



Waste and Resource Recovery Plan 2015-18

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Introduction

The Waste and Resource Recovery Plan 2015-18 (Plan) is the City of Melbourne's action plan for waste management.

In 2014-15 the City of Melbourne diverted 23 per cent of its municipal waste from landfill. Our discussions with metropolitan councils suggest this is a considerably lower percentage than for others, who tend to achieve about 50 per cent. The low rate of waste diversion is a key driver for the Plan.

The objectives of the Plan are to increase resource recovery, reduce waste to landfill and improve local amenity.

The Plan addresses the residential and commercial waste streams and excludes construction and demolition waste and prescribed waste. It identifies ten initiatives over the period 2015-16 to 2017-18. Each initiative has a number of actions, all of which are subject to annual budget considerations by Council.

Background

Residential waste and recycling

In the 2014-15 financial year, 23,000 tonnes of residential waste was sent to landfill and nearly 8,000 tonnes of material was collected for recycling or composting through the City of Melbourne's waste services.

In 2009, 39,380 households were receiving a waste collection service within the municipality. This had increased to 58,000 by June 2015. While the amount of residential waste generated per household has declined by 13 per cent, overall waste generation has risen by 25 per cent over the same period (figures provided by Citywide through the Waste Services Contract reporting).

While planning controls introduced in 2010 are improving recycling infrastructure in new high rise buildings, diversion rates are still comparatively low. The diversion rate for the City of Melbourne is 23 per cent while the Victorian average diversion rate is 45 per cent (figures from Sustainability Victoria Annual Local Government Survey 2010-11).

Under the Melbourne Planning Scheme amendment C187, applications for new developments must provide a waste management plan stating how they will reduce waste sent to landfill and maximise the recycling and reuse of materials. A large number of buildings built before 2010 have inadequate recycling infrastructure. This creates a significant barrier to improving recycling rates. It is more convenient to dispose of material in a garbage chute than to take recyclables to a central recycling area which may be located in a car park or at a basement level.

The proportion of residents living in high rise accommodation is increasing and many new developments will be constructed within the urban renewal areas of City North, Arden-Macaulay and Southbank.

Commercial waste generation

Some of the key findings about the Commercial and Industrial (C&I) waste and recycling profile are:

- Food waste is a major component of the C&I general waste stream with much of this produced from the hospitality and food and beverage sectors. A combination of avoidance, rescue/reuse and recovery systems or technologies will be needed to address food waste.
- Standard common recyclables, particularly freight packaging, are still not recycled to the best extent possible.

- Small and medium businesses account for a significant portion of the C&I waste to landfill stream even though historically they have tended not to be the target for C&I waste reduction programs.

It is estimated that 96,000 tonnes of C&I waste material was generated within the municipality in the 2012-13 financial year. This excludes waste material from shopping centres, hotels and large entertainment venues. This figure has been taken from a research report conducted in 2011 when around 1500 businesses were surveyed and is consistent with figures stated in City of Melbourne's Zero Net Emissions Report. Extrapolation was used to get an overall figure. Waste generation is expected to increase by up to 65,000 tonnes by 2030.

35 waste and recycling collection companies have permits to operate in the central city area.

C&I waste management has a large impact on amenity due to odour and visual amenity from bins stored in public spaces, noise from waste collection and congestion caused by the large number of collection trucks. The expected increase in waste generation is likely to exacerbate these issues.

Greenhouse Gas (GHG) Emissions

Disposal of waste to landfill is contributing to the carbon footprint of the city. It is estimated that in 2012-13 approximately 2 per cent of the total 7.2 million tonnes of generated CO₂-e could be attributed to the waste sector.

Landfill levy

A levy is applied to waste sent to landfill in Victoria. This mechanism seeks to support reduced waste generation or the diversion of waste from landfill into recovery or recycling streams. The current landfill levy is \$60.52/tonne and has risen from \$38.50/tonne since the last waste plan was written in 2010-11. In the 2015-16 financial year, the City of Melbourne will pay approx. \$1.8M in landfill levy fees.

Urban Renewal Areas

The Urban Renewal Areas of Southbank, City North and Arden–Macaulay are likely to include a significant growth in new apartment blocks. The development of a Structure Plan for the Lorimer precinct within the Fisherman's Bend Urban Renewal Area is currently underway. The draft Structure Plan will consider integrated waste management opportunities.

E-Gate is a 20 hectare development on the edge of Melbourne's CBD. An Expression of Interest to develop this site was released in October 2014. City of Melbourne will continue to monitor the Victorian Government's plans for this site and advocate that advanced waste management infrastructure be used on the site.

City of Melbourne's waste services

The City of Melbourne manages the contract for residential waste collection through the Waste Management Services Contract. Other services provided through this contract include the transportation from the Waste and Recycling Centre in Dynon Road to landfill, litter bin and public place recycling bin collection and commercial cardboard collection in the central city. A monthly green/garden waste collection service is also offered to residents. Cleansing services including street sweeping, provision and servicing of cigarette butt bins and road cleansing are also managed under service contracts. Waste management in parks and open spaces is provided through the Open Space Contracts.

Waste and recycling materials are processed through the Metropolitan Waste and Resource Recovery Group contracts. These include dry recyclables and green waste processing and disposal to landfill.

Council's current expenditure on waste services is around \$10M per annum including garbage and recycling collection, transportation and public place bin collections. The tipping fees are a further \$3.5M including the landfill levy.

