

South Australia's Kerbside Waste Performance Report 2018-19



Government
of South Australia

Green Industries SA

Acknowledgements

The information in this report is entirely dependent on the accuracy of the data provided by Adelaide metropolitan and SA regional councils, contractors collecting kerbside waste, and the South Australian Local Government Grants Commission. Green Industries SA acknowledges their assistance.



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Executive Summary

This report presents data on kerbside waste and recycling collection services in South Australia provided by the 19 Adelaide metropolitan and 49 regional councils in the 2018-19 financial year and analyses performance and improvements in waste disposal efficiency and sustainability over the past 16 years.

The focus is only on waste material collected at kerbside in bins provided specifically for residual waste (landfill), co-mingled recyclables and green organics. Hard waste, street sweepings, Container Deposit Scheme (CDS) returns and waste collected at drop-off facilities and council-operated commercial services are excluded.

All 19 metropolitan councils have offered a three-bin service for a number of years, although some only provide a green organics bin on an opt-in basis. In the regions, approximately half offer a three-bin system, however many where these services are provided to townships only. One regional council offers a fourth bin for paper and cardboard only. There are also some differences between councils in terms of bin ownership, full versus optional adoption, and collection frequency.

Performance

In 2018-19:

- Approximately 641,700 tonnes of Municipal Solid Waste (MSW) was collected from kerbsides across the state. This equates to about 368 kilograms per person or 956 kilograms per serviced household.
 - » Of this, 295,300 tonnes were recovered as organics (55.5%) or recyclables (44.5%). This represents a total recovery rate of 46.0%.
- In metropolitan Adelaide, approximately 489,200 tonnes of MSW was collected from kerbside. This equates to 373 kilograms per person or 982 kilograms per serviced household.
 - » Recoverables constituted 238,300 tonnes as organics (57.3%) or recyclables (42.7%), for a total recovery rate of 48.7%.
- In regional South Australia, approximately 152,500 tonnes of MSW was collected from kerbside. This equates to 351 kilograms per person or 882 kilograms per serviced household.
 - » Of this 56,970 tonnes were recovered as organics (47.7%) or recyclables (52.3%) which represents a total recovery rate of 37.4%.

Across South Australia, between 2010-11 and 2018-19:

- Total material collected through kerbside waste collection decreased by 3.3%.
- The amount of waste going to landfill fell by 6.9% (25,700 tonnes).

The 2018-19 Adelaide metropolitan area recovery rate of 48.7% is below the South Australia's Waste Strategy 2020-2025 [GISA 2020] household bin systems target of 70% waste diversion by 2025, making it clear that there is still work to be done¹.

Analysis shows that the top performing councils in 2018-19 – some achieving nearly 60% recovery rate – were those that provide a weekly residual waste collection, fortnightly recyclables collection and fortnightly organics collection that includes food waste.

Recommendations

The findings of this report suggest that the following changes are necessary to improve the diversion of kerbside waste from landfill:

1. Adopting a standardised three-bin system across all metropolitan councils to include as a minimum service to all households:
 - a. fortnightly collection of co-mingled recyclables
 - b. fortnightly collection of organics, including food waste.

This will have an immediate impact on raising the kerbside diversion rate. Universal rollout of area-wide food waste diversion systems will raise waste diversion rates and may narrow the gap between best and least performing councils.

2. Standardised, consistent materials collected in kerbside bin-based services across all metropolitan councils

The state-wide Which Bin campaign launched in May 2019 has aided the consistency of education and awareness efforts as it has a standard list of materials that can be placed in the recycling and organics bins.

This will reduce confusion for residents about which bin to use, reduce contamination of the recyclables stream and organics stream and divert more food waste from the residual stream.

Time and effort can be wasted in tailoring the message to individual councils' residents to accommodate the different bin services on offer within a council area. To build up a culture of waste minimisation and behaviour change takes time and requires reinforcement of the key messages constantly. Costs can be reduced in the longer term by providing the same message to all households across all councils.

3. Standardisation of bin infrastructure to comply with AS 4123.7

The standard promotes the adoption of common colour coding of waste, recycling and organics kerbside bin collection services across Australia and is intended to support correct recycling 'automatic' and 'unthinking' behavior.

Green Industries SA [GISA] provides a number of programs and activities to assist local government in diverting waste from landfill. Information can be found in GISA's Business Plan on the Green Industries SA website.

¹ It should be noted that *South Australia's Waste Strategy 2020-25* has an MSW diversion rate of 75%, which includes kerbside bins, hard waste, resident drop, CDS, etc.

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1. Introduction

1.1 Purpose

Information on waste streams collected at kerbside is needed to help monitor progress towards the municipal waste targets set out in *South Australia's Waste Strategy 2020-2025* (GISA 2020) and to inform decision making, particularly in relation to programs and incentives to improve recycling rates and to target areas most in need.

This report presents data on kerbside waste and recycling collection services provided by the 19 Adelaide metropolitan and 49 regional councils in the 2018-19 financial year and analyses performance and improvements in waste disposal efficiency and sustainability. It also reports on trends over a 16-year period.

The focus is only on waste collected at kerbside in bins provided specifically for residual waste (landfill), co-mingled recyclables and green organics. Hard waste, street sweepings, CDS returns and waste collected at drop-off facilities and council-operated commercial services are excluded.

As such, the recovery rate stated in this report differs from that cited in the *South Australia's Recycling Activity Survey 2018-19*, which includes these other components of the total Municipal Solid Waste (MSW).

It also should be noted that MSW is only one of the three sectors that contribute to SA's total waste, with each having its own recycling rate. In 2018-19, 83.8% of all waste was diverted from landfill for recycling and other purposes [Rawtec 2020].

Residential residual waste accounts for 43% of the total solid waste that goes to landfill. The remainder is commercial and industrial waste [20%] and construction and demolition waste [37%].

1.2 Background

The environmental benefits of a three-bin waste collection system are well established and the 19 metropolitan councils have offered this service for a number of years. In regional areas, 50% of councils have three-bin systems and all have at least one bin collected at kerbside. One regional council implemented a four-bin system several years ago where the extra bin is solely for cardboard and paper. Differences do exist between councils even where the same number of bins are provided.

In low-density residential areas, most councils provide a 140L bin for waste and 240L bins for comingled recyclables and organics respectively. However, organics bins are optional in some areas and must be purchased by residents.

All metropolitan councils collect residual waste bins weekly and recyclables fortnightly, but in 2018-19 organics collections vary: most are fortnightly, one every four weeks.

Similarly, some councils encourage food waste to be placed in the organics bin (and provide kitchen caddies with compostable liners for this purpose) but others, particularly where four-weekly collection is in place, do not.

The average landfill recovery rate from the three-bin system across the 19 metropolitan councils was 48.7% in 2018-19. The top performing councils – some achieving nearly 60% – were those that provide a weekly residual waste collection, fortnightly recyclables collection and fortnightly organics collection including food waste. Regionally, the recovery rate varies from zero [single bin service for residual waste only] to rates that are on par with metropolitan Adelaide [three-bin systems].

Councils often contract collection services to external contractors, many of which are private companies. The contractors collect the waste and recyclables and take them to transfer stations or Material Recovery Facilities (MRFs) for sorting and processing. The quantities are weighed at weighbridges and charged back to individual councils².

1.3 Context

Since 2005 Green Industries SA (GISA) – formerly Zero Waste SA – has funded metropolitan and rural councils to implement improved kerbside collection systems for residents. In particular, there has been an increased emphasis on diversion from landfill using better performing kerbside systems.

From 1 July 2003 to 30 June 2019, about \$19.3 million had been provided to 67 councils and 9 of their subsidiaries through a range of GISA grants programs such as *Circular Economy Market Development, E-Waste Collections and Incentives, Illegal Dumping Prevention, Infrastructure Grants, Kerbside Performance Incentive Schemes, Kerbside Performance Plus (Food Organics) Incentives, Kerbside Recycling Campaign, Plastic Bags Reduction Program, Recycle Right Household Education Program, Regional Infrastructure/Implementation, Regional Transport Relief Fund, Business Sustainability Program* and *Reuse and Recycling/Metropolitan Infrastructure*.

The Local Government Association of SA (LGA) has a strong interest in municipal waste management and recycling, as these services are valued by residents and present a significant cost to councils. As councils provide waste management and recycling services to their residents, they are the primary custodians of the kerbside waste data.

The SA Local Government Grants Commission (SALGGC) also requests waste data from councils, which is provided on an annual basis. GISA used this data to quantify costs incurred by councils for kerbside collections and for reporting waste quantities for regional councils.

1.4 Methodology

This report collates waste and recycling data from GISA, councils, contractors and the SALGGC.

Metropolitan councils provide GISA with a monthly breakdown, in tonnes, of residual waste, co-mingled recyclables and organics whereas regional councils' tonnages are sourced from the SALGGC. Some regional councils' data was supplied to GISA in follow-ups of the data quality to clarify problems arising with data provided to SALGGC. Small amounts of commercial and industrial waste collected by councils are not counted separately as these are considered negligible and it is not possible to separate these quantities.

² In regulations under the Environment Protection Act, if a council sends less than 10,000 tonnes to landfill per year, the waste quantities can be estimated based on a population formula [SA EPA 2009]

As the waste material streams are weighed on weighbridges, the accuracy of metropolitan Adelaide data is relatively high. While many regional councils waste goes over a weighbridge, the data supplied for some regional areas comprised all MSW waste, rather than only kerbside collected. It is also noted that the data quality for some regional councils is not as high as metropolitan data, due to the lack of weighbridges in some areas.

Data in this report has been adjusted to ensure it is kerbside only that is reported. All waste and recycling quantities in this report have been rounded to improve readability and reflect accuracy³.

Data provided annually by councils to the SALGGC is the source of many of the details of council waste services, such as bin systems and frequency of collection. As councils can offer a range of different waste services, this report summarises the main kerbside services offered to residents.

GISA has grouped councils by geographic location and other existing associations into regions taking into consideration household numbers. It should be noted that co-operative arrangements between councils in relation to waste management may exist outside the council groupings used in this report.

The three-bin recovery rate is defined as the percentage of waste that is recovered for recycling from the total kerbside waste. It can be expressed as:

$$\text{3-Bin Recovery Rate} = \frac{\text{organics + recyclables}}{\text{organics + recyclables + residual}} \times 100\%$$

The organics recovery rate is defined as the percentage of total waste from the residual and organics bin that is recovered for recycling using the organics kerbside waste. It can be expressed as:

$$\text{Organics Recovery Rate} = \frac{\text{organics}}{\text{organics + residual}} \times 100\%$$

Similarly, the recyclables recovery rate is used as a way to examine trends in the recovery rate without the effects of variations in annual rainfall. It is expressed as:

$$\text{Recyclables Recovery Rate} = \frac{\text{recyclables}}{\text{recyclables + residual}} \times 100\%$$

Demographic data [population and household figures] is based on figures from the Australian Bureau of Statistics (ABS). Some households are in unincorporated areas and do not receive council kerbside services, so these figures are not included in this report.

The Estimated Resident Population by local government area is used for population data in this report, and 'occupied dwellings' is used for serviced-households figures from ABS 2016 Census data.

³ Some totals in tables may not add up exactly due to rounding of numbers.

1.4.1 Greenness Index

Different councils have varying geographical areas, rainfall and home garden areas per household. To help in assessing the effect of relative “greenness” of a council on the rate of recovery due to green waste, a greenness index was calculated for each Adelaide Metropolitan council. Spatial analysis applied to imagery of Adelaide Metropolitan area produced Normalised Difference Vegetation Index (NDVI) values ranging from +1.0 to -1.0. Higher NDVI values indicate healthier, or greener, vegetation. Only 18 of the 19 metropolitan councils are covered as the aerial survey did not include Adelaide Hills Council.

