

Metropolitan Waste and Resource Recovery Strategic Plan



Published by the Victorian Government Department
of Sustainability and Environment

Melbourne, March 2009

© The State of Victoria Department of Sustainability and Environment 2009

This publication is copyright. No part may be reproduced by any process
except in accordance with the provisions of the *Copyright Act 1968*.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

Printed on 100% recycled post consumer waste, carbon neutral,
FSC certified paper.

ISBN 978-1-74208-905-8 (print)

ISBN 978-1-74208-906-5 (online)

For more information contact the DSE Customer Service Centre 136 186

Disclaimer

This publication may be of assistance to you but the State of Victoria and
its employees do not guarantee that the publication is without flaw of any
kind or is wholly appropriate for your particular purposes and therefore
disclaims all liability for any error, loss or other consequence which may
arise from you relying on any information in this publication.

Accessibility

If you would like to receive this publication in an accessible format, such as
large print or audio, please telephone 136 186, 1800 122 969 (TTY),
or email customer.service@dse.vic.gov.au

This document is also available in PDF format on the Internet at
www.sustainability.vic.gov.au or www.mwmg.vic.gov.au



Foreword

We are now in the fourth year of our 10-year plan under the *Towards Zero Waste Strategy* and it is clear that there has been progress and benefit in taking a long term view to using materials more wisely. Still more needs to be done however to achieve our goals and targets.

Recognising the challenges of delivering on the Towards Zero Waste targets for metropolitan Melbourne, the state government developed a partnership with local government to identify the changes required. This work resulted in the establishment of the Metropolitan Waste Management Group in 2006 and has now delivered the Metropolitan Waste and Resource Recovery Strategic Plan.

The Australian Government's Carbon Pollution Reduction Scheme will provide further drivers to manage our community's climate change issues – that is, better approaches to urban development, energy and water use and waste management. In this setting, it becomes increasingly important to capture and use the resources we are still throwing away, to deliver more viable and useful products.

Events in the global economy in 2008 show that prices for commodities including recyclables can change dramatically over a short period of time. This volatility is part and parcel of the globalised economy in which we operate. The plan identifies how we can more fully turn waste materials into commodities for use in metropolitan Melbourne and elsewhere. Supporting a 'closed loop' approach will allow for more sustainable behaviour despite fluctuations in demand and economic activity.

The Victorian Government remains committed to better ways of working with industry, councils and the community to minimise and avoid waste. Continuing trends of increasing population and waste generation within metropolitan Melbourne show that we need to do more.

From the review outlined in this plan, current waste management facilities are inadequate to deal with volumes required to achieve our targets. Additional infrastructure is needed to recover useful products in the form of renewable energy, soil conditioner or more commodities from recyclables which would otherwise be discarded.

The government has committed \$10 million through the Victorian Advanced Resource Recovery Initiative to explore the provision of advanced resource recovery technology for metropolitan Melbourne. This initiative responds to the needs identified in the plan for new infrastructure.

It is clear that using materials wisely and efficiently is essential to reducing greenhouse gases. This plan for metropolitan Melbourne aims to significantly reduce the environmental impact of this growing city by encouraging more sustainable outcomes.

The Victorian Government will play a leadership role and work with councils, industry and the broader community in the plan's implementation.

Gavin Jennings
Minister for Environment and Climate Change

Contents

Executive Summary	1
Introduction	5
1 Context	7
2 Towards Zero Waste Strategy	9
3 Roles and responsibilities	11
4 Data and modelling	13
5 Consultation	14
<hr/>	
Part 1 – The Metropolitan Plan	1
1 Overview	3
2 Waste minimisation, reuse, recycling	7
3 Municipal solid waste	9
4 Solid industrial waste	13
5 Litter prevention and control	20
6 Conclusion	21
<hr/>	
Part 2 – Municipal Solid Waste Infrastructure Schedule	1
1 Overview	5
2 Infrastructure needs assessment	8
3 Existing infrastructure and future recovery opportunities	12
4 Future waste infrastructure considerations	23
5 Upgrades and new infrastructure	31
6 Conclusion	38
<hr/>	
Part 3 – Metropolitan Landfill Schedule	1
1 Overview	3
2 Landfill capacity	5
3 Future landfill needs	7
4 Landfill sites	9
5 Landfill rehabilitation	11
6 Future review	12
<hr/>	
Appendices	1
Acronymns	24
Glossary	25
References	30

List of tables and figures

Introduction

Figure 1:	Geographical boundaries of metropolitan local governments	8
Figure 2:	Solid waste generated in Victoria by weight, 2006–07	8
Figure 3:	The waste management hierarchy	9
Figure 4:	The Victorian waste management and resource recovery framework	11
Table 1:	Recovery targets compared to actual recovery for Victoria	8
Table 2:	Towards Zero Waste targets for Victoria	10