Each waste-related contract provides opportunities for improvement. For example, feedback on the draft plan included requests for more public place recycling bins and for plastic bags/soft plastics to be able to be recycled through the comingled recycling bins. On-going management and improvement of City of Melbourne's waste service contracts will continue throughout the duration of this Plan.

Other core waste management activities

The City of Melbourne's Activities Local Law includes a number of clauses that relate to waste management. These include a requirement for waste companies operating within the central city to be registered and for waste bins to be fully closed when stored in the public place or placed out for collection.

City of Melbourne's own operations generate in the order of 500 tonnes of waste per year, of which around 36 per cent is recycled (figure calculated using data provided by City of Melbourne's cleaning contractor. A density conversion factor was applied to the number of bins of a known volume to estimate tonnage). Consistent garbage and recycling bins and signage was introduced across City of Melbourne-owned buildings in 2010. Improvements in waste management from our own operations are implemented on an on-going basis.

Effective education on waste and resource recovery underpins the success of City of Melbourne's waste programs. The actions within this plan will be supported by the development of an over-arching waste education program.

Waste management challenges

City of Melbourne's waste management challenges are identified in the table below.

Pressure	Issue	Environmental impacts	Impact on Council	Barriers
Older apartment buildings	Limited waste separation infrastructure and difficult to retrofit	Lower recycling levels	Higher cost of landfill disposal	Difficult to introduce effective recycling systems
Rapid population growth in central city. High proportion of the population is from a culturally and linguistically diverse background	May not be familiar with recycling systems High turnover of students requiring ongoing education	Poor rates of recycling Contamination of recycling stream Hard waste generated	Higher cost of landfill disposal	Can be a lack of cultural familiarity and understanding Language
Growing number of food businesses outstripping retail businesses	High food waste generators Limited availability of bin storage within premises	Low rates of recycling High proportion of food waste in garbage	Amenity impacts can include traffic congestion, truck pollution, noise, odours and vermin	Space constraints Tend to use laneways for waste storage and sometimes not kept tidy
Negative amenity impacts from waste collection	Multiple collectors and truck movements Noise Traffic congestion Overflowing bins	Truck movements increase greenhouse footprint	Resident complaints Cleaning up overflowing bins and litter	Number of waste collectors

Initiatives

Ten initiatives are included in the Plan. Each initiative has a range of specific actions. The initiatives are:

1. *High-rise recycling program.* The continued installation of infrastructure, signage and accessible recycling collection services with a new focus on improving recovery of hard waste and e-waste.
2. *Compactors and recycling hubs in central city locations.* The continued provision of waste and recycling facilities in specific locations as part of a precinct approach to waste management.
3. *Degraves Street Recycling Facility.* The expansion of the reach of the facility.
4. *Advanced waste treatment.* Collaborating with the Victorian Government and other local government municipalities to find an alternative to landfill disposal.
5. *Rewards for recycling.* The continuation of programs that assist in improving recycling levels through education and the provision of incentives.
6. *Residential organics.* The establishment of trial programs to test the viability of food waste diversion in residential high rise apartments and dwellings.
7. *Commercial organics.* In addition to expanding the reach of the Degraves Street Recycling Facility, increase support for food reuse programs.
8. *Improved recovery of electronic and hard waste.* The implementation of measures to improve the recovery of these materials from the residential waste stream and divert them from landfill.
9. *Partnerships for improved waste management.* Continue to establish joint waste management projects with commercial businesses that provide local amenity improvement. Investigate the feasibility and possible operating models to support the sectionalisation of the Central City into zones.
10. *Improved cardboard recovery.* This includes building more flexibility into current contractual arrangements for the collection of cardboard from the central city.

The initiatives are discussed further below. The implementation of each initiative and associated actions is subject to the annual planning and budget cycle for each financial year.

Initiative 1: High-Rise Recycling Program

Objective: Increase recycling, reduce waste to landfill.

Introduction

According to the ABS 2011 Census, 61 per cent of households in the municipality are high-rise apartments. In 2011, nearly three quarters of high-rise dwellings were being rented (73 per cent). 320 high-rise buildings in the municipality were built before 2010. These buildings typically have only a single chute for garbage, with recycling bins centrally located in a bin room. This remains as a significant barrier to improving recycling rates in the municipality. High rise residential living also presents recycling challenges due to high turnover/transience, and language barriers.

The existing project

This program received support through the Metropolitan Local Government Waste and Resource Recovery Fund in:

- Round 1, \$175,635 for 101 buildings,
- Round 3, \$200,000 for 70 buildings (joint project with City of Yarra).

The program collaborates with building managers and high rise apartment residents to divert recyclable material from waste collections by:

- updating signage, provision of educational fliers to residents and improving infrastructure.
- arranging access to charity bin and hard waste collections.

The current program is achieving increased recycling of an estimated 35 kilograms per apartment per year in buildings that are able to have a recycling service or to increase their number of recycling bins. The program has also achieved success in decreasing contamination rates from 25 per cent to 15 per cent in buildings that have been engaged.

From 76 buildings (17,327 apartments) the City of Melbourne is diverting an estimated 180 tonnes per annum via charity collections that would otherwise potentially be disposed to landfill through City of Melbourne's garbage collections. There may be opportunities to facilitate convenient collection points for other unwanted household goods that can be collected by third parties.

