

# Western Australian Local Government Waste and Recycling Census 2014-15

as reported by local governments





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# Executive summary

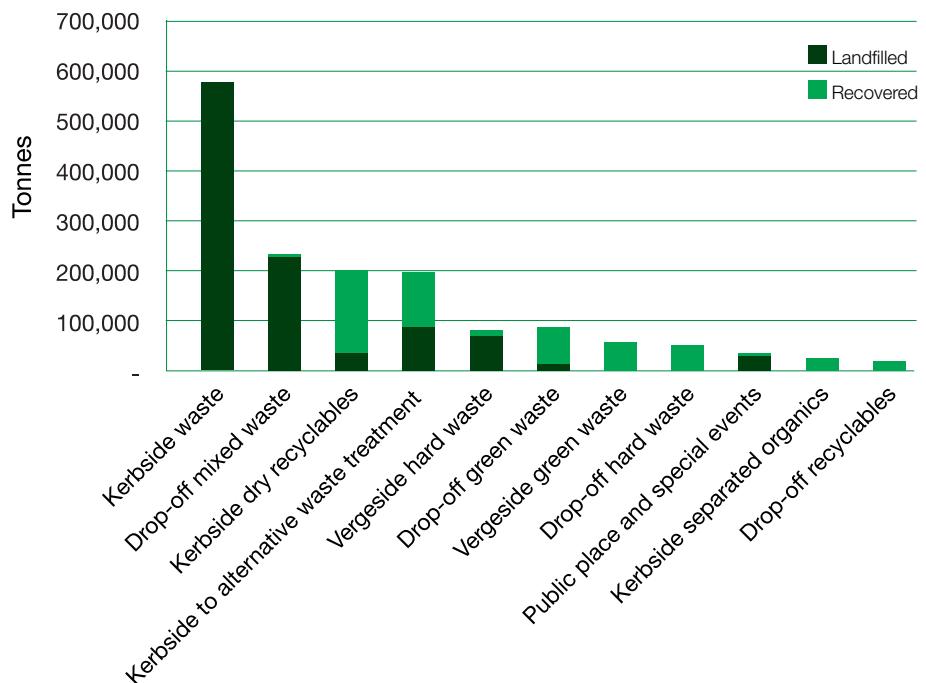
This report presents the results of the 2014-15 census of local government waste and recycling services. Data presented in this report was provided to the Waste Authority by Western Australian local government authorities. Ninety seven per cent of all local governments submitted a census return. All 30 metropolitan local governments submitted a return. The accuracy of measurements and estimates provided by local governments was not validated by the Waste Authority.

Statewide, local governments reported collecting around 1.53 million tonnes of domestic waste, equivalent to around 29 kilograms per household per week. The most common reported method of collecting domestic waste was from regular kerbside services, with 65 per cent of all reported domestic waste collected from the kerbside. Overall, 68 per cent of the reported domestic waste was disposed to landfill, with the remaining 32 per cent recovered.

The Western Australian Waste Strategy ‘Creating the Right Environment’ (WA Waste Authority, 2012) specifies waste diversion rate targets, including targets for Municipal Solid Waste (MSW) for both the Perth Metropolitan Region and major regional centres. The 2015 MSW diversion target for major regional centres was 30 per cent. Estimates of waste resource recovery (which is equivalent to waste diversion) presented in the census provide the principle means of measuring performance against this target. The local governments identified as major regional centres in 2014-15 were Kalgoorlie/Boulder, Albany, Greater Geraldton, Mandurah, Busselton and Bunbury. The domestic waste recovery rate for major regional centres was estimated at 30 per cent in 2014-15, which is consistent with the Waste Strategy’s waste diversion target for 2015. The previous domestic waste recovery rate was 29 per cent in 2013-14.

Across the state, most domestic waste recovery was achieved through kerbside collection services (Figure 1.0). Smaller quantities of domestic waste were also recovered at drop-off facilities and from vergeside collection services. In non-metropolitan areas, drop-off facilities were significant for the collection of recovered domestic waste, with around half of all recovered materials outside the metropolitan area dropped off by residents at these facilities.

Figure 1.0 Statewide local government waste collection services and waste destination in 2014-15



## Executive summary

The Waste Authority supports a three-bin kerbside system (general waste, co-mingled and green waste) for maximising recovery of domestic waste. In 2014-15, local governments that provided residents with a third bin for green waste, or directed the contents of their general waste to an Alternative Waste Treatment (AWT) facility, were, on average, able to recover a greater percentage of their kerbside collected waste (42 per cent and 48 per cent respectively) when compared to a two-bin collection system without AWT (22 per cent).

The total reported quantity of domestic waste collected by Western Australian local governments has increased over the past five years from around 1.42 million tonnes in 2010-11 to around 1.53 million tonnes in 2014-15. Reported recovery of domestic waste has also increased from around 443,100 tonnes in 2010-11 to 489,000 tonnes in 2014-15. However, domestic waste generation and recovery per capita in 2014-15 were estimated to be equivalent to rates reported in 2010-11 (0.6 and 0.19 tonnes respectively).



# 1. Introduction

The Waste Authority conducts an annual census of the waste and recycling (W&R) services provided to households and commercial premises by local government and constituted regional councils in Western Australia. The 2014-15 census was conducted between August and December 2015, and collected various data about the W&R services provided by Western Australian local governments in that financial year.

Information from the census is used by the Waste Authority and the State for the development of policy and programs and monitoring the progress towards the waste recovery targets specified in the Western Australian Waste Strategy 'Creating the Right Environment' (WA Waste Authority, 2012) (the Waste Strategy).

Data collected and reported through the census also includes information required to be reported to the National Environmental Protection Council under the National Environment Protection Measure for Used Packaging Materials (NEPM-UPM).

The main focus of this report is presenting information about domestic waste which is the major component of the Municipal Solid Waste (MSW) stream. As defined here, domestic waste is largely comprised of waste collected by local governments from households through kerbside, vergeside and drop-off services but also includes waste collected from bins in public places and at special events such as community festivals. It provides a measure of progress towards the Waste Strategy MSW diversion target for major regional centres. A separate annual report, Recycling Activity in Western Australia provides measures against the other waste diversion targets of the Waste Strategy.

Where local governments have consented, census data is provided to the Western Australian Local Government Association (WALGA) and the Forum of Regional Councils. Selected data is also collected through the census on behalf of the Keep Australia Beautiful Council.

The Waste Authority acknowledges and thanks local governments for their cooperation in providing the information summarised in this report.



## 2. Census details and other data sources

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The Waste Authority distributed and collected the 2014-15 census forms, and undertook data consolidation and analysis.

The census collects data only about W&R services provided to residents by local government and constituted regional councils (including those services contracted out to third party service providers). It does not capture W&R services provided to residents by other independent, non-contracted organisations.

Feedback was provided by the Waste Authority to local governments on the completeness and consistency of data as it was submitted by local governments. However, as no data validation was conducted, the accuracy of measurements and estimates provided by local government cannot be quantified nor guaranteed. Additionally, many local governments obtained waste data from their waste contractors. This third party data may not have been audited by local government and has not been validated by the Waste Authority.