Part 1 – The Metropolitan Plan

Figure 1:	Solid waste generated in Victoria, 2006–07	5
Figure 2:	Sources of secondary materials (by weight) received for reprocessing excluding imports, Victoria 2006–07	6
Figure 3:	Projected waste generation, metropolitan Melbourne, 2005–30	6
Figure 4:	Diversion rates (by tonnes) in metropolitan Melbourne, 2001–02 to 2006–07	9
Figure 5:	Yields of recyclables by collection system, Victoria, 2006–07	10
Figure 6:	Cost per tonne for residuals services in metropolitan Melbourne, 2000–01 to 2006–07	10
Figure 7:	Projected municipal solid waste generation, metropolitan Melbourne, 2005–30	11
Figure 8:	Solid industrial waste landfilled by locality, Victoria, 2006–07	13
Figure 9:	Resource recovery rate of solid industrial waste in Victoria, 2006–07	13
Figure 10:	Components of solid industrial waste recovered/landfilled, Victoria, 2006–07	14
Figure 11:	Modelled composition of the C&I waste generated by weight, Victoria, 2006–07	15
Figure 12:	Sources of waste disposed of to landfill from the C&I sector, Victoria, 2006–07	15
Figure 13:	Modelled composition of C&D waste generated by weight, Victoria, 2006–07	15
Figure 14:	C&D materials recovered from all sources in Victoria, 1997–98 to 2006–07	15
Figure 15:	Source of C&D materials received for reprocessing, Victoria, 2006–07	16
Figure 16:	Sources of C&D waste disposed of to landfill, Victoria, 2006–07	16
Figure 17:	Projected C&I generation, metropolitan Melbourne, 2005–30	16
Figure 18:	Projected C&D generation, Melbourne, 2005–30	17
Table 1:	Factors affecting the product mix from waste material inputs	4
Table 2:	<i>Towards Zero Waste</i> targets for Victoria	5
Table 3:	Examples of waste minimisation and recovery programs and grants	7
Table 4:	Summary of kerbside collections for metropolitan Melbourne, 2006–07	9
Table 5:	Metropolitan Melbourne household and population projections, 2007–30	10
Table 6:	Solid industrial waste disposed of to landfill in Victoria, 2006–07	13

Part 2 – Municipal Solid Waste Infrastructure Schedule

Figure 1:	Geographical boundaries of metropolitan local governments	5
Figure 2:	Composition of the residual stream from metropolitan kerbside collections, 2006–08	7
Figure 3:	Percentage of kerbside materials, by waste stream, collected from metropolitan Melbourne, 2006–07	9
Figure 4:	Projected municipal solid waste generation, metropolitan Melbourne, 2005–2030	10
Figure 5:	Building the implementation process	35
Figure 6:	Preferred procurement process model	36
Table 1:	Comparison of diversion rates of kerbside waste in some inner and outer metropolitan Melbourne councils, 2006–07	8
Table 2:	Kerbside materials collected and processed from metropolitan Melbourne in 2006–07	9
Table 3:	Projected municipal solid waste generation, metropolitan Melbourne, 2006–2030	10
Table 4:	Number of existing resource recovery facilities across metropolitan Melbourne, July 2008	12
Table 5:	Sites sorting commingled recyclables	15
Table 6:	Major garden and food organic facilities, processing 20,000 tonnes or more per annum	16
Table 7:	Waste disposal options modelled for inner and outer suburban Melbourne	23
Table 8:	Summary of options and projected results for inner urban Melbourne, 2014	24
Table 9:	Summary of options and projected results for outer suburban Melbourne, 2014	24
Table 10:	Infrastructure scenarios modelled for areas of metropolitan Melbourne	33
Table 11:	Infrastructure priorities for rollout	36

Part 3 – Metropolitan Landfill Schedule

Figure 1:	Historical region levy data (daily cover adjusted)	5
Figure 2:	Airspace demand – meeting TZW targets and no change to waste disposal to landfill	6
Figure 3:	South and east landfill availability	7
Figure 4:	North and west landfill availability	8
Table 1:	Airspace consumption – meeting TZW targets and no change to waste disposal to landfill ('000 cubic metres)	6
Table 2:	Airspace availability south and east ('000 cubic metres)	7
Table 3:	Airspace availability north and west ('000 cubic metres)	8

Executive Summary

Executive Summary

Metropolitan Waste and Resource Recovery Strategic Plan – Overview

Melbourne's population is growing and so is its waste. Over 10 million tonnes of unwanted materials were thrown out by Victorians in 2006-07.

The *Towards Zero Waste Strategy* sets the direction and vision for a more sustainable Victoria. It seeks to minimise the amount of waste that Victorians generate and maximise opportunities for recovering materials.

Towards Zero Waste (TZW) established goals for Victoria's solid waste management and resource recovery. Its targets, to 2014, cover all types of solid waste from all sectors.

The strategy is guided by three main objectives:

1. to generate less waste;
2. to increase the amount of materials for recycling and reprocessing;
3. to reduce damage to our environment caused by waste.

This *Metropolitan Waste and Resource Recovery Strategic Plan* has been developed to further deliver on key targets and intentions of *Towards Zero Waste* for metropolitan Melbourne. In particular, these include encouraging the recovery and reuse of different materials; Victoria becoming a flagship for progress in resource recovery technologies, services and infrastructure; and improvement of recycling and efficiency in resource use.

The Strategic Plan has been developed in three separate parts as required under the *Environment Protection Act 1970*: the Metropolitan Plan, the Municipal Solid Waste Infrastructure Schedule and the Metropolitan Landfill Schedule.

Part 1 – The Metropolitan Plan assesses the current situation and sets the strategic framework for the management of all solid waste in metropolitan Melbourne.

Part 2 – The Municipal Solid Waste Infrastructure Schedule sets out a schedule of existing and required infrastructure for municipal solid waste.