A student education communications plan was developed to engage students of the municipality and educate them about how to recycle correctly via advertisements in student magazines, Facebook and information distributed by student housing providers. Building managers of student accommodation were also engaged to distribute posters and work more closely with students on waste management. This target group is harder to engage because of the transient nature of the population.

The program concentrates on buildings of more than three levels with a minimum of 20 apartments. There are a further 290 apartments of this size with in the municipality that are yet to be a part of the program as well as new apartments that are yet to be constructed.

New activities

Increasing the opportunities for e-waste, hard waste and charity bin collections are the main gains to be made in this area. In some apartment blocks, special collection points will be organised. This will help keep electronic waste, hard waste and clothing out of rubbish bins.

The continued expansion of the project to other apartment blocks of five levels or more.

Actions

1. The City of Melbourne will
 - 1.1. continue to roll out the high rise recycling program
 - 1.2. expand the program to capture more student housing accommodation
 - 1.3. trial opportunities for improved recovery of e-waste and hard waste from apartment buildings
 - 1.4. collaborate with high rise developers to plan for optimal waste management and recycling solutions (supported by the waste management guidelines).

Initiative 2: Compactors and recycling hubs in central city locations

Objective: Improve amenity, increase recycling.

Introduction

Many laneways have a large number of commercial bins stored within them, collected by a range of waste collectors. This leads to multiple truck movements, increased street congestion as well as odour problems, dumped rubbish and overflowing bins in the public space. Many small to medium businesses, especially food businesses, do not have a recycling service. The upgrading and activation of inner city laneways places further pressure on the availability of space for bin storage.

The existing project

Garbage compactor bins were installed in Kirks Lane and Bullens Lane in 2013. A third compactor bin was installed in Lacey Place in 2014 and a fourth compactor bin in Caledonian Lane in 2015. The first three compactors were installed as a 12 month trial.

Six communal recycling hubs have been installed in the vicinity of the compactor bins to provide a whole-of-precinct waste solution. These are located at Kirks Lane, Warburton Lane, Hardware Lane, Brien Lane, Bullens Lane and Caledonian Lane. An extensive education program accompanies the installation of compactor bins and hubs within a precinct.

There are 400 businesses and residents using the four compactors and associated recycling hubs. As an example, between 1 January 2014 and 30 June 2014, 142 tonnes of garbage was collected from the Kirks Lane compactor and 377 tonnes of garbage from the Bullens Lane compactor.

Establishment of the project led to the removal of 260 rubbish bins stored within the public space within the Chinatown and Hardware Lane precincts.

The installations are well used and have reduced the number of overflowing bins and bins in public spaces within their respective precincts. Users of the compactors and surrounding businesses/ residents were surveyed in September 2014 and the majority of people were very supportive of the program continuing. Although community feedback was not sought on the operation of the recycling hubs, these are linked to the compactor bin precinct service.

A survey of Lacey Place compactor users and surrounding residents and businesses has been undertaken and the results are being analysed. The City of Melbourne has received a request to relocate the Kirks Lane compactor to another location further up the laneway to allow a commercial development to be undertaken. This request is being considered.

New project initiatives

The four waste compactor bins and the six recycling hubs will be maintained. On-going engagement and education of users will be undertaken to support the success of the collection systems. Signage and collection infrastructure will also be improved.

Three further precincts have been identified as in need of a communal waste and recycling service within the next three years. These locations have been chosen based upon:

- the amount of dumped rubbish and overflowing bins observed or reported at the site,
- the number of bins stored in the public space,
- the number of waste collections occurring and
- the quantity of material being recycled.

The installation of laneway compactors has an impact on the existing waste service providers operating in these locations. It is reasonable that a Public Interest Test be undertaken at each location in order to determine whether the installation will result in an overall benefit.

The three targeted locations requiring a precinct-based waste solution are the blocks bounded by:

- Swanston Street, Collins Street, Elizabeth Street and Bourke Street. This includes laneways with major bin storage in Masons Lane, Presgrave Place and Balcombe Place.
- Swanston Street, Flinders Street, Elizabeth Street and Collins Street. This includes laneways with major bin storage in Cocker Alley and Rothsay Lane and the Degraes Street Recycling Facility.
- Swanston Street, Bourke Street, Russell Street and Lonsdale Street. Although there is a compactor at the eastern end of this block, a further compactor is needed at the western end to meet demand. Laneways with major bin storage include Globe Alley and Stevensons Lane.

Actions

2. The City of Melbourne will
 - 2.1. continue to operate the four existing waste compactor bins and six existing recycling hubs
 - 2.2. install compactor bins and accompanying recycling hubs in the three targeted locations by June 2018, subject to community engagement and a public interest test at each location
 - 2.3. augment existing recycling hubs with signage and more permanent infrastructure and provide further engagement and education for users
 - 2.4. conduct sample audits of a compactor and recycling hub to determine resource loss, waste composition and identify opportunities for improvement.

Initiative 3: Degraves Street Recycling Facility

Objective: Improve amenity, increase recycling, reduce waste to landfill.

Introduction

The Degraves Street Recycling Facility (the facility) was installed in the Ross House basement car-park to improve the waste management and quality of amenity within this busy precinct. None of the businesses in the precinct were recycling. The facility opened in March 2013 and was part funded by the Metropolitan Local Government Waste and Resource Recovery Fund.

