



 Local Government
Data Collection
2004 – 2005



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Executive Summary

Total Waste

- > Garbage, recyclables and green organics kerbside services collected 1.76 million tonnes in Victoria in the 2004-2005 financial year, an increase of over 87,000 tonnes or 5.2% more than in the 2003-04 financial year. The increase was due to increases in the collection of recyclables (extra tonnes) and green organics (extra tonnes) and a reduction in garbage to landfill.
- > Kerbside collection expenditure by local government on three services was nearly \$208 million, an increase of \$11 million from the previous year (or less than 6%). The increase in expenditure can be partly attributed to many local governments adopting the new bin based recycling systems and some expansion of services, particularly green organics. *See table 1.*
- > The state wide average recyclables and green organics diversion rate by tonnes has increased from 33.5% in 2003-04 to 36.7% an increase of 3.2 Per centage points. The state average diversion rate of 36.7% is well on track to achieving the Victorian Government's *Towards Zero Waste Strategy* targets of 45% by July 2008 and 65% diversion rate for municipal waste by July 2013. *See figure 1.*

Table 1 – Kerbside Services Summary, Victoria 2004-05

	Garbage	Recyclables	Green Organics	Total
Annual service cost	\$114,653,580	\$66,666,468	\$26,449,202	\$207,769,250
Tonnes collected	1,021,223	491,884	251,188	1,764,294
Total households serviced ¹	2,043,913	1,987,555	1,593,396	–
Cost per tonne	\$112.27	\$135.53	\$103.95	\$117.76
Cost per household	\$56.10	\$33.54	\$17.11	–
Household yeild (kg)	499.6	247.5	161.7	–

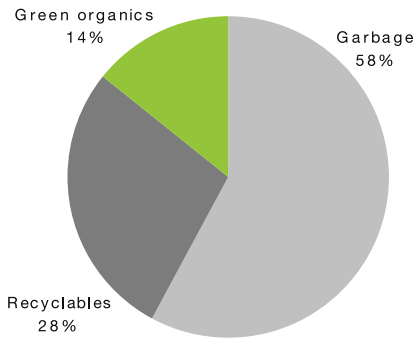
1. Total households serviced may also include commercial and industrial properties.

Figure 1. Diversion rate by tonnes. Victoria 2000-01 to 2004-05



- > Garbage accounted for 58% of the waste stream, a decrease of 4.5% or nearly 48,000 tonnes from the 2003-04 financial year. See figure 2.

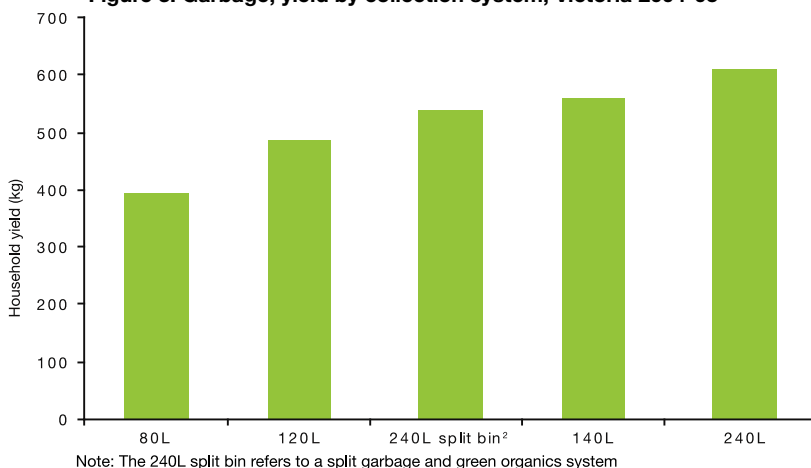
Figure 2. Composition of waste processed through kerbside services, Victoria 2004-05



Garbage

- > A little over 1 million tonnes of garbage was collected through kerbside services in 2004-05.
- > Over the last five years, Victorian households have steadily reduced their garbage generation and for the first time since the baseline was established, households have generated slightly less than 500 kg, i.e. 499.6 kg per household per year (539.6 kg 2003-04), or nearly 206 kg per person annually.
- > The total tonnes collected has decreased by nearly 48,000 tonnes or 4.5% over the past year.
- > Service costs averaged \$56.10 per household per year (\$56.47 2003-04).
- > Local governments using smaller garbage bins generated less waste and had greater diversion rates for recycling than those using larger garbage bins. See figure 3.

Figure 3. Garbage, yield by collection system, Victoria 2004-05

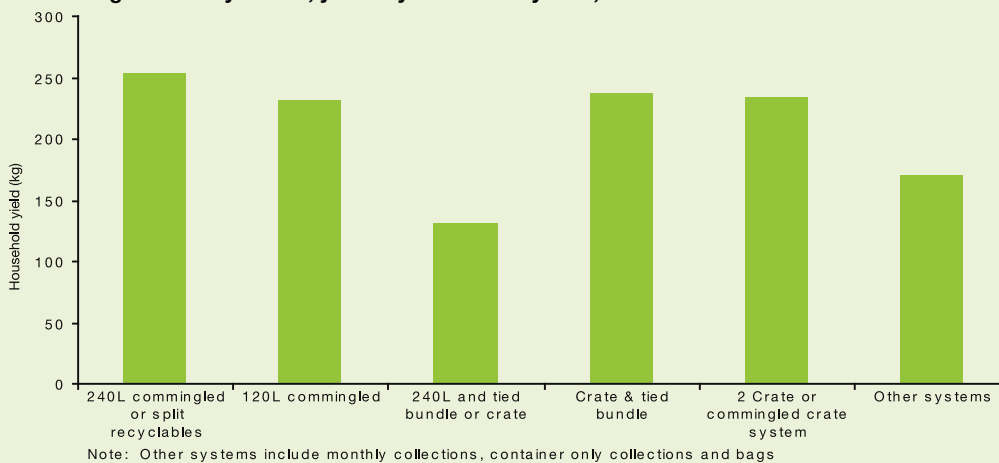


Executive Summary (cont.)

Recyclables

- > 491,884 tonnes of recyclables were collected from kerbside services, up 60,435 tonnes to nearly double the increase from the previous year, presenting a 14% increase in total tonnages collected from last year. The increase in tonnes collected can be attributed to the increase in the number of local governments that have adopted the new bin based recycling systems.
- > Collections averaged 247.5 kg per household per year (222.5 kg 2003–04), an increase of 25 kg or 11.2%, this equates to 99.1 kg of recyclables generated by every person in Victoria.
- > The majority of local governments (79%) now use a 240L or 120L commingled or split bin for recyclables
- > 240L commingled or split recyclables mobile bins delivered the greatest yield per household and a higher diversion rate compared to the other combinations of bin system. *See figure 4.*
- > Service costs averaged \$33.54 per household per year, up from \$31.97 (or 4.9%) in 2003–04
- > The average contamination rate for recyclables was 10.2 % an increase of 2.6% over the last survey period. The reason for increased contamination is mainly due to the increased use of 240L commingled bins that have greater contamination rates than crate based systems.
- > By weight of recyclable material collected from kerbside collections (excluding green organics), paper/cardboard accounted for 63.3%, miscellaneous containers (glass/steel and aluminium cans) 24.0% and plastic containers 2.5%. Contaminants made up the remainder at 10.2%.

Figure 4. Recyclables, yields by collection system, Victoria 2004–05



Green Organics

- > 41 out of 79 local governments provided a green organics collection service, of which 33 had a regular collection (i.e. weekly, fortnightly or monthly) as their predominant service.
- > 251,188 tonnes of green organics were collected from kerbside services, an increase of nearly 75,000 tonnes or 42% from 2003–04 and is largely attributed to the increase in service provision.
- > On average, 161.7 kg of green organics was collected per household (51kg per person) per year (up from 114.7 kg in 2003–04), costing \$17.11 per household.
- > Fortnightly services were the most common service, yielding 277.7 kg per household.

Environmental Benefits from Kerbside Services

The environmental savings for kerbside recycling of **containers, paper and cardboard** for the year are equivalent to:

- > Filling 4,274 Olympic sized swimming pools (10,685 megalitres of water).
- > Taking 42,217 cars off the road (253,304 tonnes of greenhouse gases).

The environmental savings for kerbside recycling of **green organics** for the year are equivalent to:

- > Filling 58 Olympic sized swimming pools (144 megalitres of water).
- > Taking 7,900 cars off the road (47,398 tonnes of greenhouse gases).

Litter and Street Sweeping Services

The total cost of litter and street sweeping maintenance cost local governments \$58 million for 2004-05, costing every person in Victoria \$11.77. Of this:

- > Maintenance of litter bins, traps and litter clean up (such as dumped rubbish) cost more than \$21 million, an increase of \$3 million from last year. Some of the increase in cost can be attributed to the increase in the number of litter bins (30%) established especially in non-metro local governments (60% increase).
- > Street sweeping services cost a total of \$37 million a year of which metropolitan local governments accounted for 78% of the total cost.
- > Road side litter alone cost local government nearly \$2.7 million, to collect 8,958 tonnes of litter.
- > 2,130 penalty infringement notices for litter were issued in 2004-05, an increase of 60% from the 1,329 issued in 2003-04.

Hard Waste

- > 41 out of 79 local governments provided a hard waste collection service.
- > Over 81,000 tonnes were collected and 67,000 tonnes were disposed to landfill, representing a 17.9% diversion rate.
- > On average, 54.5 kg of hard waste was collected per household per year for 2004-05, costing on average \$5.22 per household.

Commercial and Industrial Kerbside Services

- > Only 2 local governments provided a separate commercial and industrial kerbside recyclables service to 7,939 properties.
- > A further 132,749 commercial and industrial properties were serviced through the regular household garbage and recyclables kerbside service.

Landfill and Transfer Station Operations

- > The number of local government owned and/or operated landfills (licensed and unlicensed) have decreased (27%) while in contrast the number of resource recovery and waste transfer stations has increased by a little over 19% over the last survey period of 2003-04.

Executive Summary (cont.)

- > 110 landfills operated during 2004-05 of which 47 were licensed.
- > 247 transfer stations operated during the same period an increase of 8 over the last year. Since 2002-03, 40 new transfer stations have been established, predominately all in rural Victoria.
- > Approximately \$46 million was spent annually on operating landfills and transfer stations.
- > Nearly 271,000 tonnes of resources were recovered at landfills and transfer stations.
- > Green organics accounted for around 38% of all material recovered at landfills and transfer stations. *See table 2.*

Table 2 – Main items recovered by source of recovery, Victoria 2004-05

	Source of item			
	Kerbside	Landfill	Station	Total
Main items recovered	Tonnes			
Plastic	12,297	643	476	13,416
Paper	311,363	1,971	6,861	320,195
Green organics	251,188	29,545	66,585	347,318
Miscellaneous containers ¹	11,052	900	1,347	120,299
Scrap steel	–	11,774	26,281	38,055
Concrete	–	26,985	32,121	59,106
Motor oil	–	11,516	37,274	48,790
Total	692,900	83,334	170,945	801,228

1. Miscellaneous containers include, glass, steel and aluminium containers.



Introduction

In September 2005 Sustainability Victoria commenced its survey on the waste management and recycling services provided by Victorian local governments during the 2004–2005 financial year.

This is the fifth in the series of annual surveys undertaken for Victoria and builds on previous surveys to enable the evaluation of performance of local government waste management services.

The data plays a vital role in the formulation of future directions for waste management services throughout the state, as well as providing a measure of Victoria's progress towards the delivery of efficient and sustainable kerbside services to the Victorian community.

Sustainability Victoria gratefully acknowledges the cooperation of Victorian local governments, Regional Waste Management Groups and the Municipal Association of Victoria in achieving a 100% response rate to the survey (79 local governments).

The data collection for 2004–05 extended to the following service areas:

- > Household garbage collection and disposal
- > Household recyclables collection and sorting
- > Household green organics collection and processing
- > Litter bin and litter trap collection and disposal
- > Litter clean up services
- > Street sweeping
- > Hard waste collection
- > Commercial and industrial recyclables service
- > Landfill and transfer station operations

The data collected has been organised in this report under a number of broad section headings:

Household Waste Generation

This section focuses on the total generation of waste by Victorian households that is collected through kerbside services.

Local Government Household Kerbside Services

Kerbside services provided through local government for the collection of household garbage, recyclables and green organics is covered more specifically in this section.

As well as providing an overview of the services, the section draws on the data collected and analyses the efficiency of these services in relation to costs, yields and access as well as to container type and service frequency.

Environmental Benefits from Kerbside Recycling

Applying the findings of *The Independent Assessment of Kerbside Recycling in Australia*¹ and the *Life Cycle Assessment for Paper and Packaging Waste Management Scenarios in Victoria*² to the data, this section looks at the environmental benefits gained from kerbside recycling and green organics in Victoria during 2003–04.

1. National Packaging Covenant Council *The Independent Assessment of Kerbside Recycling in Australia*, January 2001
 2. Grant T, James KL, Lundie S, Sonneveld K (2001) *Stage 2 Report for Life Cycle Assessment for Paper and Packaging Waste Management Scenarios in Victoria*, Centre for Design at RMIT, Melbourne.

Introduction (cont.)

Litter Services

The cost of litter services is covered in this section. Litter services include collecting waste from litter bins and litter traps, as well as litter clean up services, such as illegally dumped rubbish and street sweeping.

Hard Waste Collections

This sections deals with the hard waste kerbside collection service provided by local governments.

Commercial and Industrial Recyclables Service

The focus of this section is the range of kerbside collections provided by local governments to commerce and industry.

Landfills and Transfer Stations

This section deals with the number and operating details of local government owned and/or operated landfills (including licensed and unlicensed) and resource recovery and waste transfer stations. Also included are the type and quantities of items recovered for recycling.

Sustainability Victoria has sought to verify information provided in data collection returns through rigorous follow-up with individual local governments. However, Sustainability Victoria is not in a position to validate underlying data in the report. Findings in this report are therefore subject to the accuracy of data provided by individual local governments.

As more data becomes available through future annual data collections, comparisons of individual local governments and Regional Waste Management Groups' performances over time as well as with other areas of the state will be possible. This will provide an important tool to assist the Victorian Government and Regional Waste Management Groups to assess the impact of waste minimisation and recycling initiatives across the state.

Together the data will play a vital role in the formulation of future directions for waste management services throughout the state as well as Victoria's progress towards the delivery of efficient and sustainable waste management services.



Household waste generation

The focus of this section is on the generation of waste by Victorian households.

Household waste generation is closely linked to Victorian household consumption patterns. It is a clear measure of the state's progress towards the sustainable use of resources.

It is important to note that the *Local Government Data Collection* focuses on measuring wastes collected through kerbside services when analysing household waste generation. It does not include quantities at drop-off facilities or wastes removed by private contractors outside the local government kerbside system.

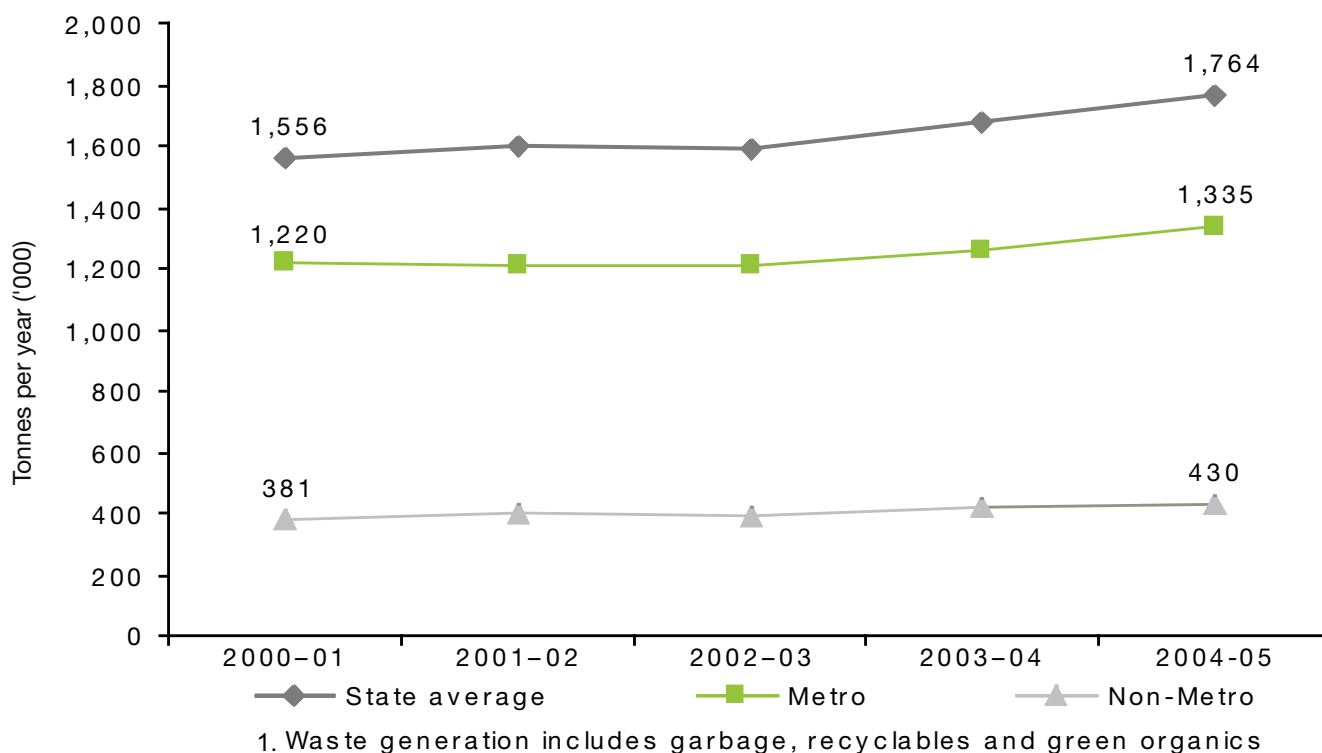
The data collected revealed that Victorians generated 1.76 million tonnes of solid waste through garbage, recyclables and green organics kerbside collection services in 2004–05.

Key findings include:

Total Waste Generated

Victorians generated 1,764,294 tonnes of solid waste through garbage, recyclables and green organics kerbside collection services in 2004–05. This represents an increase of 5.2% from the 1,677,027 tonnes generated in 2003–04 and a 13.4% increase since 2000–01. See figure 5.