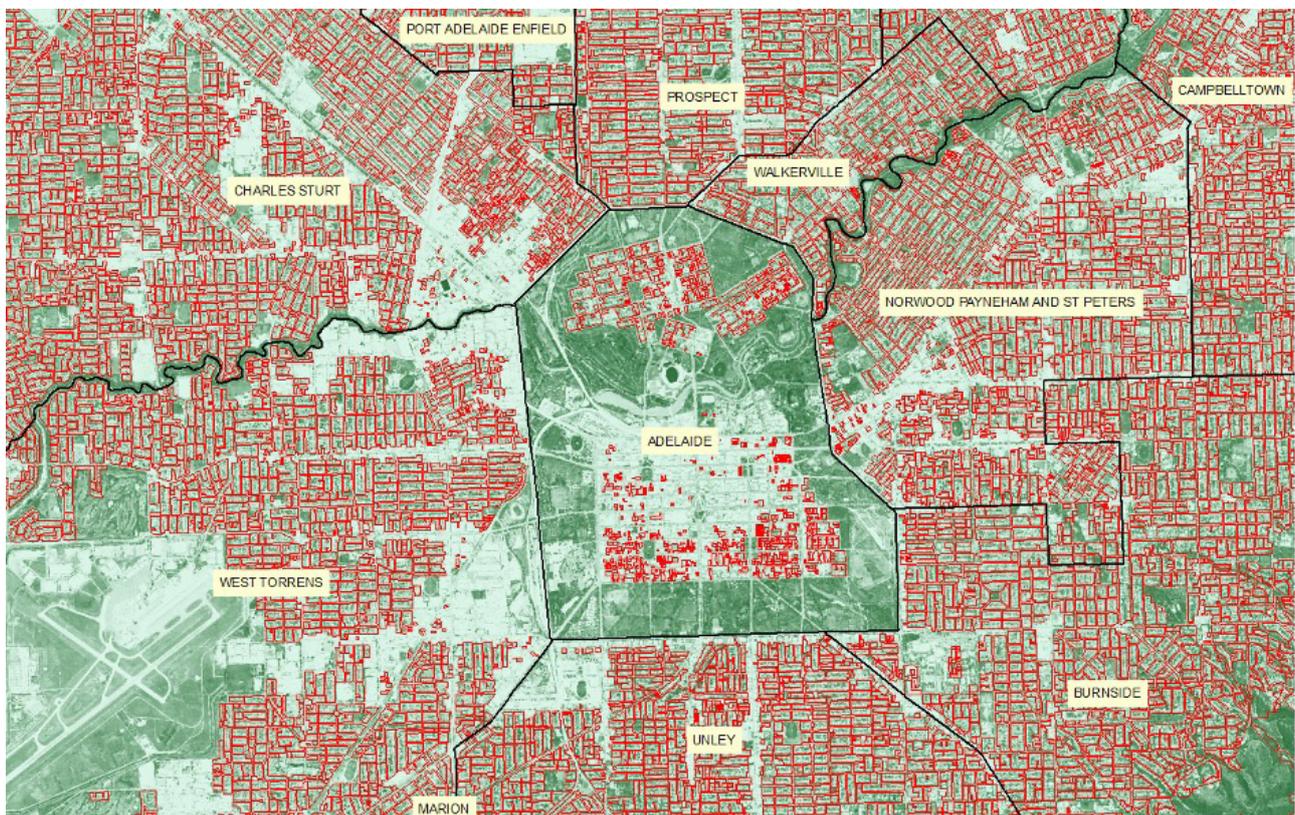
The survey was carried out in late September 2018 by Aerometrex for the Department for Environment and Water who authorised its use by GISA. The timing of the aerial capture of the imagery is appropriate for the purpose since local conditions ensure that vegetation is at its greenest and it is expected that this accurately reflects the difference between greener and drier areas.

To ensure a focus on residential waste presented at kerbside, only residential areas were selected from the land use dataset [Department for Infrastructure and Transport, 2019]. This ensures results only include green waste arising from residential land and exclude parks, street trees, etc. (Figure 1).

The zonal statistics tool was used to calculate an average greenness value of all the residential properties within a council boundary for each local government area.

Note that deriving a future set of average greenness index values will depend on local conditions at that time, such as immediate past rainfall and the season. Consequently, any such calculations are expected to vary from those generated in this initial work.

Figure 1. Example of Adelaide Metropolitan LGA with residential area overlaying NDVI imagery



2. Findings

2.1 South Australia's Kerbside Waste and Recycling Services

South Australia has 68 councils, 19 of which are metropolitan and 49 regional. In 2018-19, 44 councils across the State offered 3-bin systems to their residents (one offering a 4-bin system), compared with 16 in 2003-04. Only seven councils now offer a 1-bin system. This improvement in recycling services offered is summarised in **Table 1**.

Table 1. Summary of Council Kerbside Bin Systems in 2018-19 and 2003-04

	State		Metro Adelaide		Regional	
	2003-04	2018-19	2003-04	2018-19	2003-04	2018-19
Four-bin	0	1	0	0	0	1 ⁴
Three-bin	16	43	15	19	1	24
Two-bin	8	17	4	0	14	17
Single-bin	33	7	0	0	33	7
No bin	1	0	0	0	1	0
Total	68	68	19	19	49	49

⁴ Barunga West Council introduced a 4-bin system several years ago which includes a dark green lidded Paper & Cardboard bin.

2.2 South Australia's Waste Management Costs

The SALGGC surveys SA's local government councils each year to make recommendations to the Minister for Local Government on the distribution of untied Commonwealth Financial Assistance Grants to local councils in South Australia. SALGGC reports publish information on the amount spent by each council in 15 different categories of which waste management is one. Determining kerbside-only costs from the figures supplied should be possible in theory, but in many cases councils provided aggregated details for cost management without details of individual kerbside bin service costs. The only uniform indicator of council costs is the waste management total which is inclusive of other waste management issues besides kerbside.

In 2018-19, the 68 SA local government councils spent \$207.3 million in operating expenses on waste management of which \$136.8 million was incurred in Metropolitan Adelaide and \$70.5 million in regional councils. Across South Australia, councils spent an average \$309 per year on waste management per occupied household. Included in these amounts are ordinary solid waste collection and disposal, green waste collection and disposal, recycling collection and disposal, waste disposal facility, other waste management, so the figures do not relate to kerbside collections alone.

SA local government councils also earned revenue while managing the waste facilities, mainly in regional areas [\$52 million] as opposed to the metropolitan Adelaide councils. In regional areas, there are more council owned landfills and transfer stations and these accept waste from commercial and industrial and construction and demolition sources as well as MSW streams.

Table 2. South Australia's LG Councils total and per occupied dwelling operating expenditure on waste management (not only kerbside), 2018-19

	Metropolitan	Regional	SA
Total (\$ millions)	136.8	70.5	207.3
Per occupied Household (nearest \$)	275	408	309

2.3 South Australia's Kerbside Quantities

In SA in 2018-19, approximately 641,700 tonnes of municipal waste was collected from kerbside, 489,200 tonnes from metropolitan areas and 152,500 tonnes from regional areas (Table 3). The 19 metropolitan councils account for 76% of the total kerbside waste collected in SA.

Table 3. South Australia's Total Kerbside Waste Quantities, 2018-19

Material	State - SA (tonnes)	Metro (tonnes)	%	Regional (tonnes)	%
Residual	346,400	250,900	72%	95,500	28%
Organics	163,800	136,600	83%	27,200	17%
Recyclables	131,500	101,700	77%	29,800	23%
Total	641,700	489,200	76%	152,500	24%
Recovery Rate	46.0%	48.7%		37.4%	

Sources: SALGGC (2019) and GISA (2019)

South Australians produced approximately 368 kg per person of MSW at kerbside, or 956 kg per household serviced (Table 4). There has been an overall drop in total waste of 2.8% from the previous financial year (Table 5).

Table 4. South Australian kerbside waste collections per household and per person, 2018-19

Material	State – SA (tonnes)	Waste Per Capita (kg/pp/yr)	Waste Per Household (kg/hh/yr)
Residual	346,400	198	516
Organics	163,800	94	244
Recyclables	131,500	75	196
Total	641,700	368	956

Table 5. South Australian kerbside waste quantities comparing 2018-19 with 2017-18

Material	2017-18	2018-19	Percentage difference
Residual	359,300	346,400	-3.6
Organics	166,100	163,800	-1.4
Recyclables	135,000	131,500	-2.6
Total materials	660,400	641,700	-2.8
Recovery Rate	45.6%	46.0%	0.4%

2.4 Metropolitan Adelaide Kerbside Waste and Recycling Services

In 2018-19, all 19 metropolitan councils offered access to the three-bin system (up from 15 in 2003-04), although three – Playford, Salisbury and Gawler – only provided an organics service on request and the Adelaide Hills Council only covered about two-thirds of households (mostly in townships) for organics.

An estimated 64% of rate payers in Playford, Salisbury and Gawler chose to pay for an organics bin under Northern Adelaide Waste Management Authority's (NAWMA) voluntary service (NAWMA 2019), with participation increasing since 2011-12. It is estimated that about 90% of metropolitan households now have three bins in use, a figure which is expected to rise further in 2020 as this group of councils moves to a full three-bin rollout.

Most metropolitan councils provide a weekly residual service, fortnightly recyclable collections and fortnightly organics collections.

All use yellow lids for recycling bins and most use green for organics bins, but only 12 councils (covering 63% of households) use red lid for residual waste, as set out in Australian standard AS 4123.7. The other seven use blue lids which, according to the standard, are for cardboard and paper only.

Using Australian standard AS 4123.7 bin colours has been found to reduce waste sent to landfill, increase recycling and support consistent education campaigns to reduce resident confusion about how to correctly use kerbside bins collection services (MWRRG 2017).

2.4.1 Metropolitan Adelaide Kerbside Quantities

In 2018-19, residents in the metropolitan area generated 489,200 tonnes of kerbside materials, of which 48.7% was recovered as recyclables or organics, a 0.5% increase from the previous year (**Table 6**). This was driven by a 3.2% decrease in residual waste collected.

Table 6. Metropolitan Adelaide Councils: comparisons of 2017-18 and 2018-19 Kerbside Quantities

Material	2017-18 (tonnes)	2018-19 (tonnes)	Percentage difference
Residual	259,400	250,900	-3.2
Organics	137,800	136,600	-0.9
Recyclables	103,900	101,700	-2.0
Total materials	501,100	489,200	-2.3
Recovery Rate	48.2%	48.7%	0.5%

Approximately 373 kg of MSW was collected per person, or 982 kg per household serviced (**Table 7**).

Table 7. Metropolitan Adelaide kerbside waste collections per household and per person, 2018-19

Material	Metro Adelaide (tonnes)	Waste Per Capita (kg/pp/yr)	Waste Per Household (kg/hh/yr)
Residual	250,900	191	504
Organics	136,600	104	274
Recyclables	101,700	78	204
Total	489,200	373	982

Seasonal fluctuations in monthly collection trends (**Figure 2**) can affect quantities: for example, garden waste in spring and autumn and general waste around Christmas and Easter. Weather conditions, particularly rainfall, also can affect quantities of garden waste. As 2018-19 was a relatively dry year [see rainfall figures in **Table 15**], the three bin recovery rates are down compared to the previous years.

Fluctuations in the three-bin recovery rate over 2018-19 are shown in **Figure 3**. The impact of a relatively dry summer and autumn can be seen. The slight pick-up in organics in June is likely due to milder weather encouraging garden growth and waste from deciduous trees.

Figure 2. Metropolitan Adelaide Monthly three-bin Kerbside Quantities, 2018-19

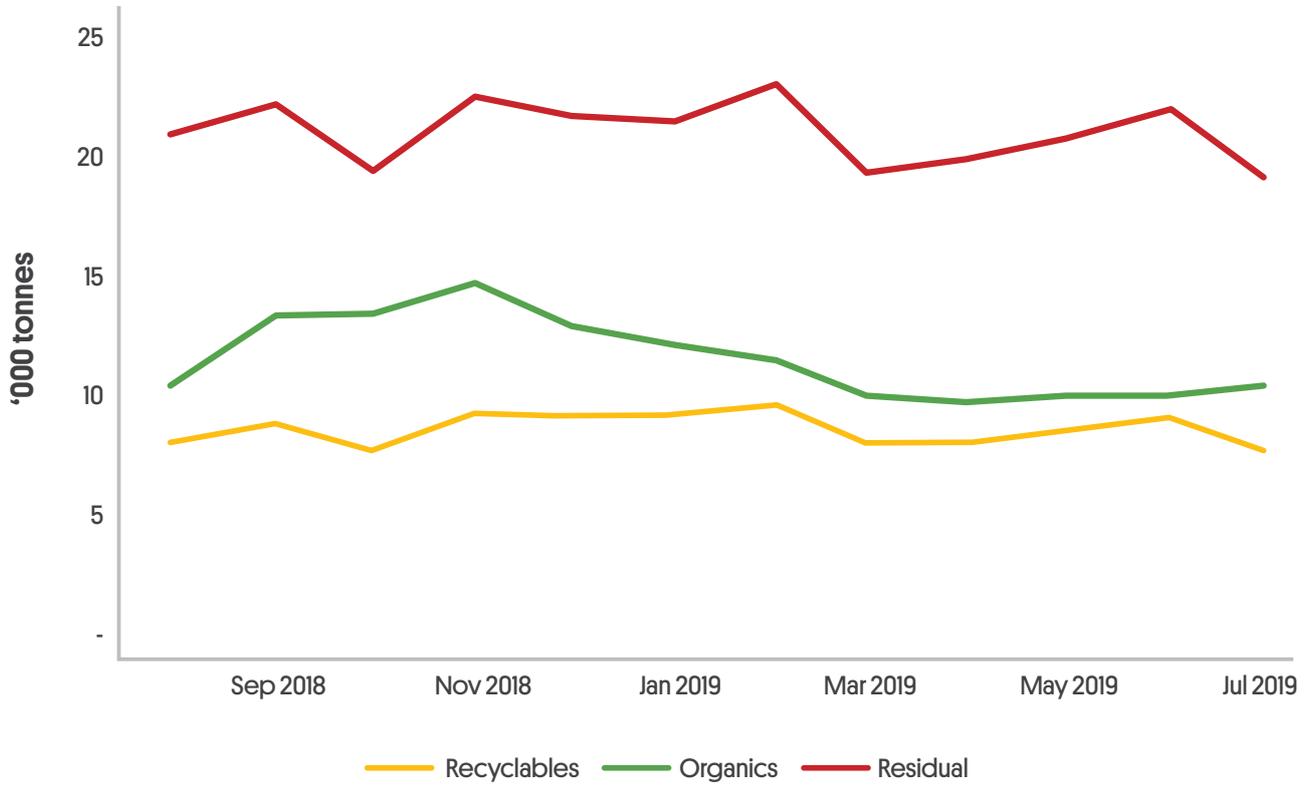


Figure 3. Metropolitan Adelaide Average three-bin Recovery Rate by Month, 2018-19

