2011	7	October 2018	2
Green waste collection	JJ Richards	January 2015	5 years 9 months	October 2020	
Biannual green and hard waste collection	WM Waste Management	October 2016	2	October 2018	1 + 1
Landfill disposal - kerbside, hard waste, PPLRC	SUEZ Environmental and Cleanaway	April 2011	10	April 2021	
Recycling processing	SKM	October 2011	7	October 2018	2
South East organics contract	Cleanaway, Veolia and Sacyr	July 2017	15	April-2032	5
Public place litter and recycling collection	JJ Richards	July 15	5	July 2020	1+1+1+1

6.2 Commercial business services

Businesses in the shire have the option to take up the bin-based kerbside services (garbage and recycling bin) by paying the commercial garbage charge. Services are on set collection days and are collected at the same frequency as residential services. Additional bins are available for extra charge.

These services are provided in response to the limited commercial waste options available in some areas, specifically the hills and more rural areas. Lack of competition within the region generally means that collections can in some instances be quite costly for businesses. Council's service benefits some small businesses where appropriate by using economies of scale from the residential collections contract which can offer cost-effective pricing. This also provides an additional avenue for recycling, where this has not traditionally been available.

6.3 Additional waste collection services

For items not easily accepted in a kerbside service, additional waste services are available from Council, Victorian Government agencies and industry. This may be due to the hazardous nature of items, other avenues to recycle them or issues in safe collection. This can quickly change as programs are established or discontinued and as technologies to collect and recycle items become available.

Council has provided e-waste (electronic waste) recycling services as scheduled drop-off days in various locations in the shire. Six to eight events have typically been held per year. From November 2016, Council was able to include collection of TVs and computers from the kerbside as part of the

biannual residential hard and green waste service, enabling a more convenient service more easily accessed by all households.

Council works with Sustainability Victoria to host an annual mobile 'Detox Your Home' household chemical collection held in Pakenham. This services part of the south-east region, open for any Victorian householder to use. Scheduling of these collections across Victoria is determined by Sustainability Victoria which also manages the program, including permanent facilities. Permanent facilities are open all year round and accept paint, batteries and fluorescent lights. Some accept gas bottles, car batteries and motor oil.

Council also holds two DrumMUSTER collections for chemical drum recycling (DrumMUSTER branded) used by the local agriculture industry. These collections require trained Council staff inspectors to run the event. Collection and processing of the drums is reimbursed by the DrumMUSTER stewardship program.

Where possible, Council promotes other recycling options and programs which the community may find of interest. These may be supplied by business, charities, social enterprise, and government agencies. This includes but is not limited to:

- mobile phones
- mattresses
- paint
- batteries
- printer cartridges
- silage wrap
- asbestos
- polystyrene
- fluorescent lights
- computers and computer peripherals.

Council also provides waste collection services, where appropriate to many Council facilities, including recreation reserves, sports clubs, community halls and centres, Council facilities and Council-run kindergartens.

6.4 Public place litter and recycling bin service

Council currently provides public place litter bins in parks, gardens and reserves, where appropriate, as well as along most shopping areas in townships. Public place recycling is also in place in some areas, although contamination can be an issue. Good results have been achieved in recreation reserves which can be overseen by the users of the bins, such as football clubs. In order to minimise contamination and maximise recycling, Council has moved to a national standardised bin labelling system developed by the APC (Australian Packaging Covenant).

In many newly developed areas and some established, there can be privately owned central shopping zones where provision of bins and cleaning are undertaken by body corporates, and not Council.

An event bin service is also available for public events, whereby a pair of bins (one garbage and one recycling) can be ordered for delivery prior to the event and collection after. This service attracts a charge, unless prior arrangement for support has been approved through Council's event grant program.

Council continues to work on refining best practice placement and use of public place litter and recycling bins. This can include encouraging the community to take home waste where practical (i.e. bushlands and isolated locations), supporting and advocating for provision of bins by businesses

where there is overuse and commercial gain, and locating bins in open space areas with barbecue facilities.

Council has a number of cigarette butt bins located in townships across the shire. Some businesses have also chosen to install and manage their own. Use of these has reduced with a general trend of reducing smoker numbers and smoking away from public places (in some areas restricted by legislation). Council supports the provision of butt bins outside locations such as pubs and restaurants where installed and maintained by the businesses where this waste is created.

6.5 Litter cleansing services

Kerb and channel street sweeping via mechanical sweeper is delivered in-house by Council staff based at the Operations Centre. Schedules and routes are developed on a rotation system and are reviewed regularly.

Town centre and hot-spot litter picking and sweeping are also delivered by Council staff based at the Operations Centre, consisting of crews that visit these areas on a rotation basis. Open spaces are litter picked and cleaned under the open space contract, which maintains Council's parks, gardens and some recreation reserves.

Litter is also captured in gross pollutant traps (GPTs) before it enters the stormwater system. As of 2017, eleven are managed by Council through a maintenance contract; these numbers are anticipated to increase with population growth. Installation of GPTs is usually part of water sensitive urban design (WSUD) to manage stormwater by developers and Melbourne Water. Melbourne Water also installs and maintains GPTs on its pipes and other assets in the shire.

All Council's waste collection contracts have a requirement that spillages are cleared by the contractor when this occurs to minimise amenity impact. VicRoads is responsible and provides litter cleaning services on VicRoads managed roads in the shire.

6.6 Litter prevention and enforcement

Council's compliance officers investigate reported littering incidences, looking for evidence that can connect the waste with the offender. Community support is important as it can be difficult to make this connection without information or witness statements being provided.

Planning conditions often dictate amenity responsibilities from business premises and can help to enforce correct behaviours. Local Law 17 is also used to enforce litter management locally; through this it is an offence to:

- remove or deposit goods near or around clothing recycling bins
- place waste out for collection not in accordance with Council standards and guidelines – bins should not be overflowing causing litter
- present bins out for collection where they are a traffic obstruction – litter can be caused when a bin is hit by an oncoming vehicle
- present bins that are unsanitary or not in good order – severely damaged bins can be a littering issue; residents can order additional bins if these are damaged free of charge
- transport waste with leakage or material deposited from a vehicle
- wash down or discharge wastes from building sites in the stormwater system
- not properly contain builders' waste, causing windblown litter
- not carry a means to collect and dispose of dog excrement
- present hard waste more than seven days before collection.

Any of these local offences can incur a penalty. These are defined in units and the value increases each year with the consumer price index (CPI). Values of the units are set by the Treasurer of Victoria.

Depending on the severity of the issue an on-the-spot infringement notice may also be issued in accordance with the *Environment Protection Act 1970*. These incur higher penalties (Table 5). Successful local prosecutions arising from littering are publicised in local media.

Table 5. Maximum litter penalties and fees. Penalty if the matter is heard in court.

Offence	Maximum penalty units	Value of 1 unit 2016-17	Total maximum cost 2016-17
Under local law (above)	20 Units	Fee \$13.94	\$311
EPA Act – General littering	40 Units	Penalty \$155.46	\$6,218.40
EPA Act – Aggravated littering	60 Units, 1 month imprisonment or both	Penalty \$155.46	\$9,327.60

Council's dedicated building and amenities officer in the Compliance Services team solely enforces, audits and educates the large number of building sites in the shire, and is effective in ensuring compliance and preventing amenity impacts.

EPA endorsed roadside litter signage was erected in 2012 in areas of particularly high litter volumes and 'hotspots'.

Litter offences are reportable through Council's customer service and website, as well as the EPA's apps, online tools and 24-hour EPA pollution hotline.

6.7 Illegal dumping services

Reports of illegally dumped rubbish on Council-maintained land is investigated by Council's compliance officers, where evidence or witness statements are available. Where offenders are identified they are issued with a notice to comply (45ZI) in order to remove the dumped wastes. Failure to comply results in a fine (Table 5).

Where offenders cannot be identified, cases are referred for collection. Prior to May 2017, this service was carried out by staff from Council's Operations team. There are no dedicated staff members whose primary responsibility is dumped rubbish, so these duties were undertaken on an overtime basis, at weekends, or when time and vehicle resources allow. Due to increasing volumes, it was becoming difficult to keep up with peak demands. From June 2017, Council has trialled a contracted service for most cases, to allow resources to be mobilised quickly, without impacting on other key Council services. Cases requiring specialist machinery are still referred to the Operations team.

Specialist contractors are engaged for collection or disposal of materials of a hazardous nature, gas bottles, chemicals and asbestos. Illegal dumping is a cost and resource that is difficult to plan for, as dumping cannot be predicted and is unknown until after it happens.

Perception by the community of the effectiveness of Council's illegal dumped rubbish services is not clear because responsibility for clean-up does not always sit with Council. Dumped rubbish on private or commercial land, including vacant blocks, is the responsibility of the land owner while the responsibility for dumped rubbish along major roads remains with VicRoads. Delayed clean up by any party can exacerbate the issue and attract more waste.

6.8 Emergency event clean up

In declared emergency events, Council is required to assist residents to dispose of material arising from the emergency, such as household waste damaged by floods. Waste resulting from floods and

fires generally must be disposed of as quickly as possible once it has been released by the relevant authorities such as the EPA or police. The waste cannot be separated into recyclables and residual waste as it may contain toxic materials such as chemicals or asbestos and may contain bacteria harmful to humans. Council has in the past used its hard waste collection contractor to provide these services which can be reimbursed by the Victorian Government.

6.9 Landfill disposal

Garbage collected from the kerbside garbage bin collection service, as well as hard waste and dumped rubbish is sent to landfill for disposal. Landfill disposal services are provided under a regional contract administered by the MWRRG, and under contract until 2021. Council utilises the Hallam Road Landfill and Pakenham transfer station under this arrangement. The MWRRG's Implementation Plan highlights the lack of landfill in our region as a priority area and Council has started work with the region on procuring landfill and alternative waste treatment solutions. The focus is also on minimising waste to landfill through its education programs, campaigns and resource recovery services to reduce the pressure on landfill disposal services.

6.10 Recycling processing

Recyclables collected from the kerbside recycling bin collection service are sold as a commodity to SKM Recycling, which processes and on-sells the recovered material. Prior to October 2011, Council paid to have this material processed, showing how recovered resources are becoming more valuable. This contract for payment is in place until October 2018 with a possible two-year extension.

6.11 Green waste processing

Green waste collected from the kerbside green waste collection service, and biannual green and hard collection service is delivered for recovery and processing. Council is part of a regional contract for green waste processing, administered by the MWRRG which began in 2017. This project resulted in three contractors providing green waste services, and the construction of a brand new in-vessel composting facility which will be staged in and is due for completion 2019.

These contracts deliver long-term secure green waste processing services, which had been a previous issue due to closure of open windrow facilities across Melbourne in the years prior to 2010. These contracts, once established, bring Council the opportunity to consider collecting and processing food organic waste (kitchen food scraps) from the kerbside.

6.12 Local resource recovery facilities

Council does not operate any tips or resource recovery facilities. The following private resource recovery facilities operate within the shire:

- Cardinia Transfer Station
- Cleanaway Pakenham Transfer station

In addition to e-waste processing facilities:

- Outlook Environmental

Other nearby sites are:

- Cleanaway Lysterfield Transfer Station
- Suez's Hampton Park Resource Recovery Centre
- Drouin Waste Recyclers
- Frankston Regional Recycling and Recovery Centre (This is operated by Frankston City Council and available to Cardinia residents at a charge).

Private facilities may charge fees for received waste at their discretion. This may vary for different items. Residents are advised by Council to check charges ahead of visiting. Some of these facilities may also be used by the commercial sector including local construction and gardening businesses.

Some sites may also operate a resale or tip shop where items are recovered and on-sold for reuse.

7 Waste and resource recovery education

Education is the backbone of changing behaviours for positive environmental outcomes, reducing waste to landfill and associated costs incurred to Council. This incorporates motivating or raising awareness of certain positive and negative practices around waste.

Council delivers its education through promotion of correct uses of its waste services, collaborative education in groups or regions, and education around local services or issues. Council waste services would not continue to be viable or successful if users do not know of their existence or how to use them effectively.

7.1 Waste and resource recovery service information

Council informs the community of Council provided, as well as other local and where applicable regional, waste and resource recovery services.

Waste education mediums produced by Council are both digital and hard copy formats providing flexibility to users. These are tailored to demand and assessed need. This is continually shifting with the rapid advancement and use of new communications technology, with Council's website now a primary source of waste and resource recovery information.

Education materials are a collaboration of waste-specific expertise from the Waste Management team, communications knowledge from Council's Communications team and the Customer Service team. Consultation also occurs with other relevant teams. Graphic, web, video and other specific design is contracted by specialists in those fields as required.

Local service information produced and distributed by Council integrates messaging of waste avoidance and minimisation where possible. This includes the waste services guide (including recycling calendar) which is distributed to all households and to new homes as they order their first collection. This guide is now delivered annually, having previously been delivered biannually. The well-used blanket residential hard and bundled green waste service also distributes a flyer to all households alerting them to an up-coming collection.

7.2 Collaborative education programs

Waste-related information distributed by Council about services, programs, campaigns, events and initiatives may be in partnership or on behalf of Victorian and Australian governments and agencies, other councils, community organisations, not-for-profit and related private organisations.

Regional approaches to education ensure consistent messaging and pooling funds and resources produces better products and outcomes. During the last strategy period, Council has participated in the following:

- *Get it right on bin night* – a long-term state-wide campaign to increase recycling rates, provide clarity on best practice recycling and reduce contamination rates. Backed by social research on Victorian recycling behaviours.
- *Love Food Hate Waste* – a state-wide campaign that aims to raise awareness about avoidable food waste from Victorian households. Modelled on the campaign of the same name in the UK and NSW.
- *Back to Earth* – initiative run by MWRRG in partnership with 19 metro Melbourne councils in Melbourne's north, west and south-east, and four regional councils in northern Victoria. The initiative shows householders the process of green waste collection and processing. Council and seven other south-east councils joined the initiative in 2016 to support entering into a regional organics processing contract.