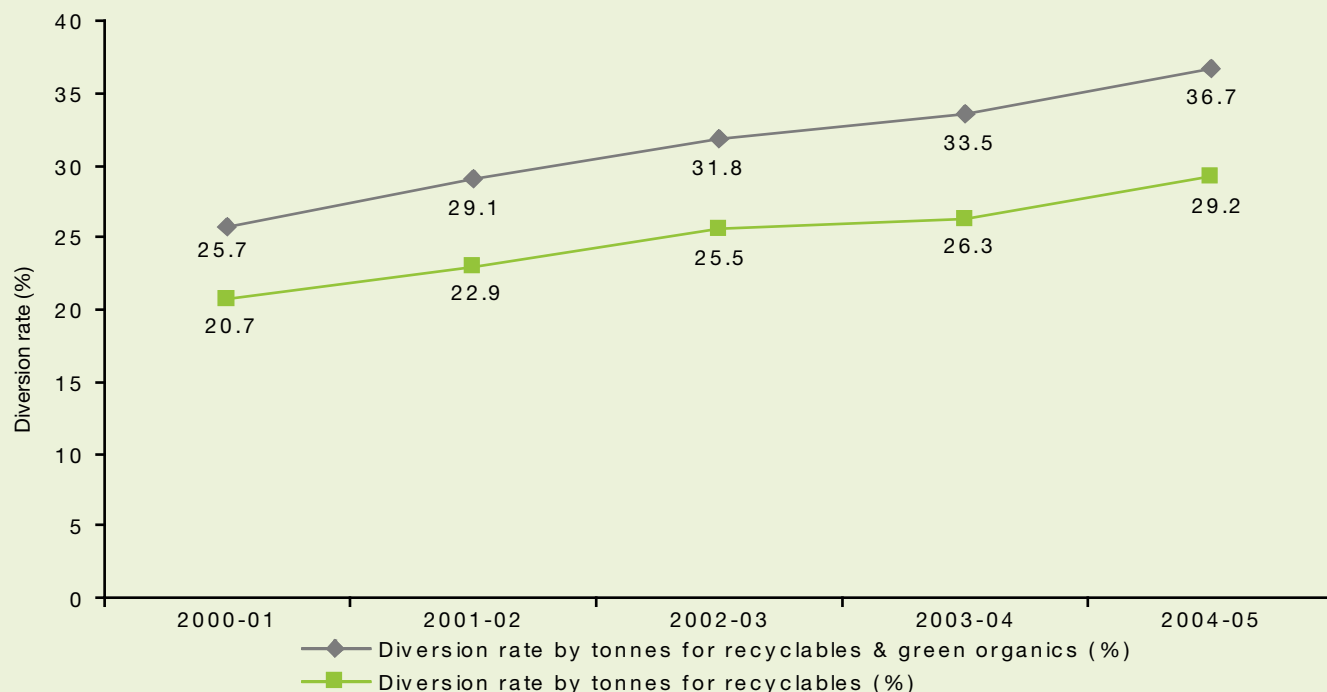
Figure 5. Waste generation¹, Victoria 2000-01 to 2004-05



Household waste generation (cont.)

The diversion rate by tonnes collected over time can be seen in figure 6.

Figure 6. Diversion rate by tonnes, Victoria 2000-01 to 2004-05



Diversion rate is calculated by tonnes of recyclables and green organics *recycled* divided by tonnes of recyclables, green organics and garbage *collected*. A second method of calculating diversion rate is by tonnes of recyclables *recycled* divided by tonnes of recyclables and garbage *collected*. This second method was initially employed because many local governments did not have a green organics kerbside service provided and the comparison between local governments and diversion rate was generally skewed for those that did have a green organics service (generally metro regions). As more local governments now have a green organics kerbside service, the comparisons are more equitable.

Diversion rates of both scenarios have steadily increased over the last five years. Diversion including green organics has risen from 25.7% in 2000-01 to 36.7% in 2004-05, while diversion including only recyclables and garbage has risen from 20.7% to 29.2% over the same period.

The state average diversion rate of 36.7% is well on track to achieving the Victorian Government's *Towards Zero Waste Strategy* targets of 45% by July 2008 and 65% diversion rate for municipal waste by July 2013.

Composition

Of the total amount of waste generated, garbage accounted for 58% down from 63% in 2003–04. *See figure 7.*

Garbage still represents the greatest proportion of the waste stream from households, but the total amount of garbage has steadily decreased in proportion to recyclables and green organics over the last five years. Garbage decreased by 5% from the previous year while green organics and recyclables in contrast increased by 3% and 2% from last year. *See figure 8.*

Over the 5 years of the survey, recyclables have increased by nearly 46%, green organics by 153% and garbage has decreased by nearly 9% since the benchmark of 2000-01.

Figure 7. Composition of waste processed through kerbside services, Victoria 2004-05

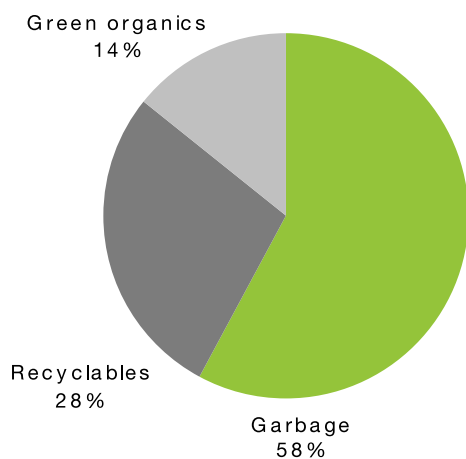
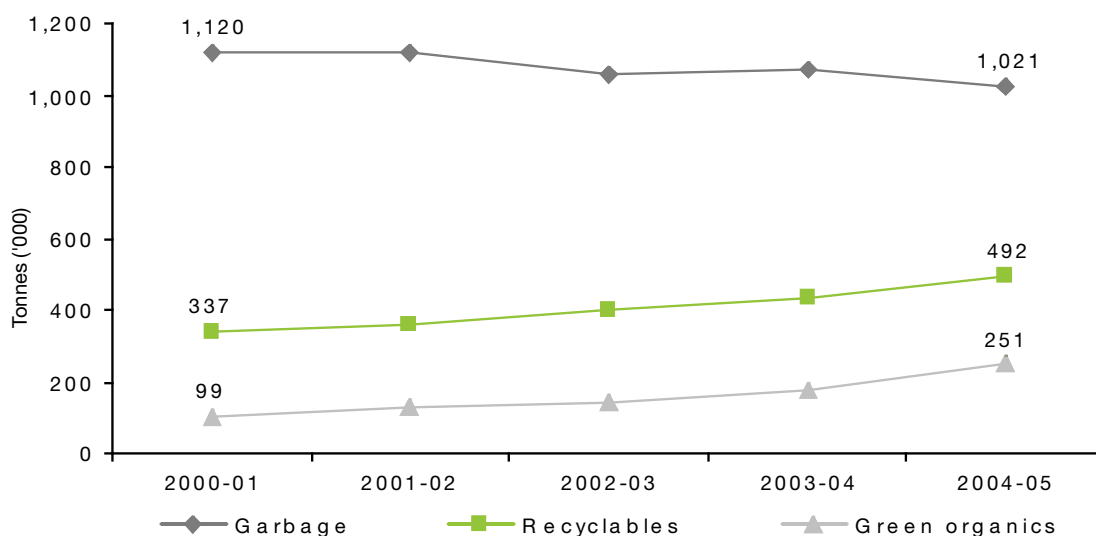


Figure 8. Tonnes collected for the three main kerbside services Victoria 2000-01 to 2004-05



Household waste generation (cont.)

Waste generated per geographic sector: quantity

In terms of quantity, metropolitan local governments generated most of Victoria's total waste stream and accounted for 1.33 million tonnes or nearly 76% of the total. See figure 5.

Waste diversion rates per region

Figure 9 shows that many of the non-metro regions had larger increases in their diversion rate compared to the metro regions and virtually all regions (14 of the 16) showed an increase in diversion rate over 2003-04.

Those regions that had low diversion rates often did not offer a kerbside green organics service. The cost of providing such a service and access to reprocessors impact on local government's decision to implement a service.

Drop off services are often provided in lieu of a kerbside service as a more cost effective way to divert material, consequently many rural local governments have lower diversion rates because drop-off figures are not included in the calculation of diversion rates. See figure 9.



Local government household kerbside services

Part two of this report provides an analysis of local government kerbside collection services. It is divided into four sections: a general overview, garbage services, recyclables services and green organic services.

The focus of each section, drawing from the data provided by local government, is on the efficiency of these services. The key efficiency considerations are:

- > service costs expressed both on a per household and per tonne basis
- > yields or quantities collected
- > access to kerbside services

Overview

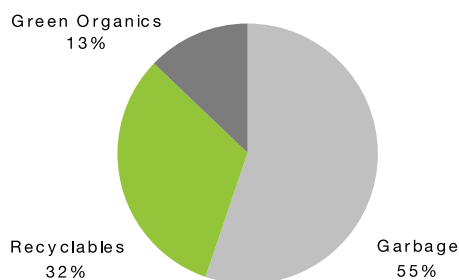
This section of the report provides an overview of the kerbside collection services provided by Victorian local governments as well as some comparisons with last year's data where appropriate. It is important to note that the data does not include waste disposed at drop-off facilities or by private contractors outside the local government system.

In 2004-05 expenditure by Victorian local governments on garbage, recyclables and green organic kerbside services was over \$207 million (see Table 3), a 5.7% increase on expenditure over 2003-04. The increase in expenditure can be partly attributed to many local governments adopting the new bin based kerbside recycling systems, an increase in the number of households serviced by kerbside services and an extension of the range of services provided to households by local governments (particularly green organics).

Overall cost of kerbside collection services

Of the \$207 million spent by Victorian local governments on kerbside collection services for garbage, recyclables and green organics during 2004-05, 87% was for garbage and recyclables services. See figure 10.

Figure 10. Proportion of total kerbside service cost by type of service, Victoria 2004-05



Expenditure increased by over \$11 million from 2003-04, representing a 5.7% increase. There has been no major shift in proportion of costs, with green organics increasing by 1%, garbage decreasing by 1% and recyclables remaining the same.

Local government household kerbside services (cont.)

Geographic comparison

The household yield for garbage was 22.8 kg per year higher in metro local governments, which is different to the 2003–04 trend where the non-metro local government household yields were higher by 8.6 kg. This could be due to efficiency gains made by some of the non-metro local governments which adopted smaller 140 and 120L bins over the 240L bins used in 2003–04 period whereas metro local governments have remained largely unchanged in their garbage bin use. Similarly, the recyclables yield was 22.9 kg per year higher in metro, but the gap with non-metro local governments has steadily decreased from the 31.2 kg in 2003–04 and 50.6 kg in 2002–03.

The costs of garbage and recyclables services were higher by \$0.95 and \$10.56 per household per year in non-metro local governments. *See table 3.*

Overall access to kerbside collection services

Victorian household access to kerbside collection services is high, with 91% of households having access to kerbside garbage collections and 89% access to recyclables collections³. *See table 4.*

Table 3 – Kerbside services summary, Victoria 2004-05

	Garbage	Recyclables	Green Organics	Total
Metro				
Annual service cost	\$83,402,143	\$45,169,692	\$22,709,325	\$151,281,160
Tonnes collected	755,427	371,982	207,183	1,334,593
Total households serviced ¹	1,493,617	1,467,564	1,385,773	–
Costs per tonne	\$110.40	\$121.43	\$108.68	\$113.35
Cost per household	\$55.84	\$30.78	\$17.03	–
Household yield (kg)	505.8	253.5	153.5	–
Non-Metro				
Annual service cost	\$31,251,437	\$45,169,692	\$22,709,325	\$151,281,160
Tonnes collected	265,795	119,901	44,004	429,701
Total households serviced ¹	550,296	519,991	207,623	–
Costs per tonne	\$117.58	\$179.29	\$81.98	\$113.46
Cost per household	\$56.79	\$41.34	\$17.64	–
Household yield (kg)	483.0	253.5	153.5	–
Total				
Annual service cost	\$114,653,580	\$66,666,468	\$26,449,202	\$207,769,250
Tonnes collected	1,021,223	491,884	251,188	1,764,294
Total households serviced ¹	2,043,913	1,987,555	1,593,396	–
Costs per tonne	\$112.27	\$135.53	\$103.95	\$117.76
Cost per household	\$56.10	\$33.54	\$17.11	–
Household yield (kg)	499.6	247.5	161.7	–
1. Total households serviced may also include commercial and industrial properties				

3. Some anomalies exist in the data due to the variations in the number of household reported in the survey. It is likely that some of the survey data contains commercial premises within the residential household figure.

Access to green organics is also relatively high at 74%, though frequency of service provision is variable (see Section 2.4 Green Organics Services). Overall, the relative proportion of access to all three kerbside services has remained fairly consistent since 2002–03, although the green organics kerbside service has shown an increase in the frequency of collections undertaken by local governments compared to last year.

While Table 4 shows access to services at the household level, Table 5 presents the number of local governments providing each service. See table 4 & 5

All Victorian local governments provide a kerbside garbage service, with 97% providing a recyclables service. Drop-off facilities are generally established to assist where services are not provided in rural areas.

The number of local governments reporting on a litter service has increased from 75 to 77 from 2003–04. This is likely due to the increased capacity of local government to quantify litter services better because of the annual survey requirements rather than the establishment of new services.

The provision of green organics services has remained fairly stable from 2003-04. Although only half of the local governments provided a green organics service, most were concentrated in populated areas (e.g. metropolitan), so approximately three quarters of Victorian households have access to such services.

Although only 2 councils provide a separate commercial and industrial recyclables service, many of the other local governments provide this service through the provision of the municipal kerbside service for small to medium size enterprises. The total number of non-residential premises can generally be reported but the cost and tonnes associated with these cannot be quantified as they are part of the collective kerbside service contract.

Hard waste is provided by little over half of the local governments similar to the green organics service. The trend again is for more metro local governments to provide this type of service rather than non-metro local governments.

Table 4 – Kerbside Services by proportion of households receiving service, Victoria 2004–05³

Kerbside service	Metro	Non-metro	Total
Per cent %			
Garbage	98	75	91
Recyclables	98	72	89
Green organics	95	30	74

Table 5 – Kerbside Services by number of local governments, Victoria 2004–05

Kerbside service	Metro (no.)	Non-metro (no.)	Total (no.)	Total as a proportion of local governments (%)
Garbage	31	48	79	100
Recyclables	31	46	77	97
Green organics	31	10	41	52
Litter service	31	46	77	97
Hard waste	30	11	41	52
Street sweeping	29	47	76	96
Commercial & industrial recyclables ¹	1	1	2	3

1. Many local governments provide a commercial and industrial recyclables service through the domestic garbage and recyclables kerbside service

Local government household kerbside services (cont.)

Garbage Services

This section of the report analyses local government kerbside services for the collection of garbage.

Access

All 79 local governments have a kerbside garbage collection service, covering 91% of Victorian households. See tables 5 & 6.

Table 6 – Garbage services by service provision category, Victoria 2003-04 to 2004-05

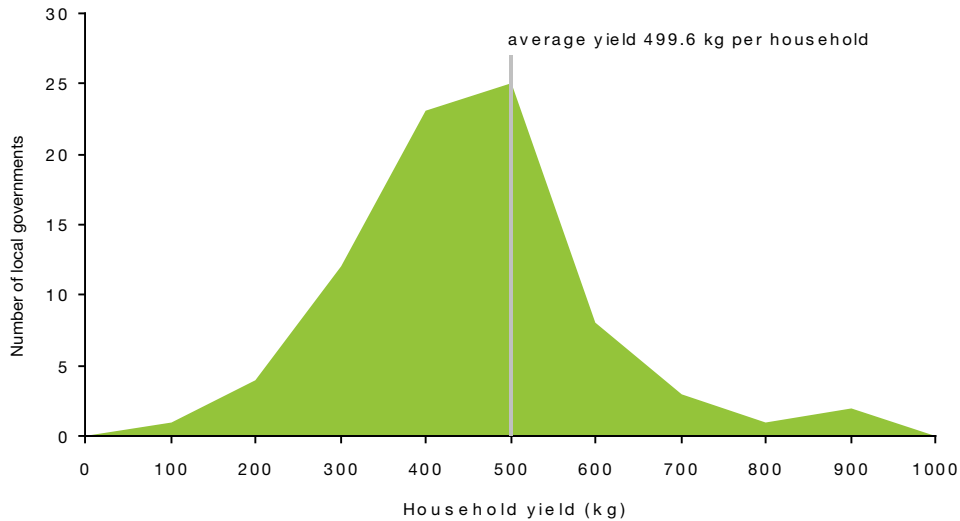
	Inner Metro	Outer Metro	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
2004-05							
Annual service cost	\$23,939,935	\$47,263,446	\$14,043,188	\$9,261,731	\$15,419,771	\$4,725,509	\$114,653,580
Tonnes collected	229,172	461,781	74,382	97,760	121,986	36,141	1,021,222
Total households serviced ¹	457,577	865,610	192,394	197,071	261,376	69,885	2,043,913
Costs per tonne	\$104.46	\$102.35	\$188.80	\$94.74	\$126.41	\$130.75	\$112.27
Cost per household	\$52.32	\$54.60	\$72.99	\$47.00	\$58.99	\$67.62	\$56.10
Household yield (kg)	500.8	533.5	386.6	496.1	466.7	517.2	499.6
2003-04							
Annual service cost	\$23,074,926	\$46,514,975	\$12,775,950	\$10,736,323	\$14,218,048	\$4,554,209	\$111,874,431
Tonnes collected	234,074.60	472,365.40	84,768.40	97,126.70	144,158.50	36,592.50	1,069,077.00
Total households serviced ¹	441,057	843,753	187,875	190,118	251,408	66,883	1,981,094
Costs per tonne	\$98.58	\$98.47	\$150.72	\$110.54	\$98.63	\$124.46	\$104.65
Cost per household	\$52.32	\$55.13	\$68.00	\$56.47	\$56.55	\$68.09	\$56.47
Household yield (kg)	530.7	559.8	451.2	510.9	573.4	547.1	539.6
Per cent Change (%)							
Annual service cost	3.7	1.6	9.9	-13.7	8.5	3.8	2.5
Tonnes collected	-2.1	-2.2	-12.3	0.7	-15.4	-1.2	-4.5
Total households serviced ¹	3.7	2.6	2.4	3.7	4.0	4.5	3.2
Costs per tonne	6.0	3.9	25.3	-14.3	28.2	5.1	7.3
Cost per household	0.0	-1.0	7.3	-16.8	4.3	-0.7	-0.7
Household yield (kg)	-5.6	-4.7	-14.3	-2.9	-18.6	-5.5	-7.4
1. Total households serviced may also include commercial and industrial properties							

Yields

Victorians generated an average of 499.6 kg (539.6 kg in 2003–04) of garbage per household per year, but this varied between local governments. See figure 11.

On average, each person in Victoria generated about 206 kg of garbage.

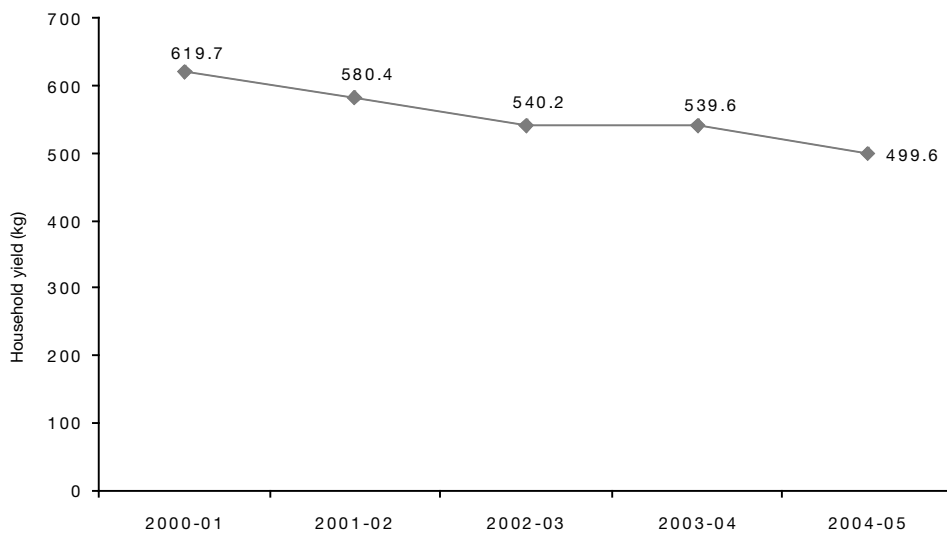
Figure 11. Garbage, household yields across local governments, Victoria 2004-05



Over the last five years, Victorian households have steadily reduced their garbage generation and for the first time since the baseline was established, households have generated slightly less than 500 kg. See figure 12.