Part 3 – The Metropolitan Landfill Schedule sets a schedule identifying the location and sequence for the filling and operation of landfill sites.

There are three types of waste: municipal solid waste (MSW), from households and council operations; construction and demolition (C&D) and commercial and industrial (C&I). Collectively, C&D and C&I is known as solid industrial waste. Of total waste generated in Victoria, municipal solid waste makes up 27 per cent by weight. *Towards Zero Waste* has targets for each of the three waste streams which are aimed at minimising the amount of waste generated and maximising opportunities for reuse.

While the targets are for the state, action in metropolitan Melbourne is critical because it is the source of about 70 per cent of waste generated in Victoria and is home to three quarters of resource recovery and reprocessing activity.

The most recent information available shows that the C&D and C&I sectors have already achieved interim targets for 2008-09, however MSW is lagging and a significant change will be required if the 2014 target is to be met.

A summary of the Strategic Plan's three parts follows.

Part 1 – Metropolitan Plan

Melbourne's population is expected to increase significantly during the life of the Strategic Plan, as is its waste. Assuming a continuation of trends expected under TZW, projections suggest that compared to 2006-07, a further 30 per cent more waste will be generated in 2030, and an additional 3.2 million tonnes will need to be recovered for reprocessing.

The most recent report which tracks progress towards achieving the *Towards Zero Waste* targets indicates, as mentioned above, that there has been good progress in the recovery of commercial and industrial and construction and demolition waste, but that a greater change in practice and approach is needed for the municipal sector if the 2014 target is to be achieved.

Recovery targets compared to actual recovery for Victoria

	TZW RECOVERY TARGETS		
	ACTUAL 2006-07	2008-09	2013-14
Municipal Solid Waste (MSW)	41%	45%	65%
Commercial & Industrial (C&I) waste	68%	65%	80%
Construction & Demolition (C&D) waste	71%	65%	80%

Municipal solid waste consists primarily of material discarded by households for weekly collection from the kerbside. By weight, between 40 and 50 per cent of the contents of the average household bin for residuals (or "garbage") consist of food and garden organics. Accordingly, the Metropolitan Plan has a focus on MSW, and the organics component in particular. The Plan notes that in dealing with organics from households, there will also be an opportunity to incorporate suitable organic materials from businesses and from adjacent municipalities and regions.

Also noted is the potential to extend the recovery of materials from a variety of sources, particularly multi-unit developments.

The Strategic Plan identifies the potential to establish up to eight new resource recovery facilities for MSW in Melbourne. A range of technologies will enable increased recovery and treatment of resources to produce energy and marketable end products, such as compost.

Implementation and procurement processes for the receipt and reprocessing of waste materials will need to be flexible enough to allow the market to deliver the best outcomes for the whole metropolitan area in terms of technology, location and time. This could include varied service options in response to different demographics within municipalities. These processes are covered in Part 2.

The Strategic Plan envisages Government assisting industry by:

- working with industry, through the Victorian Advanced Resource Recovery Initiative, in the planning and development stage of establishing alternative resource recovery/waste treatment technology facilities in Melbourne including focusing on infrastructure needs, distribution and markets for end products; and
- partnering with councils to secure material quantities needed for such facilities to be viable.

It is expected that these facilities will produce commercially viable products for sale in Victoria and potentially interstate and overseas. Government is keen to ensure that best practice technologies and practices are adopted in the establishment of such facilities and will work collaboratively with councils and industry to achieve this.

With regard to commercial and industrial and construction and demolition waste, as previously identified, recovery is tracking well against interim targets in *Towards Zero Waste* and it is hoped this trend will continue.

It is clear, however, that more could be achieved and there are a number of materials and sectors where the potential to further increase recovery is evident.

In terms of material types, the priorities for recovery are food and garden organics, paper and cardboard, concrete/bricks/asphalt and timber (both treated and untreated). There is potential for the reprocessing of a number of these solid industrial waste materials – organics in particular – at facilities processing municipal waste. The differing collection arrangements and drivers that currently limit integration of municipal and industrial waste may be overcome as technology changes.

In terms of sectors to target, the priorities include small- to medium-sized enterprises and the residential sector for C&D waste (ie, from home renovations). In addition, sectors that generate large quantities of waste need particular attention.

The success in recovery and recycling in the construction and demolition sector is influenced by the relative ease in separation (both at source and through processing) and relative weight and volume of materials. The ongoing success will be strongly influenced by the relative costs of collection, transport and processing compared to the option of disposal to landfill.

Achieving change requires movement beyond focusing on diverting waste from landfill, to resource gain, realising the potential that waste streams such as organics have as commodities in their own right. Such commodities bring with them employment opportunities in emerging industries.

In all cases, ensuring the quality of product and the existence of markets for recovered materials will be a critical factor for success. However, the push to reduce carbon emissions is likely to further change the way waste is viewed as its carbon potential is placed in the context of the renewable energy and agriculture sectors, and the potential of new outlets and partnerships is pursued.

A different but equally important element in achieving waste reduction is the provision of waste minimisation, re-use and recycling programs. The Strategic Plan recognises that the continuation of such programs and a continued commitment to the inclusion of strong education components is essential to promote resource efficiency.

Part 2 – Municipal Solid Waste Infrastructure Schedule

The Metropolitan Infrastructure Schedule gives an overview and assessment of existing municipal waste infrastructure across Melbourne and what will be needed in order to recover more waste in the future.