- *Flexible plastics recycling in the kerbside* – a partnership project with three other councils, MWRRG and APC. Combined funds enabled the project along with communications packs to be developed and distributed to all households across the four council areas.
- *Detox Your Home* – a state-wide program for collection of household chemical disposal run by Sustainability Victoria. Permanent sites are located across Victoria. Mobile scheduled collections occur across the state and require local promotion by councils.
- *Resource Smart Aussie Vic* – a state-wide initiative that helps schools benefit from embedding sustainability in everything they do. The initiative provides support to take action to minimise waste, save energy and water, promote biodiversity and reduce greenhouse gas emissions. It has an accreditation awards program and a specific waste minimisation module with guidance and best practice.
- *Stephanie Alexander kitchen garden program* – a national program providing inspiration, information, professional learning and support for educational institutions to deliver food education, in conjunction with educators, partners and the wider community. It promotes hands on learning of growing and composting healthy foods.

Council also sees the value in aligning with and providing support for national campaigns and has done so with Clean Up Australia Day, National Butt Day, Garage Sale Trail, Planet Arks National Recycling Week and National Compost awareness week.

7.3 Local education activities

While important to ensure education is nationally and regionally aligned, Council also tailors messages to be locally relevant. Not all council areas sort and process recyclables including organics at the same facilities, meaning there is variation in what can and cannot be accepted at the kerbside depending on the council area.

As part of the 2012 *Halve Your Waste* program, Council produced recycling and composting posters, compost guides, waste information flyers for the community and schools and early childhood education centres. Promotional materials were also produced including recycling story colouring books, recycled pens, pencils, rulers, water bottles, interactive recycling games, seedlings, veggie seeds, compost bins and worm farms. These promotional items interactively integrate messages of recycling, composting and waste minimisation in a fun and novel way and are used for school incursions and excursions, workshops, educator or environmental network meetings, and local family events.

Council also runs promotional campaigns through media releases or in the Council's *Connect* magazine on identified issues which may include waste reducing messages or littering issues.

It's within the interest of a recycling sorting and processing contract for there to be as much recycling as possible collected with little contamination of the wrong items. This makes for maximum recovery, a better quality recycled product, and better profit margins with less resources required extracting the wrong items. Council has an ongoing education allowance in its recyclables processing contract with SKM Recycling with the aim of motivating and informing the community of items accepted as part of the kerbside collection. This on-going allowance has funded:

- *Follow your waste* community tours of the recycling sorting facility
- *Beyond the bin* school incursions.

8 Service planning, strategy and advocacy

8.1 Emergency event planning

Council plans for and delivers services for emergency events, which can include extreme weather events such as bushfire, floods, and storms, or other issues effecting waste services such as closure of landfill or processing facilities and major events which prevent waste collection. Council has considered this in its business continuity plan, emergency management plan, and extreme weather event policies.

8.2 Extreme weather event policy

Council has an extreme weather event policy, which covers events such as bushfire, flood, high winds. As outlined in the policy, on CFA-declared code red days, collections would not occur during the day but consideration may be given to undertaking collections at other times such as evening or overnight or weekends. Consideration is also given to CFA-declared severe or extreme days, which will be reviewed with contractors. During floods, collections would be suspended.

All contractors are required to have their own extreme weather policies, as reflected in contract plans. There is provision for use of other landfills where collections need to occur outside of normal collection times.

8.3 Disrupted collection and disposal services

Waste and recycling collection and disposal services may be disrupted by events outside of Council's control such as:

- strikes
- a facility becoming a crime scene
- a waste collection truck fleet recall due to safety issues
- a facility closes suddenly due to financial or other problems
- EPA action closing a facility or reducing volumes accepted at a facility
- fire at a facility
- fire resulting in council trucks being destroyed.

Council recognises the kerbside waste and recycling services to be a very important service to the community, and not one that can be postponed or delayed without significant impacts. Council deals with each event on a case-by-case basis, and liaises with the region to establish which contractors or councils are effected and what resources and other services are available to fill gaps.

Alternative arrangements can often occur within contracts to accommodate contingency situations. All contractors pay a bank guarantee which could assist Council to procure casual labour and vehicles to assist in these situations. Contracts also put responsibility on the contractors to ensure strike or other actions do not impact on the provision of services.

8.4 Services for multi-unit developments (MUDs)

The increase in residential multi-unit developments, mixed use developments plus higher density individual properties across the shire presents a range of waste and resource recovery challenges, which are different from lower density and rural area considerations. Council has in place *Waste guidelines for new residential and mixed use developments*, which together with internal planning processes ensures adequate consideration is given to waste and resource recovery provision within these areas.

Resource recovery rates for multi-unit and mixed use development are often lower, and contamination rates higher, when compared to single dwellings so careful consideration of these issues at the planning stage aim to minimise these issues into the future.

The *Waste guidelines for new residential and mixed use developments* specify that applicants must accommodate Council's waste services in their developments as a first preference. Applicants are required to show, via the waste management plan, how Council's kerbside waste services can be accommodated at the site. Extensive justification and reasoning must be provided for consideration if this cannot be achieved, and a private waste collection proposed as an alternative. This ensures that residents are able to receive an efficient and cost-effective waste collection, without needing to pay premium rates for a private contractor to provide the service, at property owners' cost.

In most circumstances, for the type of developments currently occurring in the shire, accommodating Council's kerbside collection should be possible with some forethought by developers and/or applicants.

8.5 Advocacy

Council engages regularly with government agencies who work in the waste and resource recovery area, including MWRRG, Sustainability Victoria, EPA, Victorian Litter Action Alliance, DELWP as well as waste service providers and other councils on issues impacting the region and municipality. Much of this work results in advocacy activities to ensure our community's needs are considered when undertaking regional planning. Advocacy opportunities may be national or state strategy development or program roll out, legislation impacts or regional planning or infrastructure considerations.

8.6 Reporting services

Council is required to report on its waste and resource recovery services (costs/tonnages/systems) to the Victorian Government through Sustainability Victoria's Local Government Surveys (kerbside and diversion) and Local Government Performance Reporting Framework (LGPRF). LGPRF reporting feeds into the 'Know your council' website. Waste reporting comprises five of the 66 measures to improve the transparency and accountability of council performance. This reporting is mandatory and the correct process and requirements for reporting are set out to ensure consistency among councils. This reporting can be audited which ensure its integrity.

Much of this data was sourced for tables and graphs found within this strategy.

9 Review of previous strategies (2010–17)

9.1 Achievements (2010–17)

Council's *Waste management strategy 2010–15* and *Litter strategy 2012–17* delivered a number of achievements in the areas of green waste services, reducing waste and litter initiatives, improved contract arrangements and recovery services, as well as improved planning and compliance activities, and communication with our community. These achievements were identified by reviewing the results of the community survey (Appendix 1), the *Waste management strategy 2010–15* and *Litter strategy 2012–17* action plan review (Appendix 2), and by assessing the waste data (Section 7 and Appendix 3)

9.1.1 Community satisfaction

In the local government community satisfaction survey (coordinated by the DELWP on behalf of councils) waste management is Council's top-rated service, and has been for many years. It is also a top priority for our residents.

9.1.2 Reducing waste/litter initiatives

As part of the *Halve your waste program*, Council implemented waste reduction initiatives of the compost bin and worm farm rebate and 80-litre bin service discount, and undertook significant promotion of these incentives. Composting and mulching is a popular method of disposing of green waste in the shire (27% of the residential population).

Council has maintained a strong focus on public place litter and recycling services, installing 55 public place recycling bins as part of public place recycling grant and installing or replacing an additional 180 bins from 2015 as part of public place litter and recycling infrastructure upgrades.

Cigarette butt litter, the most littered item Australia-wide was targeted with 12 cigarette butt bins installed across six townships along with supply of personal butt bins and promotional materials. Council participated in National butt day run by Keep Australia Beautiful from 2010 to 2014 and continues to be a strong support for Clean Up Australia Day providing advice, PPE equipment and waste collections.

Support has been provided to school and childhood educators and interested groups on an ad-hoc basis for litter clean ups, school projects and applications for funding. The free hire of litter and clean-up equipment including litter pickers, high visibility vests and gloves was implemented and has been made available on request for many years.

In 2013, Council produced and distributed a waste minimisation guide to all households. Education materials continue with a stronger focus on waste minimisation in print and digital form.

9.1.3 Green waste

Council expanded the availability of the fortnightly green bin service to all areas of the shire in January 2015. This increased availability and promotion of green waste services has resulted in increased take-up, and considerable increases in the amount of green waste processed by Council. The proportion of residents using the green bin service has increased to 60 per cent, from 37 per cent in the 2010 survey. The numbers of green bin services in use in the shire has also increased from 10,000 in 2010 to 18,000 in early 2017.

The proportion of residents burning off has decreased since the 2010 survey, where 49 per cent of residents reported burning off green waste in the previous 12 months. During the recent survey, just over a quarter of residents (26%) 'burn off' their green waste, with this practice being more common in Ranges (47%) and Port (40%) wards.

Since 2010, Council has been part of a collaborative project with seven south-east councils, facilitated by the MWRRG to secure long-term contracts for high technology organic waste processing. The first of these three resulting contractors became operational in 2017, and these contracts will provide significant resource recovery opportunities once fully implemented.

9.1.4 Improved contract arrangements

Since 2010, Council has been part of a regional landfill services contract managed by the MWRRG on behalf of participating councils in the metropolitan region. This has provided Council with secure and well-priced landfill disposal services due to economies of scale and efficient and effective contract management and collective negotiations overseen by the MWRRG.

Due to new contracts and the increasing value of recyclables, Council moved to a payment per tonnes model for its recyclables processing in 2011, resulting in decreased costs for the service. Council also contracted out its public place litter and recycling service which provided more flexible and efficient services, increased bin cleaning and maintenance regimes and improved data provision to enable continuous improvement to its infrastructure and schedule. This service also includes an event service provision to cater for Council or community events.

9.1.5 Improved recovery services

Council has worked hard to improve the waste and recovery opportunities for the community, and achieved some great outcomes. The new streams of metal pots and pans, hard plastics and plastic plant pots were added to the kerbside recycling service in 2011. Flexible plastics were added in 2016 through an innovative collaborative project with three other councils.

In 2012, Council expanded its e-waste drop off services with more frequency and to more parts of the shire. These were later included in the collection and recycling of TVs and computers as part of the biannual hard and green waste service. Couches were also collected and recycled as part of this service for the first time in 2016.

Advocacy continued and contributed to Council securing an ongoing annual mobile Detox your Home event in the shire and a nearby permanent detox site in Hampton Park. These are very popular events hosted by Council and delivered by Sustainability Victoria where residents can safely dispose of unwanted chemicals from the home. A new privately run transfer station was also established in the shire in 2016 providing wider availability of services and more local competition.

An ongoing educational budget was established in the recycling processing contract to support best practice recovery. Improved bin infrastructure, education and services were achieved for schools and early childhood education centres as a result. The *Halve Your waste* program 2012–13 also delivered 10 selected schools with signage, recycling and compost bins both inside and outside the classroom, compost caddies, veggie seedlings and an educational workshop and materials. Part-subsidised recycling collections as part of the kerbside service were also introduced to incentivise doing the right thing. With the introduction of sustainability in the National Quality Standards for early childhood in 2013, recycling education and operational support was provided.

9.1.6 Improved planning and compliance

Council has worked persistently for better planned waste provision as rapid growth continues, aware that early consideration in the planning process saves time and costs. The *Waste guidelines for new residential and mixed use developments* were developed in 2015, clearly outlining key information, expectations and processes for developers and applicants. Accompanying these guidelines, a three-page waste management plan template was produced making it clear and easy for applicants to include all required information for Council officers to make an assessment. Together these documents have provided more consistency in waste management plans submitted and streamlined the assessment process.

In 2017, *Developer landscape guidelines* were also produced to better direct the design, approval and implementation of landscaping in new subdivisions including waste infrastructure provisions in privately developed public and open spaces.

Council's Local laws 9 and 10 were consolidated into one Environment, Amenity and Asset protection Local Law 17 in 2015, which included further provisions to support Council's waste service delivery, infrastructure and standards for better community waste behaviours, offering a better framework for enforcement.

In 2015, Council also created a new position of waste contract monitoring officer to improve quality and compliance of contracted waste collection services (listed in Table 4).

9.1.7 Improved communications

Council has kept abreast of new and emerging communications methods and technology to deliver information on waste services, issues and educational campaigns to the wider community. Through GPS and camera technology available as part of the green waste collection contract, in 2016 Council proactively began alerting properties where contamination of their green waste collection had been recorded. This automated process has allowed an educational letter including pictures to be regularly sent to residents advising of the correct use of the service.

A new online mapping based property search function for Council services including waste collection dates was made available in 2013. This expanded online waste collection day information to include property specific hard waste collection weeks, upcoming e-waste and mobile Detox Your Home collection events. Named My Council services tool, this tool has been regularly cross-promoted including through the residential hard and green waste flyer and waste services guide. In 2017, Council redesigned its website to be more mobile device friendly and allowing the community to report and complete most transactions online. Council has also improved the accessibility of digital materials for visually impaired people.

A better online presence, including social media, has been embraced as a platform to promote, advocate and inform, allowing timely waste collection alerts or reminders. This has also reached younger age groups who are traditionally harder to engage. Waste-related posts have shown some of the highest levels of engagement. This has made for more inventive ways of engaging with the community. In 2015, Council videoed one of the popular community *Follow your waste* tours making the learning experience accessible beyond those available to attend on the day. The 'Back to Earth' campaign in 2016 raised the awareness of the garden waste bin processing through an online competition, encouraging voting of the best school's garden project.

Not forgetting that physical materials are very effective, more emphasis has been on the use of pictures to simply communicate complex waste messages. Visually appealing materials grab attention and are not language specific making them more accessible. As part of the *Halve your waste* program, new ways of delivering key messages were developed and purchased including: interactive bean bag and magnetic recycling sorting games for kids and families, recycling and composting colouring in story books, recycled stationary, recycling themed play mats and Peppa Pig recycling themed reading books for early years. In the right situations these have ignited and opened up the recycling conversation.

Forums for the building industry held in 2010 and 2014 opened up conversations with representatives from local waste providers, the building trade and Council business units discussing challenges and options around waste, litter management and stormwater protection.