Since 2000-01, garbage generation has decreased by 19% or 120 kg per household from 619.7 kg to 499.6 kg.

Figure 12. Garbage, household yield (kg), Victoria 2000-01 to 2004-05



Local government household kerbside services (cont.)

Geographic comparison

The difference between metro and non-metro local governments in average cost per household is decreasing with non-metro households paying \$0.95 more for the provision of a kerbside garbage service. Non-metro local governments also generated on average about 4.7% or 22.8 kg more garbage than metro local governments per household per year. See table 3. These gaps between metro and non-metropolitan yields have decreased since 2002–03.

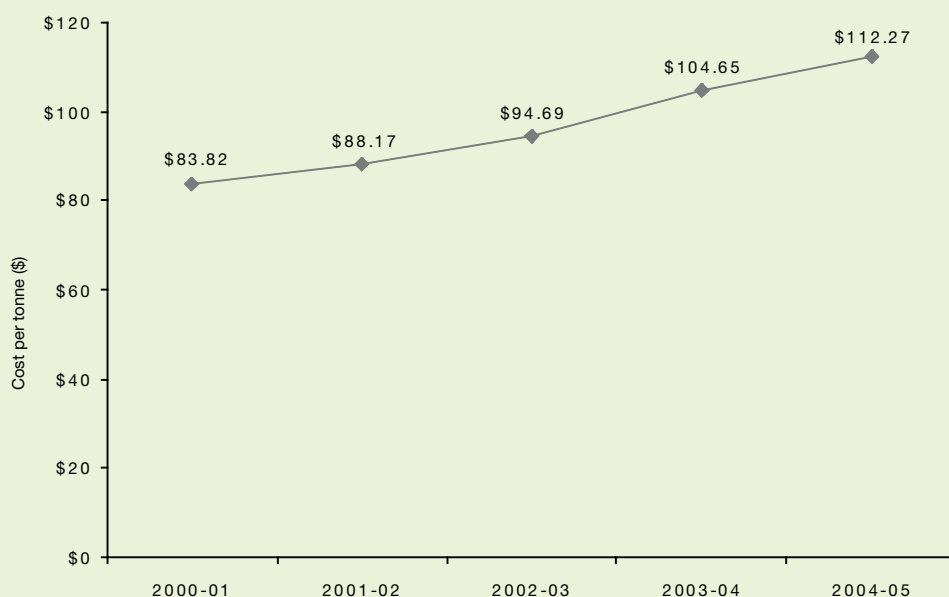
Costs per tonne and yield per household varied between local government service provision categories. See table 6. Definitions of the six service provision categories used in Table 6 are provided in Appendix B and a list of all local governments, classified by service provision, Regional Waste Management Group and metro/non-metro classification, are located in Appendix C.

The Melbourne fringe again recorded the lowest yield of 386.6 kg but also the highest cost per tonne of \$188.80. The state average cost per household has decreased slightly from \$56.47 in 2003-04 to \$56.10. Household yield has also decreased by 7.4% to 499.6 kg. The cost per tonne has increased to \$112.27 from \$104.65 in 2003-04. Figure 13 shows the steady increase in cost per tonne since 2000–01, where it was \$83.82 and is now \$112.27 in 2004-05 a 34% increase in 5 years.

It is expected that the cost per tonne will increase over time as the cost of managing landfills and the landfill levy increases.

Major provincial had the lowest cost per household of \$47.00 compared to Melbourne fringe, which was 55% more per household for a garbage service at \$72.99.

Figure 13. Garbage cost per tonne, Victoria 2000-01 to 2004-05



Collection system

The 120L weekly garbage bin continues to be the most common collection system, being used in 44 (over half) of the local governments, up from 43 in 2003–04. *See table 7.*

120L garbage bins were the most predominant in all service provision categories except in major provincial areas, where the predominant collection systems were equally 140L and 240L bins. The largest garbage bin (240L) is still used by 8 local governments, representing 10% of all local governments, a decrease from 11 local governments in 2003–04. This illustrates the constant shift to downsizing of bins. Local governments that had a split garbage and recyclables bin are moving away from these in favour of separate bins. All of these bin systems are weekly except one local government that has a 120L fortnightly system.

How yields and costs are affected by the size of the garbage collection system employed. *See table 8.*

Table 7 – Garbage collection system¹ by service provision category, Victoria 2004-05²

Service standard category	120L fortnightly	80L	120L	240L Split garbage and green organics	140L	240L	Number of local governments
Inner Metro	–	3	6	–	–	1	10
Major Provincial	–	–	1	–	2	2	5
Melbourne Fringe	1	1	3	–	1	–	6
Outer Metro	–	1	10	–	5	1	17
Rural Township	–	3	13	1	5	3	25
Number of local governments	1	8	44	1	17	8	79

1. Refers to the predominant bin type used by the local government (see glossary definition of predominant bin)
2. All services are weekly unless otherwise stated

Table 8 – Garbage average yields and costs by collection system, Victoria 2004-05¹

Collection system	Number of local governments	Cost per tonne	Cost per household	Household yield (kg)
80L	8	\$141.85	\$55.54	391.6
120L	45	\$109.91	\$53.56	487.3
240L split bin ²	1	\$136.74	\$73.70	539.0
140L	17	\$112.01	\$62.55	558.4
240L	8	\$96.62	\$58.98	610.5
State average	79	\$112.27	\$56.10	499.6

1. Refers to the predominant bin system
2. Refers to a split garbage and green organics system

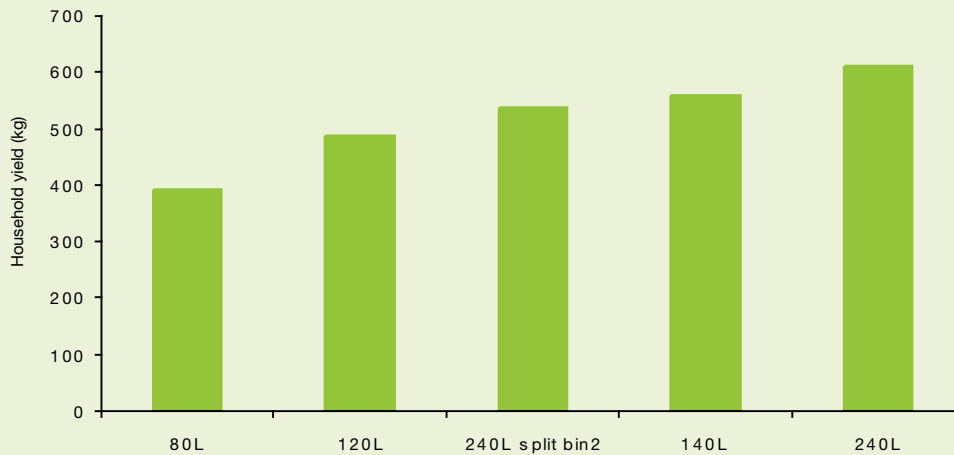
Local government household kerbside services (cont.)

Smaller bins such as the 80L bin, produced on average 391.6 kg per household per year compared to the 240L with 610.5 kg per household. This represents nearly 56% more garbage produced per household per year by using the 240L bin compared to the 80L bin. However, the costs per household and per tonne vary between bin systems.

There is a clear correlation between yield and bin size; as bin sizes increase, yields increase correspondingly.

See figure 14.

Figure 14. Garbage, yields collection system, Victoria 2004-05



Note: The 240L split bin refers to a split garbage and green organics system



Recyclables Services

This section of the report analyses local government kerbside services for the collection of containers and paper/cardboard.

Costs, yields, access to services and geographic comparison

Access

Seventy-seven local governments run a kerbside recyclables service, providing access to 89% of Victorian households. See table 4.

Yields

On average, 247.5 kg of recyclables was collected per household per year. See figure 15. This represents approximately 99 kg for every person in Victoria, or just under 2 kg per person per week.

Sustainability Victoria has developed a Guide to Preferred Standards for Kerbside Recycling in Victoria (2005). The collection systems now outlined in the guide are:

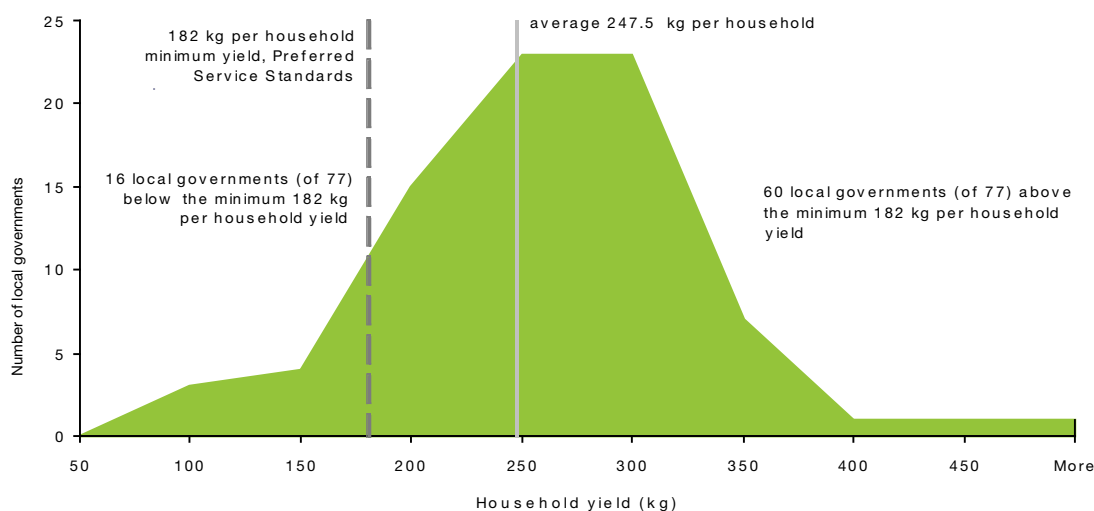
- > 240L commingled bin⁴ collected fortnightly
- > 240L split recyclables bin⁵ collected fortnightly
- > 120L commingled bin collected weekly

The Guide outlines minimum performance criteria for a kerbside recyclables system, including:

- > minimum annual household yield of 182 kg
- > maximum cost per household of \$42 for metro and larger provincial areas and \$50 for rural areas
- > maximum cost per tonne of \$170 for metro and large provincial and \$200 for rural areas

In 2004–05, the state average yield of 247.5 kg was higher than the 182 kg average minimum efficiency measure established in the *Guide to Preferred Standards for Kerbside Recycling in Victoria*. This is a 25 kg per household yield increase from the state average yield in 2003–04 of 222.5 kg and represents an 11.2 % increase.

Figure 15. Recyclables, household yield across local governments, Victoria 2004-05



4. *Commingled bin* – refers to one collection system used to accept containers and paper mixed together

5. *Split bin* – refers to the collection of containers and paper in one collection system but is segmented to accept both recyclables streams

Local government household kerbside services (cont.)

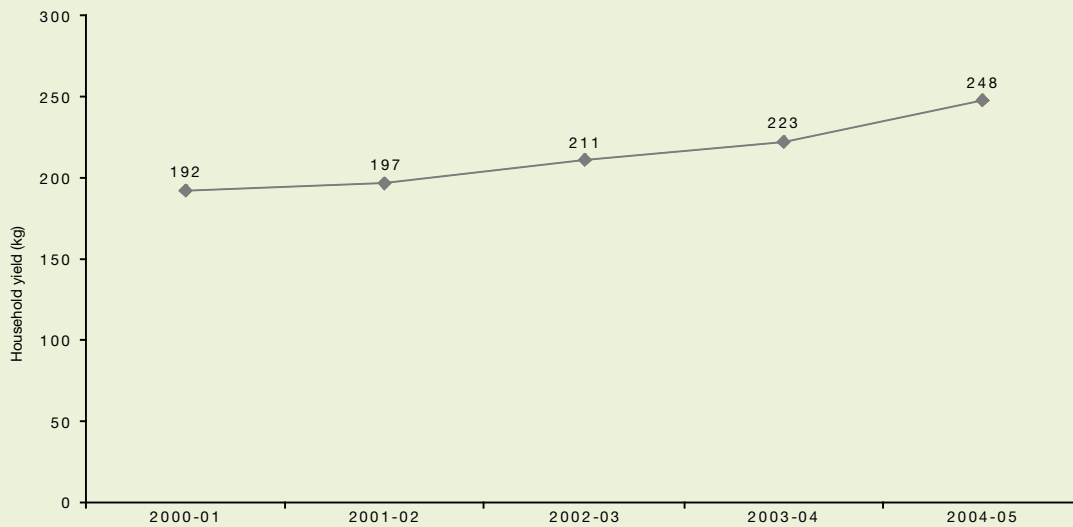
It should be noted that the yield of recyclables varied significantly around this average. *See figure 14.* However, 78% of local governments are above the minimum efficiency yield of 182 kg.

Victorians have successfully increased their recyclables yield over the last five years. *See figure 16.*

The household yield of recyclables has risen from 191.8 kg in 2000–01 to 247.5 kg in 2004–05 an increase of 29%.

On average, households in non-metro local governments generated 10% or 22.9 kg less recyclables per household per year than those in metro municipalities. *See table 3.*

Figure 16. Recyclables household yield, Victoria 2000-01 to 2004-05



Geographic comparison

It cost \$57.86 more per tonne for recyclables in non-metro areas at \$179.29, compared to metro areas with \$121.43. The higher cost per tonne and lower yield highlight the greater challenges of delivering efficient and high-yielding recycling services in rural areas, given the greater transport distances between households and end-markets and possibly the awareness level of the householders.

Patterns also emerged in the analysis of recyclables costs and yields by service provision category. See table 9.

Outer metropolitan local governments again delivered the highest average recyclables yield of all service provision categories with 274.4 kg per household per year compared against the state average of 247.5 kg. This represents an increase over last year of 9.3%.

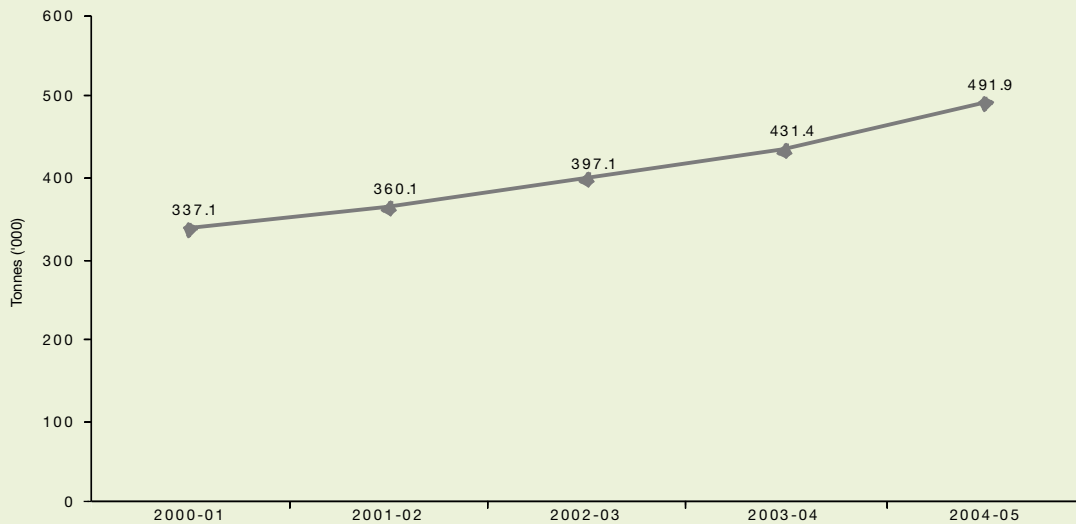
Table 9 – Recyclables services by service provision category, Victoria 2003–04 to 2004–05

	Inner Metropolitan	Outer Metropolitan	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
2004-05							
Annual service cost	\$13,642,772	\$26,296,510	\$6,296,399	\$7,488,497	\$10,225,590	\$2,716,700	\$66,666,468
Tonnes collected	96,548	233,052	47,529	45,320	57,660	11,775	491,884
Total households serviced ¹	445,430	849,353	194,511	188,872	253,560	55,829	1,987,555
Cost per tonne	\$141.31	\$112.84	\$132.48	\$165.24	\$177.34	\$230.71	\$135.53
Cost per household	\$30.63	\$30.96	\$32.37	\$39.65	\$40.33	\$48.66	\$33.54
Household yield (kg)	216.8	274.4	244.3	239.9	227.4	210.9	247.5
2003-04							
Annual service cost	\$12,984,264	\$25,617,092	\$5,956,995	\$6,035,894	\$9,219,740	\$2,166,134	\$61,980,120
Tonnes collected	88,729	207,317	40,365	42,045	42,978	10,015	431,449
Total households serviced ¹	443,662	825,941	187,016	184,803	242,402	55,131	1,938,955
Cost per tonne	\$146.34	\$123.56	\$147.58	\$143.56	\$214.52	\$216.30	\$143.66
Cost per household	\$29.27	\$31.02	\$31.85	\$32.66	\$38.03	\$39.29	\$31.97
Household yield (kg)	200.0	251.0	215.8	227.5	177.3	181.7	222.5
Per cent Change (%)							
Annual service cost	5.1	2.7	5.7	24.1	10.9	25.4	7.6
Tonnes collected	8.8	12.4	17.7	7.8	34.2	17.6	14.0
Total households serviced ¹	0.4	2.8	4.0	2.2	4.6	1.3	2.5
Cost per tonne	-3.4	-8.7	-10.2	15.1	-17.3	6.7	-5.7
Cost per household	4.7	-0.2	1.6	21.4	6.0	23.8	4.9
Household yield (kg)	8.4	9.3	13.2	5.5	28.3	16.1	11.2
1. Total households serviced may also include commercial and industrial properties							

Local government household kerbside services (cont.)

As well as geographic factors, costs in non-metro local governments were adversely affected by relatively low yields achieved in some cases. Some of the recyclables services are relatively new, so time may allow scope for further cost efficiencies and yield improvements. Overall, however, there has been a steady increase in tonnes of recyclables collected since 2000–01. See figure 17.