The assessment shows that Melbourne has an adequate number of facilities – transfer stations and materials recovery facilities (MRFs) – for the segregation and compacting of recyclable materials. It is noted however that improvements will be needed for both sorts of facilities, and for MRFs in particular as sorting technology continues to develop.

With regard to organics however, the Schedule shows that to achieve the reduction of garden and food organics going to landfill, an extension of the current three bin collection system and significant development of new processing facilities is required.

Work was undertaken to consider the merits of a number of options available to recover more kerbside-collected material. Six options were selected and modelled to assess environmental, social and economic impacts.

The findings showed that all the options outperformed the base case or “business as usual”, and this was significant with regard to waste diversion from landfill and the reduction of greenhouse impacts. Costs were estimated to be in the order of an extra 50 cents a week, or \$26 per household per annum by 2013-14. Waste management costs in 2006-07 averaged \$124 per household per annum.

The findings also showed that the development of new facilities would result in significant job creation both in the construction phase and later during operation.

Taking into account the modelling and the results of consultation and public submissions, it is envisaged that a mix of systems and facilities would be established for the Melbourne metropolitan area. For inner Melbourne where space constraints affect vehicle access, bin storage and room for bin placement at the kerb, the mix would include a two bin system and processing at an advanced resource recovery or waste treatment facility. For outer Melbourne, the mix would include a three bin system and a combination of aerobic composting for separated garden organics, anaerobic digestion of separated combined food and garden organics, and processing of residuals that would include food organics at advanced resource recovery facilities.

In modelling the options, councils were clustered to ensure the provision of sufficient volumes of materials for potential recovery facilities. Experience in the development of such facilities shows that volumes and certainty and quality of supply are among the elements critical to their success.

These modelling results helped in the identification of potential technologies and catchments and present a number of proposals for new processing facilities and timeframes. The Government has committed \$10 million as part of the Victorian Advanced Resource Recovery Initiative to develop a business case exploring options for new treatment facilities.

The Schedule states that the Metropolitan Waste Management Group and councils will need to plan for the development and introduction of such facilities and that enclosed facilities will reduce the potential for adverse environmental impacts from their operation.

The Schedule also emphasises a need for the continual improvement of existing resource recovery facilities to accommodate the recovery of a broader range of materials and link with product stewardship approaches. Resale centres and “take back” programs such as Byteback are examples of successful initiatives where the approaches they use can be applied to other materials.

Education programs are important to the success of source separation by the community at kerbside and other disposal points such as transfer stations. There is a need to maintain and expand them to support resource recovery infrastructure.

The Schedule is not prescriptive; rather it is a strategic planning tool which can be used by state and local government and industry in the development of new resource recovery and waste technologies throughout Melbourne.

Part 3 – Metropolitan Landfill Schedule

The Metropolitan Landfill Schedule presents a review of landfills and covers the 10 years from 2008 to 2017.

While the focus of the Strategic Plan is on resource gain and achieving *Towards Zero Waste* targets, the *Towards Zero Waste Strategy* notes that landfills will continue to have a role for the foreseeable future but that it is desirable to have fewer landfills that are well located and managed. The overarching aim is to minimise the development and use of landfills in line with the State Government’s *Waste Management Policy (Siting, Design and Management of Landfills)*.

A review of trends over the five years to 2006, showed that:

- closure of a number of landfills in the north has reduced landfill disposal rates in the area by 25 per cent and a similar decline has occurred in the south east;
- as a result of these closures, waste tonnages to landfill have increased in the west;
- the Maddingley landfill in the Moorabool Shire, while not in the metropolitan area, has accepted significantly increased volumes of waste from Melbourne.

In looking at landfill requirements, consideration was given to there being no reduction of waste to landfill, however it was evident that this would have no bearing on requirements for the life of this Schedule.

For planning purposes the Schedule divides Melbourne into two catchments – the north west and the south east. The north west has significant landfill capacity with evidence of price competition; the south east has less than one tenth of the capacity of the north west.

The Schedule includes a table of scheduled landfill sites for metropolitan Melbourne and a timetable for the closure of over a third of these landfills by 2017. A comparison of demand to available capacity indicates that the current scheduled sites will provide sufficient space for the 10-year scheduled period, although another solid inert site may be required towards the end of this time period.



Introduction

Contents

1	Context	7
1.1	Why focus on metropolitan waste?	8
2	Towards Zero Waste Strategy	9
2.1	Strategic tools	9
2.1.1	The waste management hierarchy	9
2.1.2	Product stewardship	9
2.1.3	Engagement and education	9
2.1.4	Partnerships with industry and government	10
2.1.5	Funding and support	10
2.1.6	Regulation	10
2.2	Targets	10
3	Roles and responsibilities	11
3.1	State agencies	12
3.2	Waste management groups	12
3.3	Local government	12
3.4	Waste industry	12
4	Data and modelling	13
4.1	Waste categories	13
5	Consultation	14

1 Context

Following the adoption of the *Towards Zero Waste Strategy* (TZW) in 2005, the Victorian Government initiated a number of changes to the *Environment Protection Act 1970* to help meet the Strategy's objectives and targets (see Appendix A for those that relate to this Strategic Plan).