9.1.8 Improved data capture

Data collection and review are an important part of developing the waste and resource recovery services and assessing and comparing possible service choices.

Recording of the costings and tonnages of dumped rubbish since 2009 allowed for future service planning. A change to a contracted service of public litter bins in 2015 included the requirement for data and feedback on bin locations and their usage. This allowed for a flexible service schedule to be developed that avoids over servicing and the resulting costs, while being responsive to changing needs.

Establishing a waste contract monitoring officer who conducts audits and makes site visits also provided data that can be used to develop services. These checks have also improved contractor safety. New technologies such as mobile tablet style computers or phones, GPS real time tracking and camera technology has also allowed for improvements in operational applications and investigations.

Waste audits conducted as part of the *Halve your waste* program in 2013 and in 2015 prior to introduction of kerbside flexible plastics recycling has provided a better understanding of opportunities for our community to do better and where service improvements can be focused.

Council has worked with contractors for more reporting in monthly operational reports relating to safety and to continuously improve services. A new customer reporting management system (CRMS) implemented by Council in 2016 has paved the way for improved communications between Council and contractor customer service.

9.2 Challenges (2010–17)

Despite the vast list of achievements listed above, Council has identified areas that could have been delivered better or did not achieve the desired results.

Some of these challenges, such as size, topography and location of the shire, as well as demographic makeup of the population will continue and are discussed more under Section 13.

Challenges of the previous strategy period 2010–17 were as follows.

- Limited resource recovery infrastructure – the number and size of transfer stations in the shire limited the ability to advocate for service provision in the shire at key times such as the TV/computer product stewardship legislation services implementation and *Detox your Home* review. It is hoped that with a new facility in the shire, Council can attract new services to the shire.
- Keeping up with development – *Guidelines for new residential and mixed use developments* were developed in 2015 to assist Council to keep up with the development in the shire. However, increased higher density development not previously seen in the shire has created the need to further review and expand the scope of these guidelines.
- Resourcing within collection contractors – as the shire is one of the fastest growing municipalities in Victoria, contractors need to keep up with the increased resources required to meet service needs. At times of significant growth, contractors have been caught out with this. Contract management practices will need to ensure that this issue is front of mind at all times in future.
- Increase in illegally dumped rubbish incidence and cost – since 2010, illegally dumped rubbish incidences and costs have significantly increased resulting in difficulty meeting the desired service expectations without dedicated resources. Into the future this service will likely need to have dedicated resources to deliver the desired outcomes.
- Physical delivery of hard copy waste education material to households – issues have occurred with the delivery of bulk mailout information to residents using Council's rates database which generally contains ratepayer and not tenant information. This problem is exacerbated by the number of residents with post office boxes and no physical roadside mailboxes. The move to online material helps with this challenge, but is likely to be an ongoing challenge.

- Limited engagement in some programs – with a large proportion of the community being families, who no doubt have busy lives and other priorities, engagement with some programs has not been as high as anticipated. It will be important to ensure that future education and behaviour change programs are as quick and simple as possible.
- Limited take-up of new green waste service options – additional green waste services were implemented due to community demand, but unfortunately take-up has been limited. Green bin services were extended to all parts of the shire in 2015 but to date take-up in the new areas has been less than 100. In addition, green waste collection limits were increased by 3 cubic metres as part of the biannual green and hard waste collection service in addition to normal allocations for \$60 but this has been taken-up by only about five residents per collection since its introduction in 2015.

10 What our community said

As part of the strategy review and development, it was important to find out about the attitudes and behaviours of the community. In 2016, Council engaged a contractor to undertake a survey of 700 residents to gain an insight into their attitudes and behaviours in relation to waste management issues and future options. The areas explored included hard rubbish, green waste, as well as littering, illegal dumping and Council provision of related education and information.

This was accompanied by an online survey, which was promoted via Council's social media and website channels, attracting 25 responses. A similar survey was undertaken prior to the 2010 strategy and has provided interesting comparison. The findings were then used along with the data, identified trends and issues, learnings and opportunities from industry, legislative requirements and other feedback to develop the action plan. The key findings are outlined below.

Hard and green waste service

- The vast majority of residents use the service (91%).
- The current service meets their needs (88%).
- Of those who feel it does not meet their needs, the most common suggestion was more frequent collections (36%).
- Support for changing to a booked service is moderate, with a mean score of 6.2 out of 10. Support is highest in Central ward (6.9) and among those aged 18–29 (7.0).
- If a booked service was implemented, 31 per cent would pay around \$60 for any additional booked service beyond their free allocation.

Green Waste

- The vast majority of residents have disposed of green waste in the last 12 months (97%).
- The most popular method of disposal is the green bin (60%), followed by composting and mulching (27%) and burning off (26%).
- Burning off is most common method of disposal in Port ward (40%), and very common in Ranges ward (47%).
- Burning off has reduced in frequency since the 2010 survey from 49 per cent to 29 per cent.
- Awareness of the green waste services:
 - green bin is very high (96%).
 - biannual hard and green waste service is 82 per cent.
 - additional three cubic metres available for \$60 only 22 per cent.
- When presented with a list of potential green waste services, and asked if these would be viable for them, they responded in order of viability:
 - a free local drop off point for green waste (61%), particularly by central ward residents (66%)
 - tip vouchers (55%)
 - a home mulcher purchase rebate (43%)
 - additional bundled green waste collections (43%).
- If Council was to establish a local drop-off option for green waste, 44 per cent of residents state, they would be likely to use it.
- Residents would be willing to pay an average of \$20 to drop off a heaped 6x4 trailer of green waste locally. Residents would be most likely to use the service a couple of times a year or less (71%).

Fees and charges

- 68 per cent of residents think that the current garbage charge and optional green waste service fees are reasonable.
- 33 per cent of residents would like to see Council offer more services, with:

- only 28 per cent of those residents wanting more services would still feel the same if it resulted in an increase in the garbage charge
 - a further third (33%) said it would depend on the cost.
- Top priority additional service is hazardous/chemical waste collection (10%).

Dumped rubbish and littering

- Concern for illegally dumped rubbish in bush reserves is very high (8.3/10).
- Concern about illegally dumped rubbish in vacant blocks or on roads or nature strips (both 7.5).
- Concern for littering is less at 6.6/10.

Communication

- 46% of residents' recall receiving Council's new waste and recycling calendar. Of those that recall it:
 - the majority have kept it (79%)
 - refer to it every 2–6 months (53%)
 - would prefer it in hard copy (69%) rather than to look it up online (26%).
- Residents look for information on local waste and recycling services on Council's website (60%) over other sources.

Waste management in the future

- The importance of waste management issues over the next 10 years (from a list of options) were:
 - capturing litter before it reaches waterways (100%)
 - community and childhood waste education' (98%)
 - using recycled materials in Council assets' (97%)
 - minimising waste through buying goods without a lot of packaging or with a longer life (95%).
 - alternatives to landfill (93%)
 - community and home composting (87%)
 - more local public waste facilities (83%)
 - kerbside service for food waste and organics (75%).
- Residents provided a variety of responses to the open question 'What would you like to be different in 10 years' time?' the most common responses were:
 - allowing more materials to be recycled (30%)
 - more education (on packaging and waste reduction) (16%)
 - reducing waste in general (14%)
 - reducing packaging (11%)
 - composting (10%).

In reviewing and reflecting on these results, themes identified from this data were:

- reducing waste, and minimising waste was quite important, residents wanted
 - more materials to be recycled
 - more education
 - reduced packaging and waste
 - alternatives to landfill
- supporting schools and ELC was very important
- residents like to receive their waste information in hard copy, with many also referring to Council's website for information
- residents want composting to be supported
- burning off has reduced significantly

- some areas for consideration for green waste options were drop off events, vouchers, home mulcher rebate, additional branch collections
- there was overall support to move to a booked hard waste service
- residents were quite responsive overall to cost for new services, over 60 per cent would not want extra services if it cost extra or it would depend on the cost
- dumped rubbish was a concern.

In order to develop the strategy and draft action plan, these key themes were then developed into potential actions. We then assessed data and trends, engaged with internal business units, other councils and industry and reviewed options to then redraft the action plan within the draft WRRS.

Further consultation was undertaken on the draft WRRS in July 2017, via a number of short online surveys, and opportunity for direct written responses. This feedback was self-selected and, when compared with the previous telephone survey, was not statistically significant. It did, however, provide a good opportunity to review and consider general trends and further comments and improvement ideas. The feedback was positive overall, and resulted in amendments to the strategy content, inclusion of some new actions, and revision of draft actions.

11 Waste trends and data

Waste generated in Cardinia Shire is in line with expectations from a shire of its size, population and interface location, and can inform opportunities for services, education and advocacy in the future.

11.1 Waste generation

Figure 6. *Cardinia Shire garbage generated compared with other metro and non-metro Victorian councils*

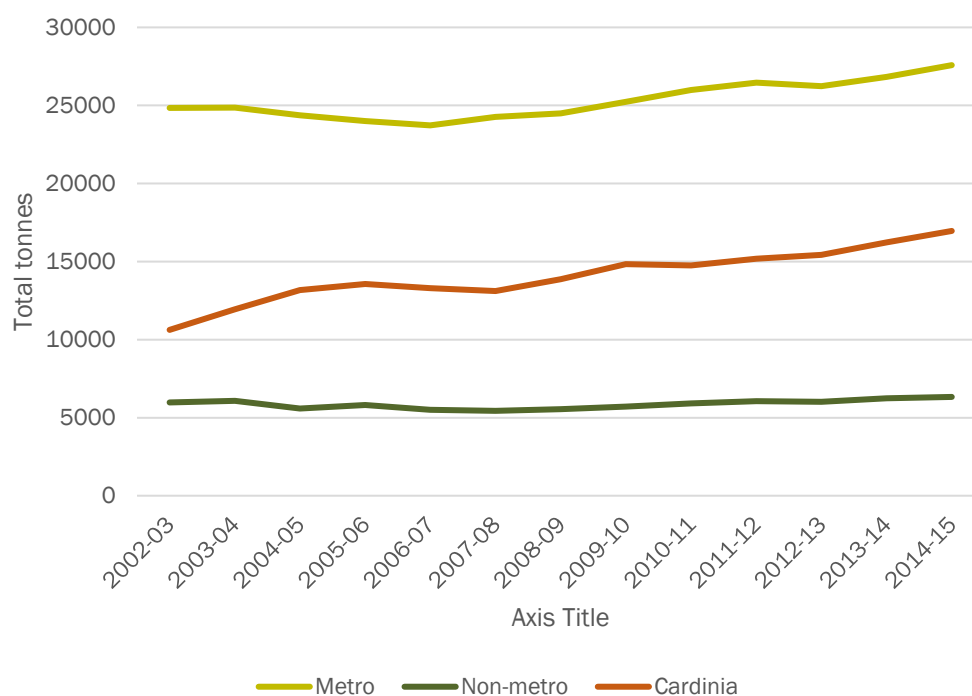
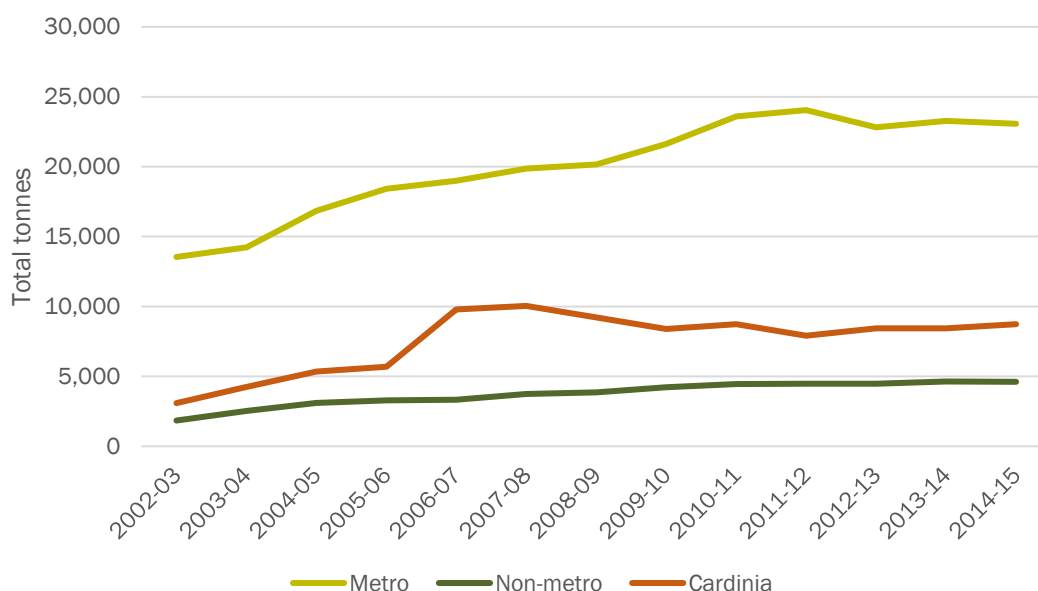


Figure 6 shows that as the shire's population continues to grow, the amount of waste generated is also growing. As areas of the shire become more urbanised (similar to metro areas) the tonnages collected will increase to be more in line with metro councils. This means Council will be handling more garbage in the future based on current trends.

Figure 7 shows the comparison to recyclable material generated (recycling and green waste streams).

Figure 7. Cardinia Shire recyclables (recycling and green waste streams) generated compared with other metro and non-metro Victorian councils.



Similar to the trend for amount of total waste generation is the amount of recyclable material generated, with spikes in data occurring in 2006 with the introduction of the green waste bin. Presumably the green waste bin introduction prompted properties to clear green waste which may have been stock piled and levelled off in more recent years. Moisture content in green waste from wet or dry years can vary the tonnage of recycling, with the drought experienced in some years can also have an impact.

Figure 8 shows the diversion rate, that is the percentage of waste that is recovered (recycled and processed) as a proportion of total waste (garbage/recycling/green) produced.