Figure 17. Recyclables tonnes collected, Victoria 2000-01 to 2004-05

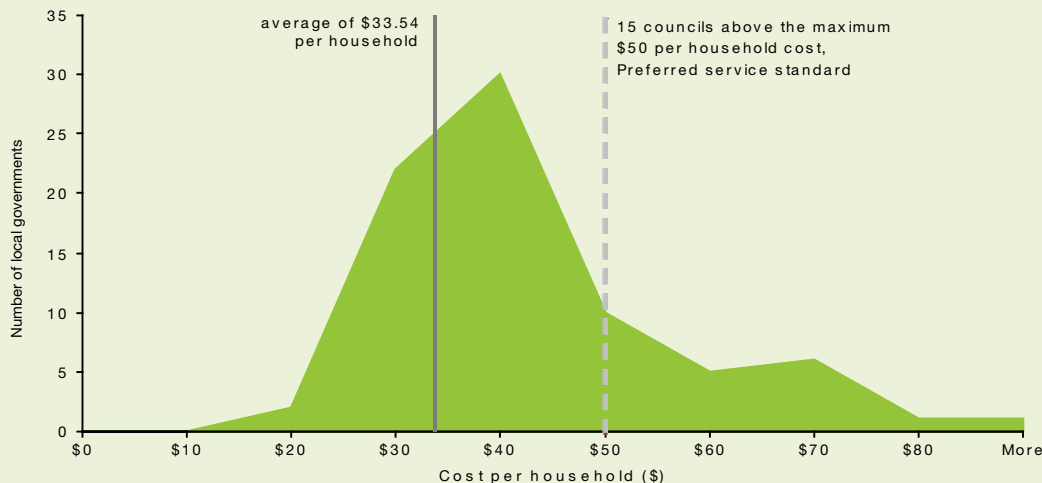


The quantity of recyclables collected has risen from 337,130 in 2000–01 to 491,884 tonnes in 2004–05. This is an increase of nearly 155,000 tonnes or 46% since 2000–01. The increase in tonnes collected can be partly attributed to the increase in the number of local governments that have adopted the preferred service standards for kerbside recycling (commingled bin systems). The majority of local governments (79%) now use a 240L or 120L commingled or split bin for recyclables instead of a crate for containers and tied bundle for paper. The 240L commingled or split recyclables mobile bins delivered the greatest yield per household and a higher diversion rate compared to the other combinations of bin systems.

Costs

Figure 18 displays the average household cost of \$33.54 per year.

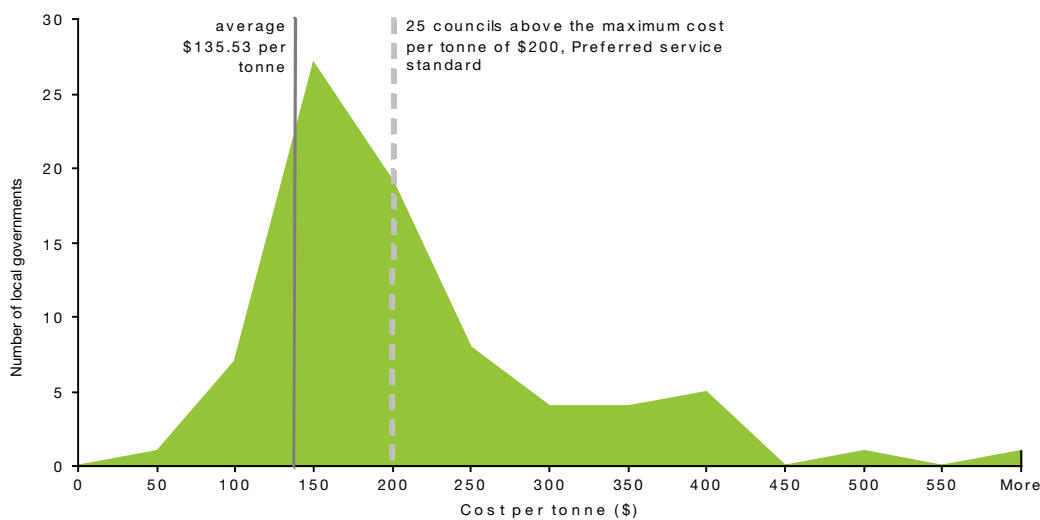
Figure 18. Recyclables, cost per household across local governments, Victoria 2004-05



However, with 15 local governments still above the highest band and 14 of these are from non-metro areas, there are continuing challenges in containing the costs of delivering optimum kerbside recycling services in some areas. In such cases, it can be more cost effective to provide high quality drop off facilities to the standard outlined in Sustainability Victoria's *Guide to Best Practice at Resource Recovery and Waste Transfer Facilities* (2004).

The average cost per tonne of \$135.53 is under the maximum of \$170 per tonne for metro and large provincial and \$200 for rural established in the *Guide to Preferred Standards for Kerbside Recycling in Victoria*. See figure 19. Twenty five local governments are above the maximum of \$200 per tonne with 23 from non-metro regions again highlighting the difficulties faced by rural local governments in delivering a cost effective kerbside service.

Figure 19. Recyclables, cost per tonne across local governments, Victoria 2004-05



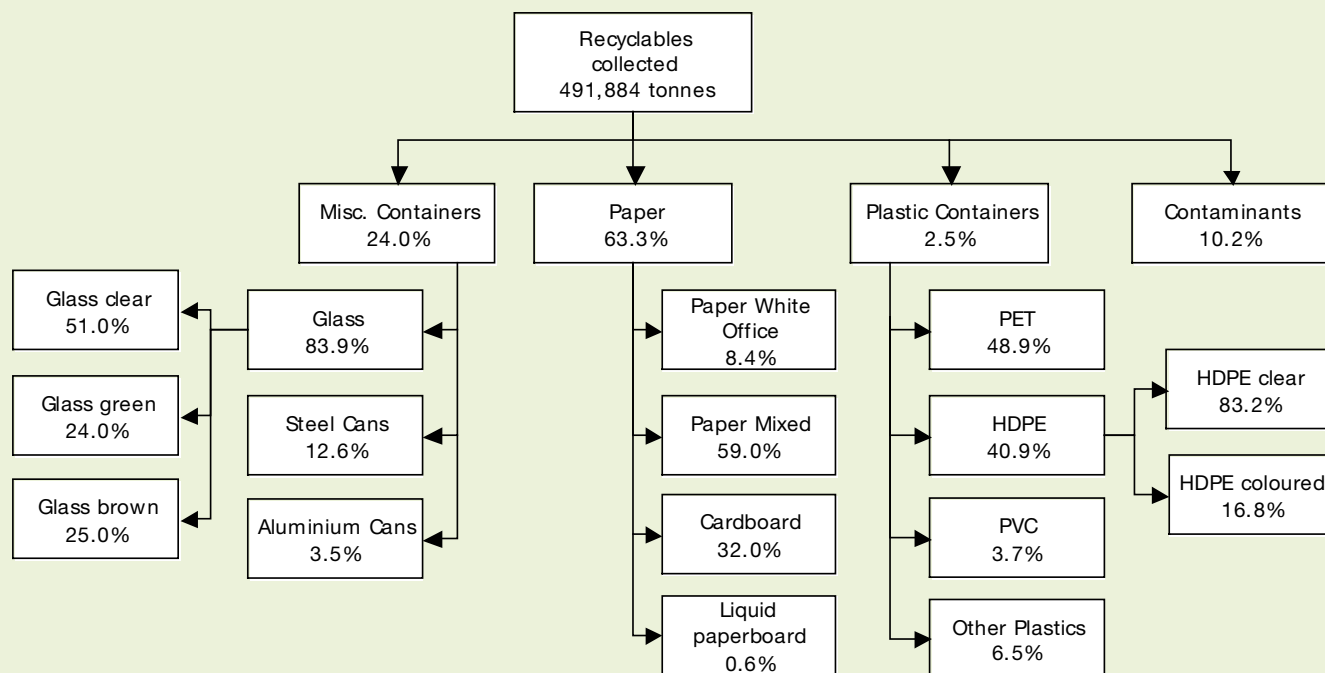
Local government household kerbside services (cont.)

Materials collected and contamination

Materials collected

Paper and cardboard items were the highest category of recyclables collected, accounting for over 67% by weight of recyclables. See figure 20.

Figure 20. Recyclables by type of item collected, Victoria 2004-05⁶



The second highest category was miscellaneous containers with 27.2%. Of this category, glass accounted for the vast majority at 83.9%, which equates to almost 23% of the entire recyclables stream. Plastic containers, due to their light weight, only made up 5.2%. These proportions are similar to those found in 2003-04.

Since 2000-01, there has been an increase of 52% in the amount of paper and cardboard collected, but this increase could be in part due to the ability of local governments to better report the amounts collected from kerbside. None-the-less, the clear trend indicates that paper product collected from kerbside services has increased every year for the last 5 years and underpins the improvements seen for the recyclables kerbside collection in moving to bin based collection systems.

In Victoria, all local governments with a recyclables service collected PET and HDPE plastic containers (Code numbers 1 and 2), with 64% collecting PVC (Code number 3) and only a third collecting other types of plastic. This was most often PP (Code number 5).

Contamination

70 local governments with a recyclables collection service provided data on contamination rates, with contamination levels averaging 10.2% of quantities collected, higher than the 2003-04 level of 7.6%. This higher than normal contamination rate can be attributed to more local governments adopting the best practice guidelines of a commingled bin which has a higher contamination rate than other bin systems. Contamination is general

6. Based on returns from local governments, comprising: 69 detailed responses for plastic containers, 72 for miscellaneous containers, 68 for paper products.

materials that cannot be reprocessed. Material that may fall into this category is broken glass (i.e. it is recyclable but unable to be sorted out from the recycling stream or plastic not normally collected such as 4, 5 and 6). Of the 491,884 tonnes collected, 50,208 tonnes were contaminants, so overall nearly 90% was recycled.

Provided are contamination rates found for various collection systems. *See table 10.*

Contamination rates by collection systems have increased slightly since 2003–04. Relatively though, bin based systems still recorded higher contamination rates of between 7.2% and 15.5%, compared to crates which had a much lower rate of 3.2% and 4.6% reflecting the trend found in previous years.

Table 10 - Recyclables, average contamination rates by collection system, Victoria 2004-05	
240L commingled or split recyclables	11.9
120L commingled	7.2
240L and tied bundle or crate	15.5
Crate & tied bundle	3.6
2 Crate or commingled crate system	4.6
State average	10.2

Container type and service frequency

There are currently 11 different combinations of container systems and service frequencies used by Victorian local governments. This indicates that many of the local governments have adopted the preferred service standards and have provided a more consistent approach in delivering a kerbside recyclables service compared to last year where there were 14 different container systems in use.

The predominant system is now a 240L commingled or split recyclables bin, provided fortnightly by 54 local governments (70%) an increase of 10 from 2003–04. The next most frequent bin system is the 120L commingled recyclables bin used by 8 local governments; the 2 crate system is now used by only 6 local governments. *See table 11.*

Table 11 – Recyclables, average yields and costs by collection system, Victoria 2004–05¹				
Collection system	Number of local governments	Cost per tonne	Cost per household	Household yield (kg)
240L commingled or split recyclables	54	\$135.06	\$34.29	253.9
120L commingled	8	\$132.50	\$30.60	230.9
240L and tied bundle or crate	2	\$238.28	\$31.41	131.8
Crate & tied bundle	5	\$146.54	\$34.68	236.7
2 Crate or commingled crate system	6	\$128.05	\$30.03	234.5
Other systems ²	3	\$208.96	\$35.37	169.2
State average		\$135.53	\$33.54	247.5

1. Refers to the predominant bin type used by the local government, apart from one council which is split evenly between 2 districts
2. Other systems includes monthly collections, container only collections and bags

Local government household kerbside services (cont.)

Yields and costs for collection systems represented by small numbers of local governments should be treated with caution (i.e. less than 5)

The comparison of 240L commingled or split recyclables versus crate and tied bundle have reversed since 2002–03, when there were more local governments with a crate and tied bundle (29) than 240L commingled or split recyclables. Changes in WorkSafe regulations relating to manual handling during this time have impacted on this change, although there had already been a shift towards moving to the 240L system over the last few years.

Container type

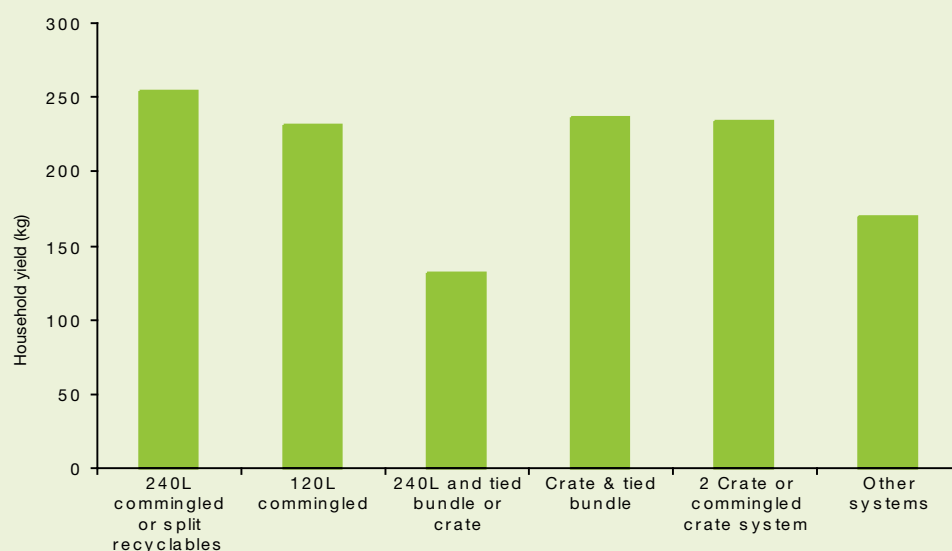
An analysis of the data revealed that container type has an impact on yields and costs.

A 240L commingled or split recyclables collection delivered the greatest yield at 253.9 kg per household, compared to 234.5 kg for the 2 crate or commingled crate system. The cost of \$34.29 to provide the 240L split or commingled system to a household is \$4.26 more expensive than the 2 crate or commingled crate system. The cost per tonne was higher for the crate and tied bundle at \$146.54, compared to \$135.06 for the 240L commingled or split recyclables system.

Figure 21 illustrates yields and costs for the most common system types employed across Victoria. It shows, yields are slightly higher for bin based systems (other than the 240L and tied bundle or crate system) than the two crate system (one crate for containers and one for paper).

Sustainability Victoria emphasises that other factors such as population density, length of time a system has been established, education programs and distances to sorting facilities and end markets can have significant impacts on yields and costs, so the performance of recycling systems should not be judged in isolation from the context of these other variables.

Figure 21. Recyclables, yields by collection system, Victoria 2004-05



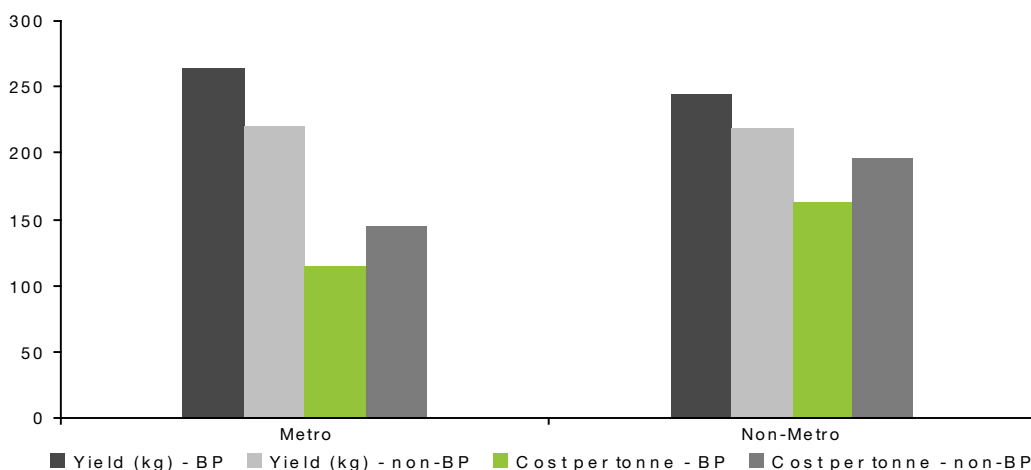
Best practice 2004-05 survey period

Kerbside recyclables services funded under Sustainability Victoria's Best Practice Program, performed well in 2004-05 compared to non-best practice services. See table 12.

The 34 local governments with a best practice service were able to generate significantly higher yields at a lower cost per tonne and per household at both the metro and non-metro comparisons compared to those local governments without best practice. See figure 22.

Table 12 – Recyclables services by Best Practice, Victoria 2004-05			
	Metro	Non-Metro	Total
Best practice councils			
Annual service cost	\$33,472,676	\$9,931,908	\$43,404,584
Tonnes collected	291,408	61,012	352,421
Total properties serviced	1,102,007	250,343	1,352,350
Cost per tonne	\$114.87	\$162.79	\$123.16
Cost per household	\$30.37	\$39.67	\$32.10
Yield (kg)	264.4	243.7	260.6
Number of local governments	23	11	34
Non-best practice councils			
Annual service cost	\$11,697,016	\$11,564,868	\$23,261,884
Tonnes collected	80,574	58,889	139,463
Total properties serviced	365,557	269,648	635,205
Cost per tonne	\$145.17	\$196.38	\$166.80
Cost per household	\$32.00	\$42.89	\$36.62
Yield (kg)	220.4	218.4	219.6
Number of local governments	8	35	43

Figure 22. Recyclables, household yield (kg) by Best Practice compared to non-best practice, Victoria 2004-05



Local government household kerbside services (cont.)

Correlation between garbage and recyclables container size and diversion

The data shows a strong correlation between smaller garbage bin size and higher diversion rates⁷ of recyclables.

See table 13.

Using smaller garbage bins increases the proportion of recyclables collected, resulting in more efficient kerbside resource recovery. This same trend has been observed since the start of the survey benchmark in 2000-01.

An 80L garbage bin gives the highest average diversion rate of 33.0% compared to other garbage bins and the state average diversion rate of 29.2%.

The 120L commingled recyclables gives the highest average diversion rate of 30.0%. This may be a consequence of some of these systems being weekly collections. This diversion rate is closely followed by the 240L commingled or split recyclables bin with 29.6%.

Using an 80L garbage bin in conjunction with a 240L or 120L commingled recyclables bin delivers the highest diversion rates of 34.4% and 36.2% respectively.

Table 13 – Correlation between garbage and recyclables collection system¹ and household diversion rate (%), Victoria 2004-05

	Garbage collection system					Average diversion rate (%)
	80L	120L	240L split bin ²	140L	240L	
240L commingled or split recyclables	34.4	30.6	26.0	28.7	18.3	29.6
120L commingled	36.2	28.8	–	–	–	30.0
240L & tied bundle	15.6	20.3	–	–	–	17.9
Crate & tied bundle	33.1	31.6	–	21.0	–	26.8
2 Crate or commingled crate system	29.5	26.8	–	–	28.3	28.6
Other systems ³	–	20.8	–	27.6	–	25.2
Average diversion rate	33.0	30.3	26.0	27.2	23.9	29.2

1. Refers to predominant bin system used by local governments
 2. A 240L split system refers to garbage and green organics split system
 3. Other systems include monthly collections, container only collections and bags

7. Diversion is calculated as: quantity recyclables recycled/ (quantity recyclables + garbage collected). It does not factor in green organics diversion because only half of all Victorian local governments have a green organics kerbside service.

Table 14 refers to the bin system employed and the number of local governments using them. In Victoria, the most common combination is a 240L commingled or split recyclables bin with a 120L garbage bin system adopted by 31 local governments resulting in a 30.6% diversion rate.

The highest diversion rate of 36.2%, combining an 80L garbage bin with a 120L with tied bundle for recyclables, is a system used by only one local government. Diversion rates for systems utilised by a small number of local governments should be read with caution.