In 2006, the Metropolitan Waste Management Group (MWMG) was formed in recognition of the key role that metropolitan Melbourne would have in achieving the statewide targets. The MWMG is an amalgamation of the four former metropolitan regional waste management groups (RWMGs).

The changes to the Act (section 50B) also provided for the development of a long-term *Metropolitan Waste and Resource Recovery Strategic Plan* for the management of solid waste across metropolitan Melbourne.

This Strategic Plan articulates the implementation and delivery of the state government's TZW Strategy for metropolitan Melbourne and identifies future directions for waste management and resource recovery, to 2030. It will inform local government and the waste industry about the strategic direction for future waste management in metropolitan Melbourne.

The Strategic Plan has three parts.

- Part 1 – The Metropolitan Plan which sets the strategic framework for the management of all solid waste in metropolitan Melbourne.
- Part 2 – The Municipal Solid Waste Infrastructure Schedule which sets out a schedule of existing and required infrastructure for municipal solid waste.
- Part 3 – The Metropolitan Landfill Schedule which sets out a schedule that identifies the location and sequence for the filling and operation of landfill sites.

The key drivers of the Strategic Plan are:

- government policies and commitments relating to the TZW Strategy and targets
- the need to deal with the projected population increases and economic growth of Melbourne, in terms of sustainability outcomes for waste and materials recovery
- the need to manage and reduce greenhouse gas emissions and energy and water consumption in response to climate change
- government policies seeking to increase energy generation from renewable sources.

The Metropolitan Waste and Resource Recovery Strategic Plan sits within a broader sustainability context, which takes account of the need for a more efficient use of resources, and the impact of the entire lifecycle of a product or service.

This Strategic Plan was jointly prepared by the Department of Sustainability and Environment (DSE), Sustainability Victoria (SV), the Metropolitan Waste Management Group (MWMG) and the Environment Protection Authority (EPA) Victoria. In developing the Strategic Plan, these agencies undertook widespread consultation and engaged in discussions, notably with local government and industry.

A companion to the Strategic Plan is the Solid Industrial Waste Management Plan (SIWMP), which will provide a clear direction for solid industrial waste and its future management and reduction in Victoria. The SIWMP will cover the five years from the time of its release and will apply to all individuals and organisations involved in the generation, management or transport of solid industrial waste in Victoria.

The Strategic Plan and the SIWMP have a number of common elements:

- the need to assess current and projected waste trends for commercial and industrial (C&I) and construction and demolition (C&D) waste
- an analysis of current levels of resource recovery for the C&I and C&D streams
- the identification of resource recovery infrastructure needs and programs for C&I and C&D waste
- the need for the plans to be consistent with each other and broader state environment protection policies and strategies (e.g. TZW)
- public consultation.

1.1 Why focus on metropolitan waste?

Although the TZW targets apply to Victoria overall, the majority of waste generation and, therefore, opportunities for improvement occur in metropolitan Melbourne and large regional centres. Accordingly, it is expected that metropolitan Melbourne and large regional centres will exceed these targets, while rural areas are less likely to meet them. These results are expected to enable the state of Victoria to meet the targets overall.

Figure 1 outlines the geographical boundaries of metropolitan Melbourne to which this Strategic Plan applies. A list of local governments is provided in Appendix B.

Concentrations of population and industrial activity make Melbourne and large Victorian regional centres a priority for the introduction of resource recovery initiatives. Metropolitan Melbourne generates approximately 70 per cent of Victoria's total solid waste. Figure 2 shows the percentage of Victoria's solid waste contributed by the three key waste streams:

- municipal solid waste (MSW)
- commercial and industrial (C&I) waste
- construction and demolition (C&D) waste.

Figure 1: Geographical boundaries of metropolitan local governments



Figure 2: Solid waste generated in Victoria by weight, 2006–07

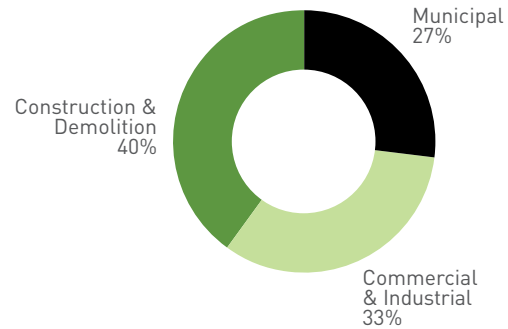


Table 1 shows future recovery targets established by TZW, and actual recovery rates, sourced from the *Towards Zero Waste Strategy: Progress Report for 2006–07*. In 2006–07, 43 per cent of MSW was recovered and diverted from landfill across metropolitan Melbourne. Given Melbourne's large waste profile, it is expected to make a significant contribution to reaching these statewide recovery targets.

Table 1: Recovery targets compared to actual recovery for Victoria

	TZW RECOVERY TARGETS		
	ACTUAL 2006-07	2008-09	2013-14
Municipal Solid Waste (MSW) <i>(METRO MELBOURNE)</i>	41% <i>[43%]</i>	45%	65%
Commercial & Industrial (C&I) waste	68%	65%	80%
Construction & Demolition (C&D) waste	71%	65%	80%

2 Towards Zero Waste Strategy

The Victorian Government's *Towards Zero Waste Strategy* seeks to minimise the amount of waste that Victorians generate and to maximise opportunities for recovering materials. It sets goals to drive Victoria to new levels of resource recovery that will take advantage of new generations of waste processing and resource recovery technology.