Figure 8. Cardinia Shire kerbside proportions and waste tonnages per year

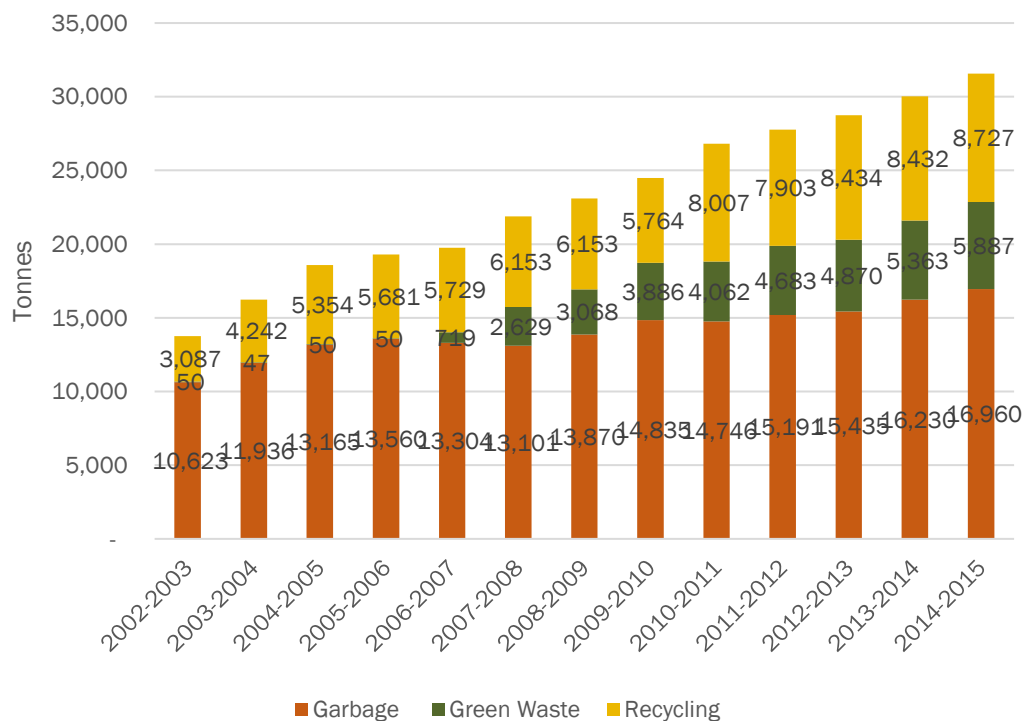


Figure 8 shows the growth in the quantities of waste (garbage/recycling/green) that Council collected and disposed of over the past 13 years. The green bin collection service has resulted in this stream becoming more significant since its introduction and the growth in garbage has proportionately decreased.

11.2 Diversion

Figure 9. *Cardinia Shire resource recovery rate (recycling and green waste recovered) compared with other metro and non-metro Victorian councils.*

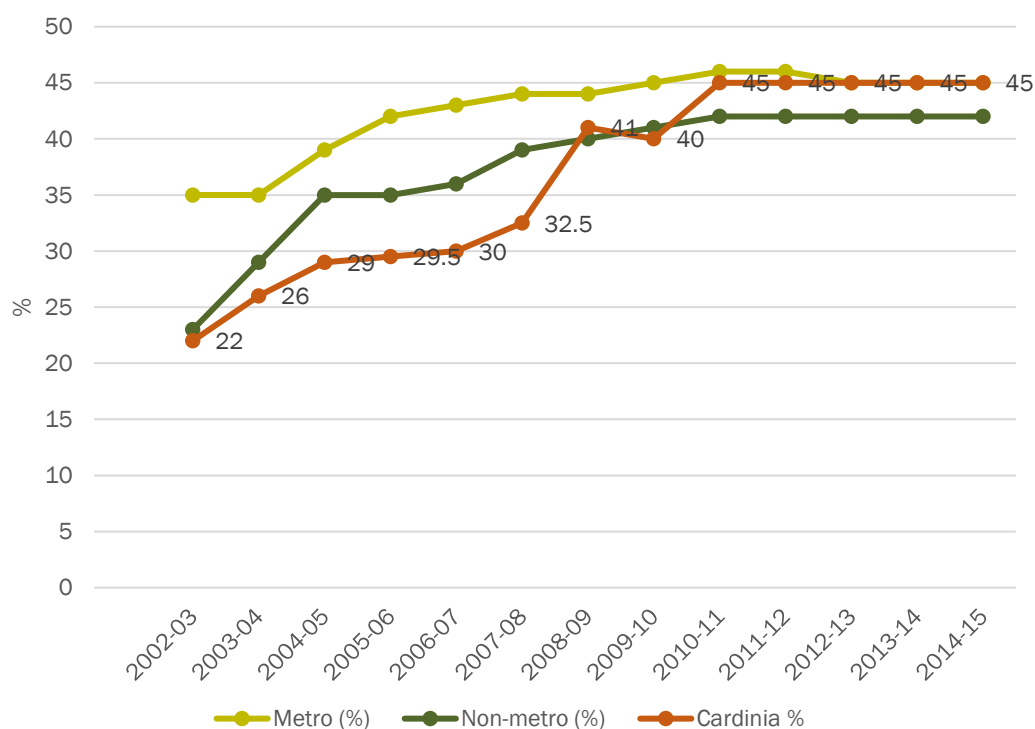
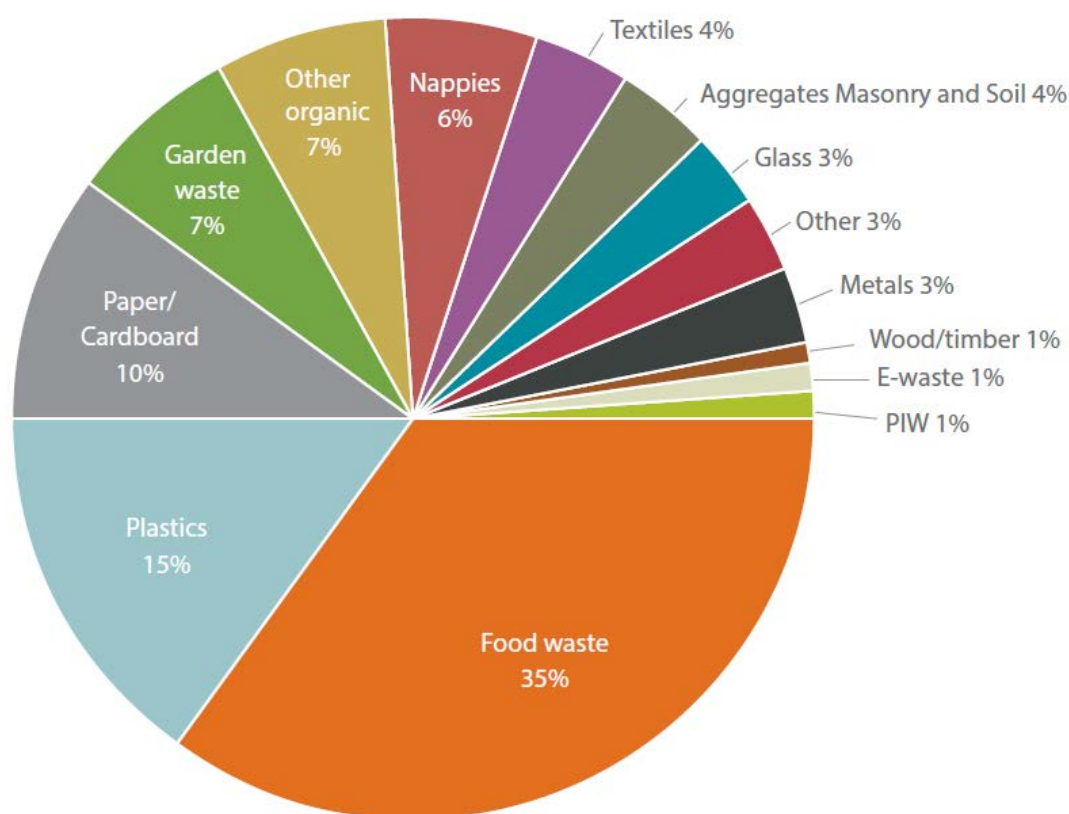


Figure 9 shows transition of the shire from a traditional non-metro area to more urbanised shire with growth. Recent recovery rates of 45 per cent sit above the 42 per cent non-metro average, and in line with metro councils, which is a good result. To be comparable these figures do not include drop-off items such as e-waste. These trends also highlight that Council's recovery rates are at a standstill. For further improvements, Council will need to look at significant service changes or initiatives with the potential for big impacts.

11.3 Composition

Composition of waste means the makeup of a waste stream by different materials. Analysing composition can identify opportunistic streams for recovery.

Figure 10. *Victorian landfill composition including municipal solid waste (household waste) and construction and industrial waste. Source: MWRRG Implementation Plan.*



When reviewing Victorian landfill composition as a whole (Figure 10) the opportunities for a regional solution for green organic waste (including food organics) is highlighted. While a good proportion of this waste would come from household sources, it also includes industrial and commercial sources. Recovering more paper/cardboard and plastics are also opportunities at 10 per cent and 15 per cent of landfill waste respectively.

Figure 11. Cardinia Shire garbage bin composition by weight (kg/wk).

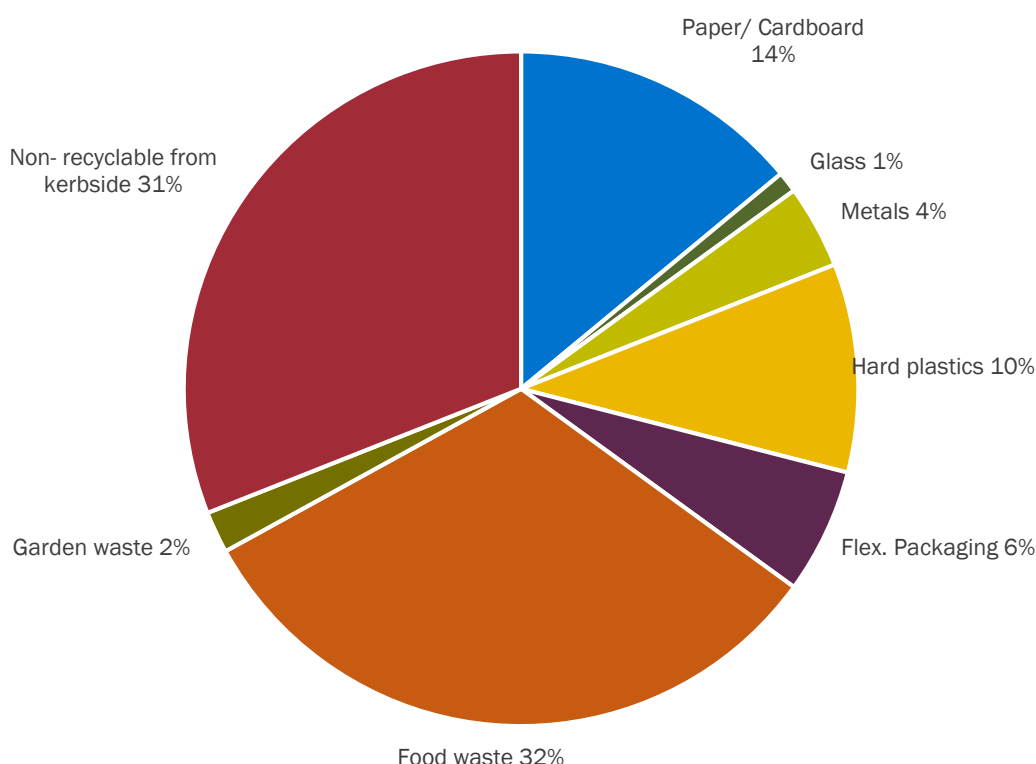


Figure 11 shows the waste composition of an average Cardinia Shire garbage bin, as audited in 2015 prior to implementation of the flexible plastics program. This shows similar trends to Victorian landfill (Figure 10). Food and garden waste make up 34 per cent, paper and cardboard 14 per cent, hard plastics and flexible plastics make up 10 and 6 per cent respectively. The non-recyclable material makes up 31 per cent, which shows the potential to recover another 69 per cent if the services were available and full behaviour change to take up these services occurred.

11.4 Illegally dumped rubbish

Research conducted by EPA's Illegal Dumping Strike Force program shows outer metro growth areas with large expanses of vacant land and semi-rural roadside areas are experiencing more costs of clean up and incidences of dumping than the average Victorian council. Factors contributing to the issue include:

- increasing costs of waste disposal across the state
- rapid local building and development
- distances to travel to waste facilities including for disposal of specialised items
- composition of the land with many semi-rural roads, vacant blocks and bushland areas with less visibility
- large number of homebuilder and establishing households
- issues of household financial hardship and cost perceptions.

Data on instances of reports of dumped rubbish, as well as costs have been provided below (Table 6). While these are useful to identify trends over the years, it should be noted when looking at the cost per reported incidence that collections of dumped rubbish are sometimes proactively collected and not always reported through Council's customer service system. The number of actual

incidences of illegally dumped rubbish is likely to be much higher. This is evident with the cost and number of incidences reported increasing significantly since 2009, as shown in Table 6.

Table 6. Illegally dumped rubbish costs and number of reported incidences per year (Cardinia Shire)

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Number of customer service requests	548	574	625	872	895	1048	1221
Total cost per year	\$50,028	\$85,184	\$76,268	\$130,653	\$136,894	\$213,270	\$196,789
Cost per reported incidence	\$91	\$149	\$122	\$150	\$153	\$204	\$161

It has been identified across local government that there are inconsistencies in reporting of dumped rubbish data, in that costs and data are not always separated out or attributed consistently. Again, this data still provides an interesting comparison.

Table 7. Illegally dumped rubbish costs and reported incidences Cardinia Shire compared with average per council and total Victoria (2013-14 and 2014-15)

		Total (Victoria)	Average per council	Cardinia Shire
Annual service costs	2013-14	\$8,290,335	\$104,941	\$136,894
	2014-15	\$9,006,244	\$114,003	\$213,270
Tonnes collected	2013-14	26,100	330	181
	2014-15	19,651	248	260
Reported incidences	2013-14	45,479	575	895
	2014-15	40,146	508	1048
Cost per reported incidence	2013-14	-	\$182	\$153
	2014-15	-	\$224	\$204

Table 7 shows that the incidences of illegally dumped rubbish in Cardinia Shire is significantly higher than the Victorian average. By comparison, the cost per reported incidence is somewhat comparable but difficult to make a good comparison given the limited period.