The existing project

The project involves the operation of a food dehydrator and cardboard baler and placement of co-mingled recycling bins in Degraves Street. The facility now services 61 businesses in the Degraves Street precinct including Degraves Street, Centre Place, Flinders Lane and Manchester Lane. As well as operating the equipment, staff collect co-mingled recycling and cardboard from the specially constructed bin enclosures used by businesses to place their food waste and recycling. Garbage within the precinct is collected by six different waste companies.

The precinct approach within this busy area enables staff to educate business operators and employees about effective waste management reducing contamination and increasing recycling loads.

An audit conducted in February 2014 found that 67 per cent of all food and recyclable materials generated were being recovered through the new infrastructure provided by the facility. The audit found that approximately 50 per cent of the food waste was presented to the organics infrastructure for on-site processing at the facility.

The food dehydrator currently operates at 50 per cent capacity. The food waste from the dehydrator is converted into soil conditioner and used in City of Melbourne parks and gardens.

New project initiatives

City of Melbourne will install a waste compactor or other collection system for general waste (garbage) within the Degraves Street area. This will further reduce truck movements within the precinct and will have other amenity benefits. It will provide a total waste solution for this immediate area.

The facility's reach will be extended to take co-mingled recycling and food waste from all residents and businesses in the precinct. This will increase the amount of recycling collected, decrease truck movements and reduce the number of bins in the public space.

Both of these extensions of the facility will be subject to community engagement via a Public Interest Test.

Further investigation into potential uses for the end product will be undertaken as required in line with increasing the amount of material being processed through the dehydrator.

Facility management

The City of Melbourne has established and seeded the Degraves Street facility using agency staffing. The commitment to the operation of the facility will be confirmed by continuing to manage its operation for the 2015-16 financial year and then establishing a three year funding model commencing 1 July 2016. An auspice agency would be contracted to manage the facility over this three year period subject to the re-negotiation of a lease with Ross House.

Actions

3. The City of Melbourne will
 - 3.1. apply a Public Interest Test to determine whether the Degrares Street Recycling Facility should be extended to:
 - 3.1.1 businesses and residents in the area bound by Swanston Street, Collins Street, Elizabeth Street and Flinders Street to take co-mingled recycling and organic waste initially and potentially general waste in the future
 - 3.1.2 general waste from businesses storing bins in Degrares Place
 - 3.2. subject to the outcome of the Public Interest Test, implement the program extensions described above.
 - 3.3. negotiate the establishment of a one year lease with Ross House followed by a longer term lease related to third party contractual arrangements.
 - 3.4. establish a three year service model for the operation of the facility under a contract arrangement that will commence on 1 July 2016 subject to Ross House agreement.

Initiative 4: Advanced waste treatment

Objective: Reduce waste to landfill.

Introduction

Advanced waste treatment (AWT) is used extensively in Europe and the United States but is far less common in Australia. There are 10 advanced waste treatment plants in Australia, processing up to one million tonnes of household and business waste each year.

AWT offers strong environment benefits because it treats waste as a resource – it can be processed and converted to energy, rather than left in landfill.

Another five facilities across NSW, Queensland and Victoria currently recover energy from industry waste. There are a further 10 facilities for recovering energy from waste in the planning and development stage across Australia, which will use waste from agriculture, households or businesses. The City of Sydney has prepared an advanced waste treatment master plan that includes reference to the establishment of a waste to energy plant.

Discussion

While the repealing of the Federal carbon price has reduced an additional landfilling cost to the City of Melbourne, the cost of landfilling per tonne, made up of the Victorian landfill levy at \$60.52 per tonne plus gate fees, provides a strong incentive to reduce waste to landfill purely based on cost. Economically, the challenge is to provide a solution for around the same cost per tonne.

A further challenge is presented by the likely need for protected buffer zones within cost effective transport distances. Moreover, the north and western metropolitan area is well served by landfills. This reduces the immediate imperative for change for inner city local government areas.

Existing landfills with appropriate buffers may offer on-site opportunities for AWT facilities.

The Victorian Government released the Statewide Waste and Resource Recovery Infrastructure Plan 2015-2044 (SWRRIP) in June 2015. The first goal of the SWRRIP states that within the 30 year timeframe: "Landfills will only be for receiving and treating waste streams from which all materials that can be viably recovered have been extracted". This goal is strongly supported.

The Metropolitan Waste and Resource Recovery Group are currently preparing the Metropolitan Waste and Resource Recovery Implementation Plan, which identify the best options for waste recovery for the metropolitan area.

The development of an AWT facility within the inner metropolitan area of Melbourne would provide an alternative disposal location for non-recyclable commercial and residential waste. The planning, siting and development of a facility is likely to require the financial support of the Victorian Government as well as adjoining municipalities and the commercial sector.

Actions

4. The City of Melbourne will
 - 4.1. monitor City of Sydney's advanced waste treatment master plan development.
 - 4.2. contribute to the development of the Metropolitan Waste and Resource Recovery Implementation Plan
 - 4.3. advocate for advanced waste treatment infrastructure opportunities within the inner metropolitan area.

Initiative 5: Rewards for recycling

Objective: Increase recycling.

The existing project

A recycling rewards project known as GreenMoney was introduced within City of Melbourne in November 2013. It complements the High-Rise Recycling Program in that it initially had a particular focus on high rise buildings but has since been expanded to the whole municipality.