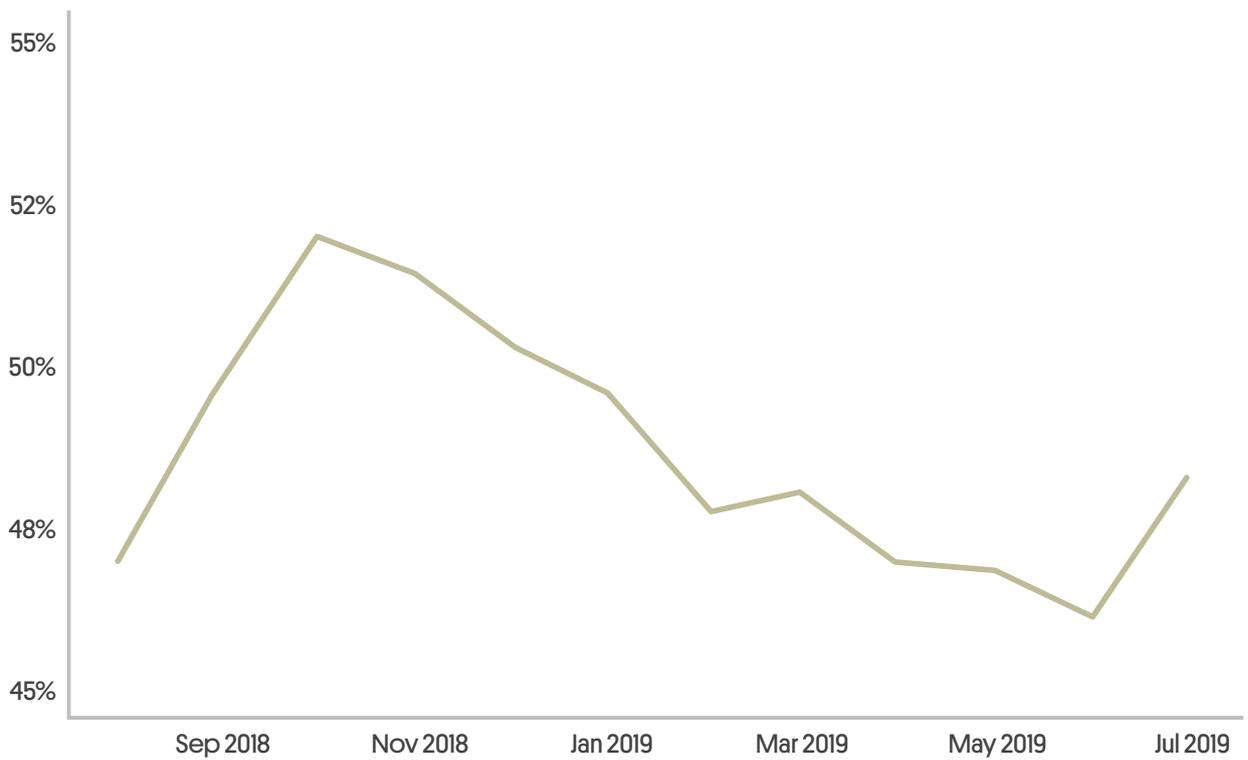
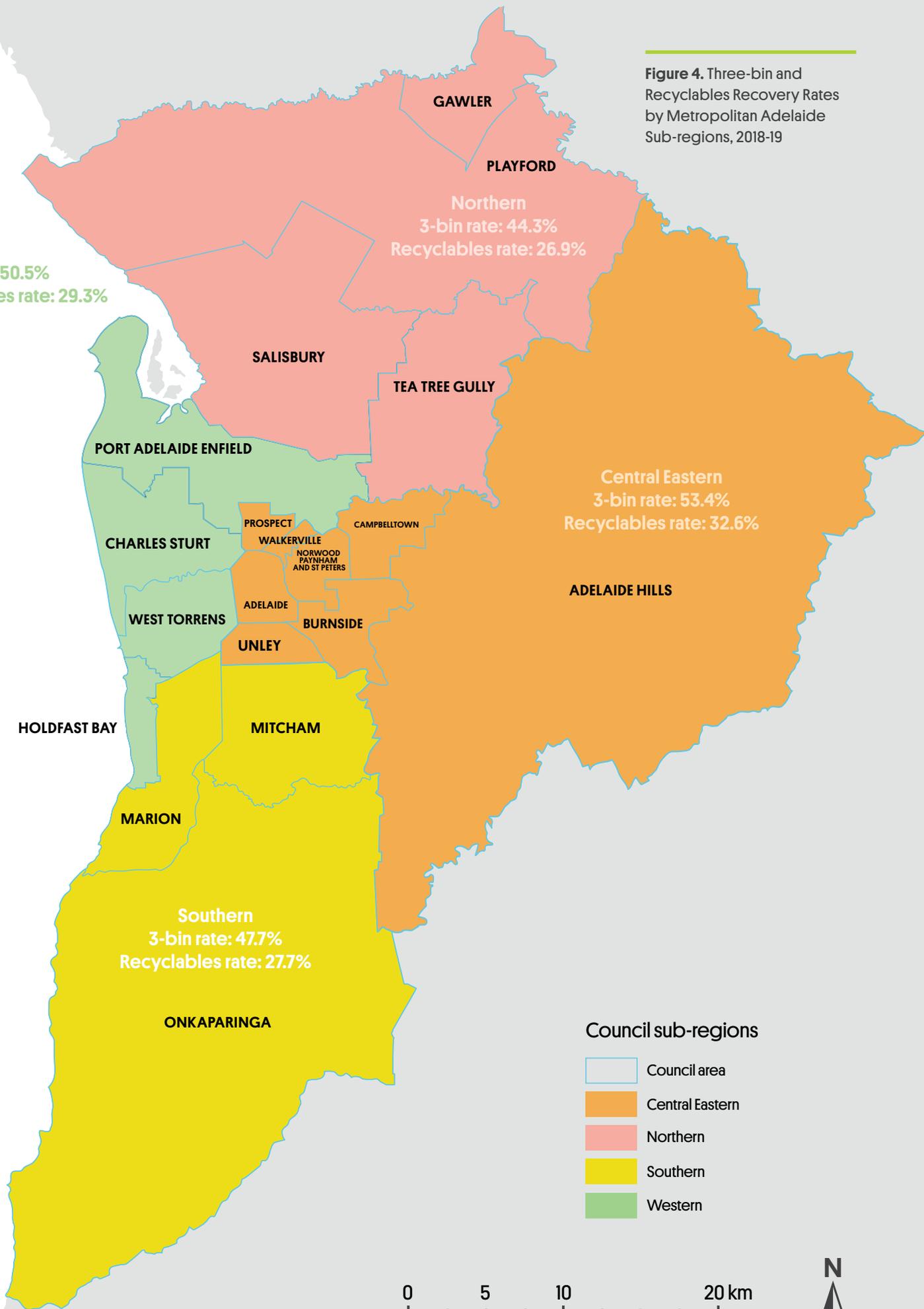


Figure 4. Three-bin and Recyclables Recovery Rates by Metropolitan Adelaide Sub-regions, 2018-19

Western
3-bin rate: 50.5%
Recyclables rate: 29.3%



2.4.2 Metropolitan Adelaide Recovery Rate Performance

Table 8 shows the three different recovery rates for each of the 19 councils with the previous year's figures as a contrast. A description of the organics and food waste diversion service they offer residents is also provided. The councils are ranked from highest performer to lowest by the 3-bin recovery rates, but colour coding also provides relative ranking for their recyclables and organics recovery rates. This shows some of the compounding issues that make up the 3-bin recovery rates. For example, the lowest ranked council does not have as much residential garden area and cannot collect organics quantities at levels equivalent to other councils. However, their recyclables recovery rate is close to the Adelaide Metropolitan median value.

Nearly two-thirds of these councils have achieved three-bin recovery rates greater than 50% in 2018-19 as compared to only one in 2002-03 (**Figure 5**). In general, the best performing councils have full organics bin coverage, supplemented with a food caddy. However, direct comparisons are difficult due to different underlying factors such as geography, demographic and social factors, use of food caddies and rainfall.

Figure 5. Metropolitan Adelaide Kerbside three-bin Recovery Rates, 2018-19 compared to the previous three years, and 2002-03