TZW is guided by three main objectives:

- to generate less waste
- to increase the amount of materials recycled and reprocessed
- to reduce damage to our environment caused by waste.

TZW provides Victoria's waste management and resource recovery framework. Within the framework, actions and strategies are planned for specific places and/or waste streams, notably:

- *Metropolitan Waste and Resource Recovery Strategic Plan* for all waste streams in metropolitan Melbourne
- *Solid Industrial Waste Management Plan* for all solid waste from industry in Victoria
- Regional Waste Management Plans for municipal solid waste for groupings of regional councils.

2.1 Strategic tools

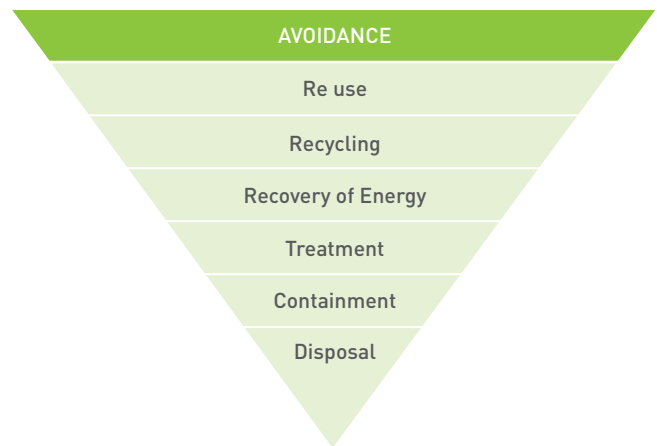
Several strategic tools influenced the development of the TZW Strategy and form a significant part of the approach to implementation. These include:

- the waste management hierarchy
- product stewardship
- data and modelling
- engagement and education
- partnerships between industry and government
- funding and support
- regulatory tools.

2.1.1 The waste management hierarchy

Underpinning the TZW Strategy is the waste management hierarchy, promulgated under the *Environment Protection Act 1970* (Figure 3). The hierarchy provides a framework to minimise resource consumption and the consequent environmental and economic costs associated with resource extraction, as well as with the processing, manufacture, transport and disposal of materials. TZW aims to modify practices, technologies and behaviours to produce results as high up the waste management hierarchy as possible.

Figure 3: The waste management hierarchy



2.1.2 Product stewardship

The core principle of product stewardship, introduced through amendments to the Victorian *Environment Protection Act 1970* in 2001, is that producers, users and government share responsibility for the environmental impacts of products throughout their life cycles – from design and manufacture, to use and end-of-life management. Product stewardship forms a key link between the community, brand owners and local government. Consumers can make informed, responsible purchasing decisions and make use of available recycling options when disposing of products, but manufacturers, brand owners and retailers are often in a far stronger position than consumers to reduce the environmental impacts of products, thereby providing consumers with better options.

A number of products have been identified as priorities for end-of-life management, based on quantities disposed of to landfill, the adequacy of current systems for recycling and for managing environmental impacts and costs of managing discarded products. Prioritised products include electrical and electronic appliances, computers, paint and batteries, and these are now being addressed by a number of different programs. Work undertaken on end-of-life product stewardship supports the Strategic Plan.

2.1.3 Engagement and education

Engagement and education are essential for achieving lasting behavioural change. Waste minimisation programs that have strong education components will achieve the best results. For instance, engagement that results in participants supporting, and correctly using, recyclables collection services, can significantly affect the quantity and quality of materials supplied to resource recovery facilities. This in turn affects the success of the facility and its products and the viability of the service in the long term.

2.1.4 Partnerships with industry and government

Achieving greater resource recovery of waste across municipal and industrial sectors requires the support of leading industry associations and key government agencies. Several successful partnerships have been established to date and new partnerships are envisaged with the development of the 'carbon economy'.

2.1.5 Funding and support

Substantial assistance has been provided to local government and industry through the landfill levy and, whilst outside the scope of this plan, the importance of having incentives to drive further resource recovery remains a critical factor. Through the \$10 million Victorian Advanced Resource Recovery Initiative (VARRI), the state government will explore the use of new recovery technology to process Melbourne's waste into clean energy and products, such as compost.

2.1.6 Regulation

Environment protection and management in Victoria is based on the *Environment Protection Act 1970*. The Act includes statutory powers and measures to manage environmental quality; establish environmental standards; regulate emissions; discharges and wastes; and prevent and clean up pollution. The Act establishes EPA Victoria and waste management groups, and defines the powers and responsibilities of each statutory body.

2.2 Targets

To achieve TZW's objectives, the following targets have been set for waste management and resource recovery across Victoria:

- a 1.5 million tonne reduction in the projected quantity of solid waste generated by 2014
- sectoral targets set out in Table 2, achieved by 2008–09 and 2014
- 75 per cent by weight of solid waste recovered for re-use, recycling and/or energy generation by 2014
- a 25 per cent improvement, from 2003 levels, in littering behaviour by 2014.

Table 2: Towards Zero Waste targets for Victoria

SECTOR	TARGET
Municipal solid waste (MSW)	A 65% recovery rate (by weight) of municipal solid waste for reuse, recycling and/or energy generation by 2014. An interim target of 45% was established for 2008–09.
Commercial and industrial (C&I) waste	An 80% recovery rate (by weight) of C&I waste for re-use, recycling and/or energy generation by 2014. An interim target of 65% was established for 2008–09.
Construction and demolition (C&D) waste	An 80% recovery rate (by weight) of C&D waste for re-use, recycling and/or energy generation by 2014. An interim target of 65% was established for 2008–09.