Local governments not equipped to measure the quantity of waste they handled were encouraged to provide estimates based on documented information, such as recent waste composition audits and historical data. Local governments were provided with example methods of estimating quantities of waste.

Some local governments did not provide complete information on tonnages and other information such as costs and charges. In many instances this was due to the absence of an established W&R data management system and/or the lack of staff whose function specifically included monitoring and reporting W&R services.

In this report, W&R tonnages and costs per person and costs per household are presented. The projected population and number of households in each local government for 2014-15 were obtained from the Western Australian Planning Commission (Mulholland & Piscicelli, 2012). The population data for the Shires of Christmas Island and the Cocos (Keeling) Islands were obtained from the Western Australian Local Government Directory 2012 (WALGA, 2012).

Waste resource recovery is referred to throughout the report and is defined as that portion of waste generated that is recovered for the purpose of recycling, re-use or energy recovery. It is calculated as the difference between the quantity of waste collected by a local government and the quantity of waste it disposes to landfill. Waste resource recovery can be considered to be an indicator of waste diversion, which is referred to in the Waste Strategy.

Except where specified otherwise, all waste quantities are reported in tonnes. Due to rounding, the totals presented in the report's tables and charts do not always equal the sum of presented data. The quantities reported in the text have also been rounded.



### 3. Local government participation

Ninety seven per cent of local governments and regional councils returned a census. All metropolitan local governments and constituted regional councils responded to the survey. Table 3.1 shows the number of participating local governments and regional councils in the metropolitan and non-metropolitan regions across the State.

Type of council	Number of local governments		
	Total	Participating	% Participation
Metropolitan			
Local government	30	30	100%
Regional councils	5	5	100%
Non-metropolitan			
Local government	110	106	96%
Regional councils	2	2	100%
<b>Total</b>	<b>147</b>	<b>143</b>	<b>97%</b>

Table 3.1 Western Australian local government participation in the 2014-15 waste and recycling census



## 4. Waste generation and recovery as reported by local governments



### 4.1 Total waste generation and recovery

In 2014-15, Western Australian local governments reported collecting around 1.53 million tonnes of domestic waste. The reported quantity was equivalent to each Western Australian household generating around 29 kilograms of domestic waste every week. Metropolitan local governments collected 68 per cent of the reported domestic waste, with 32 per cent collected by local governments outside the metropolitan area.

In the metropolitan area, 36 per cent, or around 373,600 tonnes, of domestic waste was reported as recovered. Outside the metropolitan area, 24 per cent or around 115,400 tonnes of domestic waste was reported as recovered.

Tables 4.1 and 4.2 present the quantities of domestic waste collected, disposed to landfill and recovered as reported by local government authorities in 2014-15.

Geographic region	Collected	Disposed to landfill	Recovered	Recovery rate
Statewide	1,529,378	1,040,352	489,025	32 %
Metropolitan	1,047,498	673,893	373,604	36 %
Non-metropolitan	481,880	366,459	115,421	24 %

Table 4.1 Reported total tonnes of domestic waste collected, disposed to landfill and recovered in 2014-15

## 4. Waste generation and recovery as reported by local governments (continued)

	<b>Statewide</b>	<b>Metropolitan</b>	<b>Non-metropolitan</b>
Persons <sup>1</sup>	2,555,272	1,895,800	659,472
Households <sup>1</sup>	1,026,229	759,920	266,309
Domestic waste generation per person	0.60	0.55	0.73
Landfill per person	0.41	0.36	0.56
Recovered per person	0.19	0.20	0.18
Domestic waste generation per household	1.49	1.38	1.81
Landfill per household	1.01	0.89	1.38
Recovered per household	0.48	0.49	0.43

<sup>1</sup> Residing in local governments that responded to the census

Table 4.2 Reported domestic waste collection, disposal and recovery as tonnes per capita and per household in 2014-15

Table 4.3 shows that total domestic waste generation, as reported by Western Australian local governments, has increased from around 1.42 million tonnes in 2010-11 to around 1.53 million tonnes in 2014-15. Domestic waste generation per capita in 2014-15 was equivalent to what it was in 2010-11 but has varied in the intervening years between 0.58 (2013-14) and 0.64 (2011-12). Reported recovery of domestic waste has also increased from around 443,100 tonnes to 489,000 tonnes in 2014-15. Recovery of domestic waste per capita peaked in 2011-12 at 0.23 tonnes per person but has declined to 0.19 tonnes in 2014-15 (equivalent to what it was in 2010-11).

<b>Census year</b>	<b>Waste generation (tonnes)</b>		<b>Recovery (tonnes)</b>	
	<b>Statewide</b>	<b>Per person</b>	<b>Statewide</b>	<b>Per person</b>
2010-11	1,416,301	0.60	443,090	0.19
2011-12	1,536,648	0.64	565,604	0.23
2012-13	1,495,235	0.61	499,181	0.20
2013-14	1,450,719	0.58	436,623	0.17 <sup>2</sup>
2014-15	1,529,378	0.60	489,025	0.19

<sup>2</sup> Corrected from 0.16 which was originally reported in the 2013-14 Census report (DER 2015).

Table 4.3 Reported domestic waste generation and recovery 2014-15

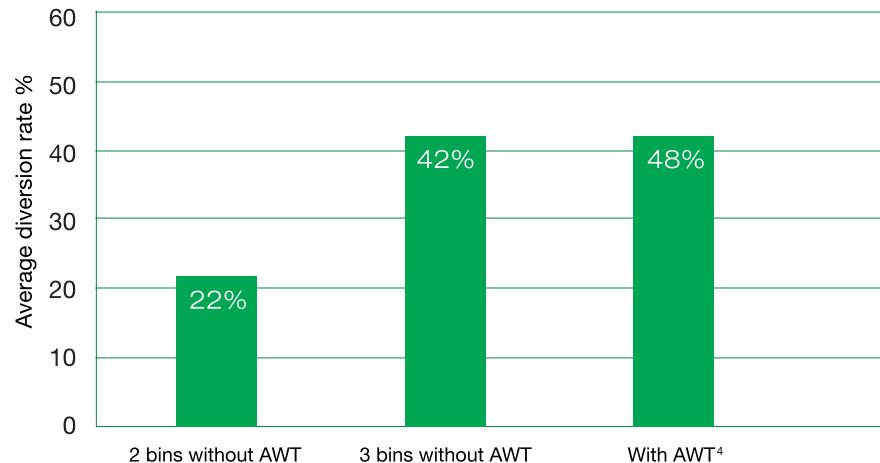
## 4.2 Waste Strategy targets for major regional centres

The Waste Strategy specifies waste diversion targets for MSW: 50 per cent in the Perth Metropolitan Region and 30 per cent for major regional centres by 2015. Metropolitan MSW diversion rates are reported in the annual Recycling Activity Review. In the context of this report, ‘recovery’ can be substituted for ‘diversion’. The census provides a measure of domestic waste recovery rates for major regional centres<sup>3</sup>, which can be taken as an indicator of waste diversion. Those local governments that the Waste Authority has identified as major regional centres are Kalgoorlie/Boulder, Albany, Greater Geraldton, Mandurah, Busselton and Bunbury. The domestic waste recovery rate for major regional centres in 2014-15 was estimated to have been consistent with the 2015 Waste Strategy target, with a recovery rate of 30 per cent achieved. This compares to 29 per cent for the same major regional centres in 2013-14.