Table 14 – Garbage and recyclables collection system¹ by number of local governments, Victoria 2004-05

Garbage collection system						
	80L	120L	240L split bin ²	140L	240L	Total
240L commingled or split recyclables	3	31	1	14	5	54
120L commingled	1	6	–	–	–	7
240L & tied bundle	1	1	–	–	–	2
Crate & tied bundle	2	2	–	1	–	5
2 Crate or commingled crate system	1	2	–	–	3	6
Other systems ³	–	2	–	1	–	3
Number of local governments	8	44	1	16	8	77

1. Refers to predominant bin system used by local governments
 2. A 240L split system refers to garbage and green organics split system
 3. Other systems include monthly collections, container only collections and bags



Local government household kerbside services (cont.)

Green Organics Services

This section of the report looks at green organics kerbside collection services provided by Victorian local governments.

Access

Seventy-four per cent of Victorian households in 41 municipalities had access to green organics kerbside collection services. See tables 4 & 5.

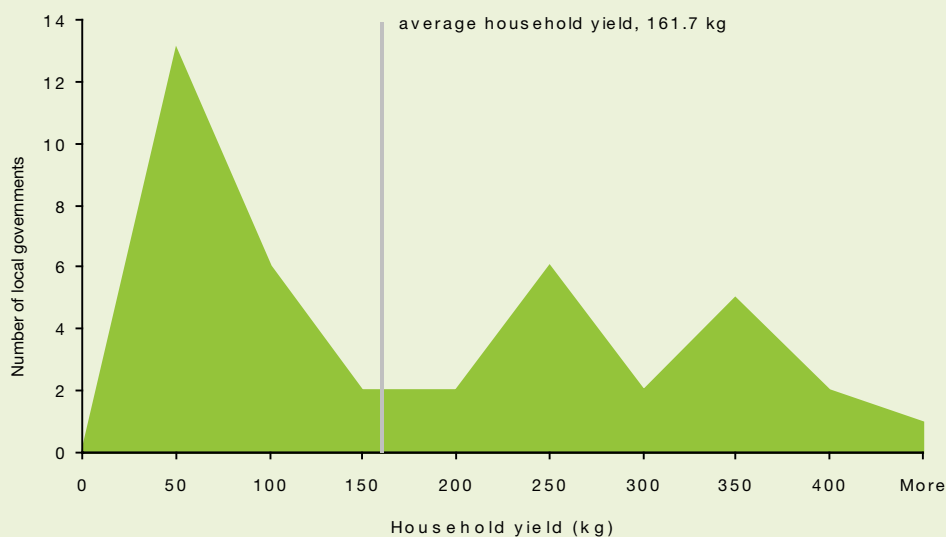
Yields

In 2004–05, the average yield was 161.7 kg of green organics collected per household per year. See figure 23.

This is an increase of 47 kg or 41% since 2003–04.

As the analysis of *total households serviced* changed in 2002–03 to the number of households with access, this variable is not compared over the four years. Previously, *total households serviced*, was reported as how many households participated or the number of on-call services made. The analysis now uses the total households that were offered the service, i.e. had access to the service rather than those that simply took up the offer to use the service.

Figure 23. Green organics, household yield across local governments, Victoria 2004-05



The cost and tonnes collected for the green organics service across service provision areas. See table 15.

In 2004–05, 251,188 tonnes of green organics were collected, which equates to a 41% increase in tonnes collected since 2003–04 (176,501 tonnes). Of the amount collected, 82% were processed. Quantities not processed may have been burnt or sent to landfill due to contamination. Processing does include using the material for daily cover at landfills, as it replaces soil as a resource.

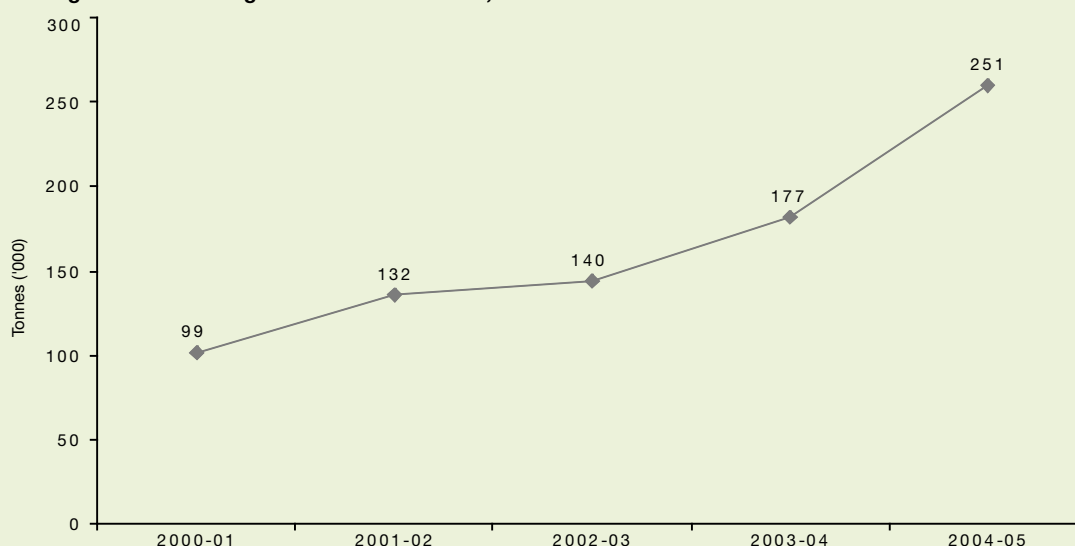
Table 15 – Green organics by service provision category, Victoria 2003-04 to 2004-05							
	Inner Metropolitan	Outer Metropolitan	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
2004-05							
Annual service cost	\$3,001,632	\$18,446,783	\$1,260,910	\$2,007,441	\$1,499,098	\$233,338	\$26,449,202
Tonnes collected	27,051	172,258	7,874	30,044	13,211	749	251,188
Total households serviced	419,161	798,860	167,752	130,074	70,155	7,394	1,593,396
Cost per tonne*	\$103.23	\$107.09	\$160.13	\$66.82	\$113.47	\$134.86	\$103.95
Cost per household*	\$7.40	\$23.09	\$7.52	\$15.43	\$21.37	\$23.81	\$17.11
Household yield (kg)*	66.6	215.6	46.9	231.0	188.3	176.5	161.7
2003-04							
Annual service cost	\$3,223,565	\$11,812,425	\$744,914	\$1,241,900	\$796,788	\$150,000	\$17,969,593
Tonnes collected	14,370	103,763	5,094	9,424	3,958	3,436	140,045
Total households serviced	424,873	726,040	157,299	127,322	60,637	8,356	1,504,527
Cost per tonne*	\$221.37	\$112.19	\$146.23	\$131.78	\$201.31	\$43.66	\$126.79
Cost per household*	\$7.49	\$17.10	\$4.74	\$9.75	\$13.14	\$17.95	\$12.17
Household yield (kg)*	33.8	152.4	32.4	74.0	65.3	411.2	96.0
Per cent Change (%)							
Annual service cost	-6.9	56.2	69.3	61.6	88.1	55.6	47.2
Tonnes collected	88.3	66.0	54.6	218.8	233.8	-78.2	79.4
Total households serviced	-1.3	10.0	6.6	2.2	15.7	-11.5	5.9
Cost per tonne*	-53.4	-4.5	9.5	-49.3	-43.6	208.9	-18.0
Cost per household*	-1.2	35.0	58.7	58.2	62.6	32.6	40.6
Household yield (kg)*	97.0	41.5	44.9	212.1	188.5	-57.1	68.5
*Averages i.e. cost per tonne, cost per household and household yield, exclude services where the local government did not provide full figures for tonnage collected or cost of service							

Local government household kerbside services (cont.)

For the increase in quantity of green organics collected over time. See figure 24.

The quantity of green organics collected has increased from 99,141 tonnes in 2000–01 to 251,188 in 2004–05 a 153% increase. During this time, there has been an expansion of the three bin system: one small bin for garbage, one large bin for recyclables and another large bin for green organics. This has encouraged householders to divert green organics from landfill.

Figure 24. Green organics tonnes collected, Victoria 2000-01 to 2004-05



Costs

The cost of providing this service is now over \$26 million a year, or an average cost of \$17.11 per household per year. Nearly all figures of cost and tonnes collected by service provision categories have increased, some markedly, from the 2003–04 figures.

Frequency

Twenty-five local governments provided a frequent (weekly, fortnightly or monthly) green organics collection service as their predominant service. See table 16.

Table 16 – Green organics collection by frequency of service, Victoria 2004-05¹

Predominant frequency of service	Inner Metro	Outer Metro	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
Bi-annual	4	2	—	—	—	—	6
Tri-annual	—	—	1	—	1	—	2
Monthly	—	—	—	—	1	1	2
Monthly (user pays)	1	—	—	—	—	—	1
Fortnightly	2	9	—	1	1	1	14
Fortnightly (user pays)	5	5	—	1	1	—	12
Weekly	1	1	1	—	1	—	4
On-call	3	3	2	—	1	—	9
On-call (user pays)	—	1	—	1	—	—	2
Total	16	21	4	3	6	2	52

1. Local governments that have more than one frequency of collection are listed here as separate services

Inner and outer metropolitan service areas (which account for 35% of local governments) continue to provide a significant proportion (65%) of the green organic collection services, predominately a fortnightly collection service.

Participation in both user pays and on call services and the costs and yield per household associated with these.

See table 17.

For regular collections (i.e. not on call), the fortnightly service had the highest household yield with 277.7 kg and highest cost at \$26.28 per household. Bi-annual and tri-annual collections had low cost per households of \$3.15 and \$7.46 but corresponding lower yields of 20.0 kg and 26.6 kg per household.

The number of on call services provided per household can be as high as 12 (i.e. one per month), but it is more often limited to once or twice per year. Free on-call services have a lower participation rate than a user pays on-call service, with 10.2% compared to 35.2%.

The fortnightly user pays services have been able to attract 47.5% participation and monthly user pays only 36.1%, indicating that a significant proportion of households are prepared to pay for such a service.

Table 17 – Green organics, average costs and yields by collection system, Victoria 2004–05

	Number of local governments ¹	Cost per tonne	Cost per household ²	Household yield (kg)	Cost per optional service	Household yield per optional service (kg)	Cost per on-call service	Yield per on-call service (kg)	Participation rate (%) ³
Regular green organics service⁴									
Bi-annual	6	\$157.23	\$3.15	20.0	—	—	—	—	—
Fortnightly	14	\$94.63	\$26.28	277.7	—	—	—	—	—
Monthly	2	\$104.37	\$17.25	165.3	—	—	—	—	—
Weekly	4	\$119.05	\$18.30	153.7	—	—	—	—	—
Tri-annual	2	\$280.90	\$7.46	26.6	—	—	—	—	—
On-call green organics service ⁴	9	\$191.57	\$1.71	8.9	—	—	\$16.98	88.6	10.1
Optional user pays green organics service⁴									
On-call (user pays)	2	\$142.83	\$1.84	12.9	\$33.58	287.7	—	—	35.2
Fortnightly (user pays)	12	\$116.73	\$11.81	101.2	\$12.50	126.0	—	—	47.6
Monthly (user pays)	1	\$99.21	\$5.95	60.0	\$32.15	276.2	—	—	36.1

1. Local governments that had more than one frequency of collection are listed here as separate services

2. Refers to all households that were provided with a service or with access to the service in the case of 'on-call' and 'user pays' services

3. Refers to the number of households that took up the service offered as a proportion of the total number of households with access to the service

4. A Regular service is provided by council as a mandatory service and the cost is generally included as part of the overall council waste charges.

An on-call service is provide by councils as part of the general waste charges and allows households to have access to a number of free services per year.

An optional service is offered to residents as an additional service where no regular green organics service is offered and incurs an annual fee.

All residents may have acces to the optional service but only some will elect to participate.

Environmental benefits from kerbside recycling

This section looks at the environmental benefits gained from recycling during the financial year 2004–05.

A total of 491,884 tonnes of recyclables were collected for recycling in Victoria, or 253.5 kg per household. Allowing for a contamination rate of approximately 10.2% (as indicated by local government) and a small quantity that was collected but not recycled, around 441,676 tonnes of municipal waste was actually recycled in 2004–05. Material that is not recycled is either garbage (householders incorrectly put material out for recycling) or a small quantity of recyclables that cannot readily be reprocessed (such as broken glass that cannot be sorted out from the recycling stream).

Applying this data to the findings of the *Life Cycle Assessment for Paper and Packaging Waste Management Scenarios in Victoria*⁸ reveals substantial environmental benefits. The benefits for the total amount collected for recycling are estimated to include savings of:

10,685 megalitres of water a year – equivalent to filling 4,274 Olympic swimming pools, OR 24 showers for every Victorian per year

253,304 tonnes of greenhouse gases (such as CO₂) a year – equivalent to the amount of greenhouse gases generated by 16,887 households per year⁹ OR taking 42,217 cars off the road per year¹⁰

Air pollution equivalent to emissions from Victorian motorists travelling over 891 million kilometres a year in average passenger cars

6,313,175 gigajoules of electricity a year, equivalent to 276 days of watching television for every Victorian

A Life Cycle Assessment was also applied to the green organics processed through kerbside collection services. Of the 251,188 tonnes collected, 205,631 tonnes were processed. The environmental benefits for kerbside green organics were savings of:

144 megalitres of water a year – equivalent to filling 58 Olympic swimming pools

47,398 tonnes of greenhouse gases a year – equivalent to taking 7,900 cars off the road

8. Grant T, James KL, Lundie S, Sonneveld K (2001) Stage 2 Report for Life Cycle Assessment for Paper and Packaging Waste Management Scenarios in Victoria, Centre for Design at RMIT, Melbourne.

9. Australian Greenhouse Office, 2003, Australian Greenhouse Office, Canberra, viewed at 17 March 2003, <http://www.greenhouse.gov.au>

10. CSIRO Atmospheric Research, 2000, CSIRO, Melbourne, viewed at 17 March 2003, <http://www.dar.csiro.au>

Litter and street sweeping services

This section looks at the operation of litter maintenance and street sweeping services. The figures give an indication of the services, as some local governments were unable to provide full breakdowns of specific costs and tonnages for the litter service, as separate from other services.

Sixty nine local governments reported on litter bin and trap maintenance services in 2004–05. *See table 18 on the next page.* This is likely to be due to local governments' increased awareness and capacity to report on litter services rather than an expansion of such a service.

The total cost to local governments of providing a municipal litter service, street sweeping and litter clean up services, cost in excess of \$58 million annually. Of this, Victorian local governments spent \$16,581,754 on the provision of litter services involving litter bins and litter traps, an increase of \$1.7 million (12%) since 2003–04.

Litter Bins and Traps

A total of 48,321 litter bins and 3,477 traps are installed across 97% of Victorian local governments in 2004–05. *See table 5.* This represents an increase of 11,028 litter bins or 30% from 2003–04 with non-metro local governments representing 60% of the increase.

Yield

A total of 32,018 tonnes were collected through litter bins representing an 18% decrease from 38,863 tonnes collected in 2003–04. Litter traps collected 4,070 tonnes, an increase of 18% over the previous year.

Cost

The majority of costs associated with the operation of litter maintenance is for litter bins, which accounts for \$15 million, while litter traps cost \$1.6 million. These are similar to the 2003–04 costs.

Penalty Infringement Notices

A total of 2,130 penalty infringement notices were issued for litter (1,329 in 2003–04). The increase in penalties is due to more effective enforcement and improved internal reporting systems across local government areas. Metro local governments issued nearly 89% of the penalty infringement notices.

Public Place Recycling

Twenty two local governments reported a total of 661 public place recycling bins, an increase from 19 local governments reporting 583 public place recycling bins in 2003–04.

Waste Wise Events

In 2004–05, 248 local government events participated in the Waste Wise Events (WWE) program across 46 local government areas an improvement over last year where 156 local government events participated in WWE programs across 37 local governments. Of this, 78 reported that they were actual accredited Waste Wise Events operating across 36 local government areas.

Litter and street sweeping services (cont.)

Table 18 – Litter Service, Victoria 2003–04 to 2004–04			
	Metro	Non-Metro	Total
2004–05			
No. of litter bins	23,865	24,456	48,321
Annual service cost for bins	10,039,957	4,975,734	15,015,691
Tonnes collected from bins	22,889	9,129	32,018
No. of side entry traps	2,521	147	2,668
No. of in-line litter traps	672	137	809
Annual service cost for traps	1,003,409	562,654	1,566,063
Tonnes collected from traps	2,874	1,196	4,070
No. of penalty infringement notices issued	1,730	400	2,130
Waste Wise Events (no. participating)	137	111	248
Waste Wise Events (no. accredited)	44	34	78
No. of public recycling bins	399	262	661
2003–04			
No. of litter bins	22,010	15,283	37,293
Annual service cost for bins	9,667,693	3,566,816	13,234,509
Tonnes collected from bins	27,727	11,137	38,863
No. of side entry traps	2,494	215	2,709
No. of in-line litter traps	686	170	856
Annual service cost for traps	1,254,809	368,021	1,622,830
Tonnes collected from traps	3,031	425	3,456
No. of penalty infringement notices issued	1,180	149	1,329
Waste Wise Events (no. participating)	94	62	156
Waste Wise Events (no. accredited)	33	24	57
No. of public recycling bins	394	189	583
Per cent change (%)			
No. of litter bins	8.4	60.0	29.6
Annual service cost for bins	3.9	39.5	13.5
Tonnes collected from bins	-17.4	-18.0	-17.6
No. of side entry traps	1.1	-31.6	-1.5
No. of in-line litter traps	-2.0	-19.4	-5.5
Annual service cost for traps	-20.0	52.9	-3.5
Tonnes collected from traps	-5.2	181.6	17.8
No. of penalty infringement notices issued	46.6	168.5	60.3
Waste Wise Events (no. participating)	45.7	79.0	59.0
Waste Wise Events (no. accredited)	33.3	41.7	36.8
No. of public recycling bins	1.3	38.6	13.4

Litter Clean Up Services

Some local governments also provided further detail on their litter services. *See table 19.* Enhanced reporting is more likely to explain variation year to year rather than increases in real terms.

The combined cost for litter clean up for illegally dumped rubbish, road side litter and bill posters amounted to \$4.6 million.

Illegally dumped rubbish cost local government in excess of \$1.7 million, with a total of 6,464 tonnes collected from 13,183 call outs. Cost data was provided by 20 local governments that were able to report on tonnes collected. Surprisingly, although the tonnes collected for illegally dumped rubbish decreased by 50%, the number of call-outs increased by 18% in 2004-05.

The cost of roadside litter was also considerable at \$2.7 million across 16 local governments that reported 8,958 tonnes collected, an increase of 168% in costs and 109% in tonnes from the previous year.

Extrapolations were undertaken of the data provided from responding local governments for the potential cost of illegally dumped rubbish and road side litter on a state wide basis. The information was stratified by metro/non-metro areas and the number of residential households by local government. It is estimated that illegally dumped rubbish and road side litter costs Victorian local governments nearly \$18 million annually.