The project issues rewards to participating households based on the amount of materials recovered. Each household is allocated points for recycling that are linked to an internet page where they can 'cash in' these points for free or discounted products from local businesses.

As well as its environmental benefit, incentivising recycling has a direct economic benefit to the municipality due to the high cost of landfill disposal.

Discussion

A survey conducted by GreenMoney in July 2014 revealed that 56 per cent of survey respondents had increased the amount they recycle. This included 8 per cent of respondents who were recycling for the first time.

The program was extended to the whole municipality in November 2014 and there are currently 5700 households participating in the program. A target of 12,000 households has been set for 2015 (20 per cent of households in the municipality). A digital App was recently developed that is expected to add to the number of participating households. A digital communication strategy is considered more effective in reaching high rise residents. Facebook and Twitter campaigns have also been undertaken.

The program has recently been extended to include more general environmental messaging as a means of cross-connecting people with a broader interest in environmental sustainability. It also allows educational messages to be delivered.

Actions

5. The City of Melbourne will
 - 5.1. formally review the GreenMoney program prior to the end of Year 2 (November 2015), assessing its effectiveness
 - 5.2. investigate other means of incentivising residential recycling.

Initiative 6: Residential organics

Objective: Reduce waste to landfill, increase recycling.

Introduction

The Victorian Government's Statewide Waste and Resource Recovery Infrastructure Plan 2015-2044 reports that in 2011-12, 97 per cent of food waste generated in Victoria was sent to landfill and that food waste constitutes 36 per cent of municipal waste sent to landfill. Waste audits conducted as part of the high rise recycling program that show food waste makes up 47 per cent of the garbage bin. Waste audits conducted by the Metropolitan Waste and Resource Recovery Group in 2014 show that food waste makes up 50 per cent of waste to landfill from low-rise households.

Finding ways to help householders reduce their food waste offers significant opportunities to reduce waste to landfill. Helping households to reduce avoidable food waste supports them to save money.

The Victorian Government's 'Love Food Hate Waste' campaign has been designed to educate people about the value in keeping food waste out of rubbish bins. The Victorian Government is also developing a Victorian Organics Resource Recovery Strategy and a Victorian Community and Business Waste Education Strategy.

Discussion

The provision of food waste recycling is supported by residents. High rise residents are seeking a way of composting their waste and some low-rise residents have requested a third bin for organic (i.e. food waste and/or green garden clippings) waste. A three bin system is only practical for residents living in low-rise housing due to logistical issues concerning the management of high rise waste collection.

Another way to reduce food waste in the residential garbage bin is to support residents to manage food waste at home. City of Melbourne already provides subsidised compost bins and worm farms to residents. This subsidisation is not widely promoted.

The Degraeves Street Recycling Facility presents an opportunity to capture residential food waste from households within the immediate vicinity as part of an expansion of the facility.

Actions

6. The City of Melbourne will
 - 6.1. trial residential food waste processing technologies in two apartment buildings, one located in the central city and one outside the central city
 - 6.2. consider the type of compost bins and worm farms available and level of subsidy currently applied, and expand the promotion of the subsidy
 - 6.3. promote the Victorian Government's 'Love Food Hate Waste' campaign
 - 6.4. monitor and contribute to the Victorian Government's infrastructure, organics and education strategies to further the opportunities for food waste recovery from residential properties within the City of Melbourne
 - 6.5. design and implement a trial organic waste collection service utilising a third bin for grass clippings and food waste from targeted low rise residential areas
 - 6.6. estimate the costs and benefits associated with providing a third green waste bin to low rise residences in the municipality and provide data and recommendations to the Future Melbourne Committee in advance of the 2016-17 budget setting process.

Initiative 7: Commercial organics

Objective: Reduce waste to landfill

Introduction

In 2011-12 in Victoria, 898,000 tonnes of food waste were sent to landfill at a cost of over \$53 million in annual landfill levies (tonnage figure from Sustainability Victoria (2015) Statewide Waste and Resource Recovery Infrastructure Plan, p49. Cost estimate assumes average landfill levy of \$60/tonne).

Food waste accounts for a significant proportion of the waste stream for hospitality businesses (including cafes, restaurants, takeaway food services, pubs, bars, clubs and catering services). It is estimated that there is an estimated 13,000 tonnes of organic waste generated by hospitality businesses per annum within the central city. (Figure was based on results of a 2012 waste audit of 31 hospitality businesses in the Degraeves Street precinct, extrapolated to the 1,493 hospitality businesses in the central city.)

With the continued growth in the number of hospitality businesses (a 66 per cent increase since 2002), there is an increasing amount of food waste going to landfill. There is no legislative imperative or financial incentive for businesses to separate food waste from general waste.

Discussion

While there are some highly motivated businesses in the municipality that are actively separating food waste and diverting it from landfill, most hospitality businesses are only now learning to separate co-mingled recycling (eg. glass, plastic, tin cans). The Degraeves Street facility has been a success because it employed staff to educate and collected food waste directly from businesses for the first 18 months of its operation.