12 The way forward

12.1 Strategic framework

Council's waste and resource recovery efforts occur within a national, state, metropolitan and council strategic context that impact upon how we deliver and plan our waste and resource recovery services.

Figure 12. Relationship with policies



Figure 12 shows how the Australian and Victorian government policies and plans interrelate. Council's plans and strategies fall outside of these policies and plans but must be aligned with the governments' objectives.

12.1.1 Councils plans and strategies

Council plan 2017

This strategy reflects Council's vision as set in the Council Plan 2017. The plan seeks by leading the way through governance to achieve a sustainable shire for present and future generations. As population growth and demand for services increase, it aims to strike a balance in achieving desired outcomes for the community while ensuring economic prosperity, social wellbeing, environmental sustainability, and long-term financial sustainability.

The management of the natural and build environment, including climate change, is highlighted in this plan, and refers to the issue of waste to landfill. Waste to landfill is increasingly costly due to the landfill levy and creation of emissions. These emissions significantly contribute to climate change and with a growing population the plan sees the importance of mitigating these with the action:

'3.3.4 Promote practices that result in the reduction per household of the amount of waste going to landfill, particularly food waste.'

Table 8. Proposed Council plan actions 2017 relating to waste

Actions 2017–18	Actions 2018–19	Actions 2019–20	Actions 2020–21
Liaise with and support schools in the areas of waste minimisation, litter and recycling			
Review effectiveness of kerbside flexible plastics recycling initiative and further promote to the community.	Begin review and development of system for diverting food waste from landfill. To include: <ul style="list-style-type: none"> • review best practice of food waste collection system at the kerbside and learn from other examples • identify collection service change requirements and review service specifications • develop behaviour change program and identify support required • identify resources required for 2 year implementation. 	Undertaken tender process for kerbside garbage/recycling/organics waste collection services and recycling processing, considering outcomes of food diversion review. Prepare for communication program delivery for behaviour change.	Implement new waste services and behaviour change program that reduce food waste to landfill.
Build on success of new resource recovery facilities by advocating for improved resource recovery and reuse options (such as ewaste/detox your home/SV programs/new streams/reuse opportunities/education)			
Commence regional project with south east councils and MWRRG to procure landfill and alternative to landfill services, including pre-sort options for commencement post 2021.	Collaborate on regional project with south east councils and MWRRG to procure landfill and alternative to landfill services, including pre-sort options for commencement post 2021.	Collaborate on regional project with south east councils and MWRRG to procure landfill and alternative to landfill services, including pre-sort options for commencement post 2021.	Collaborate on regional project with south east councils and MWRRG to procure landfill and alternative to landfill services, including pre-sort options for commencement post 2021. Prepare to deliver and take up new service.

Sustainable environment strategy (SES)

The WRRS aligns with and sits under Council's *Sustainable environment strategy* (SES). A new 10-year SES is under development and is due for adoption in 2018. The SES provides an overview of the principles, policies and plans to guide Council's leadership in environmental sustainability to achieve Council's strategic objective: to continue to plan and manage the natural and built environment for present and future generations. Elements of the SES will be informed by the outcomes of this strategy, specifically relating to water pollutants from litter and wastes derived from building sites, the need for reducing waste, community waste awareness and education.

Aspirational energy transition plan 2014–24

Council's aspirational target of achieving zero net emissions for Council operations and a 36 per cent reduction in community emissions on a per capita basis by 2024 aligns with this strategy. The

plan specifies the need for sustainable design of new developments in the shire as it continues to grow, encouraging increased service provision and employment locally, to reduce transport requirements and oil dependency, as well as importance of continued community waste reduction education including composting and sustainable gardening.

Liveability health plan (2017–21)

Council's municipal public health and wellbeing plan (*Liveability Health Plan*) identifies the vision for a healthy and liveable shire. The plan outlines the key objectives and strategies Council and partner agencies will implement in an effort to improve the health and wellbeing of Cardinia Shire residents where they live, work, learn and play. This plan sits alongside the Council plan and *Municipal Strategic Statement* (MSS) to provide strategic direction for other Council policies, plans and strategies. The key policy domains of the plan include:

- active travel
- housing
- food
- open space
- health and social services
- education
- employment.

Efficient reliable waste management services, practices, principles and opportunities set out in this strategy are not only essential for environmental benefits, but to ensure the health and liveability of the community. Opportunities exist for employment and economic growth, social connection and positive learning outcomes through waste and litter education programs. There is a strong connection with the food policy domain of the *Liveability Health Plan*, where the emerging importance of a community who grow, cook and dispose of fresh healthy food is recognised. Opportunities exist to further enhance household food waste reduction and backyard composting, as well as for larger scale commercial and agriculture use.

Local Law 17

Local laws developed by Council deal with important community safety, and peace and order issues. Local Law 17 is Council's environment, amenity and asset protection local law which supports Council's waste-related service delivery. Local Law 17 replaced Local Law 9 and 10 and came into effect on 15 June 2015. It is valid for 10 years and allows local enforcement of nuisance behaviours. Sections specific to waste ensure:

- responsible presentation of kerbside bins and hard waste
- appropriate disposal and transportation of hazardous waste
- reduction in illegal dumping
- responsible disposal of dog excrement
- compliant burning off
- stormwater protection
- correct disposal of hazardous waste
- asset protection of waste bins and other Council infrastructure
- protection of recyclable materials left out for collection
- responsible storage of building waste on construction sites.

Cardinia Shire planning scheme

Council's planning scheme requires that applications for new buildings provide a waste management plan specifying a waste and recycling management system or how waste will be reduced and recycling maximised.

It outlines that before deciding on an application the responsible authority must consider (where related to waste and resource recovery services), as appropriate:

- the movement of pedestrians and cyclists, and vehicles, including vehicles involved with waste removal
- the storage of rubbish and materials for recycling
- defining the responsibility for the maintenance of buildings, landscaping and paved areas.
- the availability of and connection to services.

The planning scheme aims:

- to avoid, minimise and generate less waste to reduce damage to the environment caused by waste, pollution, land degradation and unsustainable waste practices
- establish new sites and facilities to safely and sustainably manage all waste and maximise opportunities for resource recovery
- encourage facilities for resource recovery to maximise the amount of resources recovered, provide sufficient waste management and resource recovery facilities to promote re-use, recycling, reprocessing and resource recovery and enable technologies that increase recovery and treatment of resources to produce energy and marketable end products
- encourage waste generators and resource generators and resource recovery businesses to locate in close proximity to enhance sustainability and economies of scale
- ensure buffers for waste and resource recovery facilities are defined, protected and maintained
- site and manage waste disposal and resource recovery facilities in accordance with the Waste Management Policy (Siting, Design and Management of Landfills) (EPA, 2004).

12.1.2 Australian Government policy

National Waste Policy: Less Waste, More Resources

The National Waste Policy, developed by the former Department of Environment, and agreed to by all Australian environment ministers in November 2009, sets Australia's waste management and resource recovery direction to 2020. It was developed to summarise the roles and responsibilities of governments. The aims of the National Waste Policy are to:

- avoid the generation of waste, reduce the amount of waste (including hazardous waste) for disposal
- manage waste as a resource
- ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner
- contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency and the productivity of the land.

Product stewardship

Product stewardship is an approach to managing the impacts of different products and materials. It acknowledges that those involved in producing, selling, using and disposing of products have a shared responsibility to ensure that those products or materials are managed in a way that reduces their impact throughout their lifecycle.

The *Product Stewardship Act 2011* provides the framework to effectively manage the environmental, health and safety impacts of products and includes voluntary, co-regulatory and mandatory product stewardship.

The first product stewardship program established under the *Product Stewardship Act 2011* was the National Television and Computer Recycling Scheme. This was a co-regulatory scheme requiring importers and manufacturers of televisions, computers and computer products to fund and implement recycling services against agreed recovery targets for these products from November 2011. This has resulted in services that allow consumers to dispose of their unwanted televisions

and computers at designated collection points for free. Availability of this option in the south-east area is limited due to lack of transfer facilities in the shire at the time of the initial implementation. The annual targets have been exceeded and the scheme is the subject of an Australian Government review. This scheme allowed Council to implement cost effective drop off events for a number of years, moving into kerbside collection within the biannual green and hard waste service.

Items with schemes in place:

- TV and computers
- mobile phones
- tyres
- paint
- small household batteries
- mercury lamps.

Items with emerging schemes:

- air conditioners and fridges
- plastic microbeads and products containing them
- photovoltaic systems
- larger batteries used for energy storage.

Levels of success have varied in providing lower cost or free services for residential waste for these streams so far. Some schemes are targeted at commercial operators and business waste. The Act is currently under review.

Australian packaging covenant

The Australian packaging covenant (APC) is an agreement between companies in the supply chain and all levels of government to reduce the environmental impacts of consumer packaging by encouraging improvements in packaging design, higher recycling rates and better stewardship of packaging, resulting in less litter. Signatories must have action plans that include actions to increase recovery of packaging and address litter. For example, McDonald's litter actions include daily litter patrols near stores and education on tray mats.

The APC runs funding rounds jointly by industry and government. In 2016, Council launched its kerbside flexible plastic recycling project which was made possible through part funding of \$10,000 from this group.

Container deposits and litter

Container deposit schemes are a form of product stewardship where consumers are incentivised to responsibly dispose of empty drink containers for recycling at designated collection sites in exchange for cash or cash-equivalent. This aims to reward environmentally responsible behaviour, reduce drink container litter and increase recycling. Consumers cover the cost of the scheme in the price of the drink when purchased.

South Australia since 1975 have legislated its own scheme. The extent of a national scheme has been in discussion for many years and gained traction more recently with additional state and territory governments announcing plans to implement their own in 2017.

Council has supported the implementation of a container deposit scheme for some time and will continue to do so. A scheme, if implemented would have a positive effect on littering, and maximise materials recovered for recycling across the region.

12.1.3 Victorian Government policy

Victorian Waste and Resource Recovery Infrastructure Planning Framework

The Victorian Government has developed a Victorian Waste and Resource Recovery Planning Framework (Division 2AB of the Environment Protection Act 1970) to assist with ensuring waste is managed in a strategic, streamlined manner with infrastructure placed in the right place at the right time. The key objectives of the framework are to:

- provide a long-term strategic plan for infrastructure at state and regional levels
- facilitate the integration of the Statewide Waste and Resource Recovery Implementation Plan and the Regional Waste and Resource Recovery Implementation Plans
- enable infrastructure planning to be integrated with land use and transport planning and policy
- enable infrastructure planning decision to be made at the appropriate level in the framework.

The Statewide Waste and Resource Recovery Infrastructure Plan

As part of the framework's objectives, the Statewide Waste and Resource Recovery Infrastructure Plan (State Infrastructure Plan) developed by Sustainability Victoria on behalf of the Victorian Government has the objective to provide direction for the management of waste and resource recovery infrastructure in Victoria for 30 years.

The State Infrastructure Plan will ensure waste and resource recovery services essential to meet the needs of all Victorians are available by:

- effectively managing the expected mix and volumes of waste
- reducing the amount of valuable materials going to landfill and maximising resources recovered
- supporting innovation and investment in better infrastructure to create jobs and bolster the economy
minimising community, environment and climate change and public health impacts whilst supporting a viable resource recovery industry.

The Victorian Market Development Strategy for Recovered Resources, the Victorian Organics Resource Recovery Strategy, the Investment Facilitation Framework and the Collaborative Procurement Framework are key initiatives to further support the State Infrastructure Plan to realise Victoria's integrated waste and resource recovery system.

The State Infrastructure Plan is supported by the development of seven Regional Waste and Resource Recovery Implementation Plans (including the Metropolitan Implementation Plan) which outline a path for meeting specific regional and local needs.

Metropolitan Waste and Resource Recovery Implementation Plan

The Metropolitan Implementation Plan sets out how the waste and resource recovery infrastructure needs of the greater metropolitan Melbourne region will be met over the next 10 years. This is the region in which Cardinia Shire operates. The implementation plan brings together statewide priorities set out in the Statewide Waste and Resource Recovery Infrastructure Plan and applies them within the metropolitan context. This ensures our waste and resource recovery system is integrated and provides an essential community service.

The Metropolitan Implementation Plan's objectives are to:

- reduce waste sent to landfill
- increase organic waste recovered
- deliver community, environmental and economic benefits
- plan for Melbourne's growing population.

Section 50BH of the EP Act specifies that councils in a waste and resource recovery region must perform its waste management functions consistently with the regional waste and resource recovery implementation plan. Additional requirements are as follows.

- A council must perform its waste management functions consistently with the Regional Waste and Resource Recovery Implementation Plan applying to the council's municipal district.
- If a council disposes of waste in a waste and resource recovery region other than the waste and resource recovery region in which the council's municipal district is located, the disposal of the waste must be consistent with the Regional Waste and Resource Recovery Implementation Plan applying to the other waste and resource recovery region.
- Any person involved in the generation, management or transport of waste within a waste and resource recovery region must not do anything in relation to the waste that is inconsistent with the relevant Regional Waste and Resource Recovery Implementation Plan while the waste is in that region.