## 4.3 Kerbside recovery performance

The Waste Authority supports a three-bin system (general waste, co-mingled and green waste) for maximising recovery of domestic waste. On average, local governments that provided residents with a third bin for green waste or directed the contents of their general waste to an Alternative Waste Treatment (AWT) facility were able to recover a greater percentage of their waste (see Figure 4.1). Statewide, recovery rates were significantly higher ( $p<0.05$ ) for a three-bin system or where mixed waste was directed to AWT when compared to a two-bin collection system.

Figure 4.1 Average kerbside waste recovery rates for local governments with different kerbside service types 2014-15



<sup>4</sup> Inclusive of 2 bin systems with AWT plus a single local government with a 3 bin system with AWT.

<sup>3</sup> A major regional centre as defined by the Waste Authority includes any local government with a population above 15,000 and within 600km (by road) of Perth. If more than one centre within a WAPC planning region meets this definition, then the most populated centre is included in the first instance. Smaller centres that also meet the population and distance criteria are included if within 15 per cent of the population of the planning region's most populated centre; or, if greater than 300km from the planning region's most populated centre. One identified major regional centre is currently excluded from the calculation of the annual average diversion rates for major regional centres due to ongoing inconsistencies in its submitted census data. The Waste Authority is looking to work with this local government to resolve these reporting issues.

## 5. Waste and recycling services to households

In this report, wastes collected by local government are differentiated according to the type of collection service:

- **Kerbside services** - containerised, regular, frequent collection of waste and/or recyclables from the front of residential premises.
- **Vergeside services** - are intermittent, typically non-containerised collection of bulky wastes, such as green wastes (for example, grass or flower cuttings and hedge trimmings) and hard wastes (for example, furniture, mattresses and white goods).
- **Drop-off services** - are provided at central locations, such as a transfer station, where residents can bring their waste for disposal or recycling.
- **Public place and special events (PP&SE)** - public place collections are provided as street litter bins and permanent bins in parks. For special events such as festivals and similar gatherings, temporary bins are put in place. This also includes extra bins for sports events.

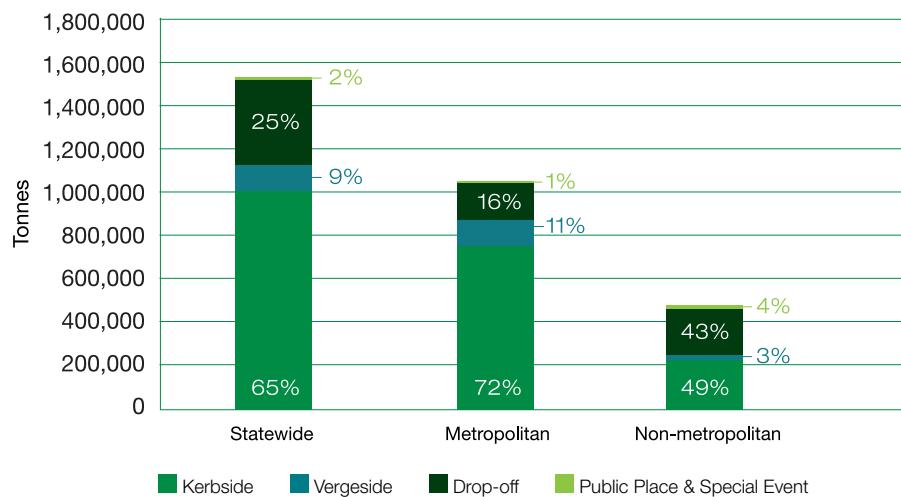
Collected waste is further disaggregated according to its destination, namely:

- disposed to landfill; and
- recovered for the purpose of recycling, re-use or recovery.

### 5.1 Collection of waste

Figure 5.1 shows the amount of domestic waste collected by local governments by the type of collection service. The majority (72 per cent or 749,600 tonnes) of domestic waste in the metropolitan area was collected from the kerbside, with other types of collection services only accounting for 28 per cent of all domestic waste collected. Outside the metropolitan area only 49 per cent (238,100 tonnes) of domestic waste was collected from kerbside services, while the remaining 51 per cent was collected through other services, predominantly drop-off waste facilities.

Figure 5.1 Quantity of domestic waste collected by service type across the State, and by metropolitan and non-metropolitan local governments in 2014-15

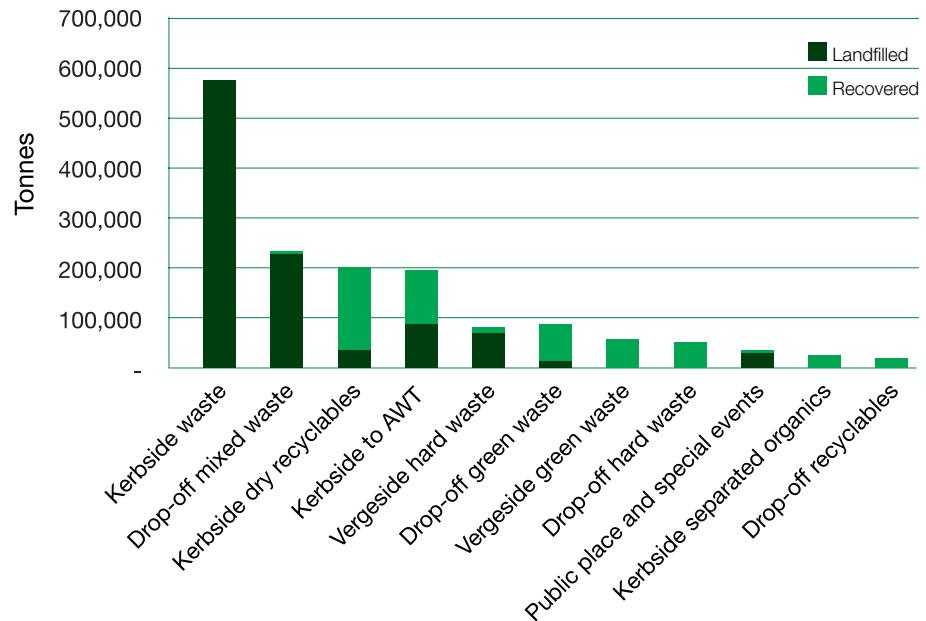


## 5.2 Destination of waste and recycling materials

Statewide, 1.04 million tonnes of domestic waste collected by local governments was disposed to landfill in 2014-15. The majority (56 per cent) of this waste was collected through general waste kerbside collection services, with drop-off mixed waste services (22 per cent) and residual waste from kerbside AWT services (8 per cent) the next biggest contributors.