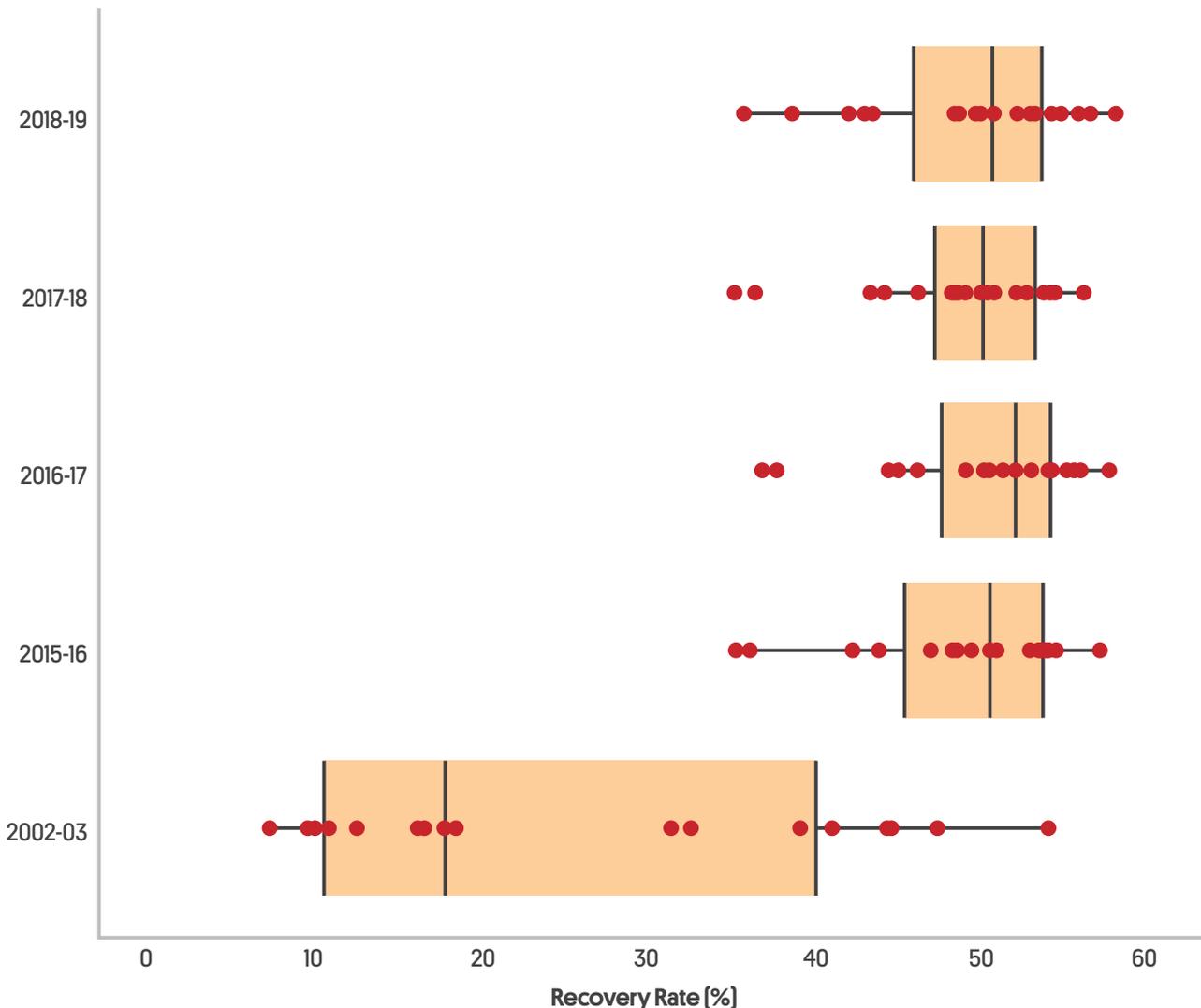


Table 8. Recovery Rates achieved by each Metropolitan Adelaide Council, 2018-19

Council Sub-Regions	2018-19			2017-18			Food Waste System	Participation rate [%]	Greenness index
	3-bin RR	Recyc. RR	Org. RR	3-bin RR	Recyc. RR	Org. RR			
Central Eastern	58.5%	34.6%	46.8%	56.5%	33.3%	44.5%	Area-wide roll out	100	0.200
Central Eastern	56.9%	35.5%	43.4%	54.8%	33.9%	41.1%	Opt-in	0	0.171
Southern	56.3%	33.3%	44.1%	54.7%	32.6%	42.0%	Limited trial	22	0.230
Western	55.2%	34.8%	41.1%	54.2%	34.6%	39.6%	Area-wide roll out	100	0.141
Central Eastern	54.6%	31.3%	42.8%	54.5%	29.5%	43.7%	Opt-in	0	0.176
Central Eastern	53.4%	32.8%	39.8%	52.5%	32.1%	38.8%	Area-wide roll out	100	0.146
Central Eastern	53.3%	31.0%	40.9%	51.1%	28.8%	39.0%	Opt-in	11	0.149
Central Eastern	52.6%	30.1%	40.5%	53.0%	30.2%	41.1%	Area-wide roll out	100	0.152
Western	51.2%	27.7%	39.9%	50.7%	27.9%	39.1%	Opt-in	16	0.148
Central Eastern	51.0%	33.1%	35.4%	48.7%	31.2%	33.2%	Limited	0	N/A
Western	50.4%	28.9%	37.8%	50.5%	29.3%	37.6%	Opt-in	26	0.138
Northern	50.1%	29.6%	36.8%	48.9%	29.2%	35.4%	Opt-in	3	0.173
Western	49.0%	28.9%	35.6%	49.3%	29.0%	36.1%	Area-wide roll out	100	0.136
Southern	48.8%	25.7%	37.8%	48.5%	25.6%	37.4%	Opt-in	8	0.163
Northern	43.7%	25.4%	30.4%	44.5%	25.8%	31.2%	Opt-in	0	0.147
Southern	43.4%	26.7%	28.7%	43.7%	26.7%	29.1%	Opt-in	0	0.178
Northern	42.3%	25.4%	28.3%	46.5%	29.8%	30.8%	Opt-in	0	0.162
Northern	38.9%	26.8%	21.3%	36.7%	25.1%	19.6%	Opt-in	0	0.143
Central Eastern	36.0%	29.2%	13.0%	35.4%	28.3%	13.4%	Opt-in	0	0.111

2.5 Regional Kerbside Waste and Recycling Services

In 2018-19, of the 49 regional councils, 24 councils offered a 3-bin service compared with one council in 2003-04, and 17 had 2-bin systems, up from 14 in 2003-04. Of the 24 councils with a 3-bin system, 10 offered this service to town residents only and other residents in the council area received a 2-bin service. The number of councils with a 1-bin system has decreased to seven from 33 in 2003-04 (Table 1). A number of regional areas provide residents with drop off waste directly to transfer stations which would affect the reported recovery rate.

Table 9. Regional services offered by local councils by bin type, 2018-19

Services	Recycling	Organics	Residual
Weekly	0	0	43
Fortnightly	39	20	6
Monthly	3	5	0
No service	7	24	0

The frequency of waste collections offered in regional townships is shown in Table 9. This table lists the main kerbside service offered for townships, but if there was no kerbside collection service, the main alternative was noted such as drop-off facilities or an 'at call' service. All 49 regional councils provide a residual kerbside collection with 43 councils collecting residual waste weekly and six fortnightly.

Recyclables are collected fortnightly by 39 councils (including one opt-in), monthly by three councils, and seven councils have drop-off facilities only for recyclables. Organics are collected at drop-off facilities at 24 councils, and 20 councils collect organics fortnightly from kerbside. Five councils have a monthly collection service for kerbside organics.

Since 2011, GISA has contributed grants to assist 48 of these councils and seven of their regional associations. This number includes grant through *The Circular Economy Market Development, E-Waste Collections and Incentives, Illegal Dumping Prevention, Infrastructure Grants, Kerbside Performance Incentive Schemes, Kerbside Performance Plus (Food Organics) Incentives, Plastic Bags Reduction Program, Recycle Right Household Education Program, Regional Infrastructure/Implementation, Regional Transport Relief Fund, and Business Sustainability Programs.*

2.5.1 Regional Kerbside Quantities

In 2018-19, residents in regional SA areas generated 152,500 tonnes of kerbside materials, of which 37.4% was recovered as recyclables or organics, a 0.2% increase from the previous year (Table 11). All bins were down about 4% but organics were less affected which created a slight increase in the recovery rate.

Approximately 351 kg of MSW was collected per person, or 882 kg per household serviced in regional areas (Table 10).

Table 10. Regional SA kerbside waste collections per household and per person, 2018-19

Material	Regional (tonnes)	Waste per Capita (kg/p/yr)	Waste per Household (kg/hh/yr)
Residual	95,500	220	552
Organics	27,200	63	157
Recyclables	29,800	69	172
Total	152,500	351	882

Table 11. South Australian Regional Councils: comparisons of 2017-18 and 2018-19 Kerbside Quantities

Material	2017-18 (tonnes)	2018-19 (tonnes)	Percentage difference
Residual	100,000	95,500	-4.4
Organics	28,300	27,200	-3.8
Recyclables	31,200	29,800	-4.4
Total materials	159,500	152,500	-4.3
Recovery Rate	37.3%	37.4%	0.2%

2.5.2 Regional South Australia Sub-Regions

To provide some comparisons between councils, sub-regional aggregations have been used (Table 12). Since 2004-05, populations in regional areas and sub-regions have increased (ABS 2020), which has contributed to an increase in total waste generated. Per capita and per household analysis has been undertaken and can be seen in Table 13.

Table 12. Local Government Regions: Populations and Households, 2018-19

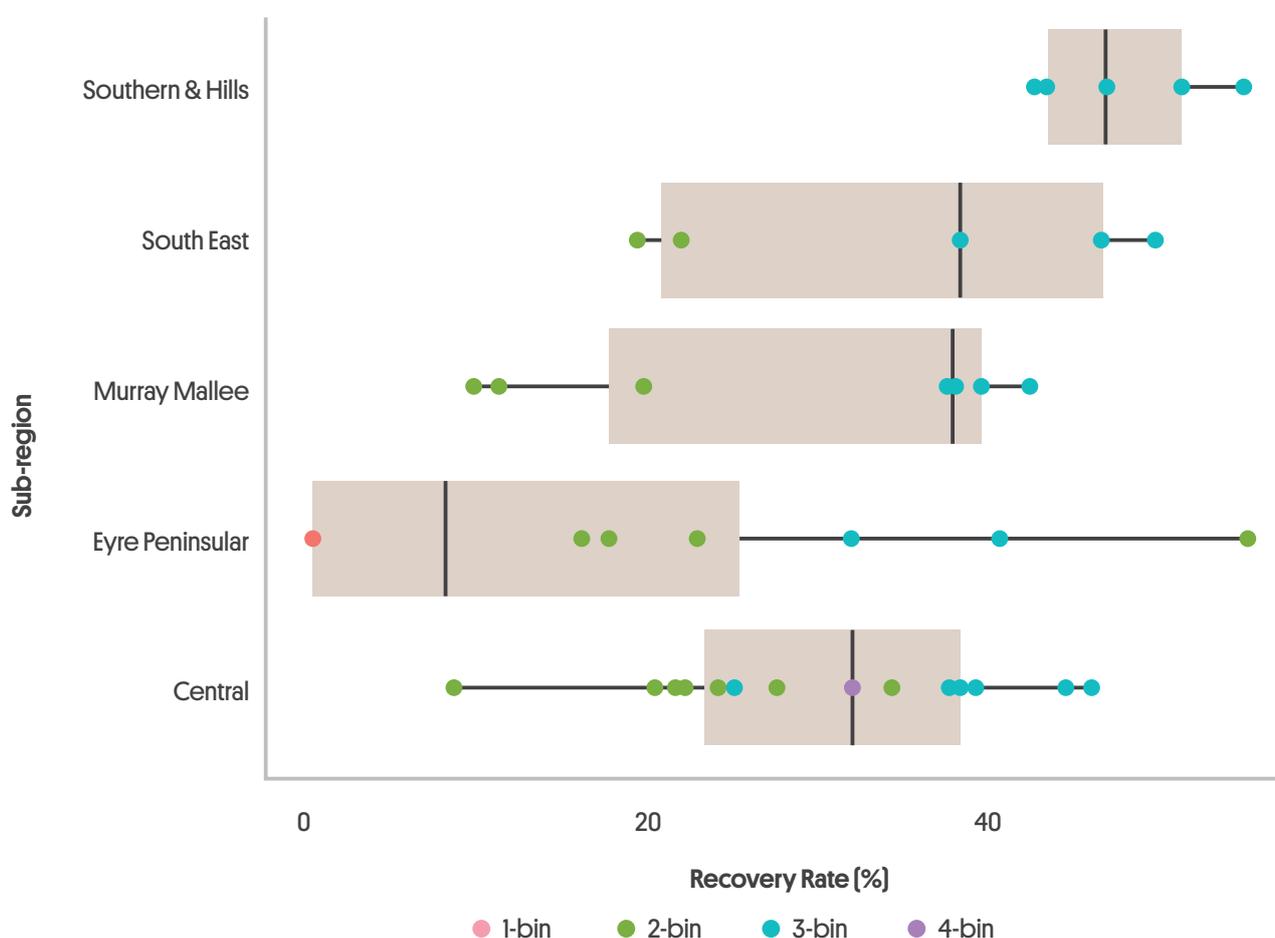
Sub-region	Councils	Occupied dwellings (2016)	Population (2019)
Central	Adelaide Plains, Barossa, Barunga West, Clare and Gilbert Valleys, Copper Coast, Flinders Ranges, Goyder, Light Regional, Mount Remarkable, Northern Areas, Orroroo Carrieton, Peterborough, Port Pirie, Wakefield, Yorke Peninsula	51,253	128,257
Eyre Peninsula	Ceduna, Cleve, Elliston, Franklin Harbour, Kimba, Lower Eyre Peninsula, Port Augusta, Port Lincoln, Streaky Bay, Tumby Bay, Whyalla, Wudinna	29,721	70,830
Murray Mallee	Berri Barmera, Coorong, Karoonda East Murray, Loxton Waikerie, Mid Murray, Renmark Paringa, Murray Bridge, Southern Mallee	29,117	72,697
Outback	Coober Pedy, Roxby Downs	2,228	5,788
South East	Grant, Kingston, Mount Gambier, Naracoorte Lucindale, Robe, Tatiara, Wattle Range	26,154	67,092
Southern & Hills	Alexandrina, Kangaroo Island, Mount Barker, Victor Harbor, Yankalilla	34,447	90,018
Total		172,920	434,682

Sources: ABS [2016] and ABS [2019]

Table 13. Local Government Regions - Total Kerbside Waste Collected, Per Capita and Per Household, 2018-19

Sub-region	Recyclables (tonnes)	Organics (tonnes)	Residual (tonnes)	Total waste (tonnes)	Waste per Capita (kg/p/yr)	Waste per Household (kg/hh/yr)
Central	9,180	5,700	27,200	42,100	328	822
Eyre Peninsula	3,480	2,630	18,700	24,800	350	834
Murray Mallee	4,560	3,810	15,600	24,000	330	823
Outback	180	60	1,600	1,840	318	826
South East	4,650	6,110	15,100	25,900	386	989
Southern & Hills	7,730	8,870	17,200	33,800	376	982
Total	29,800	27,200	95,500	152,500		
Regional Average					351	882

Figure 6. Range of recovery rates of councils within each sub-region, 2018-19



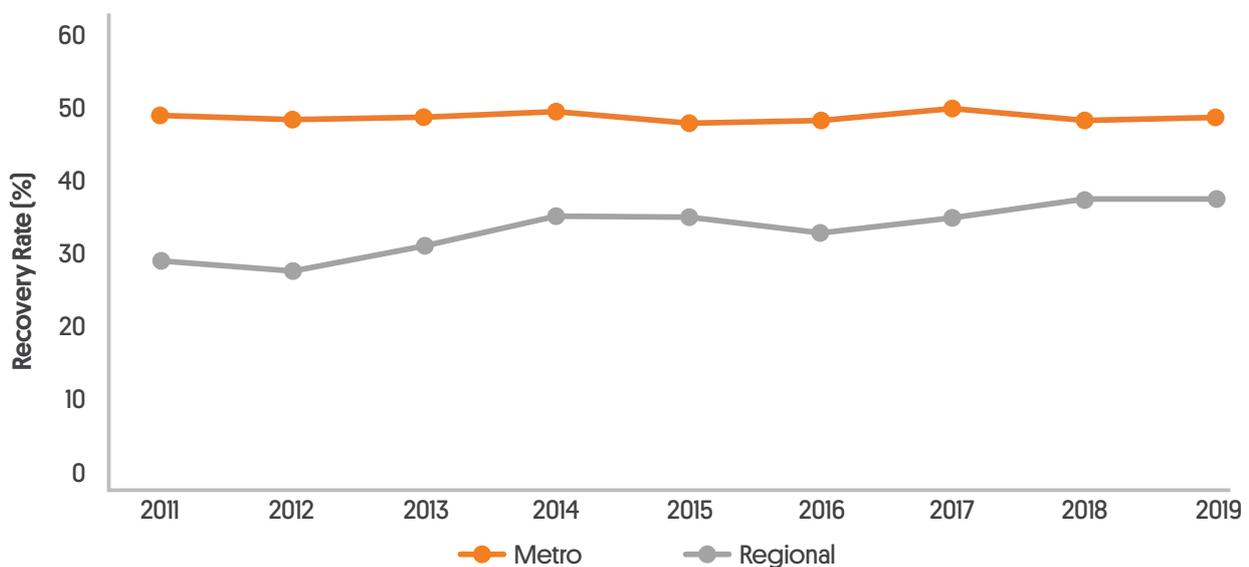
2.6 Long term trends

The long-term recovery rate for Adelaide Metro, Regional and whole of SA are shown in **Table 14**. The recovery rate has improved only slightly for the Adelaide metropolitan area but for regional area there has been an increase of 8.6% since 2010-11 to reach 37.4% in 2018-19. Regional improvements are due to increased numbers of three-bin services introduced by councils whereas fluctuations in Adelaide metro's rate are due largely to weather factors and garden organics produced. These trends are represented graphically in **Figure 7**. As most of the waste collected is from metropolitan Adelaide households compared to regional numbers, the trend for the whole of SA is not shown in the graph as the trend is similar to that of metropolitan Adelaide.