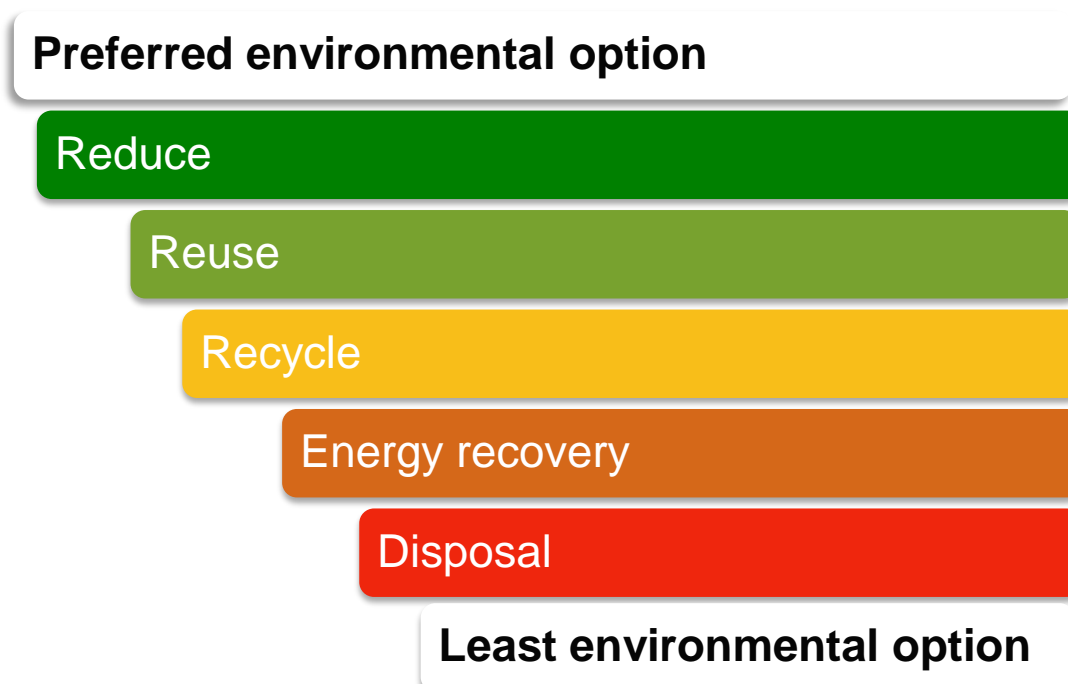
Cardinia Shire's WRRS and action plan (2017–21) aligns strongly with the Metropolitan Waste and Resource Recovery Implementation Plan. Council's actions will help meet the objectives, and Council commits to working with the MWRRG on the delivery of the Metropolitan Waste and Resource Recovery Implementation Plan as required.

Environment Protection Act 1970

The *Environment Protection Act 1970* (the EP Act) is the primary legislation for waste management in Victoria. It establishes a statutory framework for the management of all solid wastes, such as municipal, commercial, industrial and prescribed wastes in Victoria. It also establishes government waste agencies, defines their objectives, powers and functions and creates policy tools that are used to achieve objectives.

The EP Act sets out principles of environmental protection (sections 1B to 1L) including the waste hierarchy (Figure 13) that reflects the environmental order of preference of managing waste. Principles also require the integration of economic, social and environmental considerations.

Figure 13. Waste hierarchy



The Gaia Foundation in its report 'Short Circuit: the Lifecycle of our Gadgets and the True Cost to Earth' includes an extended waste hierarchy, the 8 Rs as shown in Figure 14.

Figure 14. The extended waste hierarchy, the 8Rs



Our Environment our future: Victoria's Environmental Sustainability Framework (Victorian Government strategy)

The current Victorian Government has committed to implementing a ban on e-waste to landfill with the aim of supporting jobs in the recycling industry. Development of this legalisation and program is underway, and Council has been advised it is to be implemented July 2018. This will certainly have an impact on Council services, and potential costs in the future.

The landfill levy

A landfill levy is one of a number of economic instruments designed to deliver environmental outcomes, in this case to discourage waste to landfill by incentivising resource recovery.

A levy for waste deposited to landfill in Victoria was established under the Act in 2002. The levy has been hypothecated to resource recovery and other environmentally beneficial programs and projects and funds environmental government organisations such as EPA, Sustainability Victoria and waste and resource recovery groups. The landfill levy was significantly increased from \$9 to \$44 per tonne of waste from 1 July 2011, and has continued incremental increases since that time. The landfill levy currently makes up 50–60 per cent of the total cost of disposing of landfill.

Local Government Act 1989

Under the *Local Government Act 1989* local government provides for the peace, order and good government of its municipal area, delivers services and facilities for the community and manages the resources of the municipality. It has responsibility for implementing many diverse programs, policies and regulations set by the Victorian and Australian governments.

Local government is responsible for a range of domestic waste management services, including, kerbside garbage, recycling and green organics collections, transfer stations, waste education and

litter management and prevention. Council has direct control of its own operations and its contracted services.

As of 2017 the Act was under review and a consultation process underway. A new Local Government Act is intended to be developed and introduced into the Victorian Parliament in 2017–18.

Planning – Victorian legislative and policy framework

As Melbourne's population grows, land use planning continues to play a vital role in facilitating the growth needed in the waste and resource recovery system. It is important that land use planning controls balance the protection of existing facilities from encroachment with the need to minimise the impacts of waste and resource recovery facilities on communities and the environment.

Key land use planning legislation and policies for Victoria are as follow.

- *Planning and Environment Act 1987*
This Act establishes a framework for planning the use, development and protection of land in Victoria to meet the present and long term interests of all Victorians. A key function of the Act is to minimise the risk of any potential adverse environmental, health and safety impacts.
- *The Victorian Planning Provision – State Planning Policy Framework*
The VPP's State Planning Policy Framework seeks to ensure that all responsible authorities work to achieve the Planning and Environment Act's objectives. This includes policy integration and balancing conflicting objectives in favour of net community benefit and sustainable development.

Clause 19 Infrastructure includes key objectives and strategies to promote waste avoidance and best practices to reduce damage to the environment caused by waste, pollution, and land degradation. Strategies acknowledge the need for new sites and facilities and encourage facilities that can maximise recovery and meet best practice standards. Waste generators, resource generators and resource recovery businesses are encouraged to locate in close proximity to enhance sustainability and economies of scale. Buffers for waste and resource recovery facilities are required to be defined, protected and maintained

- *Plan Melbourne: Metropolitan Planning Strategy.*
The Victorian Government's *Plan Melbourne 2017-2050* and accompanying five-year implementation plan sets out how Melbourne will accommodate future growth and be a competitive, liveable and sustainable city.

Plan Melbourne includes a number of targets from the Metropolitan Waste and Resource Recovery Implementation Plan that MWRRG is implementing, including:

- 25 per cent of municipal solid waste collected via MWRRG contracts will be recovered and managed via advanced resource recovery facilities and diverted from landfill
- 95 per cent of new multi-unit developments will accommodate resource recovery collections
- securing 600,000 tonnes of organic waste processing capacity for Melbourne by 2026.

12.2 Challenges

12.2.1 Size, location and typography of the shire

Cardinia Shire comprises 1,280 square kilometres of land and is situated 50 kilometres south-east of Melbourne. It is one of the largest metropolitan municipalities, in terms of geographical size, with a relatively low but fast-growing population. This brings with it challenges in delivering cost effective equitable services, as a wide range of service providers are not always available to create good

competition. Economies of scale cannot be achieved to the same degree as in smaller, more densely populated municipalities, and this can put pressure on the garbage charge.

Some of the challenges relating to topography, size, and location that Council faces when planning and delivering its services include:

- designing waste services that cater to the mix of land uses from increased high density urban living to rural, low density and sometimes difficult access areas
- achieving cost-effective but equitable services across a large shire
- historic lack of resource recovery and landfill facilities but with growing need
- limited competition by service providers, particularly hard waste and landfill services
- reduced availability of commercial collection operators in the shire including food waste collection for the hospitality industry, niche service providers and flexibility of services
- green waste production on semi and rural properties and how to support them to reduce burning off
- increasing incidence and costs of illegally dumped rubbish due to our interface location and other factors
- difficulty in distributing relevant waste service advice to residents of rural areas without roadside mail boxes.

12.2.2 Growing population

Our population is growing rapidly, which results in challenges to plan for and deliver waste services. This also brings ongoing opportunities to achieve efficiencies over time, and to adequately consider the way the shire is developed to mitigate potential issues that some inner city areas face. In 2017, Council was providing about 37,500 garbage services weekly, which is expected to increase to more than 53,000 by 2028. Household size is also decreasing.

Over the next 20 years, there will be significant increases in the 0 to 4 age group and the 5 to 9 age group, with the majority of the population being represented by the 'parents and homebuilders, aged 35–49' group (20% by 2036). The largest increase in people between 2016 and 2036 is forecast to be in ages 0 to 4, which is expected to increase by 6,757 and account for 8.3 per cent of the total population, followed by children aged 5 to 9 which is expected to increase by 6,680 and account for 8 per cent. It will therefore be important to consider the needs of children and families when designing services and take the opportunity to engage with these groups to embed good waste behaviours from a young age.

Social research identified financial hardship as a significant social and personal issue for residents. This has cascading implications for waste perceptions, behaviours, and engagement with services. Table 9 presents the proportion of residents in either growth or rural areas experiencing selected indicators of financial hardship.

Table 9. Selected findings from Growth Area Social Research, 2014 and Rural and Township area Social Research, 2016

Indicator	Total growth areas (2014)	Total rural areas (2016)	Port ward (2016)	Ranges ward (2016)
Financial difficulties	20%	18%	17%	18%
Expensive medical services	21%	15%	16%	13%
Rental mortgage or stress	17%	9%	9%	9%

Analysis of the language spoken at home in 2011 by the population compared to Greater Melbourne shows that 89.2 per cent of people spoke English only, and only 7 per cent of those speaking a non-English language either exclusively, or in addition to English, compared with 66.3 per cent and 29.1 per cent respectively for Greater Melbourne. While specifically catering for culturally and linguistically diverse (CALD) communities is not necessarily required in Cardinia Shire, the principals of use of plain English, imagery and simplicity apply when designing Council's waste education and promotional material. These principals cater for a variety of education and awareness levels to maximise effectiveness.

Accommodating this increase and changing landscape requires thought and consideration to ensure services continue to meet the needs into the future. Challenges related to growing population include:

- infrastructure costs due to new population – kerbside bin provision for every new household and increased public place litter and recycling networks
- service pressures and planning within the kerbside services as residents move in each day
- plan and development checking for adequate waste provision in new areas and properties for the future
- unavailability of private collectors at reasonable prices to cater for niche developments, meaning private collectors within private developments cannot be relied upon
- high waste generation due to low quality and disposal products and furniture purchased by establishing households and families on tight budgets
- historic lack of waste and resource recovery facilities and infrastructure in the area but the need is growing
- community engagement in waste services – relatively high proportion of families and households experiencing financial difficulties impacts on the time or resources to engage in Council's services or programs
- challenges of developing and maintaining high levels of understanding of good waste behaviours due to resident movement resulting from new properties and renters, and information distribution challenges
- increased diversity in the community – education levels and languages spoken and how this relates to education material and strategies
- establishing new schools, Council buildings and facilities – future proofing services and getting it right before undesirable behaviours are embedded.

12.3 Opportunities

The focus away from traditional ways of dealing with waste (which was a strong reliance on landfill) toward increased reuse, recycling, resource recovery and alternative waste treatments means the industry is fast moving with new issues and opportunities arising that cannot always be forecast or predicted.

Due to our reliance on industry, technological advances, new markets, market forces for pricing, society behaviour change and awareness of new issues, Council needs to be dynamic and flexible in its approaches moving forward and be open to adapting to arising opportunities. Sometimes we are restricted by existing contracts which may limit our ability to take up new opportunities and respond to emerging issues immediately. It is therefore important to participate in regional programs and projects and share knowledge with the industry and other councils to keep abreast of these changes and be in the best position to respond.

Some of these issues or opportunities are:

- legislation changes such as the e-waste ban proposed by the Victorian Government
- government initiatives such as move from analogue to digital televisions and the resulting waste created

- community awareness and desire for change on issues such as microplastics and single use plastics
- increasingly problem and costly materials for disposal or processing which may also be illegally dumped at increasing costs
- increasing waste trends such as increased packaging and litter
- community take-up of peer-to-peer sharing of goods or services rather than individual ownership
- closure of facilities previously relied on for processing or disposal such as closure of landfills in the south-east and finite airspace in remaining facility
- new technologies and processes and time taken to implement or take-up
- climate change and how to reduce its impact
- externally provided initiatives which become available or discontinued over time (i.e. Australian and Victorian governments, EPA)
- determining how to best divert food waste from landfill.

13 Implementation

Actions within the WRRS (2017–26) build on the successes of the previous strategy and take advantage of recent advancements such as newer technologies and improved markets for products resulting in improved financial outcomes for resource recovery. Council has also identified areas where we would like to do better or deliver a response to an emerging or prevalent issue.

Section 14 contains the Action plan (2017–21), outlining the actions to implement these opportunities.

13.1 Regional actions

The Environment Protection Act (Section 50BH) specifies that councils must perform its waste management functions to be consistent with its regional waste and resource recovery implementation plan, in this case the MWRRG Implementation Plan. Council recognises both the requirement and the advantages of working with the region on issues, particularly infrastructure and services, waste education, knowledge sharing and advocacy. It will work with the MWRRG on the delivery of the MWRRG Implementation Plan as required.

13.2 Reducing waste

Reducing waste and increasing resource recovery has long been a focus for Council and will continue to be through implementation of this strategy. Many of its actions related to contracts and leading the way also have benefits in reducing waste.

Council will continue to support and reward the community to reduce waste through its rebate program, which currently includes a discount for take up of the 80-litre bin option and a \$30 rebate for purchase of compost bin and worm farms. Council will increase its compost bin and worm farm rebate to \$50, in order to ensure its continued relevancy as an incentive and encourage higher take up, and will introduce a home mulcher rebate of \$50 to support residents to mulch green waste at home. A business case for expansion to include a cloth nappy rebate will also be undertaken.

As the green bin service is now available to all parts of the shire, the waste guidelines will be updated regarding the 'no garden waste in your garbage bin' directive and Council will undertake promotion and compliance activities. Grass clippings and garden waste create greenhouse gases in landfill and should be reused at home through mulching and composting, or recovered for beneficial uses such as compost through use of the green bin.

Council will build on the success of the flexible plastic initiative by investigating strategies for maximising benefits of kerbside recycling bins. This may involve educating residents on how to make more space within their bins (by crushing bottles and boxes for example), but also the potential for lower cost or subsidised additional recycling bins for residences that produce high volumes of recycling.