Statewide, 489,000 tonnes of domestic waste collected by local governments was recovered. The majority (58 per cent) of domestic waste recovered was collected from other kerbside services (kerbside dry recyclables, kerbside to AWT and kerbside separated organics), with smaller quantities recovered from drop-off (28 per cent) and vergeside (13 per cent) services (Figure 5.2)

Figure 5.2 Domestic waste destination by collection service in 2014-15

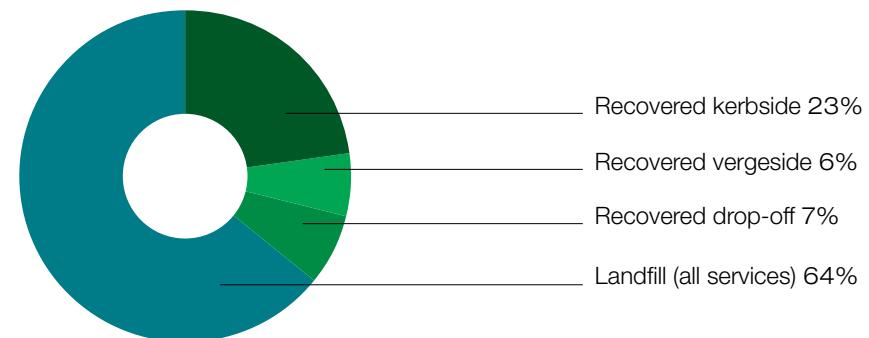


## 5. Waste and recycling services to households (continued)

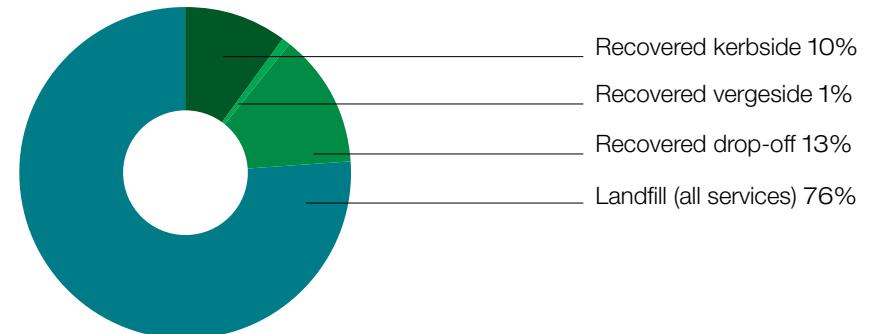


Figures 5.3 and 5.4 below show that in the metropolitan area most recovered domestic waste was collected from the kerbside (23 per cent of all collections), while outside of the non-metropolitan area, most recovered domestic waste was collected at drop-off facilities (13 per cent of all collections).

*Figure 5.3 Proportion of domestic waste reported as handled by metropolitan local governments by destination, and the disaggregation of recovered materials by type of collection service*



*Figure 5.4 Proportion of domestic waste reported as handled by non-metropolitan local governments by destination, and the disaggregation of recovered materials by type of collection service*



## 6. Kerbside services

Kerbside services are defined as containerised, regular and frequent collection of waste and or/recyclables from the front of residential premises. Average participant rates, service delivery methods and proportion of households provided with kerbside services are given in Appendix A.

### 6.1 Kerbside general waste directly disposed to landfill

Across the State, 130 local governments (26 metropolitan and 104 non-metropolitan) reported providing a kerbside waste collection service where waste was directly disposed to landfill. Of the six local governments that did not provide this service, four were metropolitan local governments that directed all kerbside waste to an Alternative Waste Treatment (AWT) facility, and two were non-metropolitan governments that largely depended on drop-off collection services.

In 2014-15, local governments reported collecting around 580,100 tonnes of kerbside waste in Western Australia for direct disposal to landfill. Table 6.1 provides quantities collected in the metropolitan and non-metropolitan areas from this service.

Geographic region	Number local governments with service	Collected	Collected per household	Collected per person
Statewide	130	580,097	0.65	0.26
Metropolitan	26	396,131	0.61	0.24
Non-metropolitan	104	183,966	0.77	0.31

Table 6.1 Tonnes collected from kerbside waste for disposal to landfill services in 2014-15



## 6. Kerbside services (continued)

### 6.2 Kerbside general waste processed at an Alternative Waste Treatment (AWT) facility

Fourteen local governments reported providing a kerbside general waste collection service where waste was processed at an AWT facility. Ten of these local governments also reported a waste to landfill service. In some local governments, AWT was only available for part of the reporting period.

In 2014-15, 187,800 tonnes of kerbside waste was reported as collected for treatment at an AWT facility with around 54 per cent of this material reported as recovered. Table 6.2 details the quantities collected and recovered from this service.

Geographic region	Number local governments with service	Collected	Disposed to landfill	Recovered	Collected per household	Collected per person
Statewide	14	187,767	86,978	100,789	0.62	0.19
Metropolitan	14	187,767	86,978	100,789	0.62	0.19
Non-metropolitan	0	0	0	0	0.00	0.00

Table 6.2 Reported tonnes of waste collected from the kerbside and directed to an AWT in 2014-15





### 6.3 Kerbside recycling - co-mingled and separated dry recyclables

A total of 94 local governments (29 metropolitan and 65 non-metropolitan) reported providing kerbside recycling collection services to their residents. Table 6.3 lists the frequency of kerbside recycling services, the type and size of container and the type of recyclable materials collected. It shows the majority of local governments that provided co-mingled dry recycling service collected these bins fortnightly.

Local governments reported that around 199,500 tonnes of recyclable materials were collected from the kerbside in 2014-15. Over 165,500 tonnes, or around 83 per cent, of this waste was reported as recovered. Table 6.4 on page 16 details the quantities collected and recovered from these services in 2014-15.

Service	Container size	Collection frequency	Number of local governments <sup>5</sup>
<b>Co-mingled service</b>			
	240L	weekly	3
	240L	fortnightly	84
	240L	monthly	1
	other	weekly	1
	other	fortnightly	2
<b>Containers only</b>			
	120L	weekly	1
	240L	fortnightly	1
<b>Paper &amp; cardboard</b>			
	120L	weekly	1
	other	monthly/other	2

<sup>5</sup> Some local governments provided more than one type of kerbside recycling service to their residents therefore the sum of the number of local governments in Table 6.3 does not equal the total shown in Table 6.4.

Table 6.3 Number of local governments providing kerbside recycling services, by container type and size, and frequency of collection service in 2014-15

## 6. Kerbside services (continued)

<b>Geographic region</b>	<b>Number local governments with service</b>	<b>Collected</b>	<b>Disposed to landfill</b>	<b>Recovered</b>	<b>Collected per household<sup>6</sup></b>	<b>Collected per person</b>
Statewide	94	199,454	33,959	165,496	0.24	0.10
Metropolitan	29	155,304	26,084	129,220	0.24	0.10
Non-metropolitan	65	44,150	7,875	36,276	0.24	0.10

<sup>6</sup> Per person and per household figures based on kerbside co-mingled recycling service (i.e. excludes separated recycling kerbside services such as paper and cardboard only collections).

Table 6.4 Reported tonnes collected and recovered from kerbside recycling services in 2013–14

### 6.4 Kerbside separated organics

Eight local governments (four metropolitan and four non-metropolitan) offered a kerbside separated organics collection service in 2014–15. This service type includes green waste collections and combined green waste – food waste services.