Chinatown, which generates substantial amounts of food waste, will also require a precinct food waste approach if food waste is to be successfully diverted from bins. In some respects, Chinatown is well placed for a food waste diversion program because a precinct waste management approach is already being deployed in much of this area. A workable program would require multi-lingual staff and high levels of intervention within individual restaurants if it were to be successful. Restaurants in Chinatown are still learning to properly source separate co-mingled recycling. No site in Chinatown has been identified for a food waste collection or processing facility. A program would therefore involve door-to-door collection and transport. The current waste and recycling services on offer in Chinatown will be consolidated and expanded as part of this plan. A food waste diversion program will be considered as part of the development of the next three year plan.

The Hardware precinct (i.e. Hardware Street, Hardware Lane and nearby food restaurants) is an alternative precinct for a food waste diversion program. A precinct waste management approach is also being taken in this area of the central city. The appeal of food waste diversion in this area is that it is close enough to the facility at Degraeves Street for it to be taken for processed there. Feedback from local traders will be important to the development of any proposal.

An unknown percentage of food waste is leftover food that could be collected and eaten (i.e. as opposed to food that is leftover from plates). Opportunities for City of Melbourne's involvement in facilitating or promoting food rescue will be investigated. As part of this investigation, a survey will be undertaken of selected restaurants to discover how much leftover food is generated each week and the willingness of restaurants to set this aside for distribution to welfare centres. This approach is supported by SecondBite (who collect unspoilt food from larger organisations), Residents 3000 and the City Precinct Business Association who wish to be project partners should the project be feasible.

Actions

7. The City of Melbourne will
 - 7.1. implement a food waste reduction and recovery program in the Hardware precinct.
 - 7.2. investigate whether there is a role for City of Melbourne in facilitating food rescue, including undertaking a survey of selected restaurants to assess the amount of discarded foodstuffs currently being sent to landfill and the willingness for restaurants to separate this out for distribution.
 - 7.3. develop clear information and advice to assist private businesses who want to divert food waste from landfill through the use of food waste processing technology and facilitate approvals for the infrastructure to be installed on or adjacent to the business site.

Initiative 8: Improved recovery of electronic and hard waste

Objective: Increase recycling, reduce waste to landfill.

Introduction

Electronic and electrical waste, known collectively as 'e-waste', in particular television and computer waste, is one of the fastest growing waste streams in Australia (Australian Bureau of Statistics, 2006).

The City of Melbourne is diverting up to 10 tonne from landfill per annum in the e-waste collection provided free for residents as part of the Spring Clean campaign. The annual event includes two main drop-off points, one at City Square and one at Dynon Road.

The amount of hard waste collected each year within the City of Melbourne has increased from 213 tonnes in 2008-09 to 985 tonnes in 2015-16. Most of this residential hard waste is going to landfill although there are plans to improve the recycling facilities at the Waste and Recycling Centre operated by Citywide Service Solutions.

Charity bins have been successfully installed in a large number of high-rise apartment blocks as one means of diverting waste from landfill.

The Metropolitan Waste and Resource Recovery Group (MWRRG) is conducting a study into practical and innovative solutions for councils to recover hard waste for reuse or recycling.

Discussion

There are two priorities for this initiative:

- reduce the amount of hard waste and e-waste being generated. Reuse of unwanted items prolongs the product life and avoids the production of a new item. The success of existing reuse systems such as websites that allow residents to give away unwanted items or charity donations is difficult to quantify. Reuse of items results in waste reduction at all stages of the product lifecycle.
- offer more recovery systems for unwanted materials. Some recovery initiatives have been implemented to divert unwanted household goods to existing collections (e.g. mobile phones, charity bins). This approach is effective in reducing our waste to landfill but does not increase our overall recovery rate (as they are collections independent of City of Melbourne). Currently, only large steel items and mattresses are being diverted from landfill from the City of Melbourne's hard waste collection. The only e-waste recycling service offered by the City of Melbourne is the annual drop-off day event.

Effective recovery systems need to be established if more waste is to be successfully diverted from landfill. This will entail entering into a partnership with an organisation that will take e-waste or hard waste for recycling. Discussions have been held with one organisation.

Actions

8. The City of Melbourne will
 - 8.1. collaborate with service providers and other organisations to improve recovery of hard waste and e-waste. This will include:
 - 8.1.1 implementing a range of new measures to increase reuse of items
 - 8.1.2 trialling an e-waste collection bin system for high rise apartment buildings
 - 8.1.3 trialling e-waste collection bins within laneway recycling hubs
 - 8.1.4 collaborating with Citywide to provide a permanent drop-off service for residential e-waste at the Dynon Road waste and recycling centre.

Initiative 9: Partnerships for improved waste management

Objective: Improve amenity, increase recycling.

Introduction

Many small to medium sized businesses in the central city do not have space to store their waste and recycling bins inside their premises. This creates a situation where bins are required to be stored in the public space (See Initiative Two for details of the problems this can cause).

The compactors and recycling hubs that are being rolled out in targeted precincts help reduce the number of bins stored on the street.

35 waste and recycling companies currently hold a permit to operate within the Central City.

Discussion

Partnership arrangements with businesses are important in areas where compactors are not able to be installed due to the small size of laneways or not financially viable due to the limited extent of the problem.

Co-management of commercial waste is being negotiated in Rothsay Lane and Crossley Street. An arrangement already exists in Russell Place. This involves having businesses or waste companies lead the management of a communal service (e.g. by providing storage space for other business' bins). Businesses understand that they benefit by working with other businesses, residents and the City of Melbourne to improve the local amenity.