13.3 Green organic waste

13.3.1 Food waste diversion

One of the greatest opportunities to increase resource recovery, reduce waste to landfill and reduce greenhouse gases is diverting food organic waste (which currently makes up 32% of landfill waste) to beneficial uses such as compost and similar products. Council has been making advances in addressing this problem for some time through joint procurement projects for high technology facilities. Once fully implemented these contracts will provide the opportunity to collect food organic waste (i.e. food scraps from the kitchen) and process it into reusable organic product (compost).

Council will undertake a review of this and other options and develop a system for diverting food waste from landfill. While the environmental benefits of diverting food waste and reducing landfill are easy to recognise, there will be significant challenges in implementing any system and adopting

the required behaviour change within the community. The review will need to include how systems have been implemented within Australia and overseas. It will be important to share knowledge and experiences with other councils also considering this change. To develop and implement a system and achieve high diversion, service changes will be likely. Such changes could require new contracts and supply of new bins, and could mean different costs to the current services. There will be a lot of support required to get full behaviour change and diversion and the low contamination rates required, all of which will form part of the review. This project has the potential to significantly decrease waste to landfill, at rates not seen since the introduction of recycling services.

13.3.2 Burning off mitigation

While significant reductions have been achieved in the amount of burning off in the shire since 2010, opportunity exists to further reduce unnecessary burning off, in accordance with the objectives of Council's open air burning policy to reduce air pollution and greenhouse gases. It is recognised that burning off will be necessary in some parts of the shire to minimise risk from bushfire. In order to support this policy, Council will implement a suite of options to support residents with alternatives to burning off, as well as providing education and services to reduce this occurrence. With the diverse community and property types in the shire, any one green waste service will not be the ultimate solution for every resident. This suite of options will include:

- initially, a trial of an annual drop-off service whereby residents can clean up their properties and dispose of green waste for free at permanent transfer stations local to the shire. This system is proposed to be trialled in the November 2017 and will run annually until a kerbside pickup can be implemented
- a booked green waste collection service will be implemented as part of a move to a booked green and hard waste service in the future. This service will collect green waste from properties as a booked arrangement throughout the year
- establishing a \$50 mulcher rebate, whereby residents who purchase a home mulcher to mulch green waste at home can apply for a \$50 rebate
- promoting the green bin as an option to dispose of small branches and leaves for all residents
- literature highlighting the benefits of using alternatives to burning off (where possible) by recycling and mulching at home or using other available green waste services.

Council will continue to support members of the community who compost and worm farm at home, recognising that recycling waste where it is created has the best environmental outcome. This will be achieved through the increasing the rebate to \$50 and continuing to promote their use. Council will also support early learning centres and community gardens through this program.

13.4 Waste-related education

Education will continue to be a key element in the change of waste behaviours, which underpins and supports service changes, efficiencies and new initiatives. Council will continue to work on education initiatives that offer a broader combined approach to educating the community, providing consistency and long-term vision as well as value. This will require advocating for and actively collaborating with the Victorian Government, agencies and other councils where regional opportunities exist for solutions on common waste issues. This may include, but is not limited to food waste, single use plastics, reducing contamination, e-waste, litter and illegal dumping. Council will strive for partnerships with established community organisations, social enterprise as well as other councils where expertise and resources can be shared and messaging is consistent.

For optimal community engagement more focus will be on the support of local grass roots community led projects and initiatives that have long-term viability or impact, rather than prescribed initiatives to the community from Council.

Council will focus and remain responsive to the emerging waste issues understanding that these may change over time and the need to be flexible. Council will keep investigating how new

technologies and communications may enhance the ability to educate and respond while remaining mindful that hard copy media is often preferred by the community.

School and early childhood waste education will continue with a planned long-term approach in order to support lasting good behaviours and change for the increasing young Cardinia Shire population.

13.5 Litter and illegal dumping

Perhaps the most important component of minimising incidence of both litter and Illegal dumping is to provide the infrastructure and services to allow the community to 'do the right thing' with its waste.

Council places value on supporting the community members who take an active interest in these areas. Council will continue its support of community led initiatives and actions by continuing its service of free hire of litter pickers, gloves and high visibility vests to the community. It will continue to support the community to apply for grants related to litter, illegal dumping and waste where they arise. It will support programs such as the plastic bag ban, as implemented by the communities of Emerald and Bunyip. It will support Clean Up Australia Day through prompt collection of waste, and consider support of other ad hoc requests on a case-by-case basis.

Council will continue to review its public place litter and recycling services to ensure bins are placed in the correct locations and emptied at appropriate frequencies to minimise litter. Public place recycling will be located in appropriate areas where contamination can be minimised. Council will continue its roll out of national branded signage to all public place litter and recycling bins to ensure residents know how to dispose of and separate their litter correctly.

Illegally dumped rubbish is an increasing issue; costs have increased around 500 per cent in the past five years. This is likely due to higher population, increasing costs of disposal as well as increased urbanisation of adjacent municipalities, meaning offenders travel further out of metro Melbourne to illegally dump waste in many cases. Council will be required to deliver this service differently into the future, to ensure it can keep up with demand, and deliver prompt services in line with community expectations. Prompt clearances of illegally dumped waste minimise further incidence of dumping. Council will undertake a review of the dumped rubbish service, looking at opportunities to align with a booked green and hard waste service, and improve response times.

Opportunities like moving to a booked residential green and hard waste service would assist the illegally dumped rubbish issue by having more convenient services available throughout the year to the community, as well as the opportunity to achieve economies of scale and more cost-effective collections through aligning the services under one contract.

Council will explore options for gaining evidence of illegal dumping and littering, taking advantage of improvements in CCTV cameras and footage in recent times. Council will continue to promote successful prosecutions to continually raise awareness of the illegal activity. Within two years, Council will undertake a business case for a dedicated litter and illegal dumping officer to support hard waste and illegal dumping services, by promoting correct behaviours and improved visual amenity through education and enforcement aligned with best practice. Illegally dumped rubbish is a metropolitan-wide issue, and Council will collaborate on regional actions that address the issue.

Council will work with its contractors to ensure litter resulting from waste collection is minimised. Educating the community on correct placement and presentation of bins (such as not overfilling bins to stop bird scavenging) can also have an impact on litter minimisation and Council will undertake campaigns and education on emerging issues such as this as opportunities arise.

13.6 Leading the way

Opportunities exist for Council to better demonstrate and support best practice waste and recovery practices at Council-run or supported facilities. External waste collection and recycling services are currently provided to these facilities. There are however, opportunities to improve recovery rates and reduce contamination through provision of internal bin infrastructure (internal waste and recycling bins) which enable source separation and higher levels of education and support.

As part of this strategy, an internal review of waste and recycling at Council-run or supported facilities will be undertaken for effectiveness and increased resource recovery opportunities. Council will then retrofit internal bin systems at facilities along with education support.

Council will also commit to Implementing best practice waste and resource recovery services and infrastructure at new Council facilities as they are designed and constructed. This will include setting targets for recovery of demolition and construction waste arising from new facilities.

13.7 Advocacy

Advocacy is an important part of Council's work, helping to raise awareness of issues unique to Cardinia Shire and for infrastructure and services needs that Council cannot or does not have the capacity to deliver.

Council will build on the success of establishment of new resource recovery facilities in the shire by advocating for further and expanded services for the community such as a permanent *Detox your home* site, free e-waste drop off services, and inclusion of other opportunities for recycling. These new facilities mean Council will be in a position to advocate more strongly for consideration by Victorian Government for new services and schemes.

Council is a supporter of the Australian Government's product stewardship legislation, which designs programs and schemes so that the producers and importers of materials and products take on some responsibilities for disposal of end of life products. This program has delivered good outcomes for TV and computer waste. Council will advocate to Australian Government for availability of the product stewardship programs to reduce the cost to Council, for materials such as fridges, mattresses, tyres and other emerging problem materials.

To build on the advantages of actions under leading the way, Council will advocate for better environmental outcomes at Council-supported facilities and events. Examples are reducing the use of single use plastics and strategies to reduce waste at events.

13.8 Development

A lot of work was undertaken in the past five years to improve how waste and recycling service provisions are considered within newly developed areas, through the adoption of waste guidelines for multi-unit developments, and improved internal processes. This ensures safe and efficient collection for future residents, as well as minimising the potential for arising amenity issues such as litter and bin placement issues.

With increased density developments, further scrutiny is required into the future. Council will therefore undertake continued and increasing consideration of waste provisions for emerging development issues. The current guidelines will be reviewed and expanded, widening the scope to ensure continued relevance. This will include higher density development; private developments, mixed use developments, as well as open space and community facilities. The focus will be on maximising resource recovery opportunities at new dwellings and ensuring there is capacity for Council to provide its waste services to future dwellings. This ensures equity and cost effective waste charges for all residents into the future.

13.9 Landfill rehabilitation

Council will continue to monitor and maintain its closed landfill, the former Nar Nar Goon Landfill to comply with EPA's Closed Landfill Guidelines. Council has undertaken increased compliance activities in recent years to comply with the updated requirements in these guidelines, and will need to continue on with those activities.

13.10 Contracts

Adopting a regional approach to contracts through joint procurement projects has provided many benefits to Council. Joint procurement can provide cheaper rates due to economies of scale and increased availability of new technologies or services by providing a feasible volume or business model for potential providers. Due to the shire's growing population, Council has continued to make efficiencies in collection costs when undertaking new tender processes and will retender services when appropriate to ensure economies of scale are received. In order to achieve higher recovery rates, Council will, at procurement, explore new materials and opportunities for collection and recycling to maximise recovery and reduce waste to landfill. Services will also be reviewed through business planning processes to identify continued opportunities for efficiency improvements, appropriateness, value for money, and increased recovery.

13.10.1 Landfill

With closure of many landfills in the south-east region in recent times, and finite landfill space at Suez's Hallam Road Landfill, securing landfill services will be a priority over the next 10 years and beyond. This issue has been identified in the MWRRG Implementation Plan, which outlines plans to work with councils in this region to procure landfill alternatives (potentially alternate waste treatments and/or waste to energy). As part of this strategy, Council will work with the MWRRG to procure landfill and alternatives to landfill beyond 2021, focusing on improved recovery. The current regional landfill services contract expires April 2021, so beginning the process to implement services beyond this time is an immediate priority. There will also be a focus on maximising material recovered prior to being sent to landfill through Council's other contracts and services.

13.10.2 Green and hard waste collection services

The current method of delivery of the green and hard waste service is the 'blanket collection' model, a 'one size fits all' approach whereby all residents are allocated a collection week every six months in approximately May and November, and can put waste out if they wish to during this time. The alternate model is a 'booked collection' which makes the service available to residents throughout the year, at a time convenient to them.

Reviewing the two models revealed significant community benefits to moving toward the booked service model in the future, and it is proposed to do this by for future hard waste contracts.

The key benefits for the booked service are convenience, opportunity to align the dumped rubbish service, better catering for higher density developments, and minimising contract risk. Other considerations are outlined in Table 10.

Currently, only 11 out of the 31 metropolitan councils deliver using a blanket approach, with a trend toward the booked service over time. Continuing with the blanket approach poses a risk to Council of increasing pricing or unavailability of providers, as demonstrated during recent procurement of the current service. Contractors need a spread of contracts for a good proportion of the year to ensure maximum efficiency of their fleet within the blanket model. If this does not occur, it is likely to result in increasing costs and tendered prices.

A considerable advantage of the booked collection model is the convenience for residents to dispose of waste correctly, therefore reducing incidents of illegally dumped rubbish, particularly by tenants moving house. Council will also investigate if there are benefits to deliver the dumped rubbish service as part of a booked residential green and hard waste service contract. This could mean that

vehicles operating in the shire collecting green and hard waste are able to also collect dumped rubbish on behalf of Council. This could result in a cost-effective collection of dumped rubbish, and improved service standards.

A booked service would also involve a dedicated vehicle and staff who can become familiar with the shire, its community and service expectations, and deliver better services as a result.

Table 10. Considerations for each collection system

Blanket	Booked
Efficiencies by limiting collecting periods and undertaking services during set times	Convenience to residents to book at times suitable
Many residents like the regularity of this service, promoting a regular clean-up of properties	More recovery options due to spread out of volumes over the year to increase recovery (such as sending material through a sorting service to extract extra materials prior to sending to landfill)
Limited competition in service providers, as providers need to have other blanket services with other councils throughout the year to make it viable	Opportunity to have authorised collections of resalable goods due to spread of volumes throughout year
Reliance on other councils to continue with this model for cost effective pricing	Opportunities to offer solutions when investigating dumped rubbish
Increased difficulty to accommodate these services in higher density areas	Caters to higher density developments better
Meets the needs of 88% of residents	Ability to dedicate consistent enforcement and education approaches due to even distribution of work throughout the year
Limits the period of waste in areas to 2–3 weeks per year (but in mass quantities)	Provide support to residents to reduce avoidable burning off as they can use the services for green waste
	Opportunity to offer unlimited paid services after free services have been taken up
	Significant opportunities to offer an efficient and cost effective dumped rubbish alongside the booked model
	Waste can be out in areas throughout the year (in lesser quantities).
	Potential for better service due to regular dedicated vehicles and staff who know the shire and community

Considering these factors, a move toward a booked service for future hard waste contracts is considered opportunistic. The current contract expires October 2018, with a possible 2-year extension. To make this transition, officers will consider this option by tendering both services for a cost comparison at the procurement stage. Council will also initiate discussions with other councils on joint procurement for this service.

Council will undertake a business case to employ a dedicated litter and illegal dumping officer to support a change in service for hard waste and illegal dumping services. If considered beneficial, such a resource could promote correct behaviours and improve visual amenity through education and enforcement aligned with best practice.

The action plan also outlines that future hard waste specifications for tender will be reviewed to ensure they include provision for collection and clearance of waste from emergencies and extreme weather events. This will ensure that services can be activated at short notice where required during these events.

14 Action/implementation 5-year plan (2017–21)

Regional actions

No	Action	Team	Timeframe	Cost/Details
1.	Work with the MWRRG on the delivery of the MWRRG Implementation Plan as required	Waste Team (IS)	As required	Existing staff resources within Garbage charge budget.