Local governments reported collecting around 20,400 tonnes of separated organic waste from the kerbside in 2014–15. Around 18,800 tonnes, or around 92 per cent, of the separated organic waste was reported as recovered. Table 6.5 details the quantities collected and recovered from this service in 2014–15.

<b>Geographic region</b>	<b>Number local governments with service</b>	<b>Collected</b>	<b>Disposed to landfill</b>	<b>Recovered</b>	<b>Collected per household</b>	<b>Collected per person</b>
Statewide	8	20,448	1,633	18,815	0.24	0.10
Metropolitan	4	10,435	1,258	9,177	0.21	0.09
Non-metropolitan	4	10,013	375	9,638	0.29	0.12

Table 6.5 Reported tonnes collected and recovered from kerbside green waste services in 2014–15



## 7. Vergeside services

Vergeside collection services are intermittent, non-containerised collection of bulky wastes, such as green wastes (for example grass or flower cuttings and hedge trimmings) and hard wastes (for example furniture, mattresses and white goods).

Across the State, 58 local governments reported providing a vergeside green waste collection and 68 reported providing a hard waste collection in 2014-15.

As with previous reports, some local governments reported difficulty in estimating the quantities of materials collected and disposed of from vergeside collection services in 2014-15. The quantities reported here may be subject to a high degree of inaccuracy and should be interpreted cautiously.

### 7.1 Vergeside collection frequency

Table 7.1 lists the number of local governments by frequency of vergeside green waste and hard waste collections. It shows the majority of councils collect vergeside green and hard waste either annually or biannually, with only a smaller proportion offering more frequent collections.

Frequency	Green waste service		
	Statewide	Metropolitan	Non-metropolitan
Annual	25	6	19
Biannual	21	12	9
Quarterly	5	4	1
On demand	3	3	
Other	4	3	1
Total	58	28	30

Frequency	Hard waste service		
	Statewide	Metropolitan	Non-metropolitan
Annual	41	14	27
Biannual	15	9	6
Quarterly	2	1	1
On demand	3	2	1
Other	7	4	3
Total	68	30	38

Table 7.1 Reported frequency of vergeside services in 2014-15

## 7. Vergeside services (continued)

### 7.2 Vergeside green waste

As shown in Table 7.1, 28 metropolitan local governments and 30 non-metropolitan local governments reported providing a vergeside green waste collection to their residents.

Local governments reported collecting a total of around 56,700 tonnes of green waste material through vergeside services in 2014-15. Around 53,700 tonnes, or 95 per cent, of this material was reported as recovered. Table 7.2 details the quantities collected and recovered from this service in 2014-15.

	<b>Collected</b>	<b>Disposed to landfill</b>	<b>Recovered</b>	<b>Collected per household</b>	<b>Collected per person</b>
<b>Statewide</b>	56,713	3,031	53,682	0.07	0.03
<b>Metropolitan</b>	50,131	1,930	48,201	0.07	0.03
<b>Non-metropolitan</b>	6,582	1,101	5,481	0.06	0.02

Table 7.2 Reported tonnes of vergeside green waste collected and recovered in 2014-15

	<b>Collected</b>	<b>Disposed to landfill</b>	<b>Recovered</b>	<b>Collected per household</b>	<b>Collected per person</b>
<b>Statewide</b>	77,861	68,601	9,260	0.09	0.04
<b>Metropolitan</b>	68,517	60,592	7,925	0.09	0.04
<b>Non-metropolitan</b>	9,344	8,009	1,335	0.07	0.03

Table 7.3 Reported tonnes of vergeside hard waste collected and recovered in 2014-15

## 8. Drop-off services

Drop-off services are provided at central locations, usually at a waste depot, where residents can bring their waste for disposal or recycling using cars, utility vehicles or trailers.

Non-metropolitan local governments that do not provide kerbside and/or vergeside services may provide drop-off recycling services at a local landfill or a transfer station. In some non-metropolitan local governments, recycling services are provided by not-for-profit organisations, such as the Lions Club. Both metropolitan and non-metropolitan householders with kerbside recycling services may also have access to drop-off facilities at landfills or transfer stations operated by local governments or regional councils. In some local government areas, residents may have access to more than one drop-off facility.

	<b>Number local governments providing service</b>	<b>Collected</b>	<b>Disposed to landfill</b>	<b>Recovered</b>
<b>Statewide</b>	107	229,364	227,050	2,314
<b>Metropolitan</b>	12	93,517	92,523	993
<b>Non-metropolitan</b>	95	135,848	134,527	1,321

Table 8.1 Reported tonnes of drop-off mixed waste collected and recovered in 2014-15

### 8.1 Drop-off mixed waste

A total of around 229,400 tonnes of mixed waste was reported as dropped off by residents at local government or regional council facilities in 2014-15. Around 2,300 tonnes, or 1 per cent, of this material was reported as recovered. Table 8.1 details the quantities collected and recovered from this service in 2014-15.

### 8.2 Drop-off recyclables

A total of around 13,600 tonnes of dry mixed recyclables were reported as dropped off by residents in 2014-15. Around 13,000 tonnes, or 96 per cent, of this material was reported as recovered. Table 8.2 details the quantities collected and recovered from this service in 2014-15.

	<b>Number local governments providing service</b>	<b>Collected</b>	<b>Disposed to landfill</b>	<b>Recovered</b>
<b>Statewide</b>	67	13,586	603	12,983
<b>Metropolitan</b>	10	6,878	9	6,869
<b>Non-metropolitan</b>	57	6,708	594	6,114

Table 8.2 Reported tonnes of drop-off recyclables collected and recovered in 2014-15

## 8. Drop-off services (continued)

### 8.3 Drop-off green waste

A total of around 85,900 tonnes of green waste was reported as dropped off by residents in 2014-15. Around 77,600 tonnes, or 90 per cent, of this material was reported as recovered. Table 8.3 details the quantities collected and recovered from this service in 2014-15.

	<b>Number local governments providing service</b>	<b>Collected</b>	<b>Disposed to landfill</b>	<b>Recovered</b>
<b>Statewide</b>	85	85,894	8,293	77,601
<b>Metropolitan</b>	13	50,723	0	50,723
<b>Non-metropolitan</b>	72	35,171	8,293	26,878

Table 8.3 Reported tonnes of drop-off green waste collected and recovered in 2014-15

### 8.4 Drop-off hard waste

A total of around 49,600 tonnes of hard waste and other types of waste (not mixed, green or dry recyclable wastes) were reported as dropped off by residents in 2014-15. Around 46,400 tonnes, or 93 per cent, of this material was reported as recovered. Table 8.4 details the quantities collected and recovered from this service in 2014-15.

	<b>Number local governments providing service</b>	<b>Collected</b>	<b>Disposed to landfill</b>	<b>Recovered</b>
<b>Statewide</b>	82	49,621	3,242	46,379
<b>Metropolitan</b>	14	18,882	622	18,260
<b>Non-metropolitan</b>	68	30,739	2,620	28,119

Table 8.4 Reported tonnes of drop-off hard waste collected and recovered in 2014-15

## 8.5 Regional council drop-off facilities

Drop-off W&R facilities were provided for residents by five regional councils in 2014-15: Southern Metropolitan Regional Council; Eastern Metropolitan Regional Council; Mindarie Regional Council; Western Metropolitan Regional Council; and Bunbury-Harvey Regional Council.