Table 19 – Litter clean up services, Victoria 2003–04 to 2004–05

	Illegally dumped rubbish	Roadside litter	Bill poster	Cigarette bins
2004–05				
No. of local governments that list item separately for expense allocation	12	16	6	11
Annual service cost	\$1,745,750	\$2,697,291	\$182,836	\$111,498
Tonnes collected	6,464	8,958	n.a.	n.a.
No. of call outs	13,183	n.a.	128	n.a.
No. of penalties issued	234	n.a.	61	n.a.
No. of cigarette bins	n.a.	n.a.	n.a.	1104
2003–04				
No. of local governments that list item separately for expense allocation	14	12	6	9
Annual service cost	\$1,827,612	\$1,007,227	\$224,336	\$107,707
Tonnes collected	12,991	4,282	n.a.	n.a.
No. of call outs	11,161	n.a.	287	n.a.
No. of penalties issued	361	n.a.	179	n.a.
No. of cigarette bins	n.a.	n.a.	n.a.	624
Per cent change (%)				
No. of local governments that list item separately for expense allocation	-14.3	33.3	0.0	22.2
Annual service cost	-4.5	167.8	-18.5	3.5
Tonnes collected	-50.2	109.2	n.a.	n.a.
No. of call outs	18.1	n.a.	-55.4	n.a.
No. of penalties issued	-35.2	n.a.	-65.9	n.a.
No. of cigarette bins	n.a.	n.a.	n.a.	76.9

Litter and street sweeping services (cont.)

For budget allocations, it was more common to separately list the cost of cleaning up illegally dumped rubbish (14 local governments) as a specific service as compared to other litter clean up services. Illegally dumped rubbish appears to be the highest activity that is specifically recorded by local governments in comparison to dealing with road side litter and bill posters. This is in terms of cost, tonnes collected, number of call outs and number of penalties issued. Despite not indicating that any of the four litter clean up areas were listed separately as a line item in the budget, more local governments went on to actually provide figures. In some instances, careful estimates were used in lieu of a separate line item.

Cigarette bin services also showed a significant increase, with 34 local governments reporting a total of 1,104 cigarette bins, and 18 recording an operational cost of \$111,498. The number of local governments that listed cigarette bins as a separate item for expense allocation was very low with only 11 local governments reporting.

Street Sweeping

Nearly all local governments (76 of 79) indicated that they provided a municipal street sweeping service although 7 did not provide annual service cost figures.

Based on the response of 69 local governments, the annual service cost for street sweeping in Victoria cost local governments in excess of \$37 million. *See table 20.* This equates to \$7.50 annually for every person in Victoria.

Metro local governments incurred the greatest proportion of the cost with 78% of the total. *See figure 25.*

Figure 25. Street sweeping service, annual service cost, Victoria 2004-05

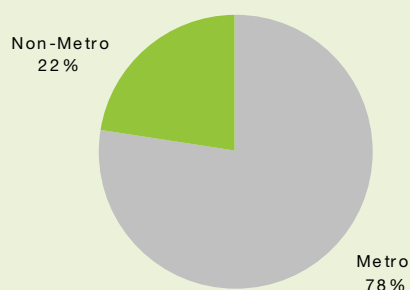


Table 20 – Street sweeping service, Victoria 2004-05

	Metro	Non-Metro	Total
Annual service cost	\$28,789,809	\$8,297,737	\$37,087,546

Commercial and industrial recyclables

The focus of this section is the range of kerbside collections provided by local governments to commerce and industry.

Access

Table 21 shows the number of commercial and industrial (C&I) premises receiving kerbside services provided by local government. Only 2 local governments had a separate commercial & industrial kerbside service for recyclables predominately for the collection of paper/cardboard products.

Of those C&I properties serviced through the domestic garbage kerbside system (81,442) more than half (51,307) also receive a recyclables collection service. It is likely that most of the properties receiving a recyclables service would also be receiving a garbage collection service.

A further 7,939 properties received a recyclables collection service through a separate C&I kerbside service. Two local governments provided this service, only collecting cardboard.

Since the last survey undertaken for this sector (2002-03), an additional 13,950 C&I premises are receiving a domestic garbage and/or recyclables kerbside service.

It should be noted that wherever possible, local governments were requested to exclude C&I properties from the domestic kerbside service. Only if related costs and tonnes could be excluded did this occur (which was not often the case). Some local governments could not identify the number of C&I properties within the total properties serviced and simply listed C&I properties under the number of domestic households serviced.

Table 21 – Number of commercial and industrial premises serviced by kerbside collections, Victoria 2004-05

	Inner Metro	Outer Metro	Melbourne Fringe	Major Provincial	Small Provincial	Rural Township	Total
Separate commercial & industrial kerbside service							
Recyclables collection	7,439	—	—	—	500	—	7,939
Domestic kerbside service							
Garbage collection	23,941	29,013	3,150	6,604	15,291	3,443	81,442
Recyclables collection	16,532	14,715	3,086	1,801	12,876	2,297	51,307
Total commercial & industrial premises serviced ¹	31,380	29,013	3,150	6,604	15,791	3,443	89,381

2. In order to avoid double counting, it is assumed that properties serviced by a domestic kerbside recyclables collection are also provided with a garbage service

Hard waste

This section of the report looks at hard waste kerbside collection services provided by Victorian local governments. Hard waste is household waste not normally accepted into garbage bins, e.g. white goods, tyres, etc.

Access

A little over half of all local governments (41) reported the provision of a hard waste collection service. *See table 22.* As with green organics, the analysis of total households serviced has changed to the number of households with access, regardless of how many households participated or the number of on-call services made.

Cost

The total hard waste service cost to Victorian local governments was nearly \$7.8 million, 60% of this cost was accounted for by Outer Metropolitan areas. Since the last survey of hard waste in 2002-03, the total cost has increase by \$1.9 million or a little over 32%.

Yield

Over 81,000 tonnes were collected and nearly 67,000 tonnes disposed to landfill which represents a state average diversion rate of about 18%.

Small provincial areas reported the greatest diversion rate at 38% far greater than any of the other service provision categories and more than 2 times better than the state average of 17.9%.

Table 22 – Hard waste services by service provision category, Victoria 2004-05

	Inner Metropolitan	Major Provincial	Melbourne Fringe	Outer Metropolitan	Rural Township	Small Provincial	Total
Annual service cost	\$1,643,945	\$178,000	\$1,006,278	\$4,706,385	\$97,600	\$158,406	\$7,790,614
Tonnes collected	10,427	5,700	6,515	55,624	1,942	1,141	81,349
Tonnes disposed	9,253	5,000	5,895	43,987	1,924	704	66,763
Diversion rate (%)	11.3	12.3	9.5	20.9	0.9	38.4	17.9
Total households serviced	436,416	12,168	168,395	812,307	11,408	52,754	1,493,448
Cost per tonne	\$157.66	\$31.23	\$154.46	\$84.61	\$50.26	\$138.78	\$95.77
Cost per household	\$3.77	\$14.63	\$5.98	\$5.79	\$8.56	\$3.00	\$5.22
Household yield (kg)	23.9	468.4	38.7	68.5	170.2	21.6	54.5
Cost per 'on-call' service ¹	\$31.09	—	\$27.66	\$26.15	—	—	\$27.40

1. Only local governments that reported the number of 'on-call' services undertaken were included

On average, 54.5 kg of hard waste was collected per household during 2004-05. *See figure 26.*

On-call services produced on average 131.3 kg per call out, or nearly two and a half times more annually than for all other types of hard waste collection service provided. *See table 23.*

Frequency

The most predominant frequency of hard waste service reported was annual by 15 local governments (37%) followed closely by bi-annual with 13 and on-call with 9 local governments. *See table 24.*

Table 23 – Hard waste collection cost and yields for on-call services, Victoria 2004-05¹

Annual service cost	\$1,504,267
Tonnes collected	7,207
Tonnes disposed	6,185
Diversion rate (%)	14.2
Total households serviced	363,279
Number of on-call services	54,910
Household yield (kg) for on-call services	131.3
Participation rate (%)	15.1
Cost per 'on-call' service	\$27.40

1. Only local governments that reported the number of 'on-call' services were included

Table 24 – Hard waste collection frequency by service provision category, Victoria 2004-05

Frequency of service	Inner Metropolitan	Major Provincial	Melbourne Fringe	Outer Metropolitan	Rural Township	Small Provincial	Total
Annual	3	1	—	5	1	5	15
Bi-annual	4	—	1	6	2		13
Monthly	1	—	—	—	—	1	2
On call	2	—	2	5	—	—	9
Other	—	—	1	—	1	—	2
Total	10	1	4	16	4	6	41

Landfills and transfer stations

This section looks at the number of local government owned or operated landfills (licensed and unlicensed) and resource recovery and waste transfer stations across the state, including those that are operated by private contractors. The data does not include privately owned sites.

The number of local government owned or operated landfills and transfer stations. See table 25.

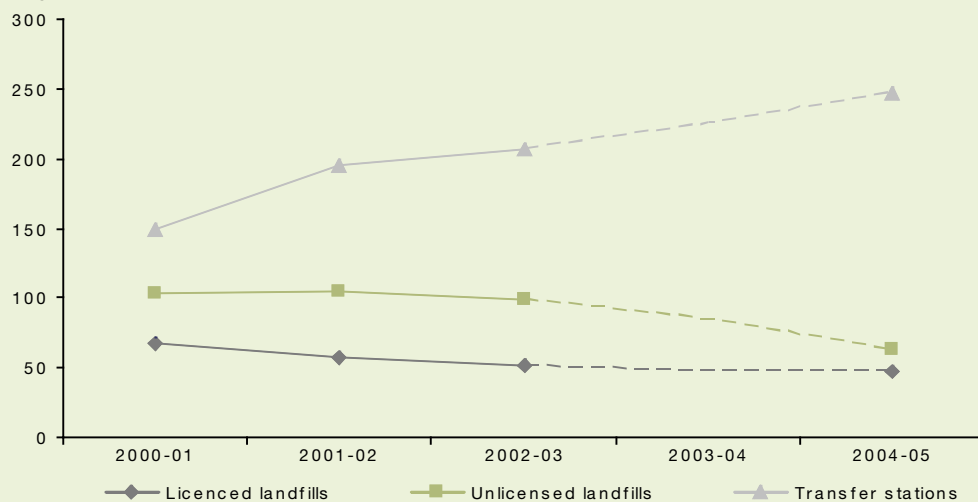
Overall there has been a decrease in the number of licensed and unlicensed landfills which has led to an increase in the number of transfer stations and resource recovery centres being established and/or upgraded across the state.

See figure 27.

Table 25 – Number of local government owned landfills and transfer stations by service provision category, Victoria 2004-05

	Inner Metropolitan	Major Provincial	Melbourne Fringe	Outer Metropolitan	Rural Township	Small Provincial	Total
Operating landfills –							
No. of licensed landfills	0	5	3	4	7	28	47
No. of unlicensed landfills	0	2	3	0	26	32	63
Total	0	7	6	4	33	60	110
Closed landfills –							
No. of licensed landfills closed during 2004-05	0	1	0	1	1	4	7
No. of unlicensed landfills closed during 2004-05	0	0	0	0	6	2	8
Total landfills closed	0	1	0	1	7	6	15
Transfer stations –							
No. of transfer stations	4	13	17	10	79	124	247
No. of new transfer stations established during 2004-05	0	0	0	0	2	6	8

Figure 27. Number of licensed/unlicensed landfills and transfer stations, Victoria 2000-2005¹



¹No survey conducted for 2003-04 period, data has been extrapolated from existing information

Licensed Landfills

Of the 110 operational landfills reported by local governments, 47 (43%) were licensed. Inner metropolitan local governments did not operate or own any landfills. Small provincial local governments had 60% of all licensed landfills (28 out of 47) operating in 2004-05.

Unlicensed landfills

There were 63 unlicensed landfills operating in Victoria during 2004-05, this represents 57% of all landfills (licensed and unlicensed). Rural Townships and Small provincial local governments have the majority (92%) of unlicensed landfills (58 of 63) operating in Victoria.

Closed Landfills

The rate of licensed and unlicensed landfill closures has slowly decreased over the past 5 years. Of the 15 landfills closed during 2004-05, licensed and unlicensed landfills were equally represented. The closure of landfills was predominately (13 of 15) from Rural Townships and Small Provincial local governments.

Transfer Stations

Rural Townships and Small Provincial local governments maintain 203 (83%) of Victoria's 247 transfer stations reflecting the need in rural communities for drop-off facilities to consolidate recyclables and waste. These areas account for all of the 8 new transfer stations established during 2004-05.

Operating Details

The operating costs for landfills and transfer stations were a little over \$46 million for the 2004-05 period. *See table 26.* These sites serviced nearly 4.5 million people which encompass nearly 92% of Victoria's population.

Table 26 – Operating details of local government owned landfills and transfer stations, Victoria 2004-05

	Metro	Non-Metro	Total
Landfills—			
Annual operating costs	\$6,483,200	\$16,278,177	\$22,761,377
Population serviced	442,400	1,062,170	1,504,570
No. of weighbridge installed	7	65	72
Total landfills operating	7	103	110
% of landfills with weighbridge	100	63	65
Transfer stations—			
Annual operating costs	\$14,061,663	\$9,187,187	\$23,248,850
Population serviced	1,881,133	1,099,491	2,980,624
No. of weighbridge installed	20	129	149
Total transfer station operating	26	221	247
% of transfer stations with weighbridge	77	58	60

Landfills and transfer stations (cont.)

Weighbridges

A total of 125 weighbridges were installed in 35% of these sites as at 2004-05. In 2002-03, there were 35 weighbridges installed, this figure has more than tripled in the past 2 years reflecting the need for better reporting on the amount of waste to landfills.

Disposal Charges

Table 27 shows the disposal costs of landfills and transfer stations, which includes the landfill levy for putrescible and inert waste. The use of cubic metres or tonnes as a measure of quantity was based on how local governments charged for disposal. In general, industrial wastes (both putrescible and inert) attract a higher charge than municipal waste across sites. Green organics however, are charged at a lower rate than for putrescible and inert waste. For recyclables, many of the sites did not attract a disposal fee, and if they did, the fee was minimal.

Resource Recovery

170 landfills sites and transfer stations provided resource recovery at their facilities. Additional details for items and quantities recovered were also provided, for 41 landfills and 129 transfer sites (note that some of the smaller sites provide aggregate data for all sites consolidated onto one location only, hence the discrepancy in the number of sites) a total of 270,800 tonnes were recovered for 2004-05. This represents an increase of 48% or 87,000 tonnes more than the 2002-03 period.

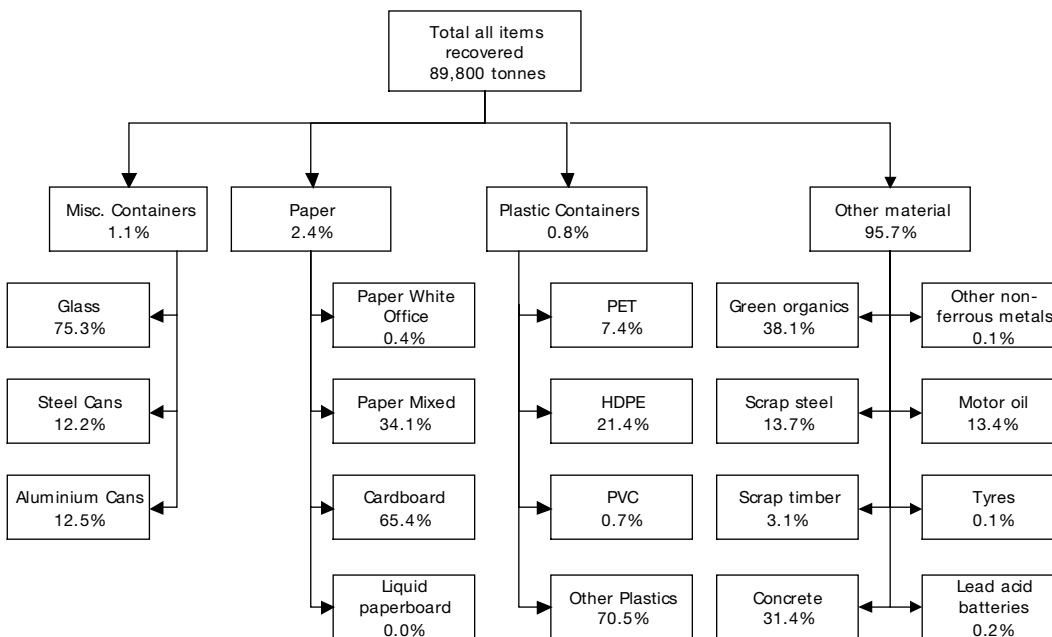
Table 27 – Disposal charges at landfills and transfer stations, Victoria 2004-05

	Average cost per cubic metre	Average cost per tonne	Sites with a gate fee (%)
Landfills			
Municipal putrescible	\$15.13	\$47.97	70
Industrial putrescible	\$17.93	\$49.35	63
Municipal inert	\$16.85	\$46.65	63
Industrial inert	\$18.64	\$48.23	63
Separated green organics	\$8.04	\$32.69	55
Separated recyclables	\$2.15	\$13.22	33
Transfer stations			
Municipal putrescible	\$15.62	\$52.55	72
Industrial putrescible	\$18.03	\$55.70	61
Municipal inert	\$17.11	\$53.14	69
Industrial inert	\$18.98	\$54.33	61
Separated green organics	\$8.15	\$39.46	75
Separated recyclables	\$2.82	\$0.00	37

Resource Recovery at Landfills

Nearly 90,000 tonnes were recovered from landfill sites during 2004-05; more than double the amount reported in 2002-03. See figure 28. *Other material* comprised the greatest proportion of resource recovery at landfill sites with nearly 96% of the total. Green organics was the largest contributor to this category with 36% of the total of all items recovered. Similarly, concrete represented nearly 27,000 tonnes or 30% of all items recovered. Paper items accounted for only 2.4% of the total with cardboard making up the greatest proportion of paper items with 65.4% or 1.6% of the total of all items recovered at landfills during 2004-05.

Figure 28. Resource recovery by type of items recovered at landfills, Victoria 2004-05



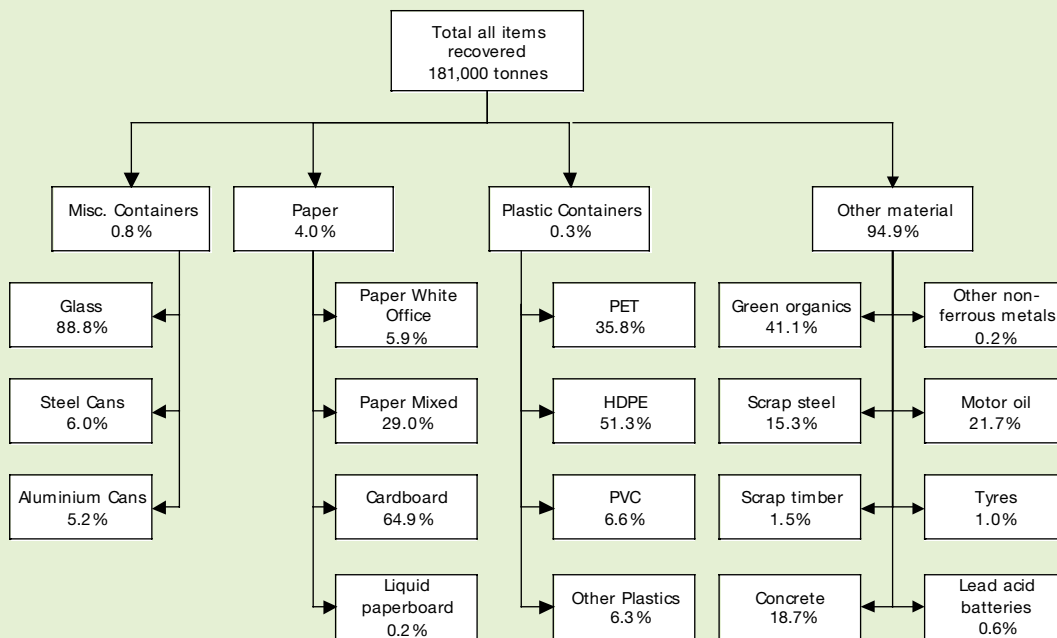
Landfills and transfer stations (cont.)