Table 14. Recovery rates for South Australia, Adelaide Metro and Regional areas for nine-year period

Financial year ending June 30	Recovery Rate [%]		
	SA	Metro	Regional
2011	44.2	49.0	28.8
2012	43.1	48.3	27.4
2013	44.3	48.7	30.9
2014	45.9	49.4	35.0
2015	44.7	47.8	34.8
2016	44.4	48.2	32.7
2017	46.3	49.9	34.7
2018	45.6	48.2	37.3
2019	46.0	48.7	37.4

Figure 7. Comparison of three-bin recovery rates for Metro Adelaide and Regional areas from 2010-11 to 2018-19



3. Factors Affecting Recovery Rates

3.1 Food Waste Collection Systems

Table 8 indicates where food caddy systems have been deployed and how effective these have been for the Adelaide Metropolitan area. Currently most of these councils offer free caddies, although in some councils, this is on an opt-in basis rather than council-wide roll-out. For some councils, the availability of food caddy systems on their websites could be more prominent to make it easier for residents, but food caddies may have been promoted in other ways.

A full rollout of organics bins across Adelaide would be expected to lift the recovery rate significantly. Councils with opt-in organics collections should complete the organics bins rollout to all households before more food caddies are deployed. These councils will continue to achieve low recovery rates at kerbside until they do so.

In regional areas, 12 councils offer an opt-in service to at least townships. Details can be found in **Appendix 2**.

A few councils encourage home composting systems as an alternative to disposal in the organics bins. No details are available on the uptake rate but, in practice, less waste should be presented at kerbside.

3.2 Garden vegetation

High levels of garden organics tend to boost overall recovery rates (**Table 8**). For example, a Hills council with leafy suburbs has the best three-bin recovery rate, but when organics (the third bin) are discounted, it performs worse than a western suburbs council. Councils with opt-in organics services tend to have lower three-bin recovery rates. Some drier council areas also have alternative recovery options such as resident drop-off facilities, which would not be reflected in three-bin figures.

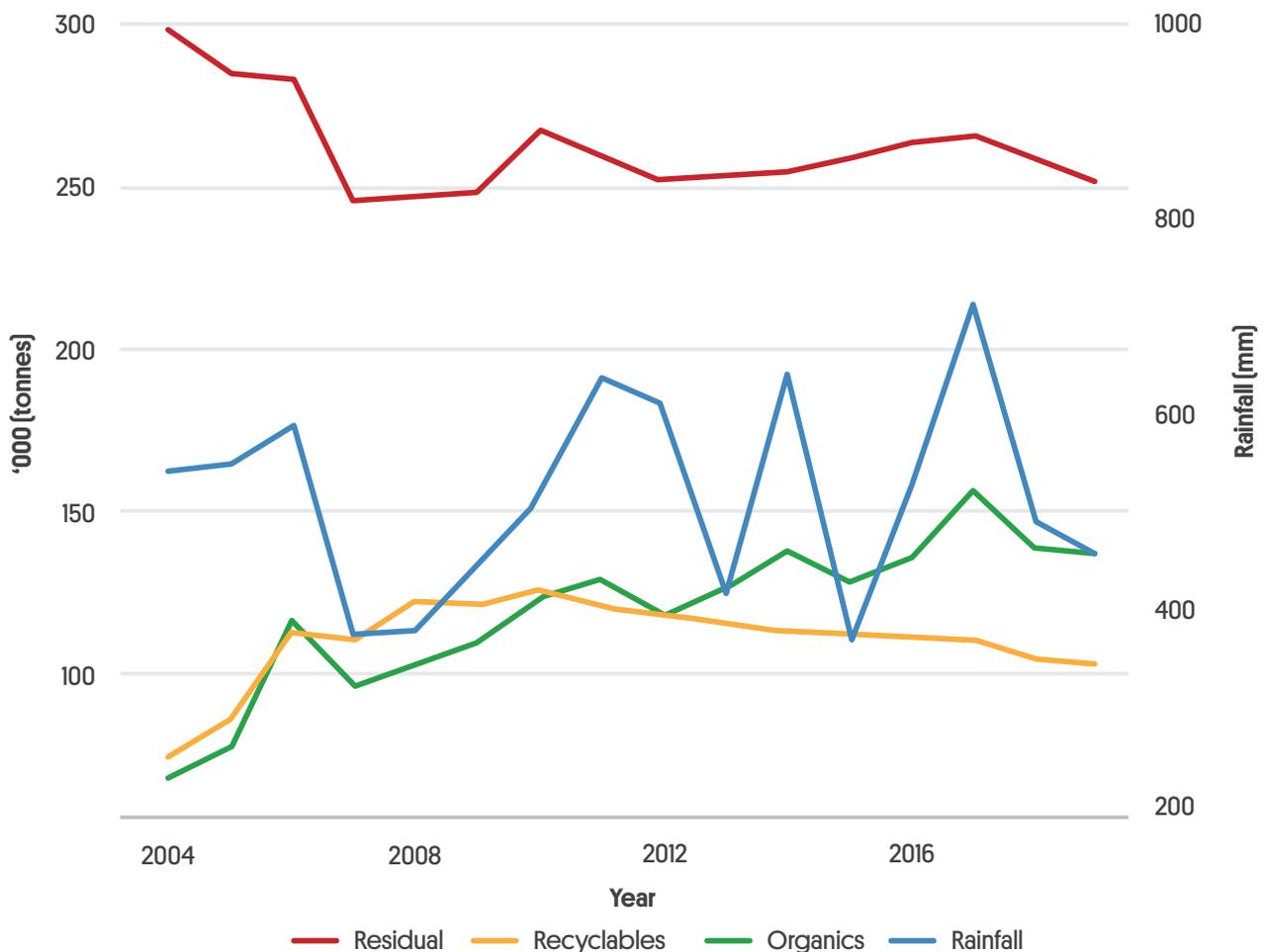
Adelaide's rainfall was lower in 2018-19 relative to previous years (**Table 15**), contributing to a 0.9% decrease in organics collected compared with 2017-18.

Table 15. Total Rainfall (mm) Recorded at Kent Town for Financial Years [periods ending June 30]

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Rainfall (mm)	638	609	413	647	377	523	716	487	456

Figure 8 shows annual rainfall and total materials collected at kerbside by bin type for the years 2003-04 to 2018-19. Volumes of organics collected drop in dry years, although this is offset by watering of gardens and rainfall patterns across the year.

Figure 8. Trends of kerbside waste tonnages by bin compared with annual rainfall [blue line] for Metro Adelaide from 2003-04 to 2018-19

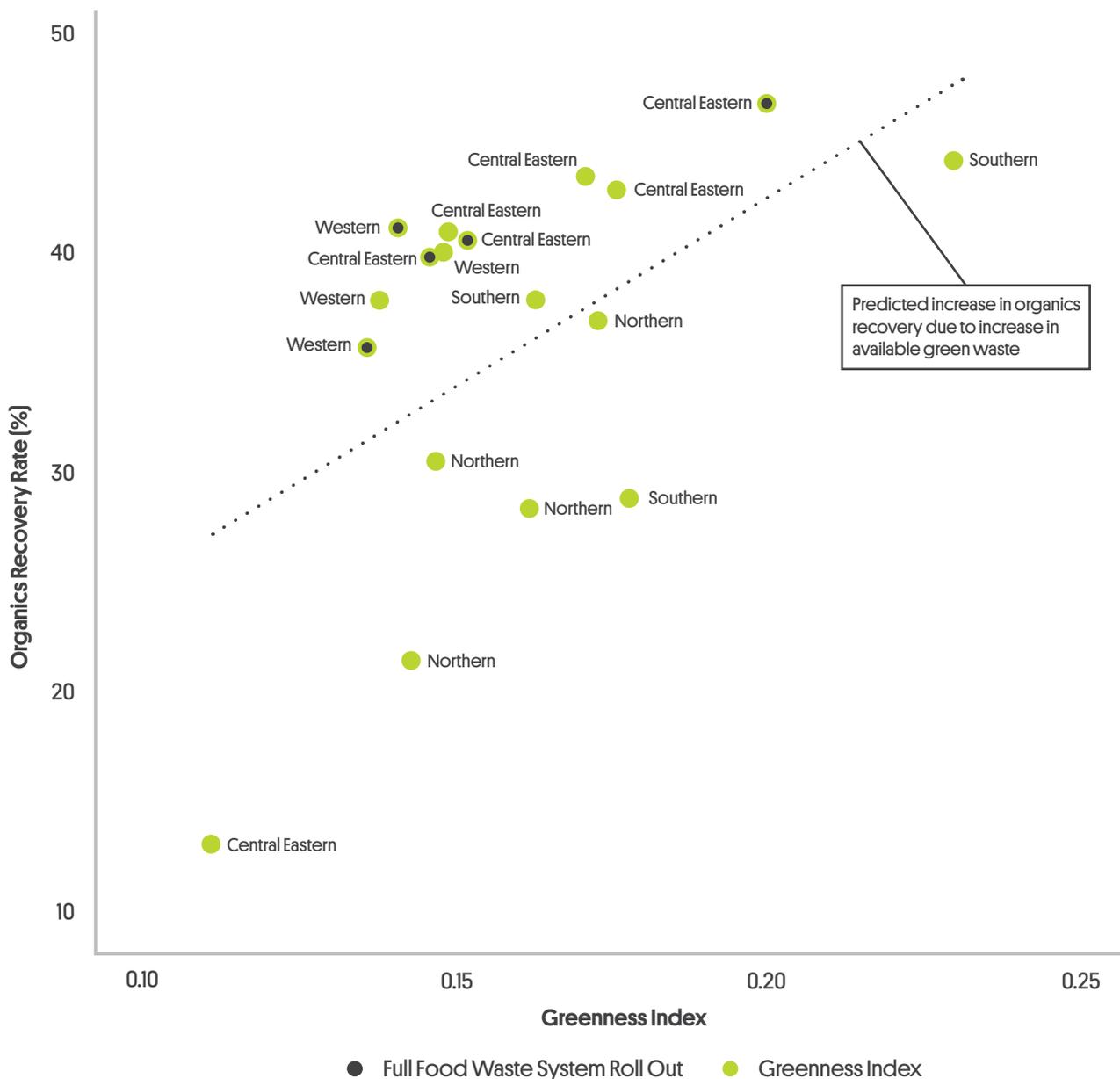


The Organics recovery rate was plotted against the greenness index for each Metropolitan council (except Adelaide Hills) (**Figure 9**) to illustrate that the recovery rate is linked to levels of organic waste presented at kerbside, i.e. councils who can produce more green waste have more waste to recycle and could achieve better recovery rates. Conversely, councils with a residential area served by higher numbers of multi-unit dwellings and very little garden area per dwelling will score lower on a greenness index and are likely to score lower for recovery rates.

Highlighted in **(Figure 9)** are those councils who have a full food waste system deployed to their residents. All these councils scored above the trend line regardless of their greenness index which illustrates that food waste diversion leads to better recovery rates.

Food waste diversion systems when rolled out across whole council areas do increase the recovery rate of waste at kerbside.