The amounts of waste reported as collected, landfilled and recovered at these drop-off facilities in 2014-15 disaggregated by waste type is shown in Table 8.5. These services and quantities have been included in Tables 8.2 and 8.4.

Waste type	Collected	Disposed to landfill	Recovered
Mixed waste	24,369	23,853	516
Dry recyclables	4,415	-	4,415
Green waste	9,893	-	9,893
Hard waste	4,262	-	4,262

Table 8.5 Reported tonnes of self-hauled, residential waste collected and recovered at regional council drop-off facilities in 2014-15



## 9. Public Place and Special Events (PP&SE) Services



Local governments collect waste in public places using street litter bins and permanent bins in parks. For special events such as festivals, sport events and similar gatherings, temporary bins are put in place in addition to permanent bins.

The majority (92 per cent) of local governments reported providing PP&SE waste collection services. A smaller proportion (27 per cent) reported providing PP&SE recycling collection services.

A total of around 28,600 tonnes of waste was reported as collected from these services in 2014-15, with a reported recovery of around 1,700 tonnes (six per cent) of materials.

Most local governments were unable to provide a direct measure of the quantity of W&R materials collected from public place bins because they were typically collected with householder kerbside waste. However, the majority were able to estimate tonnes collected based on the number of bin lifts and an estimation of average bin weight or, alternatively, attributing to PP&SE a proportion of the domestic bin collection run. Similarly, quantities of W&R materials collected from temporary bins placed at special events were not typically measured by local government. The reported quantity was likely to be a 'best guess' by the local government officer completing the census.

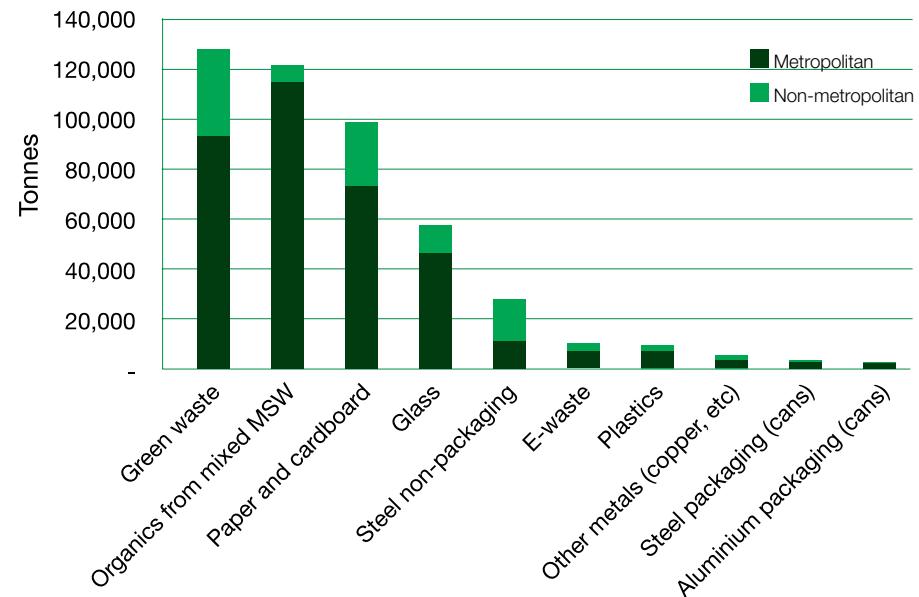
## 10. Recovered materials

Local governments were asked to report separately the total quantity of materials recovered from domestic waste collected. These quantities exclude residual waste and/or contamination. The quantities of recovered domestic waste do not necessarily equal the quantities previously reported in Sections 6 to 9, due to inconsistent and/or non-reporting by some local governments. However, reported differences were generally small and the data presented in this section should still provide a reliable indication of the proportions of the types of domestic waste recovered by local governments.

### 10.1 Recovered materials statewide

A total of 488,600 tonnes of recovered materials were reported in this section of the census. Of this, green waste (usually recycled into compost or mulch) formed the largest proportion of recovered materials (128,650 tonnes). Paper and cardboard, was the largest category (99,100 tonnes) of recovered dry recyclable materials. The majority (75 per cent) of recovered materials were collected through services provided by metropolitan local governments, with 25 per cent collected by non-metropolitan government. Figure 10.1 below charts the top 10 material categories, by weight, recovered by local government services across the State.

Figure 10.1 Top 10 domestic waste material categories recovered by local governments in 2014-15



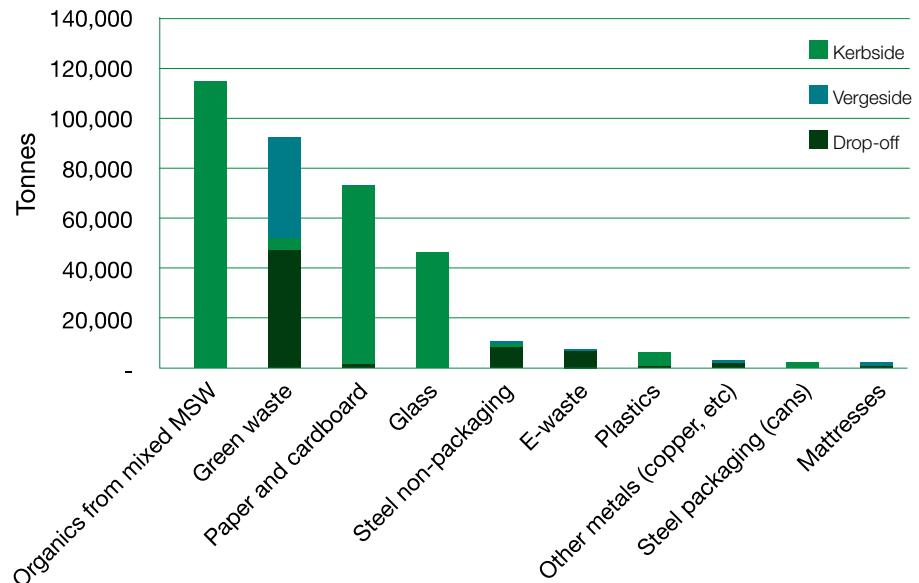
## 10. Recovered materials (continued)

### 10.2 Recovered materials as reported by metropolitan local governments

Figure 10.2 shows the top 10 (by weight) domestic waste material types recovered by metropolitan local governments, disaggregated by the type of collection service. The figure shows that organics recovered from mixed MSW (115,500 tonnes), green waste (92,800 tonnes) and paper and cardboard (72,800 tonnes) were the largest (by weight) categories of materials recovered by metropolitan local governments. The majority (68 per cent) of all reported recovered materials were collected from kerbside services. For recycled green waste however, only a small proportion (six per cent) was collected from kerbside services in the metropolitan area with the dominant shares collected via vergeside and drop-off services.