Resource Recovery at Transfer Stations

Transfer stations recovered 181,000 tonnes in 2004-05, nearly 100,000 tonnes more than landfills. See figure 29.

Approximately 40,000 more tonnes were recovered from transfer stations in 2004-05 than in 2002-03. *Other material* again captured the greatest share of all items recovered with nearly 95%. Green organics and concrete contributed the greatest proportion of items in this category with 41.1% and 21.7%. Both items represented 57% of all items recovered from transfer stations in 2004-05. Paper items represented 4% and plastic only 0.3%. These proportions are similar to 2002-03 figures except for motor oil, which has shown a significant increase from 1.2% in the *Other material* category in 2002-03 to 21.7% in 2004-05. This indicates that the Product Stewardship for Oil program has had a major impact on the recovery of this item.

Figure 29. Resource recovery by type of items recovered at transfer stations, Victoria 2004-05



Resource Recovery by Source

Some of the main items recovered through municipal kerbside collections and drop-off facilities. *See table 28.*

Although landfills and transfer station diverted 116,432 tonnes of recyclables (i.e. plastic, paper and miscellaneous containers such as glass, aluminium and steel cans) and green organics from landfill in 2004-05, kerbside services recovered nearly 6 times more with 692,900 tonnes. Green organics again represented the greatest proportion of all items recovered with over 354,000 tonnes or nearly 37% of the total of all items diverted from landfill followed by paper with 33%. Plastic items represented only 1.4% of the total.

Figure 30 shows the relative proportions of items recovered by the source of recovery.

The vast majority of paper, plastic, containers and green organics are collected through kerbside services (72%) with transfer stations playing a greater role than landfill in resource recovery of these items.

Figure 30. Proportion of items recovered by source of recovery, Victoria 2004-05

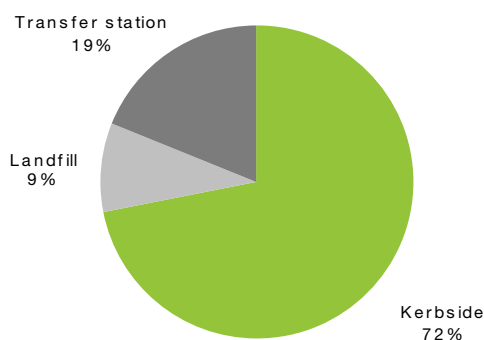


Table 28 – Main items recovered by source of recovery, Victoria 2004-05

	Source of item			Total
	Kerbside	Landfill	Transfer station	
Main items recovered	Tonnes			
Plastic	12,297	718	543	13,558
Paper	311,363	2,155	7,240	320,758
Green organics	251,188	32,743	70,597	354,528
Misc containers ¹	118,052	988	1,448	120,488
Scrap steel	—	11,774	26,281	38,055
Concrete	—	26,985	32,121	59,106
Motor oil	—	11,516	37,274	48,790
Other ²	—	2,921	5,496	8,417
Total	692,900	89,800	181,000	963,700

1. Miscellaneous containers include glass, steel and aluminium containers

2. Other refers to scrap timber, tyres, non-ferrous metals and lead acid batteries

Appendix A – Methodology

Coverage

The target population of the survey was all 79 local governments. The survey was completed by the local governments on Sustainability Victoria's website.

The data collection is completely enumerated; that is the data collection included all 79 Victorian local governments, representing a 100% response rate. All local governments have a weighting of one, which means that the numerical findings in this report are entirely derived from the data provided by the 79 participating local governments.

Data collected

The data collection extended to the following service areas:

- > Household Garbage collection and disposal
- > Household Recyclables (i.e. containers and paper/cardboard) collection and sorting
- > Household Green Organics collection and processing
- > Litter bin and litter trap collection and disposal
- > Litter clean up services
- > Street Sweeping
- > Hard Waste collection service
- > Commercial and Industrial Recyclables collection service
- > Landfill and Transfer Station operations

Diversion rate

The diversion rate is calculated by tonnes recycled compared to the tonnes collected. In the past, diversion rate has been calculated per household and only analysed the amount collected.

Diversion rate by tonnes (for example the state-wide diversion rate) is calculated either by including or excluding green organics. The diversion including green organics is calculated by tonnes of recyclables recycled + green organics processed divided by tonnes of recyclables + green organics + garbage collected.

Presentation of data

The data has been provided in full to Regional Waste Management Groups and their respective member local governments for verification and for their use in waste planning and reporting.

In this report, the data is presented in aggregated form. This reduces the impact of statistical anomalies on the findings. The data collection findings are therefore more representative of costs, yields and other features being analysed.

In various parts of the report, the data is grouped by:

- > Service Provision Categories – established in the *Guide to Preferred Service Standards for Kerbside Recycling in Victoria* (Sustainability Victoria, November 2000).
- > Metropolitan/Non-Metropolitan classifications
- > Regional Waste Management Group
- > Collection system type
- > Collection frequency

Survey limitations

Sustainability Victoria has sought to verify information provided in data collection returns by local governments through rigorous follow-up with individual local governments by telephone, fax and email, to validate data entries. In addition, Sustainability Victoria circulated extracts containing individual local government returns to Regional Waste Management Group Executive Officers and Regional Education Officers to verify data. Through these steps and extensive data analysis, Sustainability Victoria has identified and corrected a significant number of anomalies.

However, Sustainability Victoria is not in a position to validate underlying data in the report. Findings in this report are therefore subject to the accuracy of data provided by individual local governments.

Appendix B – Glossary

Annual service cost

The service cost refers to the collection, sorting, processing and disposal costs of providing a waste service as well as the annualised depreciated bin costs. In-house contracts should allocate costs for providing labour services and associated sorting and disposal fees even if they are usually only accounted for internally. Capital equipment used for providing the kerbside service such as bins, trucks and other specialised equipment should be depreciated as per normal accounting practices, with the annual depreciation figure included as a cost. Lease or hire purchase costs should also be reported. All capital expenditure costs associated with the construction and commissioning of infrastructure are excluded. Only the annual operating expenses of providing a kerbside service are required.

Cigarette bins

Cigarette bins are containers mounted on walls or poles, dedicated to the disposal of cigarette butts. They can be purchased or rented through (and sometimes even cleaned by) the manufacturer.

Diversion rate

The diversion rate is calculated by tonnes of recyclables and green organics recycled divided by tonnes of recyclables, green organics and garbage collected OR tonnes of recyclables recycled divided by tonnes of recyclables and garbage collected. This is in contrast to the calculations in 2002–03 which only analysed the quantity collected.

In-line and side entry traps

Traps act as filters in the stormwater to capture litter before it enters the waterways. They are cleaned regularly, either manually or with a vacuum, to dispose of the litter to landfill. In-line entry traps operate within the drainage system and act as a filter to capture pollutants flowing through the stormwater. Side entry traps act at the drainage entrance to capture pollutants.

Items recovered for recycling

Most local governments provided a total quantity recovered or at least the sub-totals for paper, miscellaneous (non-plastic) containers, and plastic containers. Of the 77 local governments that provided this service, detailed breakdowns were provided from 69 local governments for the totals of plastic containers, 72 for non-plastic containers (i.e. glass, steel and aluminium), 68 for paper. Significantly fewer local governments reported on individual items (eg. the quantity of PET within the plastic container category).

On call services

Many local governments provide an on call service for a green organics collection. The most common number of free services allowed per household was once or twice per year, though one did allow a weekly collection.

Penalty Infringement Notices

Penalty Infringement Notices (PINS) are issued for littering under Part VIIA of the Environmental Protection Act 1970. Council appointed Litter Enforcement Officers may be based in a range of council units such as local laws, traffic, building and planning. This part of the Act includes a range of offences such as littering (including dumping rubbish), bill posting, leaving advertising material on vehicles, delivery of unwanted advertising material, failing to comply with litter abatement notices and several others.

The Plastic Coding System

The Plastic Coding System is a series of symbols that identify the most common plastic material used in the manufacture of a product or packaging. The symbols are usually embossed on the bottom of plastic containers and bottles. Their purpose is to assist collectors with sorting the collected plastics by material type. They do not indicate that the product can be recycled or is made from recycled content. Each symbol in the Plastics Coding System consists of a

Appendix B – Glossary (cont.)

number from 1 to 7 inside a chasing arrows triangle. The most common plastic containers that are collected in Victoria are:



- PET (polyethylene terephthalate) - Plastic Identification Code 1 used for soft drink bottles.



- HDPE (high density polyethylene) - Plastic Identification Code 2 used for milk and juice bottles.



- PVC (polyvinyl chloride) - Plastic Identification Code 3 used for juice and cordial bottles.



- PP (polypropylene) - Plastic Identification Code 5 used for ice-cream containers.

Predominant bin type

This refers to the bin type used by most residential properties within the municipality for garbage and recyclables. For instance, if a local government has a 120L bin for 30% of the municipality and a 240L bin for 70% of the municipality then the predominant bin type is the 240L bin.

Predominant frequency of service

This refers to the frequency of service that is most common within the municipality for green organics. The defining criterion is the number of households serviced. For example, if a local government has a fortnightly service for 1,000 households and an annual service for 10,000 households, the predominant frequency of service is an annual service as more households receive this service.

Recyclable collection systems

For this publication, the following definitions of bin types have been used:

- > *2 crate or commingled crate system* – refers to a crate for the collection of containers and a crate for

the collection of paper or one crate that is used to collect containers and paper mixed together;

- > *Crate and tied bundle* – refers to a crate for the collection of containers and a tied bundle for the collection of paper;
- > *Commingled bin* – refers to one collection system used to accept containers and paper mixed together;
- > *Split bin* – refers to the collection of containers and paper in one collection system but is segmented to accept both recyclables streams;
- > *Split Garbage & Recyclables* – refers to the collection of recyclables (commingled containers and paper) together with garbage in one collection system but is segmented to accept the two different waste streams.

Regional Waste Management Groups (RWMG)

There are 16 Regional Waste Management Groups, which cover all 79 Victorian local governments, divided into metro and non-metro areas. They vary in the number of local governments they include, ranging from one local government to ten local governments. Each RWMG is responsible for coordinating the planning of waste management activities for its member local governments.

Resource Recovery

Resource recovery is where items are collected so as to avoid waste going to landfill. Items recovered range from those collected through kerbside recycling (e.g. glass bottles), to scrap steel, green organics and motor oil.

Service provision categories

The six kerbside recycling service provision categories established in the *Guide to Preferred Service Standards for Kerbside Recycling in Victoria* have been applied in this report to the range of waste management services provided by local government. Each local government

area has been coded to a service provision category (see Appendix C) according to the following guidelines:

- > *Inner Metropolitan:* Covering the more densely populated inner area of Melbourne. Characterised by high levels of multi-tenanted dwellings, narrower streets making accessibility for collection purposes difficult, and generally short distances to a landfill/transfer station, sorting facilities and end markets for recyclables. For example, Yarra and Port Phillip City Councils.
- > *Outer Metropolitan:* A geographically more dispersed part of Melbourne, which is generally based on average population density, average block sizes and generally short distances to a landfill/transfer station, sorting facilities and end markets for recyclables. For example, Whitehorse, Monash and Hume City Councils.
- > *Melbourne Fringe:* Areas on the outskirts of Melbourne often with a blend of urban and rural areas. Likely to have slightly larger block size and moderate collection transport costs and freight costs to a landfill/transfer station, sorting facilities and end markets for recyclables. Includes metro and non-metro local governments. For example, Nillumbik, Cardinia and Macedon Ranges Shire Councils.
- > *Major Provincial Centres:* Characterised by significant population totals and average population density. Likelihood of regional sorting facility within the city and reasonable transport route to Melbourne or other market destinations. Relatively short distances to a landfill/transfer station for waste disposal. For example, Wodonga, Greater Bendigo and Ballarat City Councils.
- > *Small Provincial Centres:* Population centres of moderate size and density with some surrounding semi-rural properties. Reasonable likelihood of transportation to a major centre for sorting and additional transportation of recyclables to reprocessing markets. Moderate distances to

a landfill/transfer station for waste disposal. For example, Ararat Rural City Council, Baw Baw and Campaspe Shire Councils.

- > *Rural Townships/Remote:* Small population centres with significant distances to sorting and reprocessing facilities. Rural areas with sparse populations and lower level road infrastructure, greater distances to a landfill/transfer station for waste disposal. For example, Buloke, Corangamite and Moira Shire Councils.

Tonnes collected

Conversion factors have been used to convert quantities reported in cubic metres to tonnes. No compaction factors have been taken into account unless otherwise stated on the survey forms.

The conversion factors as used by Sustainability Victoria are:

1 cubic metre is equal to:

Paper/cardboard	0.10 tonne
Household garbage/Garden/vegetation/	0.15
Wood/timber	0.30
Glass	0.347
Plastics	0.013
Steel cans	0.052
Aluminium cans	0.026
Commingled recyclables, i.e. plastic/glass/steel/aluminium	0.063

Total households serviced

Refers to both residential households and commercial and industrial premises serviced. Many local governments cannot provide a split of the number of commercial and industrial premises serviced or do not have a separate charge for this service. For practical reasons, the derived figures calculated in this publication which rely upon the *Total households serviced* such as *Cost per household*, refer to the total residential and commercial and industrial premises serviced.

Appendix C – Table of Local Governments

The following table lists all local governments in alphabetical order and by region, service provision category and metro/non-metro classification.

Victorian Local Governments, Victoria 2004-05			
Council name	Regional Waste Management Group	Service Standard Category	Metro/Non-metro classification
Alpine Shire Council	North Eastern RWMG	Small Provincial	Non-Metro
Ararat Rural City Council	Grampians RWMG	Small Provincial	Non-Metro
Ballarat City Council	Highlands RWMG	Major Provincial	Non-Metro
Banyule City Council	Northern RWMG	Outer Metropolitan	Metro
Bass Coast Shire Council	Gippsland RWMG	Small Provincial	Non-Metro
Baw Baw Shire Council	Gippsland RWMG	Small Provincial	Non-Metro
Bayside City Council	South Eastern RWMG	Outer Metropolitan	Metro
Benalla Rural City Council	North Eastern RWMG	Small Provincial	Non-Metro
Boroondara City Council	South Eastern RWMG	Outer Metropolitan	Metro
Brimbank City Council	Western RWMG	Outer Metropolitan	Metro
Buloke Shire Council	Central Murray RWMG	Rural Township	Non-Metro
Campaspe Shire Council	Goulburn Valley RWMG	Small Provincial	Non-Metro
Cardinia Shire Council	South Eastern RWMG	Melbourne Fringe	Metro
Casey City Council	South Eastern RWMG	Outer Metropolitan	Metro
Central Goldfields Shire Council	Highlands RWMG	Small Provincial	Non-Metro
Colac Otway Shire Council	Barwon RWMG	Small Provincial	Non-Metro
Corangamite Shire Council	South Western RWMG	Rural Township	Non-Metro
Darebin City Council	Northern RWMG	Inner Metropolitan	Metro
East Gippsland Shire Council	Gippsland RWMG	Small Provincial	Non-Metro
Frankston City Council	South Eastern RWMG	Outer Metropolitan	Metro
Gannawarra Shire Council	Central Murray RWMG	Rural Township	Non-Metro
Glen Eira City Council	South Eastern RWMG	Inner Metropolitan	Metro
Glenelg Shire Council	South Western RWMG	Rural Township	Non-Metro
Golden Plains Shire Council	Highlands RWMG	Rural Township	Non-Metro
Greater Bendigo City Council	Calder RWMG	Major Provincial	Non-Metro
Greater Dandenong City Council	South Eastern RWMG	Outer Metropolitan	Metro
Greater Geelong City Council	Barwon RWMG	Major Provincial	Non-Metro
Greater Shepparton City Council	Goulburn Valley RWMG	Major Provincial	Non-Metro
Hepburn Shire Council	Highlands RWMG	Small Provincial	Non-Metro
Hindmarsh Shire Council	Desert Fringe RWMG	Rural Township	Non-Metro
Hobsons Bay City Council	Western RWMG	Inner Metropolitan	Metro
Horsham Rural City Council	Grampians RWMG	Small Provincial	Non-Metro
Hume City Council	Northern RWMG	Outer Metropolitan	Metro
Indigo Shire Council	North Eastern RWMG	Small Provincial	Non-Metro
Kingston City Council	South Eastern RWMG	Outer Metropolitan	Metro
Knox City Council	Leastwaste RWMG	Outer Metropolitan	Metro
Latrobe City Council	Gippsland RWMG	Small Provincial	Non-Metro
Loddon Shire Council	Central Murray RWMG	Rural Township	Non-Metro

Victorian Local Governments, Victoria 2004-05

Council name	Regional Waste Management Group	Service Standard Category	Metro/Non-metro classification
Macedon Ranges Shire Council	Calder RWMG	Melbourne Fringe	Non-Metro
Manningham City Council	Leastwaste RWMG	Outer Metropolitan	Metro
Mansfield Shire Council	North Eastern RWMG	Rural Township	Non-Metro
Maribyrnong City Council	Western RWMG	Inner Metropolitan	Metro
Maroondah City Council	Leastwaste RWMG	Outer Metropolitan	Metro
Melbourne City Council	Western RWMG	Inner Metropolitan	Metro
Melton Shire Council	Western RWMG	Outer Metropolitan	Metro
Mildura Rural City Council	Mildura RWMG	Small Provincial	Non-Metro
Mitchell Shire Council	Goulburn Valley RWMG	Small Provincial	Non-Metro
Moira Shire Council	Goulburn Valley RWMG	Rural Township	Non-Metro
Monash City Council	South Eastern RWMG	Outer Metropolitan	Metro
Moonee Valley City Council	Western RWMG	Inner Metropolitan	Metro
Moorabool Shire Council	Highlands RWMG	Melbourne Fringe	Non-Metro
Moreland City Council	Northern RWMG	Inner Metropolitan	Metro
Mornington Peninsula Shire Council	Mornington Peninsula RWMG	Melbourne Fringe	Metro
Mount Alexander Shire Council	Calder RWMG	Small Provincial	Non-Metro
Moyne Shire Council	South Western RWMG	Rural Township	Non-Metro
Murrindindi Shire Council	Goulburn Valley RWMG	Rural Township	Non-Metro
Nillumbik Shire Council	Northern RWMG	Melbourne Fringe	Metro
Northern Grampians Shire Council	Grampians RWMG	Small Provincial	Non-Metro
Port Phillip City Council	Western RWMG	Inner Metropolitan	Metro
Pyrenees Shire Council	Highlands RWMG	Rural Township	Non-Metro
Queenscliffe Borough Council	Barwon RWMG	Small Provincial	Non-Metro
South Gippsland Shire Council	Gippsland RWMG	Small Provincial	Non-Metro
Southern Grampians Shire Council	South Western RWMG	Small Provincial	Non-Metro
Stonnington City Council	South Eastern RWMG	Inner Metropolitan	Metro
Strathbogie Shire Council	Goulburn Valley RWMG	Rural Township	Non-Metro
Surf Coast Shire Council	Barwon RWMG	Small Provincial	Non-Metro
Swan Hill Rural City Council	Central Murray RWMG	Small Provincial	Non-Metro
Towong Shire Council	North Eastern RWMG	Rural Township	Non-Metro
Wangaratta Rural City Council	North Eastern RWMG	Small Provincial	Non-Metro
Warrnambool City Council	South Western RWMG	Small Provincial	Non-Metro
Wellington Shire Council	Gippsland RWMG	Small Provincial	Non-Metro
West Wimmera Shire Council	Desert Fringe RWMG	Rural Township	Non-Metro
Whitehorse City Council	Leastwaste RWMG	Outer Metropolitan	Metro
Whittlesea City Council	Northern RWMG	Outer Metropolitan	Metro
Wodonga Rural City Council	North Eastern RWMG	Major Provincial	Non-Metro
Wyndham City Council	Western RWMG	Outer Metropolitan	Metro
Yarra City Council	Western RWMG	Inner Metropolitan	Metro
Yarra Ranges Shire Council	Leastwaste RWMG	Melbourne Fringe	Metro
Yarriambiack Shire Council	Grampians RWMG	Rural Township	Non-Metro

Appendix D – Waste generation and diversion rate per household through kerbside collection services

All local governments with a garbage and recyclables kerbside collection services are listed below and are ranked by diversion rate. Local governments funded for best practice for kerbside recyclables collection have also been noted.