On a wider scale, the City of Melbourne will, where practical, collaborate with a third party to install communal waste compactor bins in large commercial developments that surrounding businesses can utilise. This will involve a situation where the use of space given up by a developer for a public compactor is exchanged for a financial incentive. It will also involve working in partnership with these developments to improve resource recovery.

As reported earlier, there are 35 separate waste/recycling collectors operating in the central city. There may be efficiencies to be gained by utilising a different operating model that divides the central city into precincts or collection zones.

Actions

9. The City of Melbourne will
 - 9.1. continue to encourage the shared provision of bin storage and communal recycling services that are supported through partnership with businesses.
 - 9.2. investigate and report to Council by December 2015 the feasibility and possible operating models to support the sectionalisation of the Central City into zones. The objective being to achieve greater efficiency in waste and recycling collection, leading to improved amenity and safety for residents and visitors in the Central City area. Included in this report will be the mechanisms for incentivising the waste companies towards the installation of communal waste compactors and food digesters into the Council's Waste Management Services contracts.
 - 9.3. trial the establishment of a communal compactor bin located within an existing or new commercial building and provide improved resource recovery as necessary within this building.

Initiative 10: Improved cardboard recovery

Objective: Increase recycling, improve amenity

Introduction

Commercial cardboard is collected seven days per week as part of the City of Melbourne contracted waste service. There are currently over eighty 1100L cardboard bins in 38 central city laneways being serviced. Cardboard is also collected loose from laneways and footpaths in the central city. It is estimated that loose cardboard represents 30 per cent of all cardboard collected through the City of Melbourne's waste services.

Discussion

There are a number of issues associated with how cardboard is managed across the central city including:

- loose cardboard obstructing the footpath and creating a mess, particularly on windy days. Some businesses place their cardboard out too early in the day relative to the collection time, which exacerbates this problem.
- the provision of multiple 1100L bins in some laneways (instead of multiple collections each day) taking up a lot of public space.
- the contracted service is currently not able to meet demand in some laneways, even with a collection every day, as there is a limited amount of space to accommodate bins.
- there is still an un-quantified amount of cardboard going to landfill from businesses that do not use a cardboard recycling service.

In 2012-13, the tonnage of recovered cardboard from the three cages at the Degraes Street Recycling Facility was at levels of 19 to 28 per cent of all the cardboard recovery from commercial communal bins. This suggests that a more frequently collected cage or bin can help contribute to higher volumes of cardboard being recovered.

Actions

10. The City of Melbourne will
 - 10.1. work with the waste contract service provider to improve servicing of cardboard bins.
 - 10.2. identify opportunities to consolidate some of the 1100L cardboard bins in selected laneways across the central city in line with a precinct-based cardboard solution.
 - 10.3. investigate technological solutions for cardboard storage and collection such as cardboard-specific compactors in laneways.
 - 10.4. phase out loose cardboard collections where alternative technological solutions or laneway bins can be established.

Initiatives, actions and estimated costs for three years (2015-16 to 2017-18)

The tables below provide an estimate of costs for the delivery of the actions under initiative.

Initiative 1: High-Rise Recycling Program

Number	Action	Estimated cost	Comments
1.1	continue to roll out the high rise recycling program	\$450,000	\$150,000 per year including staff, educational resources and bin infrastructure
1.2	expand the program to capture more student housing accommodation		Captured in above costs
1.3	trial opportunities for improved recovery of e-waste and hard waste from apartment buildings	\$30,000	
1.4	collaborate with high rise developers to plan for optimal waste management and recycling solutions (supported by the waste management guidelines).	\$0	Internal (staff and admin) costs only

Initiative 2: Compactors and recycling hubs in central city locations

Number	Action	Estimated cost	Comments
2.1	continue to operate the four existing waste compactor bins and six existing recycling hubs	\$1,920,000	\$160,000 per year for each compactor (includes lease, monitoring, cleaning, collection and disposal of waste).
2.2	install compactor bins and accompanying recycling hubs in the three targeted locations by June 2018, subject to community engagement and a public interest test at each location	\$540,000	\$100,000 installation cost per compactor, then \$160,000 per year operational cost. Assumes two compactors installed and operational from mid-way through year two and a further compactor mid-way through year three.
2.3	augment existing recycling hubs with signage and more permanent infrastructure and provide further engagement and education for users	\$100,000	Signage, infrastructure and educational costs
2.4	conduct sample audits of a compactor and recycling hub to determine resource loss, waste composition and identify opportunities for improvement.	\$30,000	Waste audit costs

Initiative 3: Degraves Street Recycling Facility

Number	Action	Estimated cost	Comments
3.1	apply a Public Interest Test to determine whether the Degraves Street Recycling Facility should be extended to:	\$0	Internal (staff and admin) costs only
3.1.1	businesses and residents in the area bound by Swanston Street, Collins Street, Elizabeth Street and Flinders Street to take co-mingled recycling and organic waste initially and potentially general waste in the future		
3.1.2	general waste from businesses storing bins in Degraves Place		
3.2	subject to the outcome of the Public Interest Test, implement the program extensions described above.	\$1,065,000	Continuation and expansion of the facility is expected to cost \$355,000 per year if the facility operates under the current staffing model (includes agency staff, lease costs and collection costs).
3.3	negotiate the establishment of a one year lease with Ross House followed by a longer term lease related to third party contractual arrangements	\$0	Included in above costs
3.4	establish a three year service model for the operation of the facility under a contract arrangement that will commence on 1 July 2016 subject to Ross House agreement.	\$0	Assumed that the cost of operation will be equivalent or less than current staffing model.