Figure 9. Organics recovery rate plotted against the greenness index for each Metropolitan council (except Adelaide Hills)*



* Note: Councils slightly above the predicted line perform better on organics versus available garden waste and are likely to recover more household food waste.

3.3 Recyclables

In recent years, there has been a trend to reduce the weight of glass and steel packaging or to replace these materials with lighter plastics, and consumers are reading more information digitally which results in fewer physical copies of newspapers and magazines. Newspaper sales fell 44% between 2005 and mid 2018 [see Wikipedia (2019)].

This has led to a decrease in the volume and, in particular, the weight of material being recycled – though this may be offset to some extent in the future by increased amounts of cardboard as the trend towards online shopping increases.

Less waste can mean lower recovery rates if less recyclables are presented at kerbside. To offset this drop, less material must be presented in residual bins and changes to householder behaviour such as food diversion are essential.

3.4 Economic and demographic

Economic and demographic factors influence the amount of kerbside waste and recovery rates. Residual waste per person has remained steady in recent years, but total kerbside waste has increased with population increases. Each council has a mix of residents – from young families to older couples – which affects the profile of waste presented.

Households with larger incomes have the potential to produce more waste as they can spend more on consumer goods [more packaging and other waste], and particularly food. With more waste generated there is the possibility of more recyclables generated. Additionally, more organics can be produced from gardens being watered in dry years. All these individual factors create a situation where the recovery rate for these residents can go up, but ironically they may be generating more waste overall.

ABS analysis from the 2016 census shows that some councils have slowing population growth (e.g. Prospect), while others are attracting young families and have increasing populations (e.g. Onkaparinga and Marion). Each situation presents its own demographic and infrastructure challenges.

High-rise developments affect bin system rollouts, and as there are no gardens per household, three-bin recycling rates decrease in areas with large numbers of these developments (e.g. central Adelaide).

The recovery rate is related to household income, and councils with higher household incomes have tended to adopt a full three-bin system with food caddy to all households.

Many other factors underlie this situation – such as awareness programs and education levels of households – but this report cannot examine them in detail.

3.5 Contamination Rates

A number of kerbside waste audits were undertaken in recent years to determine the behaviour of residents in using the waste bins. Audits have been carried out by both metropolitan and regional councils.

Combined, they indicate that contamination was around 13% by weight (post collection) in recyclables bins and 2% in green organics bins. Industry consultations have confirmed that these figures are consistent with their findings and that contamination of recycling bins, and to a lesser extent organics bins, continues to be an issue.

In addition to lowering the effective recovery rate, contamination interferes with sorting through materials recovery facilities (MRFs) and commercial composting facilities. This wastes resources that may otherwise be recycled or devalues its worth in potential markets.

The audits also show that 30-40% of the contents of the residual bins is food waste. Significant improvements in the recovery rate would be achieved if food waste was placed in the green organics bin. Some audits have shown that the residual bin can contain as much as 69% recyclable and organic material.

3.6 Three, four, or more?

South Australia has shown that it is capable of good recovery rates of kerbside material from a three-bin system and these rates have steadily improved overall as more councils adopt the system. This improvement occurs particularly where food caddies are fully rolled out to households to divert food organics. Concerns over contamination are still raised by MRFs and composters as high contamination rates devalue recycled material and various proposals have been put forward to address the problem. Education efforts through the Which Bin campaign and infrastructure grant funding have been available through GISA to improve efficiency and contaminate removal processes.

One solution presented to improve kerbside recovery rates and reduce contamination of recyclable streams is to increase the number of bins offered to households. In 2020, Victoria announced it will introduce a fourth bin at kerbside in 2021 to collect glass bottles and jars separately.

There is a possible balance between compaction of material to reduce costs and addressing contamination rates. In a study by A.Prince for Zero Waste SA [2012], it was found that the average percentage of contamination in loads did not vary with compaction levels, probably due to contamination being primarily influenced by household behaviour, not waste collection. It did however find that the MRF contamination level was slightly higher than the kerbside contamination levels.

South Australia has had a container deposit scheme to divert a large proportion of glass from households in place for over 40 years. Combined with the three-bin system this has contributed to improvements in the kerbside recovery rate. However the three-bin system has not been fully implemented in all regional councils and greater diversion is still possible to reduce the amount of recyclables and organics presented in the residual bin at kerbside, particularly by increased provision of organics bins or allowing food waste in green bins. A proper cost-benefit analysis would be required to determine whether additional bins offered to householders would show increased diversion rates and subsequent costs benefits.

4. Conclusions

This report examines the effectiveness of the kerbside bin systems in South Australia both in metropolitan Adelaide and regional councils, using the recovery rate as an indicator.

The most effective system of those in use is the fully implemented three-bin system and providing a weekly residual waste collection, fortnightly recyclables collection and fortnightly organics collection that includes food waste.

All metropolitan councils have a three-bin system but some are opt-in only for the organics service. Increasingly, regional councils are offering a similar service, at least in townships. The councils that have the best recovery rates were generally those in which all households have a three-bin system with food waste system, which has achieved up to 60% recovery rate at certain times of the year.

The generation of kerbside waste materials by South Australian households has remained relatively stable over the study period. Improved recycling services have increased the amount of resources recovered and reduced the amount of material being disposed to landfill.

The recovery rate is an indicator of recycling performance. Both three-bin and recyclables recovery rates have been discussed and the latter attempts to show waste diversion without seasonal effects. Various factors influence the recovery rate at a local level or regional level:

- Weather – rain tends to increase organics weight and inflates recovery rates
- Packaging – may reduce the recycling rate in the longer term as heavier material such as glass and steel cans are light-weighted or replaced by lighter plastics
- Less newsprint is being presented at kerbside
- Geography – density of housing and natural rainfall affects opportunities for vegetation growth
- Councils without any organics collections tend to have significantly lower recovery rates, but this may be partly off-set by resident drop-offs
- In the Adelaide metropolitan area, the use of opt-in system for organics collections in some councils has led to performances where recovery rates are seven to 10 percentage points lower than those with full organics bin roll out.
- Education programs, in addition to state-wide communications campaigns will assist councils to raise recovery rates through consistency of message across the state.
- Deploying a uniform three-bin system with food caddies will lead to greater recovery rates
- Economic and social attributes, such as household income and spending, influence the recovery rate. Additionally, the residual waste per person should also be viewed when considering long term trends. The data used for this report and some obtained from other sources show that there are still potential opportunities for greater diversion of recyclable material from the residual bins.
- Uniformity in the waste management message to residents across the whole SA community reduces confusion and increases good waste management practices and recovery rates.

APPENDIX 1:

Estimated composition of Metropolitan Adelaide's Kerbside Waste Bins

Summary

This appendix estimates average metropolitan kerbside bin waste composition based on kerbside waste bin audits carried out by Metropolitan Adelaide Councils. Data was provided by Adelaide metropolitan councils for audits carried out in 2017 through to 2019. This report is provided back to councils and their contractors to allow them to compare themselves against a metro average to provide a rough benchmark of their progress in comparison with the whole metro area.

Methodology

Summary reports of council kerbside bin audits were obtained from councils or LGA. These audits examined around 100 bins of each type with the current methodology of detailing about 20 bins at once as opposed to individual bins. Overall, around 1,700 bins of each of residual, recyclables and organics were examined. The data came from audits mainly in 2018 and 2019 but also from 2017 so the results are spread over a small number of years.

To calculate an average composition for each kerbside bin within a council, the percentage of each material category [metals, plastics, etc] found in a bin during the audit was multiplied by the 2018-19 total tonnes collected at kerbside for that bin and council. The results were then summed for all the metropolitan councils across each category and the breakdown expressed as percentage of the metro total tonnes for the bin type.

Caveats

This data deals with the contents presented at kerbside and does not deal with what is delivered to materials recovery facilities, landfills or transfer stations. It must be kept in mind that this is an estimated drawn from available data only. The data used does not deal with the same period for each council, raising the uncertainty of the effects of weather, spending habits of householders, et cetera in each year. In one council which had two surveys not far apart, one recyclables bin category differed by several percentage points between the two surveys. This raises issues of representativeness for that council for the whole year.

Auditing the various councils' bins was carried out by a number of contractors who reported on some items like plastics in different ways making a detailed breakdown of materials difficult. For this reason, the summary presented here details only the broad categories of bin compositions, eg "metals" but no breakdown into "Steel", "Aluminium cans", "other metal", etc are provided.

The focus is only on the composition of waste collected at kerbside in bins provided specifically for residual waste (garbage), co-mingled recyclables and green organics. Hard waste, street sweepings, CDS returns and waste collected at drop-off facilities and council-operated commercial services are excluded.

All 19 metropolitan councils have offered a three-bin service for varying numbers of years, although some provide a green organics bin only on an opt-in basis. Where audits were carried out in the NAWMA group of councils, the NAWMA area wide percentage of households having a green organics bin was applied to all individual councils in determining the average composition of the residual waste and recyclables bins.

In a similar way to the previous point, the average audit composition of the East Waste kerbside audits was applied to each of those 7 councils.

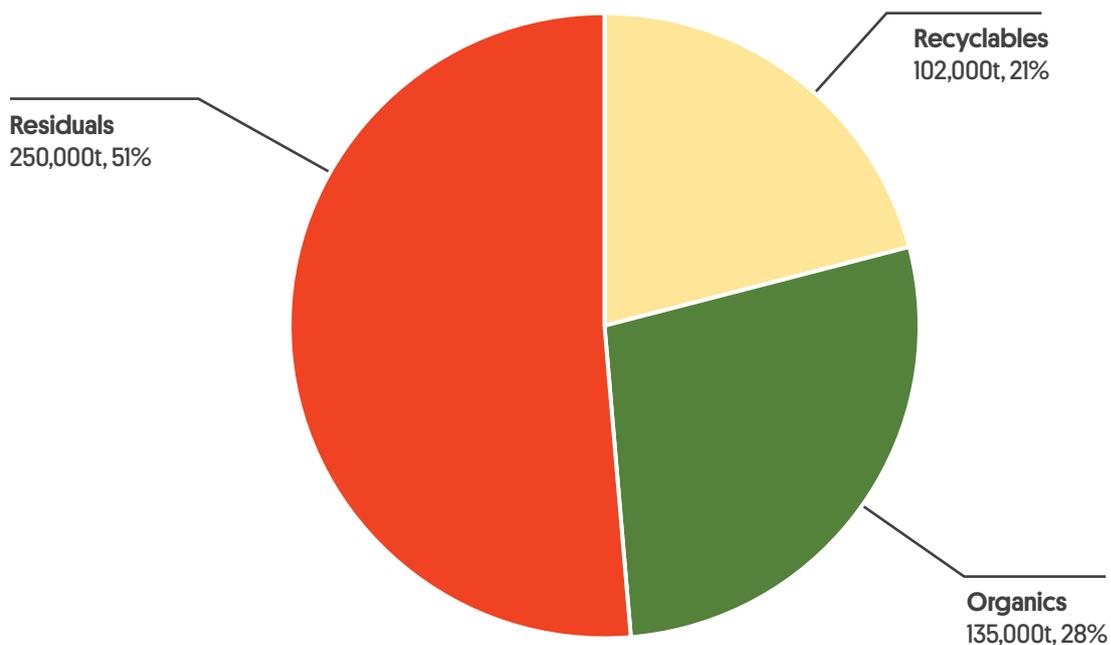
For the above reasons, the results are shown with a minimum of significant figures to reflect the nature of the data and its accuracy.

Despite these limitations, it is believed these findings will be useful to inform those involved in kerbside waste collections.

Material presented at kerbside

The total material presented at kerbside in this model across Metropolitan Adelaide was approximately 487,000 which broken down by bin can be seen in **Figure 1**. From ABS figures, there are 1,298,213 people in Metropolitan Adelaide (June 2018) located in 498,241 dwellings (ABS 2016).