Figure 10.2 Top 10 domestic waste material types recovered by metropolitan local governments in 2014-15

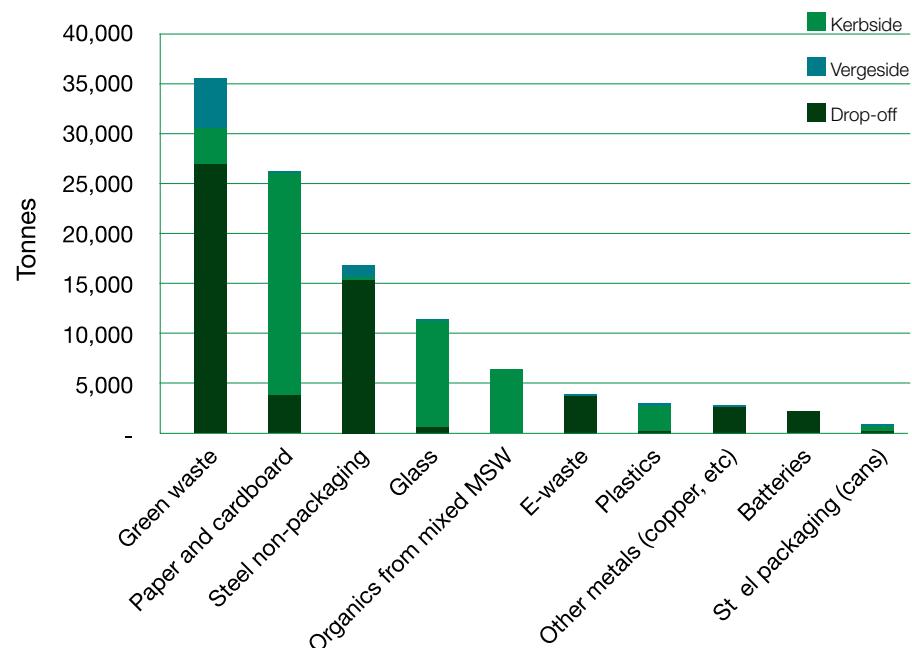


### 10.3 Recovered materials as reported by non-metropolitan local governments

Figure 10.3 shows the top 10 (by weight) domestic waste material categories recovered by non-metropolitan local governments, disaggregated by the type of collection service. Green waste (35,900 tonnes) and paper and cardboard (26,100 tonnes) were the largest categories of materials recovered by non-metropolitan local governments. In non-metropolitan local governments, around half (52 per cent) of all recovered materials were collected from residential drop-off services and the majority of the remaining recovered materials (43%) were collected via kerbside services.



Figure 10.3 Top 10 domestic waste material categories recovered by non-metropolitan local governments in 2014-15. Note: non-metropolitan 'Organics from mixed MSW' includes source separated organic waste.



# 11. Financial data

## 11.1 Cost of providing waste and recycling services

Local governments were asked to provide the cost of providing W&R services disaggregated by service and waste type. The reported costs are not directly comparable across all local governments. While the majority of local governments provided disaggregated costs, some only provided a total cost for all their W&R services. In addition, others did not respond to this section of the census. Furthermore, the types of costs and/or services that were included in the reported figures were not verified.

Eighty-four per cent of local governments reported the total cost of providing W&R services to their residents, with a coverage of 89 per cent of the State's population. These local governments reported spending \$248 million on the provision of providing W&R services to their residents in 2014-15. When extrapolated to the rest of the State's population, expenditure by all local governments is estimated at around \$279 million. Figures 11.1 and 11.2, show that the majority of reported costs were related to providing kerbside collections and the collection of general waste. Local governments that did not provide disaggregated cost data are not included in Figures 11.1 and 11.2 below.

Figure 11.1 Reported total local government expenditure on the provision of waste services by waste type 2014-15

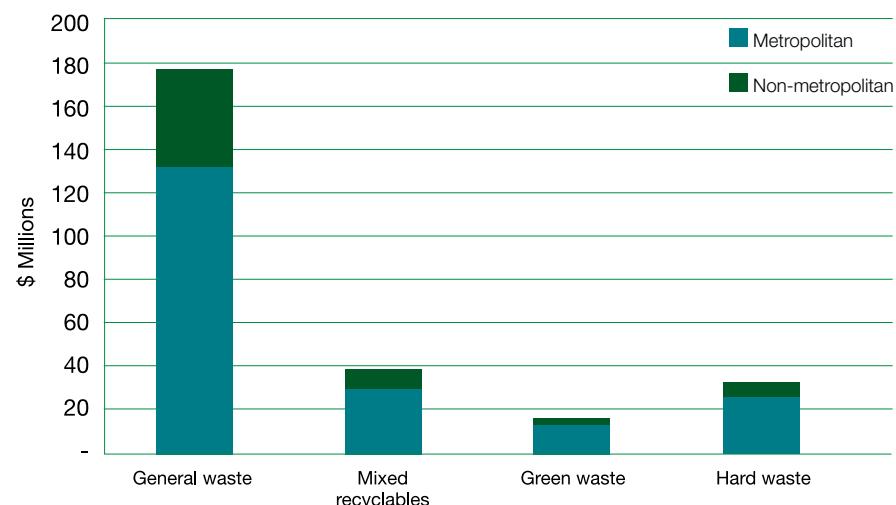
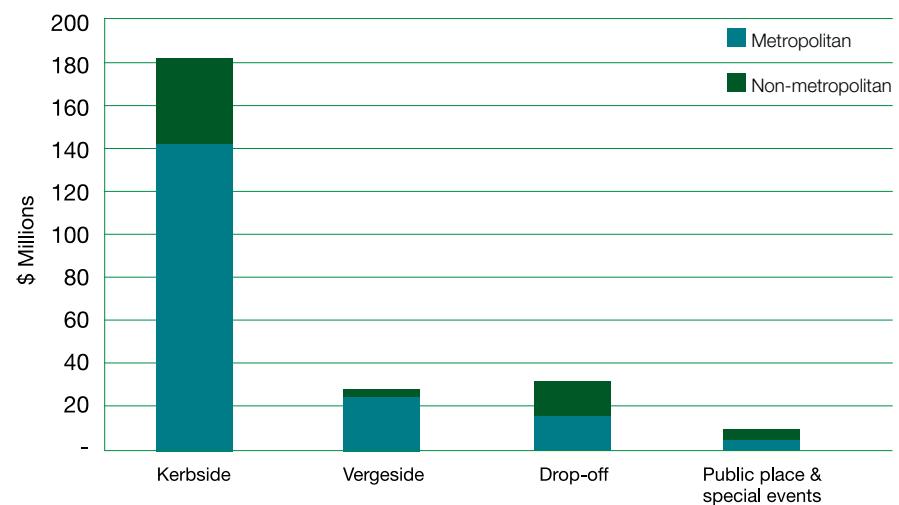