Initiative 4: Advanced waste treatment

Number	Action	Estimated cost	Comments
4.1	monitor City of Sydney's advanced waste treatment master plan development.	\$0	Internal (staff and admin) costs only
4.2	contribute to the development of the Metropolitan Waste and Resource Recovery Implementation Plan	\$0	Internal (staff and admin) costs only
4.3	advocate for advanced waste treatment infrastructure opportunities within the inner metropolitan area.	\$0	Internal (staff and admin) costs only

Initiative 5: Rewards for recycling

Number	Action	Estimated cost	Comments
5.1	formally review the Green Money program prior to the end of Year 2 (November 2015), assessing its effectiveness	\$390,000	\$130,000 per year over 3 years if the program is continued
5.2	investigate other means of incentivising residential recycling.	\$0	Internal (staff and admin) costs only

Initiative 6: Residential organics

Number	Action	Estimated cost	Comments
6.1	trial residential food waste processing technologies in two apartment buildings, one located in the central city and one outside the central city	\$30,000	6-month trial in Year 1, with the aim of proving the technology for future uptake by developers/Owners Corporations
6.2	consider the type of compost bins and worm farms available and level of subsidy currently applied, and expand the promotion of the subsidy	\$0	Internal (staff and admin) costs only
6.3	promote the Victorian Government's 'Love Food Hate Waste' campaign	\$0	Internal (staff and admin) costs only
6.4	monitor and contribute to the Victorian Government's infrastructure, organics and education strategies to further the opportunities for food waste recovery from residential properties within the City of Melbourne	\$0	Internal (staff and admin) costs only
6.5	design and implement a trial organic waste collection service utilising a third bin for grass clippings and food waste from targeted low rise residential areas	\$50,000	Trial likely to occur in Year 3 (due to lack of availability of food/green waste processing sites).
6.6	estimate the costs and benefits associated with providing a third green waste bin to low rise residences in the municipality and provide data and recommendations to the Future Melbourne Committee in advance of the 2016-17 budget setting process.	\$0	Internal (staff and admin) costs only

Initiative 7: Commercial organics

Number	Action	Estimated cost	Comments
7.1	implement a food waste reduction and recovery program in the Hardware precinct.	\$100,000	Year 2 and 3 implementation at \$50,000 per year.
7.2	investigate whether there is a role for City of Melbourne in facilitating food rescue, including undertaking a survey of selected restaurants to assess the amount of discarded foodstuffs currently being sent to landfill and the willingness for restaurants to separate this out for distribution.	\$10,000	Year 1 budget to undertake survey (\$10,000). Future year budgets to be confirmed subject to outcome of investigation.
7.3	develop clear information and advice to assist private businesses who want to divert food waste from landfill through the use of food waste processing technology and facilitate approvals for the infrastructure to be installed on or adjacent to the business site.	\$0	Internal (staff and admin) costs only

Initiative 8: Improved recovery of electronic and hard waste

Number	Action	Estimated cost	Comments
8.1	collaborate with service providers and other organisations to improve recovery of hard waste and e-waste. This will include:	\$90,000	\$30,000 budget pa for this suite of actions
8.1.1	implementing a range of new measures to increase reuse of items		Costs included in above
8.1.2	trailing an e-waste collection bin system for high rise apartment buildings		Costs included in above
8.1.3	trailing e-waste collection bins within laneway recycling hubs		Costs included in above
8.1.4	collaborating with Citywide to provide a permanent drop-off service for residential e-waste at the Dynon Road waste and recycling centre.		Costs included in above

Initiative 9: Partnerships for improved waste management

Number	Action	Estimated cost	Comments
9.1	continue to encourage the shared provision of bin storage and communal recycling services that are supported through partnership with businesses.	\$7,500	Small budget for supporting items such as signage
9.2	investigate and report to Council by December 2015 the feasibility and possible operating models to support the sectionalisation of the Central City into zones. The objective being to achieve greater efficiency in waste and recycling collection, leading to improved amenity and safety for residents and visitors in the Central City area. Included in this report will be the mechanisms for incentivising the waste companies towards the installation of communal waste compactors and food digesters into the Council's Waste Management Services contracts.	\$15,000	Year 1 budget to support the investigation of feasibility and operating models. Future year budgets to be confirmed subject to outcome of investigation.
9.3	trial the establishment of a communal compactor bin located within an existing or new commercial building and provide improved resource recovery as necessary within this building.	\$10,000	Year 2 budget to support installation of a bin. This does not cover full costs as a partnership approach is intended to be adopted.

Initiative 10: Improved cardboard recovery

Number	Action	Estimated cost	Comments
10.1	work with the waste contract service provider to improve servicing of cardboard bins.	\$0	Internal (staff and admin) costs only
10.2	identify opportunities to consolidate some of the 1100L cardboard bins in selected laneways across the central city in line with a precinct-based cardboard solution.	\$0	Internal (staff and admin) costs only
10.3	investigate technological solutions for cardboard storage and collection such as cardboard-specific compactors in laneways.	\$200,000	Installation of one or more compactors from Year 2
10.4	phase out loose cardboard collections where alternative technological solutions or laneway bins can be established.	\$0	Internal (staff and admin) costs only