Figure 1. Estimated Kerbside Waste Composition



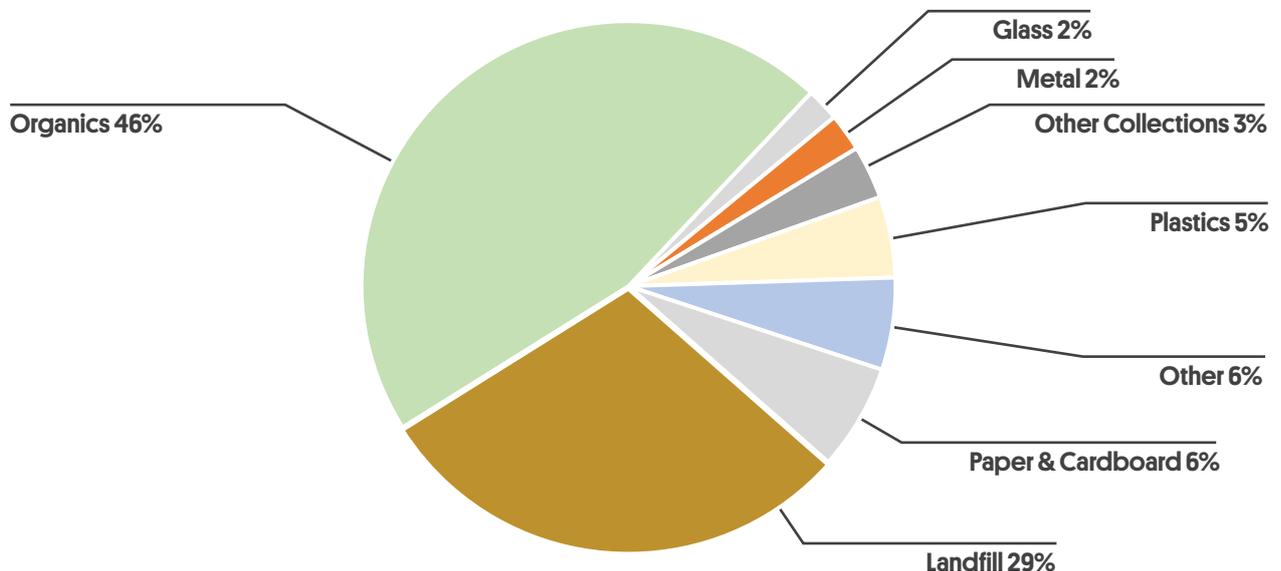
Residual (red or blue lid) waste bin

In Metropolitan Adelaide every household has a red lid (12 councils) or blue lid (7 councils) bin to collect residual waste weekly. The average estimated composition of these bins is shown in **Figure 2**. Approximate tonnes are shown in **Table 1**.

Table 1. Estimated average composition of 2018-19 Metropolitan Adelaide residuals by tonnes using the kerbside audits

Material	Tonnes	Percentage
Paper & Cardboard	15,000	6%
Glass	4,800	2%
Plastics	12,000	5%
Metal	5,400	2%
Organics	116,000	46%
Other Collections ¹	9,000	3%
Landfill	73,000	29%
Other materials ²	15,000	6%
All material	250,000	

Figure 2. Estimated Residual Bin Composition



Nearly half the residual bin is organics such as garden and food wastes should be placed in the green organics bin. Similarly, nearly 16% are recyclables (glass, metal, plastics and cardboard) that could be placed in the yellow lid bin. Potentially only 29% of the current contents need to be landfilled.

¹ Can consist of e-materials, light bulbs, clean film, textiles / other reuseables, other metal, coffee pods

² Mainly building materials, rocks/bricks and chemical/hazardous waste

Recyclables (yellow lid) bin

The averaged estimated composition of the recyclables bin (yellow lid) are shown in **Figure 3**. Approximate tonnes of materials are shown in **Table 2**.

Table 2. Estimated average composition of 2018-19 Metropolitan Adelaide recyclables by tonnes using the kerbside audits

Material	Tonnes	Percentage
Paper & Cardboard	53,000	51%
Glass	20,000	20%
Plastics	9,500	9%
Metal	4,000	4%
Organics	2,400	2%
Other Collections	1,600	2%
Landfill	10,600	10%
Other materials	1,200	1%
All material	102,300	

Figure 3. Estimated Recyclables Bin Composition

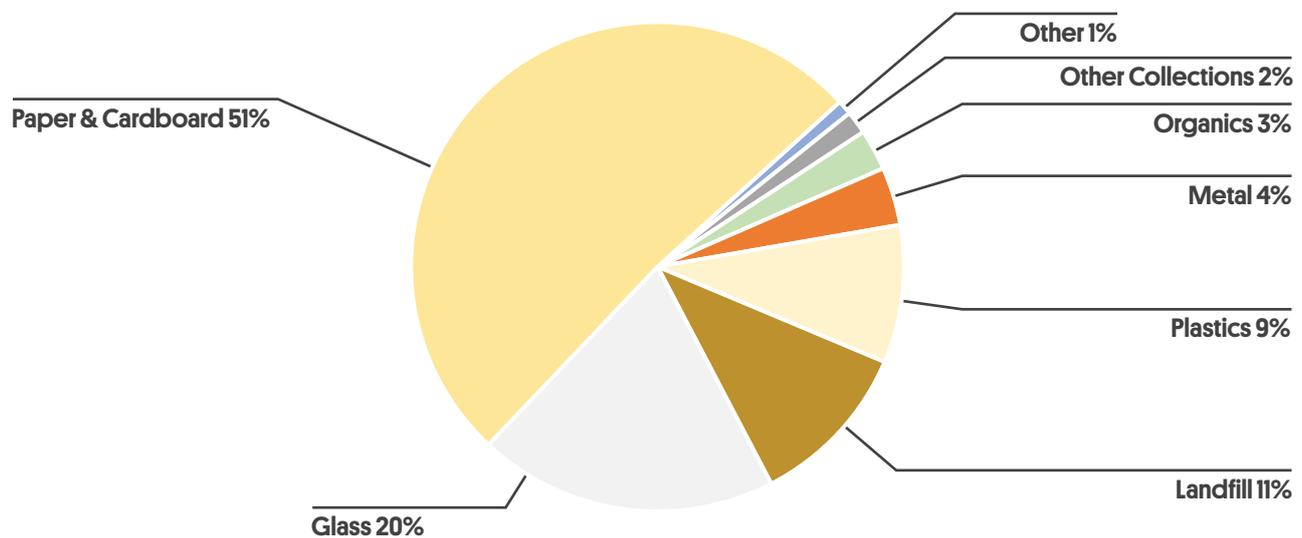


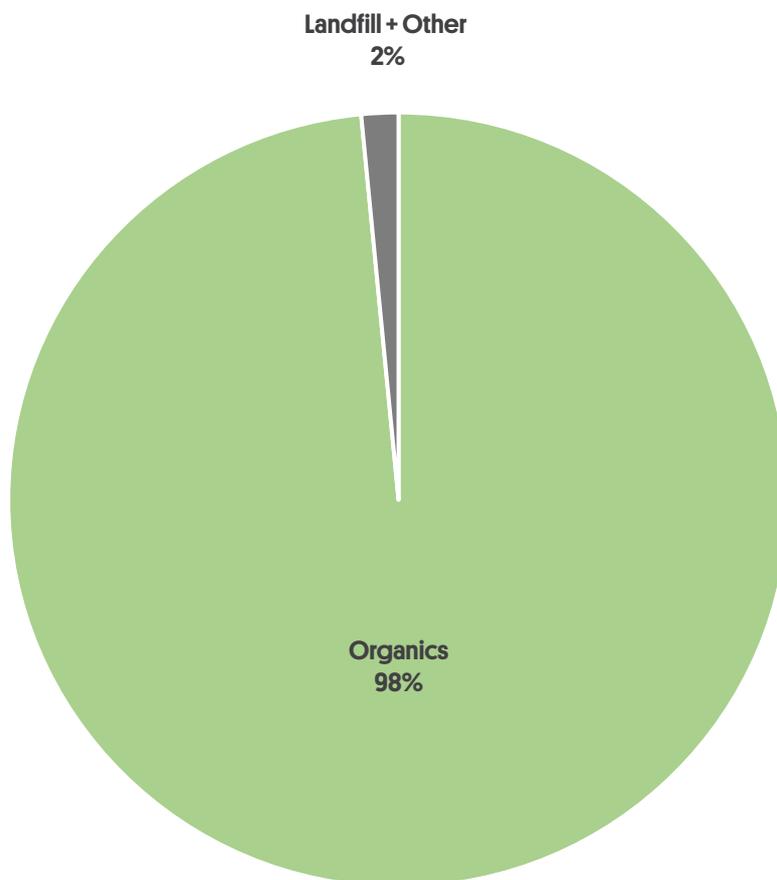
Figure 3 shows that about 84% of the recyclables bin are true recoverables and only 11% should be landfilled. The remainder represents materials such as batteries and organics which should not be disposed in the yellow bin as they should be disposed of elsewhere such as drop-offs or, in the case of organics, the green organics bin.

The range of recoverables in the yellow bin is quite wide with some councils performing well. Most councils have a contamination range between 10% and 20%.

Organics (green lid) bin

About 135,000 tonnes of green waste is presented at kerbside in the green organics bin. The estimated composition of this waste is approximately 97% to 98% organics such as garden and food waste. This is consistent with reports from composters on the level of contamination that is landfilled by composters. The summed audits were less than 0.5% recyclables which were mainly cardboard. Glass and metals estimated to be present in the green bin in this summarised audit were negligible overall.

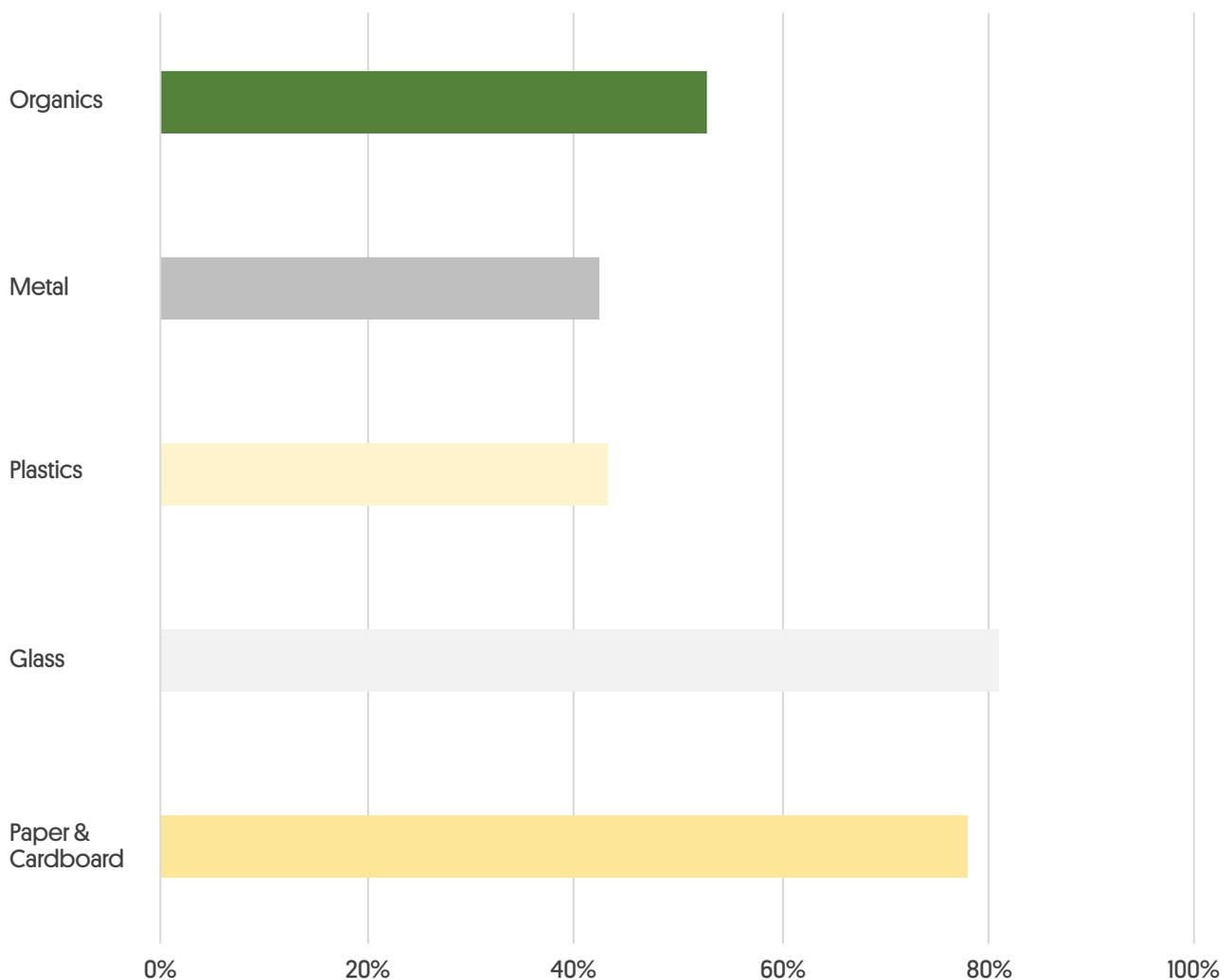
Figure 4. Estimated Organics Bin Composition



Summary of recyclables in bins

The estimated percentages of the recoverables, which are present in kerbside bins, is shown in **Figure 5** below. What is being illustrated is the percentage of metals, plastics, glass, and paper & cardboard, which are placed in the yellow lidded recyclables as well as the percentage of organics that are placed correctly in the green lidded organics bin.

Figure 5. Estimate of recyclable material by type which is placed in the correct bin



While householders place 78% [by weight] of paper and cardboard and 81% of glass in the yellow bin, there are problems with organics, metals and plastics. Approximately 250,000 tonnes of organics is presented at kerbside and only 53% of it is correctly placed in the green bin.