Diversion rate through kerbside collection services for local governments, Victoria 2004-05			
Rank	Local government	Diversion rate nett of contamination ¹ (%)	Best Practice ²
1	Greater Geelong City Council	58.0	Y
2	Monash City Council	54.7	
3	Maroondah City Council	51.6	Y
4	Banyule City Council	50.7	Y
5	Latrobe City Council	49.4	
6	Bayside City Council	49.1	Y
7	Manningham City Council	48.9	Y
8	Kingston City Council	48.1	Y
9	Frankston City Council	46.6	Y
10	Nillumbik Shire Council	46.2	
11	Benalla Rural City Council	45.5	
12	Baw Baw Shire Council	45.2	Y
13	Surf Coast Shire Council	44.9	Y
14	Boroondara City Council	44.6	Y
15	Colac Otway Shire Council	43.3	Y
16	Mornington Peninsula Shire Council	42.9	Y
17	Hobsons Bay City Council	42.6	Y
18	Melton Shire Council	41.5	Y
19	Corangamite Shire Council	40.0	
20	Knox City Council	40.0	Y
21	Moreland City Council	39.2	
22	Strathbogie Shire Council	37.3	
23	Stonnington City Council	37.0	Y
24	Yarra City Council	36.9	Y
25	Darebin City Council	36.4	Y
26	Alpine Shire Council	34.9	
27	Macedon Ranges Shire Council	34.9	
28	Port Phillip City Council	34.5	
29	Whitehorse City Council	34.4	Y
30	Wodonga Rural City Council	34.2	
31	Hepburn Shire Council	33.2	
32	Northern Grampians Shire Council	32.9	
33	Wangaratta Rural City Council	32.7	Y

1. Diversion rate equals tonnes of recyclables and green organics collected (less contamination) divided by tonnes of garbage, recyclables and green organics collected.
2. Best practice refers to local governments that have been funded by Sustainability Victoria for best practice, other local governments may have best practice in place but were not funded.

Diversion rate through kerbside collection services for local governments, Victoria 2004-05

Rank	Local government	Diversion rate nett of contamination ¹ (%)	Best Practice ²
34	Warrnambool City Council	32.4	
35	Gannawarra Shire Council	32.3	
36	Greater Dandenong City Council	32.2	Y
37	Whittlesea City Council	31.8	Y
38	Moonee Valley City Council	31.7	
39	Wyndham City Council	31.6	Y
40	South Gippsland Shire Council	31.5	
41	Bass Coast Shire Council	30.9	
42	Southern Grampians Shire Council	29.8	
43	Ballarat City Council	29.7	Y
44	Queenscliffe Borough Council	29.5	
45	Wellington Shire Council	29.2	
46	Glenelg Shire Council	28.6	
47	Hume City Council	28.3	Y
48	Mount Alexander Shire Council	27.6	
49	Glen Eira City Council	27.1	Y
50	Mansfield Shire Council	26.8	
51	Swan Hill Rural City Council	26.5	
52	Mitchell Shire Council	26.5	Y
53	Maribyrnong City Council	26.2	
54	Cardinia Shire Council	25.8	Y
55	Campaspe Shire Council	25.8	Y
56	Moorabool Shire Council	25.8	
57	Yarra Ranges Shire Council	25.5	Y
58	Pyrenees Shire Council	24.3	
59	Hindmarsh Shire Council	23.0	
60	East Gippsland Shire Council	22.9	
61	Brimbank City Council	22.9	
62	Indigo Shire Council	22.2	
63	Casey City Council	21.9	Y
64	Mildura Rural City Council	21.3	
65	Moyne Shire Council	20.3	Y
66	Greater Bendigo City Council	19.6	Y
67	Moira Shire Council	19.3	
68	Golden Plains Shire Council	17.6	
69	Central Goldfields Shire Council	17.5	

1. Diversion rate equals tonnes of recyclables and green organics collected (less contamination) divided by tonnes of garbage, recyclables and green organics collected.

2. Best practice refers to local governments that have been funded by Sustainability Victoria for best practice, other local governments may have best practice in place but were not funded.

Appendix D – Waste generation and diversion rate per household through kerbside collection services (cont.)

Diversion rate through kerbside collection services for local governments, Victoria 2004-05			
Rank	Local government	Diversion rate nett of contamination ¹ (%)	Best Practice ²
70	Buloke Shire Council	16.1	
71	Greater Shepparton City Council	15.8	Y
72	Towong Shire Council	15.0	
73	Murrindindi Shire Council	14.9	
74	West Wimmera Shire Council	14.6	
75	Horsham Rural City Council	12.4	
76	Ararat Rural City Council	12.4	
77	Melbourne City Council	12.2	
	State average	36.7	

1. Diversion rate equals tonnes of recyclables and green organics collected (less contamination) divided by tonnes of garbage, recyclables and green organics collected.
2. Best practice refers to local governments that have been funded by Sustainability Victoria for best practice, other local governments may have best practice in place but were not funded.

This table includes those 77 local governments that have a kerbside garbage and recyclables service; of these, 41 local governments also had a kerbside green organics service. Yarriambiack and Loddon did not provide a kerbside recyclables service and are therefore not included in this table.

Local governments that had a green organics kerbside service generally had a much higher diversion rate than those that did not.

Many local governments provide a drop-off facility for green organics instead of a frequent kerbside service due to cost efficiencies and access to reprocessors.

The table below lists the yield of recyclables collected through kerbside services per household by all local governments in alphabetical order. Those who were approved for funding for Best Practice for Kerbside Recycling as at 30 June 2005 are also indicated.

Recyclables household yield by local government, Victoria 2004-05			
Local government	Predominant bin type	Household yield (kg)	Best Practice
Alpine Shire Council	Crate & tied bundle	223.7	
Ararat Rural City Council	Commingled crate	162.6	
Ballarat City Council	240L commingled	179.0	Y
Banyule City Council	240L commingled	272.1	Y
Bass Coast Shire Council	240L commingled	119.9	
Baw Baw Shire Council	240L commingled	241.4	Y
Bayside City Council	240L commingled	322.8	Y
Benalla Rural City Council	240L commingled	434.2	
Boroondara City Council	120L commingled	323.0	Y

1. Corangamite Shire Council has included transfer station drop-off items in the kerbside recyclables service
2. Moreland has two district services operating for recyclables collection split 50:50 between the 2 regions of Nth and Sth Moreland.

Recyclables household yield by local government, Victoria 2004-05

Local government	Predominant bin type	Household yield (kg)	Best Practice
Brimbank City Council	Crate & tied bundle	207.3	
Buloke Shire Council	240L commingled	197.4	
Campaspe Shire Council	240L commingled	214.7	Y
Cardinia Shire Council	240L commingled	271.1	Y
Casey City Council	240L commingled	263.6	Y
Central Goldfields Shire Council	240L bin & crate	86.7	
Colac Otway Shire Council	240L commingled	189.0	Y
Corangamite Shire Council ¹	Crate & tied bundle	348.5	
Darebin City Council	240L commingled	173.9	Y
East Gippsland Shire Council	240L commingled	238.5	
Frankston City Council	240L commingled	313.3	Y
Gannawarra Shire Council	240L commingled	260.9	
Glen Eira City Council	2 crate system	222.5	Y
Glenelg Shire Council	Commingled crate	162.8	
Golden Plains Shire Council	240L commingled	151.5	
Greater Bendigo City Council	240L commingled	214.9	Y
Greater Dandenong City Council	240L commingled	251.4	Y
Greater Geelong City Council	240L commingled	289.5	Y
Greater Shepparton City Council	240L commingled	217.4	Y
Hepburn Shire Council	240L commingled	223.3	
Hindmarsh Shire Council	Bag & tied bundle	217.0	
Hobsons Bay City Council	240L commingled	268.0	Y
Horsham Rural City Council	240L commingled	171.1	
Hume City Council	240L commingled	310.0	Y
Indigo Shire Council	240L commingled	154.8	
Kingston City Council	240L commingled	274.3	Y
Knox City Council	240L split recyclables	221.7	Y
Latrobe City Council	240L commingled	262.8	
Macedon Ranges Shire Council	240L commingled	276.9	
Manningham City Council	240L split recyclables	287.7	Y
Mansfield Shire Council	240L commingled	361.2	
Maribyrnong City Council	240L commingled	213.9	
Maroondah City Council	240L split recyclables	269.5	Y
Melbourne City Council	120L commingled	79.9	
Melton Shire Council	240L commingled	286.3	Y
Mildura Rural City Council	240L commingled	192.0	
Mitchell Shire Council	240L commingled	254.2	Y

1. Corangamite Shire Council has included transfer station drop-off items in the kerbside recyclables service

2. Moreland has two district services operating for recyclables collection split 50:50 between the 2 regions of Nth and Sth Moreland.

Appendix D – Waste generation and diversion rate per household through kerbside collection services (cont.)

Recyclables household yield by local government, Victoria 2004-05			
Local government	Predominant bin type	Household yield (kg)	Best Practice
Moira Shire Council	240L commingled	245.9	
Monash City Council	2 crate system	262.2	
Moonee Valley City Council	240L commingled	265.9	
Moorabool Shire Council	2 crate system	177.0	
Moreland City Council Sth ²	120L commingled	169.7	
Moreland City Council Nth ²	2 crate system	237.8	
Mornington Peninsula Shire Council	240L commingled	206.1	Y
Mount Alexander Shire Council	140L	172.5	
Moyne Shire Council	240L bin & tied bundle	202.0	Y
Murrindindi Shire Council	240L commingled	107.4	
Nillumbik Shire Council	240L commingled	313.8	
Northern Grampians Shire Council	240L commingled	547.8	
Port Phillip City Council	120L commingled	230.8	
Pyrenees Shire Council	120L commingled	141.9	
Queenscliffe Borough Council	120L commingled	151.4	
South Gippsland Shire Council	240L commingled	203.8	
Southern Grampians Shire Council	120L commingled	266.2	
Stonnington City Council	240L commingled	237.6	Y
Strathbogie Shire Council	240L commingled	230.3	
Surf Coast Shire Council	240L commingled	255.4	Y
Swan Hill Rural City Council	240L commingled	232.3	
Towong Shire Council	240L commingled	193.1	
Wangaratta Rural City Council	240L commingled	309.7	Y
Warrnambool City Council	Crate & tied bundle	211.1	
Wellington Shire Council	240L commingled	222.3	
West Wimmera Shire Council	Crate	61.9	
Whitehorse City Council	Crate & tied bundle	263.4	Y
Whittlesea City Council	240L commingled	296.9	Y
Wodonga Rural City Council	240L commingled	179.2	
Wyndham City Council	240L commingled	282.9	Y
Yarra City Council	120L commingled	294.2	Y
Yarra Ranges Shire Council	240L commingled	263.2	Y

1. Corangamite Shire Council has included transfer station drop-off items in the kerbside recyclables service
2. Moreland has two district services operating for recyclables collection split 50:50 between the 2 regions of Nth and Sth Moreland.

Loddon and Yarriambiack Shire Councils provide drop-off facilities for recyclables instead of a kerbside service due to low population density. Drop-off facilities can be more cost efficient in providing communities in low density areas with access to diverting waste from landfill.

The following table lists the garbage household yield of all local governments in alphabetical order. All garbage services were weekly except for Nillumbik Shire Council which has a fortnightly service.

Garbage household yield by local government, Victoria 2004-05		
Local government	Predominant bin system	Household yield (kg)
Alpine Shire Council	80L	393.8
Ararat Rural City Council	240L	817.7
Ballarat City Council	140L	427.4
Banyule City Council	80L	403.7
Bass Coast Shire Council	120L	268.2
Baw Baw Shire Council	120L	433.3
Bayside City Council	140L	480.8
Benalla Rural City Council	140L	918.2
Boroondara City Council	120L	582.2
Brimbank City Council	140L	728.6
Buloke Shire Council	120L	949.0
Campaspe Shire Council	140L	472.7
Cardinia Shire Council	120L	671.1
Casey City Council	120L	502.0
Central Goldfields Shire Council	80L	442.3
Colac Otway Shire Council	240L split garbage & green organics	539.0
Corangamite Shire Council	120L	586.9
Darebin City Council	80L	445.7
East Gippsland Shire Council	240L	581.3
Frankston City Council	120L	394.5
Gannawarra Shire Council	120L	516.8
Glen Eira City Council	240L	708.8
Glenelg Shire Council	120L	350.0
Golden Plains Shire Council	240L	694.6
Greater Bendigo City Council	240L	697.4
Greater Dandenong City Council	140L	553.4
Greater Geelong City Council	120L	395.0
Greater Shepparton City Council	240L	753.2
Hepburn Shire Council	120L	398.4
Hindmarsh Shire Council	120L	444.0
Hobsons Bay City Council	120L	471.9
Horsham Rural City Council	240L	549.9
Hume City Council	140L	606.2
Indigo Shire Council	140L	490.8
Kingston City Council	120L	483.0
Knox City Council	120L	542.0

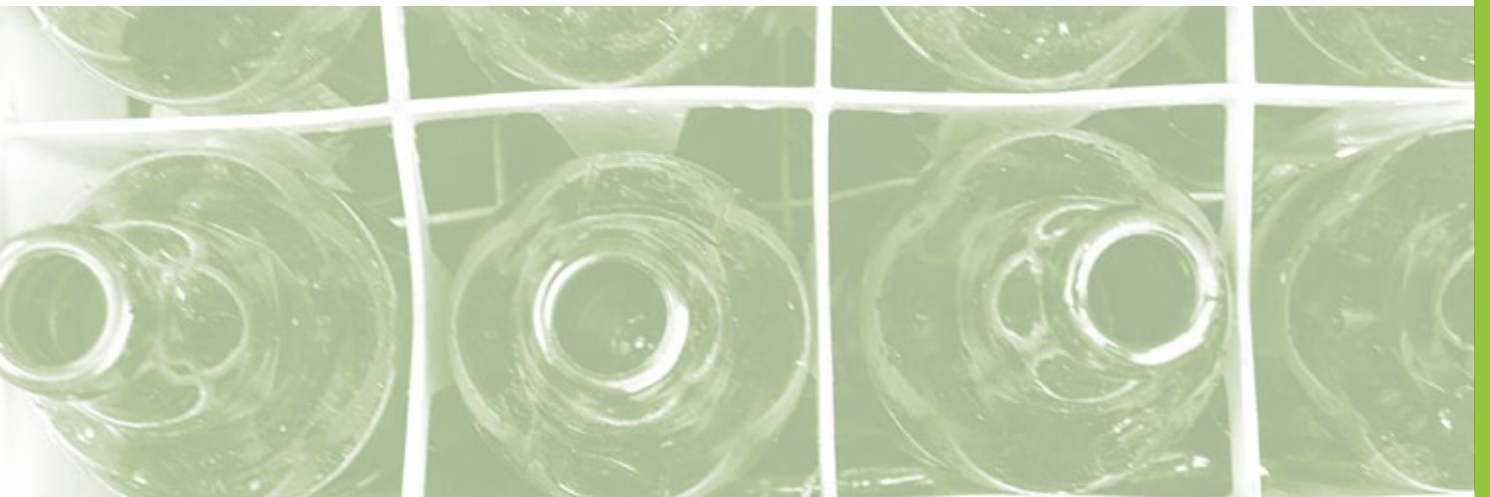
Appendix D – Waste generation and diversion rate per household through kerbside collection services (cont.)

Garbage household yield by local government, Victoria 2004-05		
Local government	Predominant bin system	Household yield (kg)
Latrobe City Council	120L	404.1
Loddon Shire Council	140L	531.3
Macedon Ranges Shire Council	140L	438.1
Manningham City Council	120L	547.1
Mansfield Shire Council	140L	379.2
Maribyrnong City Council	120L	582.1
Maroondah City Council	120L	523.3
Melbourne City Council	120L	508.3
Melton Shire Council	120L	504.8
Mildura Rural City Council	120L	527.2
Mitchell Shire Council	120L	529.9
Moira Shire Council	120L	595.6
Monash City Council	240L	432.1
Moonee Valley City Council	120L	599.3
Moorabool Shire Council	120L	470.0
Moreland City Council	80L	476.2
Mornington Peninsula Shire Council	80L	256.6
Mount Alexander Shire Council	140L	436.7
Moyne Shire Council	120L	624.0
Murrindindi Shire Council	140L	547.3
Nillumbik Shire Council	120L	213.6
Northern Grampians Shire Council	120L	626.0
Port Phillip City Council	120L	345.7
Pyrenees Shire Council	120L	449.3
Queenscliffe Borough Council	120L	491.9
South Gippsland Shire Council	120L	391.7
Southern Grampians Shire Council	120L	467.3
Stonnington City Council	120L	464.1
Strathbogje Shire Council	120L	156.2
Surf Coast Shire Council	120L	286.9
Swan Hill Rural City Council	120L	526.8
Towong Shire Council	140L	371.8
Wangaratta Rural City Council	140L	541.3
Warrnambool City Council	80L	431.3
Wellington Shire Council	120L	392.8
West Wimmera Shire Council	120L	361.3
Whitehorse City Council	120L	532.5
Whittlesea City Council	120L	642.3
Wodonga Rural City Council	140L	360.9

Garbage household yield by local government, Victoria 2004-05

Local government	Predominant bin system	Household yield (kg)
Wyndham City Council	140L	630.5
Yarra City Council	80L	419.0
Yarra Ranges Shire Council	120L	505.5
Yarriambiack Shire Council	120L	569.4





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