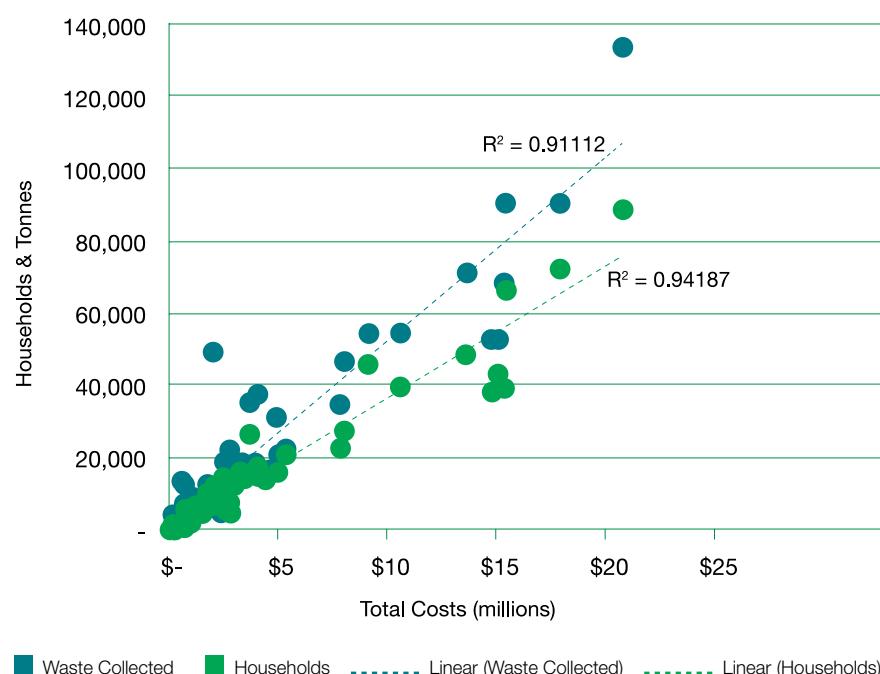
Figure 11.2 Reported total local government expenditure on the provision of waste services by service type



The reported total cost of providing W&R services was strongly correlated to the number of households and the quantity of waste collected by a local government (Figure 11.3). However, the estimated annual costs per household to local government for the provision W&R services were highly variable ranging from around \$80 to over \$800, with a median of \$266 per household.

Most local governments reported some breakdown of costs into service or waste types. The estimated median costs per household for the most commonly reported waste and service types are shown in Table 11.1.

Figure 11.3 Comparison of waste service costs to tonnes of waste collected and number of households 2014-15



Waste type	Median cost per household	Number local governments
Mixed waste	\$184	121
Dry recyclables	\$52	86
Service type		
Kerbside services	\$179	118

Table 11.1 Estimated median costs per household for local governments

## 11.2 Local government charges for the provision of waste and recycling services

Local governments were asked how much residents were charged for the provision of W&R services. Ninety per cent of local governments responded to a question about charges for the provision of W&R collection services. The median annual charge for providing W&R services was \$275 per household. Only a minority of local governments ( $n=45$ ) reported a separate recycling charge. The median reported annual charge for a recycling service was \$78 per household.

## 12. W&R services to commercial premises

Local governments were asked to provide data about the W&R services they provided to commercial premises. One hundred and four local governments indicated that they provided waste services to around 36,000 commercial premises. Most local governments were unable to provide a direct measure of the quantity of W&R materials collected from commercial premises. This is because bins provided to commercial premises were typically collected with domestic kerbside waste. However, where bin sizes and lift frequencies were the same as the domestic service, the majority were able to estimate tonnes collected as a proportion of the total collection run. Some local governments were unable to separate tonnes of waste collected from domestic and commercial premises and this waste has been reported as domestic waste in this report.

The 92 local governments that were able to separately estimate tonnes of waste collected from commercial premises reported collecting around 137,184 tonnes of waste in 2014-15. Of this amount, around 8,424 tonnes (six per cent) was recovered.



Local governments were also asked to provide the total cost of providing W&R services to commercial premises. Seventy local governments reported a total cost of around \$19 million, with a median cost to local governments per premises of \$500 per year. The range of reported annual costs per premises varied between \$61 and \$3,943. The wide range reflects the variety of W&R services provided to commercial premises and also the unknown mix of costs included in the reported figures. The remaining local governments indicated they were unable to separate the costs of service provision to commercial premises, from the costs for domestic premises.

## 13. Waste compostion audits

Five local governments and one regional council reported conducting a waste composition audit in 2014-15.



## 14. Local government initiatives

The census gathered information on local government W&R initiatives during 2014-15:

- Twenty-four local governments and one metropolitan regional council reported new W&R infrastructure and/or initiatives in 2014-15, including:
  - New or upgraded transfer stations in the Cities of South Perth and Karratha and in the Shires of Capel, Wickepin and Ashburton.
  - New tip shops in the City of Karratha and the Shire of Halls Creek.
  - Introduction of kerbside recycling in the Town of Narrogin.
  - Introduction of kerbside W&R services in the Shire of Chittering.
  - Upgraded facilities at landfills in the City of Busselton and Shires of West Arthur, Wyndham, Irwin and Manjimup.
  - New liquid waste facility in the Shire of Broome.

- Upgraded household hazardous waste facility in the City of Cockburn.
- New material recovery facility at the Newman landfill in the Shire of East Pilbara.
- Continued roll out of public place recycling bins in the City of Fremantle.
- Thirty-nine local governments reported recycling their own construction and demolition waste and 65 reported recycling green waste from their own operations.
- Thirty-four local governments and regional councils reported having a Sustainable Purchasing Policy or Green Purchasing Policy.
- Fifty-six local governments and regional councils reported spending a total of approximately \$3.5 million in W&R education programs in 2014-15. Around half of this (52 per cent) was expended by the regional councils.



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## APPENDIX A - Kerbside and vergeside services: delivery and participation

<b>Kerbside services</b>	<b>Metropolitan</b>	<b>Non-metropolitan</b>	<b>Statewide</b>
<b>General waste for disposal to landfill</b>			
Number of LGAs with service	26	104	130
Number of households with service	653,043	238,378	891,421
Average participation rate	98%	94%	95%
Service - outsourced	15	82	97
Service - provided in-house	11	22	33
<b>General waste processed at an AWT</b>			
Number of LGAs with service	14	0	14
Number of households with service	300,520	0	300,520
Average participation rate	100%	na	100%
Service - outsourced	7	na	7
Service - provided in-house	7	na	7
<b>Co-mingled and separated dry recyclables</b>			
Number of LGAs with service <sup>7</sup>	29	65	94
Number of households with service	640,411	184,820	825,231
Average participation rate <sup>8</sup>	97%	86%	89%
Service - outsourced	22	61	83
Service - provided in-house	7	5	12

	<b>Metropolitan</b>	<b>Non-metropolitan</b>	<b>Statewide</b>
<b>Separated organic waste</b>			
Number of LGAs with service	4	4	8
<b>Vergeside services</b>			
<b>Green waste</b>			
Number of LGAs with service	28	30	58
Number of households with service	730,322	116,587	846,908
Service - outsourced	20	12	32
Service - provided in-house	8	18	26
<b>Hard waste</b>			
Number of LGAs with service	30	38	68
Number of households with service	754,642	131,185	885,826
Service - outsourced	22	18	40
Service - provided in-house	8	20	28

<sup>7</sup> Number of LGAs may not equal sum of Services due to some local governments using multiple service providers

<sup>8</sup> Co-mingled service only

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