Figure 6. Estimated percentage of recyclable material by type by kerbside bin

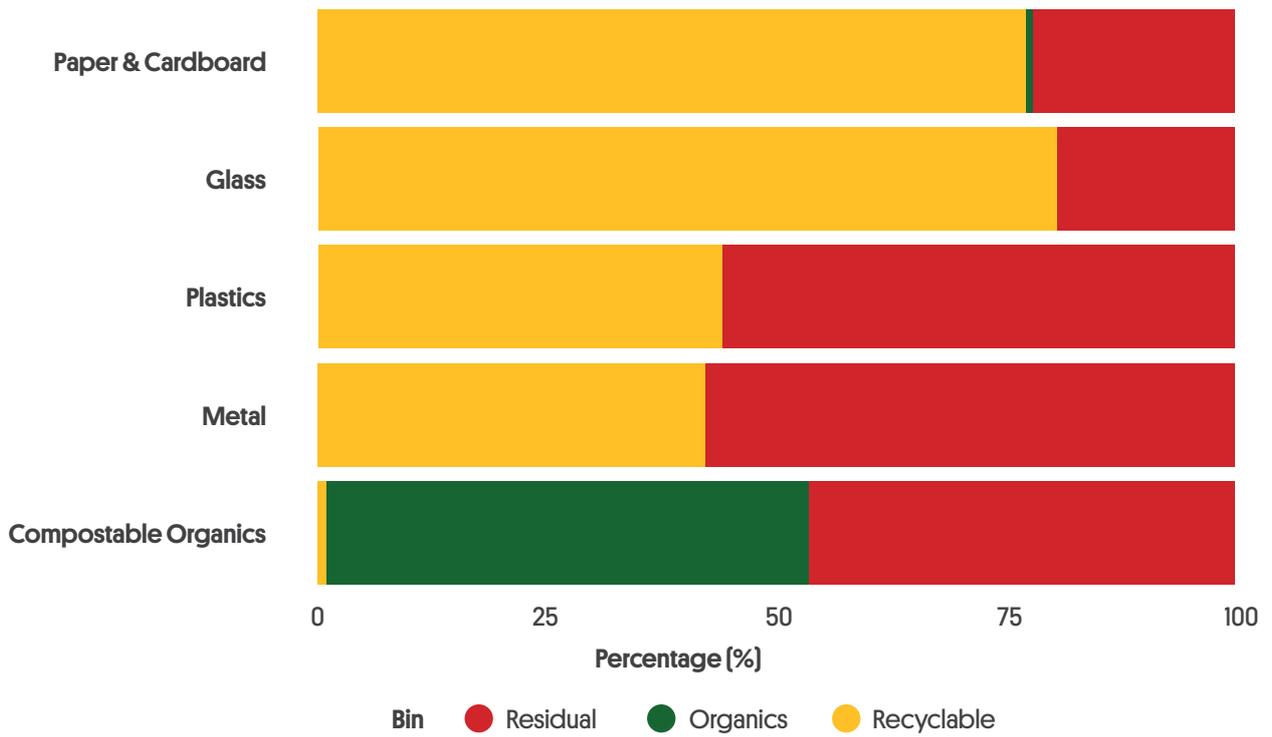
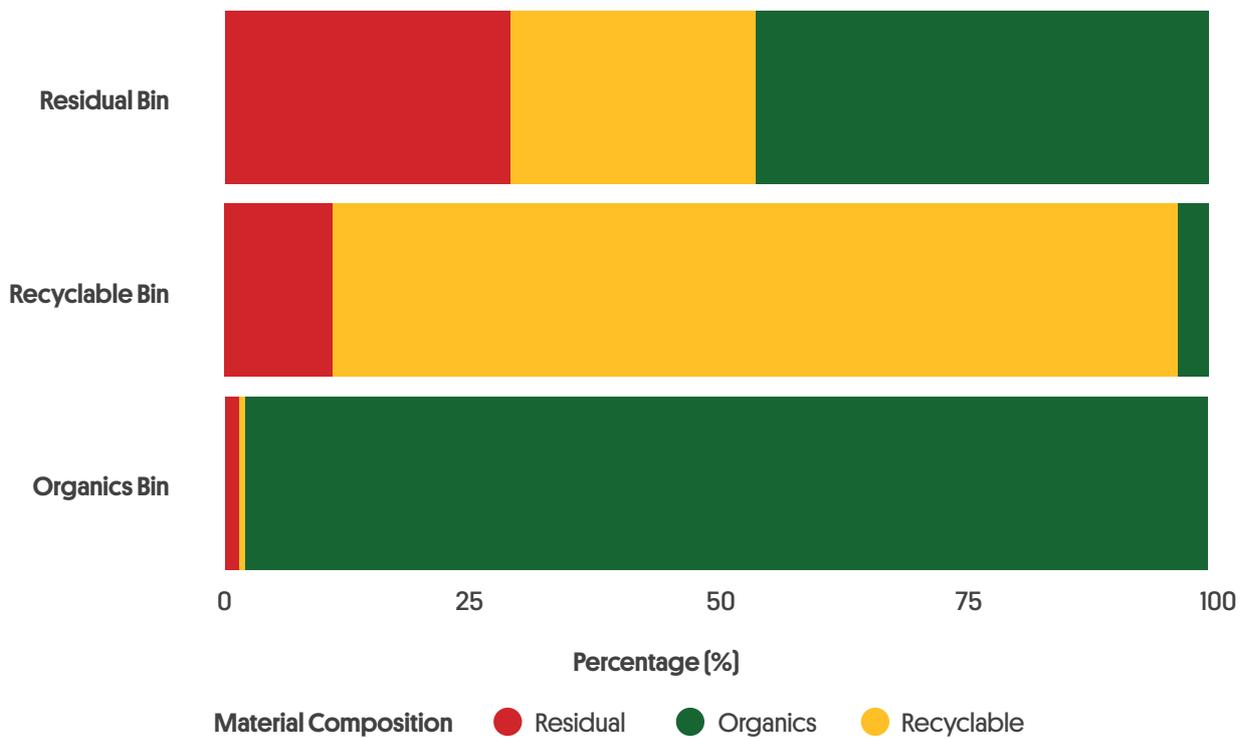


Figure 7. Estimated percentage of waste material type present in each kerbside bin



Recommendations

The three-bin system has been shown to be effective system to minimise waste going to landfill and in metropolitan Adelaide area has achieved up to 60% recovery rate at certain times of the year for some high performing councils. The analysis presented above also shows the obvious opportunities to minimise waste even further and improve the recovery rate through changes to the material presented in bins by householders.

Most notably:

- The residual bin has at least 46% incorrectly placed organic waste which represents the greatest opportunity for improving waste recovery rates. About 120,000 tonnes is lost instead of being composted or sent for other uses.
- The 'Which bin' campaign has a food waste diversion component which will help and this message needs to be extended to all organics.
- Individual bin audits should be introduced to study the variability of householder behavior so the frequency of incorrect material placement can be determined. What percentage of householders do the right thing?
- Although different contractors claim to use the 'Zero Waste SA Kerbside Audit methodology', inconsistencies which do not allow smooth aggregation of results have crept in. A new revised and widely accepted methodology is needed and is in development by GISA and recommended that all councils adopt.
- Many recyclables are bagged by householders and placed in the yellow bin in the mistaken belief that they will be recycled. The message needs to be spread that these are lost recyclables as de-bagging does not occur at the MRF and only loose recyclables should go in the yellow bin.
- Related to the previous point, any waste food should be removed from its packaging before being placed in a compostable bag, or directly in the green bin.
- Waste and recoverables such as e-waste and hazardous waste are presented at kerbside that should be disposed of elsewhere. Further messages need to be reinforced on where to take hazardous waste or C&D waste rather than just placing it in the kerbside bins.
- Councils should include a requirement in contracts for kerbside audits that a spreadsheet of the raw data collected during any bin audit be provided along with the final report. This would prevent a loss of accuracy in any further analysis.
- A new teaching module for primary or lower secondary school students could assist in developing and disseminating correct bin use behavior in the community.

Appendix 2:

Regional kerbside bin collection frequency

Council	Number of bin	Waste	Recycling	Organics	Food waste system
Adelaide Plains	Towns 3-bin, Rural 2-bin	F	F	F	Opt-in T
Alexandrina	Towns 3-bin	F	F	F	Opt-in T
Barunga West	3-bin	W	M	M	None
Berri Barmera	3-bin	W	F	F	None
Ceduna	1-bin	W	-	-	None
City of Mount Gambier	3-bin	W	F	F	Opt-in T
City of Port Lincoln	2-bin	W	F	-	None
Clare and Gilbert Valleys	2-bin	W	F	-	None
Cleve	2-bin	W	F	-	None
Coober Pedy	1-bin	W	-	-	None
Coorong	3-bin	W	F	F	None
Copper Coast	3-bin (green opt-in)	W	F	M	None
Elliston	2-bin	W	F	-	None
Franklin Harbour	1-bin	W	-	-	None
Grant	2-bin	F	F	-	None
Kangaroo Island	Towns 3-bin	F	F	F	Opt-in T
Karoonda East Murray	2-bin	W	M	-	None
Kimba	2-bin	W	F (opt-in)	-	None
Kingston	2-bin	W	F	-	None
Light	Towns 3-bin, Rural 2-bin	W	F	F	Opt-in T
Lower Eyre Peninsula	1-bin	W	-	-	None
Loxton Waikerie	Towns 3-bin, Rural 2-bin	W	F	F	Opt-in T
Mid Murray	2-bin	W	F	-	None
Mount Barker	Towns 3-bin, Rural 2-bin	W	F	F	Opt-in T
Mount Remarkable	2-bin	W	F	-	None
Municipal of Roxby Downs	3-bin	W	F	M	None
Murray Bridge	Towns 3-bin, Rural 2-bin	W	F	F	None
Naracoorte Lucindale	3-bin	W	F	F	None
Northern Areas	2-bin	W	F	-	None
Orroroo Carrieton	2-bin	W	F	-	None

Council	Number of bin	Waste	Recycling	Organics	Food waste system
Peterborough	2-bin	W	F	-	None
Port Augusta	3-bin	W	F	F	None
Port Pirie	3-bin	W	F	F	None
Regional of Goyder	2-bin	W	F	-	None
Renmark Paringa	3-bin	W	F	F	None
Robe	2-bin	W	F	-	None
Southern Mallee	2-bin	W	M	-	None
Streaky Bay	1-bin	W	-	-	None
Tatiara	Towns 3-bin, Rural 2-bin	W	F	F	None
The Barossa	Towns 3-bin (green opt-in), Rural 2-bin	W	F	F	Opt-in T
The Flinders Ranges	2-bin	W	F	-	None
Tumby Bay	1-bin	W	-	-	None
Victor Harbor	Towns 3-bin	F	F	F	Opt-in T
Wakefield	3-bin	W	F	4-W	None
Wattle Range	3-bin	W	F	F	T
Whyalla	3-bin	W	F	F	Opt-in T
Wudinna	1-bin	W	-	-	None
Yankalilla	3-bin	F	F	F	T
Yorke Peninsula	3-bin	W	F	M	None

NB: The abbreviations in the table refer to [F]ortnightly, [M]onthly, [W]eekly and [T]ownships

Glossary

Commercial and Industrial waste (C&I)	Comprises solid waste generated by the business sector as well as solid waste created by state and federal government entities, schools, and tertiary institutions.
Construction and Demolition waste (C&D)	Includes waste from residential, civil and commercial construction and demolition activities, such as fill material (e.g. soil), asphalt, bricks and timber. C&D waste excludes construction waste from owner/ occupier renovations, which is included in the municipal waste stream.
Container Deposit Scheme (CDS)	A refundable charge imposed on a range of recyclable beverage containers. The deposit is included in the retail price and refunded when the container is returned to a collection point.
East Waste	East Waste Management Authority is a regional subsidiary of local councils formed under the Local Government Act 1999 to provide effective waste collection services for its member councils: Adelaide Hill Council, City of Burnside, Campbelltown City Council, City of Norwood Payneham & St Peters, City of Mitcham, City of Prospect, and the Corporation of the Town of Walkerville.
Food caddy	A kitchen benchtop food container for the collection of household food waste, to be placed in the organic waste bin.
Food organics	Organic waste derived from food preparation and/or surplus food.
Garden organics	Organics derived from garden sources e.g. grass clippings, tree prunings.
Hard waste	Large materials that are not suitable for collection in the kerbside three-bin system. Common items include furniture, appliances and mattresses.
Kerbside collection	Collection of household waste, recyclable materials (separated or co-mingled), and organic waste that are left at the kerbside for collection by local council collection service.
Municipal solid waste	Solid waste generated from domestic (household) premises and council activities such as street sweeping, litter and street tree lopping. May also includes waste dropped off at recycling centres, transfer stations and construction waste from owner/occupier renovations.
NAWMA	Northern Adelaide Waste Management Association is a regional subsidiary of local councils formed under the Local Government Act 1999 to provide waste management and resource recovery services for the City of Salisbury, City of Playford and Town of Gawler. Its clients also include businesses, industry and regional councils.

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