



Government
of South Australia

Green Industries SA

South Australia's Kerbside Waste Performance

State & Regional Report 2021-22



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.



**Government
of South Australia**

Green Industries SA

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Executive Summary

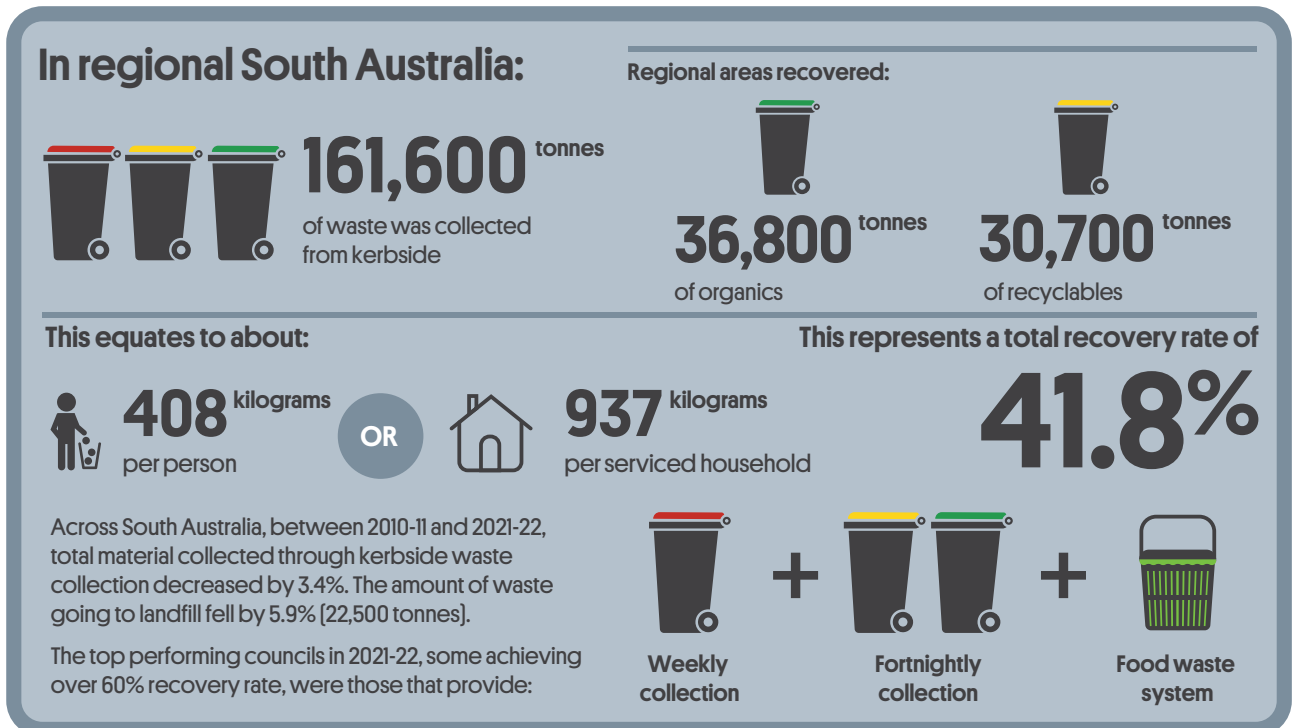
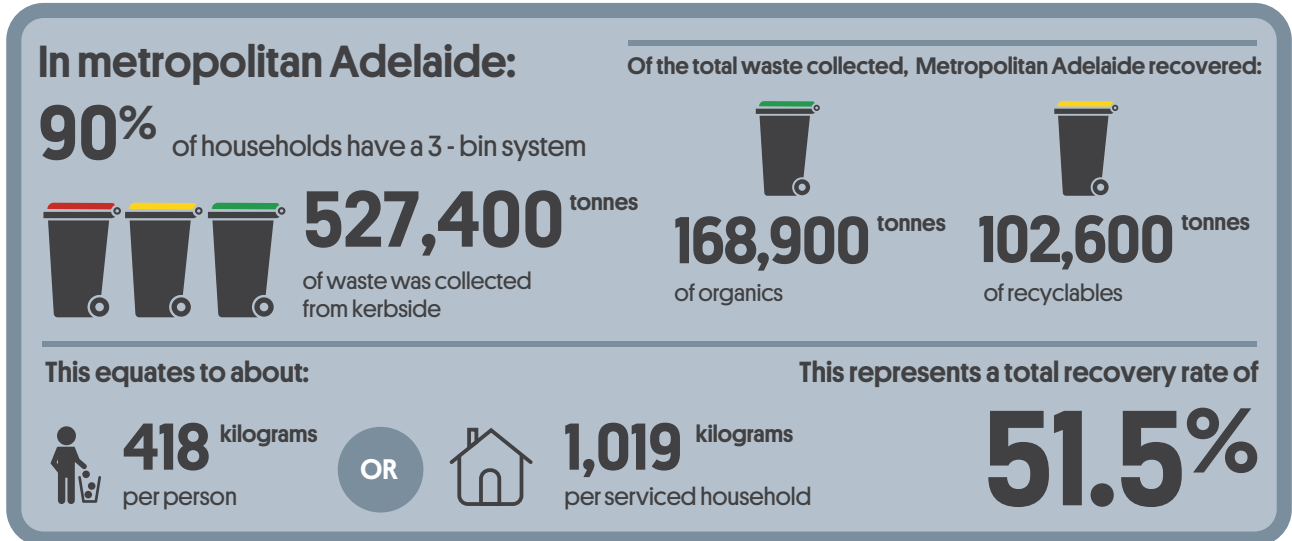
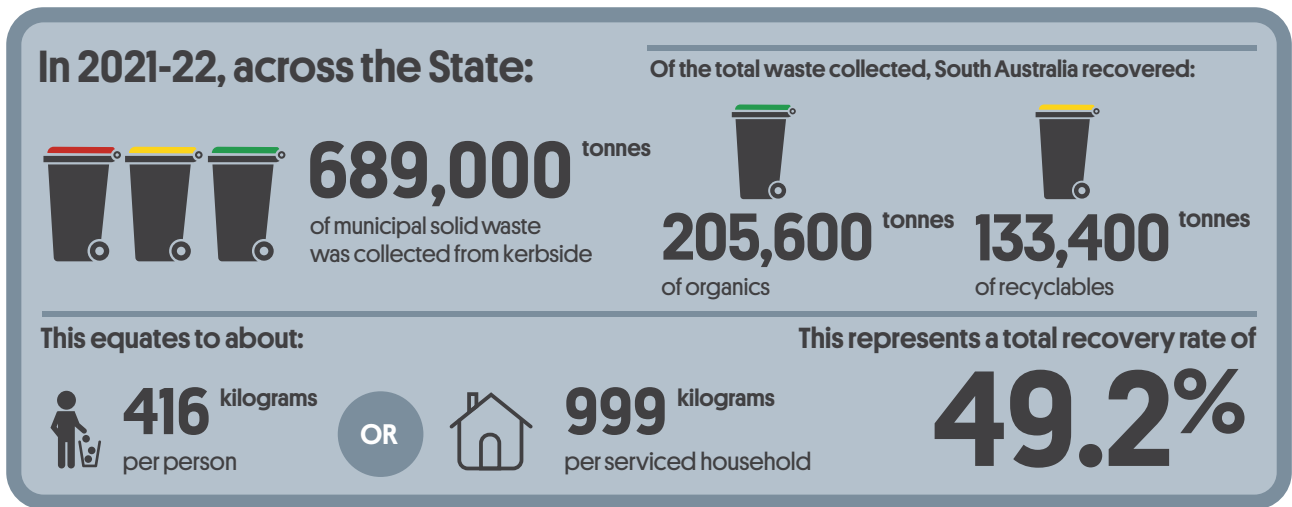
This report presents data on a state-wide kerbside waste and recycling collection services in South Australia and the 49 regional councils in the 2021-22 financial year. It compliments an earlier report covering Metropolitan Adelaide for the same time period which is available on the [Green Industries SA](#) website. This report analyses performance and improvements in council waste management efficiency and sustainability across the state over the past 18 years.