The targets apply to Victoria as a whole, but are flexible in terms of demographics and other factors. The concentration of population and industrial activity mean Melbourne and large regional centres are expected to achieve resource recovery levels in excess of these targets.

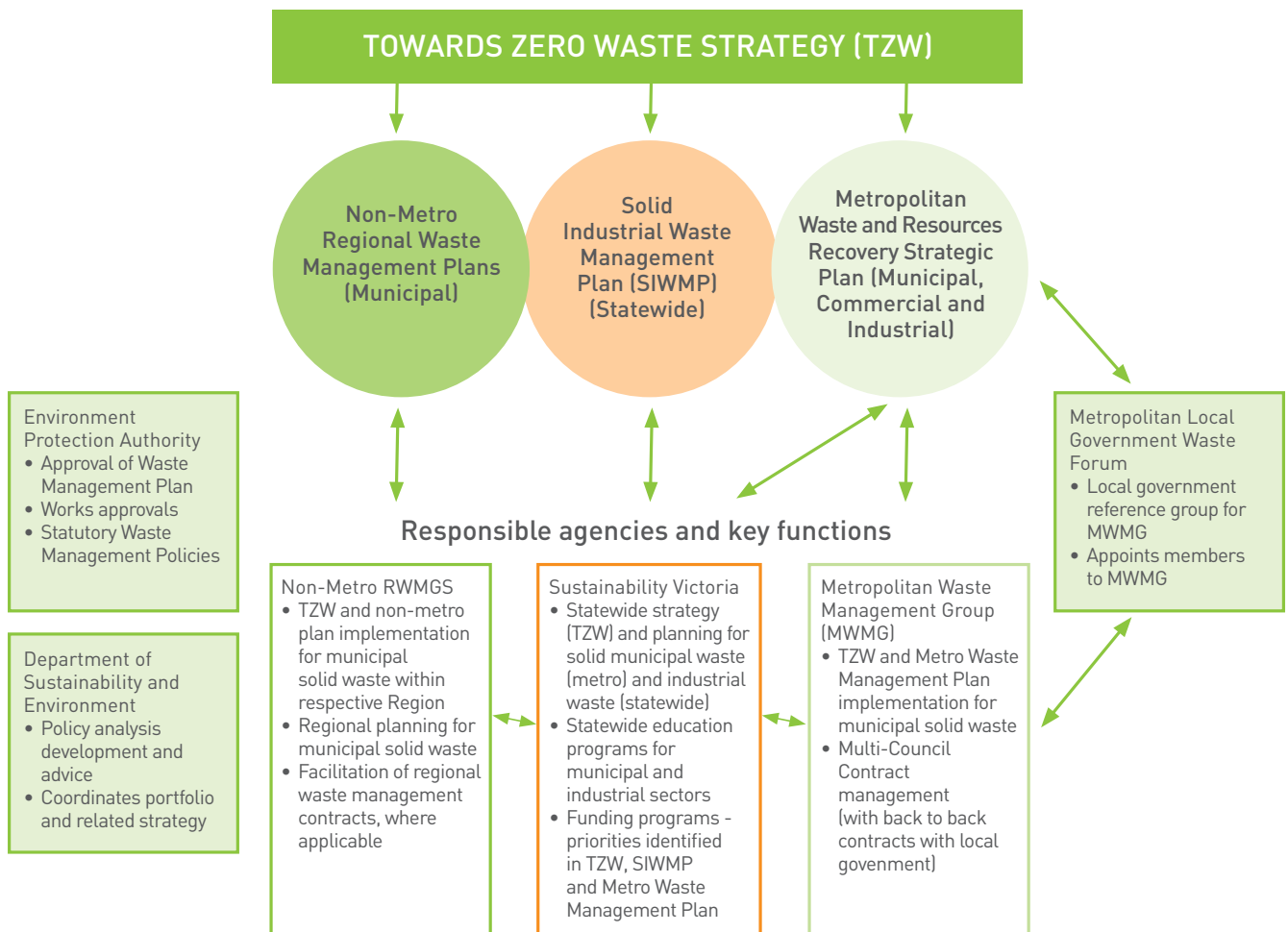
Metropolitan Melbourne contributes approximately 70 per cent of Victoria's total solid waste, ie, MSW, C&I waste and C&D waste.

The *TZW Strategy: Progress Report for 2006–07* indicates that there has been good progress in materials recovery from the C&I and C&D sectors. However, more significant change is required to achieve the 65 per cent recovery target set for MSW, in metropolitan Melbourne in particular.

3 Roles and responsibilities

Successful waste management and resource recovery requires coordinated planning and action at local, regional and state levels. Various state and local agencies have responsibilities for particular components of the Victorian waste management and resource recovery framework, as illustrated in Figure 4. Specific roles and responsibilities were established for the development of the *Metropolitan Waste and Resource Recovery Strategic Plan*.

Figure 4: The Victorian waste management and resource recovery framework



3.1 State agencies

Several Victorian Government agencies are responsible for waste management and resource recovery in the state.