Reducing waste

No	Action	Team	Timeframe	Cost/Details
2.	Expand waste reduction rebate program to reward positive behaviours by increasing compost bin/worm farm rebate to \$50, and expanding to include a \$50 green waste mulcher rebate	Waste Team (IS)	July 2018	Estimated annual cost \$5,600 compost/worm farm rebate and mulcher rebate \$2,500. \$5,600 funded within garbage charge budget (diverted from waste education allowance), and \$2,500 funded within green waste charge budget.
3.	Undertake Business Case to expand Rebate program to cloth nappies	Waste Team (IS) Children and Family services (CFS)	July 2020	Existing staff resources within Garbage charge budget for initial Business Case
4.	Update waste guidelines regarding “No Garden Waste in the Garbage Bin”, and undertake promotion and compliance activities	Waste Team (IS)	June 2018	Existing staff resources within Garbage charge budget. Promotion delivered within Waste Education component of Garbage charge.
5.	Investigate strategies for maximising benefits of kerbside recycling bins	Waste Team (IS)	June 2019	Investigation to be delivered with existing staff resources within Garbage Charge. Outcome will assess and determine further costs and benefits.

Green waste

No	Action	Team	Timeframe	Cost/Details
6.	Implement a suite of options that provide alternatives to burning off	Waste Team (IS)/ Safer Communities (CS)	October 2020	To include: <ul style="list-style-type: none"> Booked green and hard waste service expected to be up to 20% more expensive. However, savings to be achieved to dumped rubbish \$78K, and savings of green waste drop off service of \$100K. Net cost to each residential property of up to \$1.01 - \$3.66 per year (depending on whether they currently take up the green bin service or not). Literature developed within existing waste education component of garbage charge budget* Drop off trial expected to cost \$50,000 per year, funded by green waste budget.
7.	Trial green waste drop off option for residents at 2 transfer stations	Waste Team (IS)	Fire Preparation period November 2017	As above, within action 6.
8.	Undertake a review and develop a system for diverting food waste from landfill	Waste Team (IS)	October 2019	Existing resources within draft garbage charge/green waste budget for 2017–18. Costs of delivering new services determined as part of review. To be undertaken in conjunction with the south east region and MWRRG.
9.	Continue to promote the benefit of composting as a preference to all other collection systems.	Waste Team (IS)	Ongoing (reporting annually)	Existing resources within Garbage charge budget, rebate as above \$5,600.

Waste related education

No	Action	Team	Timeframe	Cost/Details
10.	Participate in regional education programs where available	Waste Team (IS)	As opportunities arise (report annually)	Existing staff resources within Garbage charge budget, and Waste education component.
11.	Promote green waste services and their benefits within the community to expand knowledge	Waste Team (IS) /Safer Communities (CS)	November 2020	Existing staff resources within Garbage charge budget, and Waste education component.
12.	Continue to support the hard copy calendar, as well as online presence (while support continues from the Community)	Waste Team (IS) / Communications (CC)	Ongoing	Existing budgeted item within Garbage charge
13.	Review waste and resource recovery content on website annually to ensure continued relevance	Waste Team (IS)/ Communications (CC)	Annually	Existing staff resources
14.	Provide educational material and support to schools and ELC to improve engagement and resource recovery	Waste Team (IS)	Ongoing (report annually)	Existing resources within Garbage charge budget. Recycling Processing Contract currently provides \$10,000 worth of education program per year as prescribed by Council.
15.	Provide education and promotion on emerging or hot issues as part of Councils waste and Resource recovery education program, as identified through business planning	Waste Team (IS)	Annual Planning	Existing staff resources within Garbage charge budget, and waste education component of charge.

Litter and illegal dumping

No	Action	Team	Timeframe	Cost
16.	Continue to support community led litter initiatives such as “Clean up Australia Day”	Waste Team (IS)	Ongoing	Existing resources within Garbage charge budget
17.	Review dumped rubbish service for improved delivery	Waste Team (IS) / Operations (O)	March 2018	Review to occur under existing staff resources. There is currently a \$207,000 allowance within the 2017–18 garbage charge budget. This budget would be used to fund the trial.
18.	Explore options for gaining evidence of illegal dumping and littering and undertake trial.	Waste Team (IS) /Operations (O) and Compliance Services (DCC)	October 2019	Estimated camera cost \$5,000, funded by savings achieved within ewaste services of draft 17-18 Garbage charge, staff resources from Compliance services.
19.	Develop a business case for a dedicated litter and illegal dumping prevention officer to promote correct behaviours, as per best practice.	Waste Team (IS) /Operations (O) and Compliance Services (DCC)	October 2019	Existing resources within Garbage charge budget for Business Case
20.	Continued review of Public Place Litter and Recycling Services, to reduce litter, maximise recycling and reduce contamination	Waste Team (IS)	At least annually	Existing resources within Garbage charge budget
21.	Complete roll out of national standard signage to Public Place Litter and Recycling services to assist users to correctly use bins	Waste Team (IS)	October 2020	Existing resources within Garbage charge budget (Litter bin infrastructure maintenance component)
22.	Collaborate on regional actions on dumped rubbish – data, sharing ideas, contracts, litter and illegal dumping enforcement etc	Waste Team (IS)/ Operations (O)	As opportunities arise (report annually)	Existing resources within Garbage charge budget

Leading the way

No	Action	Team	Timeframe	Cost
23.	Undertake internal review of waste and recycling at Council run or supported facilities for effectiveness and increased resource recovery opportunities	Waste Team (IS)/ Children and Family Services (CFS) / Community Strengthening (CS) / Recreation and facilities (AC)/ Open Space (O) /Buildings and Facilities BF)	March 2019	Existing staff resources within garbage charge budget
24.	Retrofit internal bin systems at appropriate facilities along with education support	Waste Team (IS)/ Community Wellbeing (CS)/ Children and Family Services(CFS)/ Recreation and facilities(AC)/ Open Space (O)/Buildings and Facilities (BF)	As budget allows within next 5 years, minimum 3 per year.	Estimated cost \$4,600 for 3 sites, (from current Litter bin infrastructure maintenance budget within Garbage charge)
25.	Implement Best Practice waste and resource recovery services and infrastructure at new Council facilities, including demolition and construction waste.	Waste Team (IS)/Buildings and Facilities (BF)/Recreation (AC)/Engineering (IS)	As arises.	Capital works budget. Cost estimated at \$20,000 per site (\$2,000 additional to existing costs for the internal bins)

Advocacy

No	Action	Team	Timeframe	Cost/Details
26.	Build on success of new resource recovery facilities by advocating for improved resource recovery and reuse options (such as ewaste/detox your home/SV programs/new streams/reuse opportunities/education)	Waste Team (IS)	As opportunities arise (reporting annually)	Existing resources within Garbage charge budget
27.	Advocate for limited use of single use plastics at Council supported events and facilities.	Waste Team (IS) / Community Strengthening (CS)	Ongoing	Existing resources within Garbage charge budget
28.	Advocate to Commonwealth Government for availability of the product stewardship programs to reduce the cost to Council and seek opportunities at local resource recovery facilities.	Waste Team (IS)	Ongoing as opportunities arise (report annually)	Existing resources within garbage charge budget
29.	Advocate to Sustainability Victoria on the importance of Detox your home services to the community	Waste Team (IS)	Ongoing	Existing resources within Garbage charge budget

Development

No	Action	Team	Timeframe	Cost/Details
30.	Review and update of the Development guidelines to assist with the continued and increasing consideration of waste provisions within developed areas	Waste Team (IS) / Strategic and Statutory Planning (DCS)(SED)	Updated document provided by June 2019.	Existing resources within Garbage charge budget. (Potential \$1,000 legal advice – funded by Garbage charge).

Landfill rehabilitation

No	Action	Team	Timeframe	Cost/Details
31.	Comply with EPA regulations for ongoing monitoring and maintenance of former Nar Nar Goon Landfill	Waste Team (IS)	Annually	Existing Landfill monitoring component within Garbage charge budget, up to \$60,000 per year.

Contracts

No	Action	Team	Timeframe	Cost/Details
32.	Hard waste – move toward booked services for future hard waste contracts, considering dumped rubbish service synergies	Waste Team (IS)/Operations (O)	Oct 2020	The booked option provides overall benefit to Council and the community over time. Move toward this model by tendering both service models for a cost benefit comparison during next tender process. Existing component within garbage charge budget. New booked service could cost up to 20% more (refer Action 6), but with savings due to reduced cost for dumped rubbish services and improved green waste service access, overall impact is \$38,000, which results in up to \$1.01 - \$3.66 increase per property (depending on whether they are currently taking up green bin service)*
33.	Hard Waste – Initiate discussions with other Councils on joint procurement	Waste Team (IS)	Oct 2018	Existing resources within Garbage charge budget
34.	Hard waste – review future hard waste specifications for tender to ensure they include provision for collection and clearance of waste from emergencies and extreme weather events	Waste Team (IS)	Oct 2020	Existing resources within garbage charge budget
35.	For new contracts, review specifications to allow to explore new materials/opportunities for collection and recycling to maximise recovery and reduce waste to landfill	Waste Team (IS)	At procurement (report annually)	Existing resources within Garbage charge budget, prices to be assessed at tender.
36.	Landfill - work with MWRRG to procure landfill and alternatives to landfill beyond 2021, focusing on improved recovery rates.	Waste Team (IS)	April 2021	Existing resources within garbage charge budget. Prices available at tender, but likely to be more expensive due to higher technology and improved environmental outcomes. This decision will be referred to Council for agreement to participate as details and opportunities are further identified.
37.	Annually review services through business planning processes to identify continued opportunities for efficiency improvements, appropriateness, value for money, and increased recovery.	Waste Team (IS)	By June each year	Existing resources within Garbage charge budget

Review

No	Action	Team	Timeframe	Cost/Details
38.	Undertake annual review of Action Plan	Waste Team (IS)	September annually	Existing resources within Garbage charge budget
39.	Review Action Plan 2017-2021 and update Action Plan for 2022-2026	Waste Team (IS)	December 2022	Existing resources within Garbage charge budget

*Green and hard waste service cost comparison increase calculated using available rates as at 16-17 financial year.

Business Unit coding

IS - Infrastructure services

CS - Community strengthening

CFS - Community family services

SED - Strategic and economic development

CC - Customer Communications

O - Operations

DCS - Development compliance services

AC - Active communities

15 Engagement

To inform the review and development of this draft strategy Council engaged the community, internal Council business units, relevant councils, waste associated government bodies and contractors.

Wallis Market and Social Research were engaged in 2016 to gain an understanding of the community's waste attitudes, behaviours and perceived options for future. They carried out 700 random phone surveys across all Council wards. These explored topics including hard rubbish, green waste, littering, illegal dumping and Council provision of related education. The survey was conducted between 14 July and 24 August 2016. In addition, an online version was developed and promoted through Council's social media and website. 25 responses were received. The collective results and comments have been reflected throughout this draft strategy, and can be seen in Appendix 1.

Further consultation was undertaken on the draft WRRS in July 2017, via a number of short online surveys, and opportunity for direct written responses. This feedback was self-selected and when compared with the previous telephone survey, not statistically significant, but provided a good opportunity to review and consider general trends and further comments and improvement ideas. The feedback was positive overall, and resulted in amendments to the strategy content, inclusion of some new actions, and revision of draft actions.

The final WRRS was adopted by Council in late 2017.

16 References

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Victorian Litter Action Alliance website, <http://www.litter.vic.gov.au/>

17 Glossary

Term	Definition
Action plan	the list of actions to be implemented under the strategy that might also be known as an implementation plan
Council plan	means a plan setting out the medium-term strategic objectives, strategies, strategic indicators and resources reflecting vision and aspirations of the community for the next four year
Diversion rate	<p>The <i>Diversion rate</i> is the official measure used by Sustainability Victoria to track progress of local government recycling performance. Sustainability Victoria calculates two other diversion rates to allow comparison between councils with similar services as not all councils provide all services.</p> <p>Diversion rate 2 allows comparison with local governments without green organics and Diversion rate 3 allows comparisons with local governments that provide drop-off collection facilities for parts of their municipality, rather than a regular kerbside recyclables service as is the case in some rural municipalities.</p> <ul style="list-style-type: none"> • The Diversion rate is the amount of tonnes of recyclables and green organics collected (less contamination) divided by tonnes of garbage, recyclables and green organics collected. • Diversion rate 2 equals tonnes of recyclables collected (less contamination) divided by tonnes of garbage and recyclables collected • Diversion rate 3 equals tonnes of recyclables, green organics and drop-off material (recyclables and green organics) collected (less contamination), divided by tonnes of garbage, recyclables, green organics and drop-off material collected.
Region	includes the 31 municipalities in the Metropolitan Waste and Resource Recovery Region defined in the Environment Protection Act 1970
Strategic resource plan	means a plan of the financial and non-financial resources for at least the next four years required to achieve the strategic objectives in the council plan (Source p21)
Waste strategy	refers to the various names given to waste and resource recovery strategies or plans by different councils

18 Abbreviations

Abbreviation	Full name
APC	Australian Packaging Covenant
CRMS	Customer Relations Management System
DELWP	Department of Environment, Land, Water and Planning
EP Act	Environment Protection Act 1970
EPA	Environment Protection Authority Victoria
EPA PAN	Environmental Protection Authority Pollution Abatement Notice
GPS	Global Positioning System
Hh	Household
LGPRF	Local Government Performance Reporting Framework
MWRRG	Metropolitan Waste and Resource Recovery Group
Metropolitan Implementation Plan	Metropolitan Waste and Resource Recovery Implementation Plan
PPLR	Public Place Litter and Recycling
SMART	specific, measurable, achievable, realistic, time limited
SES	Sustainable Environment Strategy
Statewide Infrastructure Plan	Statewide Waste and Resource Recovery Infrastructure Plan
Strategic Plan	Metropolitan Waste and Resource Recovery Strategic Plan 2009
SV	Sustainability Victoria
VPPs	Victorian Planning Provisions
WRRG	Waste and Resource Recovery Groups
VAGO	Victorian Auditor General's Office

19 Appendices

Appendix 1: Community engagement survey results

Appendix 2: Action plan review

Appendix 3: Additional data

Appendix 4: Feedback review – draft Waste and resource recovery strategy