- The Department of Sustainability and Environment (DSE) is primarily responsible for policy analysis, development and advice, and coordinates portfolio and government environmental sustainability strategies. The then Minister for the Environment, the Hon. John Thwaites, appointed the department responsible for preparation of the Metropolitan Waste and Resource Recovery Strategic Plan. DSE was also responsible for approving Part 2 of the Strategic Plan – The Municipal Solid Waste Infrastructure Schedule.
- EPA Victoria administers the *Environment Protection Act 1970* and its instruments, including regulation of waste management and resource recovery facilities and services. The EPA was responsible for approving Part 3 of the Strategic Plan – The Metropolitan Landfill Schedule.
- Sustainability Victoria is responsible for a range of environmental sustainability measures, including the planning and management of solid waste throughout Victoria. Sustainability Victoria leads implementation of the statewide TZW Strategy. This includes developing and delivering many of the strategy's programs, assisting partners and measuring and reporting on progress through annual business plans. Sustainability Victoria was responsible for developing Part 1 of the Strategic Plan – The Metropolitan Plan.
- The Department of Planning and Community Development (DPCD) is responsible for planning. The intent and relevant components of TZW and this Strategic Plan need to be reflected appropriately in Victoria's planning system. DPCD supported the development of the Strategic Plan, and is undertaking an investigation of linkages between TZW, this Strategic Plan and the State Planning Policy Framework.

3.2 Waste management groups

There are 13 waste management groups in Victoria – the MWMG and 12 regional waste management groups (RWMGs). The groups were established under the *Environment Protection Act 1970* to provide for the coordination and facilitation of waste management and resource recovery planning and services, at the regional level. Waste management groups are a partnership between Victoria's 79 municipal councils and the Victorian Government to achieve common goals.

- The MWMG has a critical role in implementing TZW for municipal solid waste in metropolitan Melbourne. MWMG combines the buying power of 30 metropolitan councils to facilitate the establishment of advanced waste technologies. The Local Government Waste Forum is crucial to the MWMG's operation. MWMG was responsible for development of Part 2 – The Municipal Solid Waste Infrastructure Schedule and Part 3 – The Metropolitan Landfill Schedule of the Strategic Plan.
- RWMGs provide regional planning for the management of municipal solid waste for their member councils. Groups which share a common boundary with the MWMG have been consulted in the development of the Strategic Plan, to address cross-regional issues and opportunities.

3.3 Local government

Councils are key agents in improving the sustainability of municipal solid waste. They have a key role in providing waste services to their residents and ratepayers, who in some cases include businesses. Council kerbside collections are a cornerstone of systems for diverting resources from landfill and ensuring these materials are recovered.

A number of forward-thinking councils have trialled and developed innovative approaches to the avoidance, minimisation and recovery of waste material, both within their own operations and in partnership with residents and businesses. Council commitments to divert material from landfill, and take a leading role in the reduction of greenhouse gases with their communities, provides a basis for innovative management of municipal solid waste.

3.4 Waste industry

The waste management industry provides waste collection, recovery and disposal services, and owns and manages facilities and landfills – although some are still in council ownership. It is anticipated that industry will continue to provide services and infrastructure into the future.

The industry has made a significant contribution to the growth of materials recovery in particular, and in the achievement of TZW targets.

4 Data and modelling

Annual waste data for Victoria comes from three sources: the tonnages of municipal and industrial waste sent to licensed landfills (provided to the EPA), a survey of reprocessors to get data about material composted and recycled, and a survey of council data on kerbside collection services (both conducted by Sustainability Victoria).

Six options to increase materials recovery from kerbside collection were modelled against social, environmental and economic parameters. Cost parameters used were based on best practice landfills. The modelling was used for comparative purposes only and was not intended to be prescriptive – due to its predictive nature, modelling can only be indicative.

4.1 Waste categories

Waste is classified as municipal solid waste and solid industrial waste, and the latter is further broken into commercial and industrial, and construction and demolition. These terms are used to describe both the source and the type of waste.

5 Consultation

The Act required that stakeholders were consulted in relation to the draft Metropolitan Plan, the draft Municipal Solid Waste Infrastructure Schedule and the draft Metropolitan Landfill Schedule. This Strategic Plan reflects the feedback and recommendations that emerged through these consultations. The requirements of the Act are set out in Appendix A, and the details of consultation is outlined below:

- consultation with metropolitan councils through the bi-monthly Local Government Waste Forum meetings
- industry briefings held in April and May 2007 on the preparation of the Strategic Plan
- issues workshops held in July 2007 for the Strategic Plan
- consultation with adjacent regional waste management groups
- consultation with existing waste and resource-recovery operators
- industry and local government workshop on the Strategic Plan and future resource recovery options held in November 2007
- waste infrastructure siting and needs workshop held in early 2008 (inner urban councils)
- public consultation period of 48 days, which included four public briefings
- a Local Government Waste Forum workshop on key issues.

Some consultation was undertaken specifically in relation to the draft Metropolitan Landfill Schedule:

- an advertisement in the Age on 21 July 2007 seeking expressions of interest for the preparation of the Landfill Schedule
- an industry briefing on Landfill Schedule held on 27 July 2007
- provision of information to Landfill Victoria
- communications to extractive industries
- site inspections, where required, to evaluate airspace availability at existing sites
- consultation with consultants and site owners, where requested, during development of the schedule.