The focus is only on waste material collected at kerbside in bins provided specifically for residual waste (landfill), co-mingled recyclables and organics (green and/or food). Hard waste, street sweepings, Container Deposit Scheme (CDS) returns and waste collected at drop-off facilities and council-operated commercial services are excluded from the main report but results are presented in **Appendix 1**.

All 49 regional councils offer a one-bin system at a minimum and more have extended their services to include recycling and organic bins. Approximately half offer a three-bin system, including many where these services are provided to townships only. One regional council offered a fourth bin for paper and cardboard only but has ceased this provision since September 2022. There are also differences between councils in terms of bin ownership, full versus optional adoption of bin types, and collection frequency may differ between town and other areas.

Green Industries SA is committed to working with Local Government councils to improve waste and recycling management to achieve the targets set in the *South Australia's Waste Strategy 2020-25*.

Performance



Recommendations

The findings of this report suggest that the following changes would improve the diversion of waste from landfill:

1. Adopting a standardised three-bin system across all regional councils to include as a minimum service to all households at least in townships, with:
 - a. fortnightly collection of co-mingled recyclables and residual; and
 - b. weekly collection of organics, including food waste.
3. Standardisation of bin infrastructure to comply with AS 4123.7

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 [60.7%] and least [0%, single bin system] performing councils.

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

Inconsistent messaging where advice and language could vary from council to council was leading to confusion on the easiest way to comply with proper recycling practice. Simplifying and standardising messaging is essential to improve awareness and knowledge to entrench the culture of waste minimisation.

The state-wide Which Bin campaign has focused on “building mental availability for correct kerbside bin knowledge and behaviour”. It has aided the consistency of education and awareness efforts by providing 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 and organics streams and divert more food waste from the residual stream.

Normalising the behaviour of recycling and improving the awareness takes time and requires constant reinforcement of the key messages. Costs on communication and education are also

reduced in the longer term by providing the same message in the same format and the same brand to all households across all councils.

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.

South Australia’s Waste Strategy 2020-25 recognises the importance to set up consistent systems and technology for MSW and one of the priority actions identified is to ensure that kerbside bins are compliant with the relevant Australian standard on mobile waste containers. While it is recognised that standardisation of bin colours will incur extra costs by councils, it is suggested that new or replacement bins be compliant with the Australian standard as a minimum to ensure the transition over time.

4. Developing Regional Waste Management Plans setting regionally appropriate and progressive waste diversion targets

To ensure continued progressive improvement in waste diversion in regional areas, the *South Australia’s Waste Strategy 2020-25* includes a new quantitative target for regional areas – by 2023: Regional Waste Management Plans are in place for all South Australian regional local government areas and/or regional city clusters and set regionally appropriate and progressive waste diversion targets.

Regional Waste Management Plans may be progressed at the regional local government area or to leverage and optimise synergies across major regional centers where more practicable.

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1

Introduction

1.1 Purpose

Information on waste streams is needed to help monitor progress towards the municipal waste targets set in *South Australia's Waste Strategy 2020-25* (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 in South Australia and the 49 regional councils in the 2021-22 financial year. It compliments an earlier report covering Metropolitan Adelaide for the same time period which is available on the [Green Industries SA](#) website. This report analyses performance and improvements in council waste management efficiency and sustainability across the state over the past 18 years.

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, Container Deposit Scheme (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 *Circular Economy Resource Recovery Report (CERRR) 2021-22*, 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 2021-22, 81.9% of all waste was diverted from landfill for recycling and other purposes (Blue Environment 2022).

Residential residual waste accounts for 44% of the total solid waste that goes to landfill. The remainder is commercial and industrial waste (18%) and construction and demolition waste (39%).

Reporting is based on the gross waste quantities reported in councils' kerbside performance data and provided without further alteration. This data therefore depicts quantities that are inclusive of contamination. The complete data enables the examination and analysis of householder behaviours and bin usage, trends and patterns and the relationship and dependency on geography and socioeconomic factors.

1.2 Background

The environmental benefits of a three-bin waste collection system are well established as evidenced in the performance of the metropolitan Adelaide councils who have offered this service for a number of years. A trial was conducted in 2022-23 in the Holdfast Bay Council area where organics bins were collected weekly and residual bins moved to fortnightly collections. This has raised the recovery rates to above 70% in those participating households. Varying the collection frequency of some of the bins has the potential to improve recovery rates significantly and divert more material from landfill.

In regional areas, half of councils have three-bin systems and all have at least one bin collected at kerbside. The number of recycling bins in service has steadily increased over recent years. One regional council implemented a four-bin system several years ago where the extra bin is solely for cardboard and paper but this service ceased in September 2022. Differences do exist between councils even where the same number of bins are provided due to different collection frequencies and service provision for green and food organics, use of kitchen caddies, and area-wide roll-out versus opt-in for townships. Some regional councils have adopted fortnightly collections for all three bins and have raised recovery rates to just over 60%.

In township residential areas, nearly all regional councils provide a 140L bin for residual waste and 240L bins for comingled recyclables, while only about half provide an organics bin.

Recovery rates in regional areas vary from zero (single bin service for residual waste only for 6 councils) to rates that are on par with metropolitan Adelaide (three-bin systems with fortnightly collection). The top performing regional councils – some achieving 60% or more – were those that provide fortnightly collection of the three bins including area-wide roll out of kitchen caddies for food waste.

Councils often contract collection services to external contractors, many of which are private companies. The contractors collect the residual bins which are transported to landfill transfer stations, mixed-recycling bins which are taken to Material Recovery Facilities (MRFs) for sorting and processing and green organics bins to composting facilities. Except for smaller councils where waste quantities are determined on a population-based basis, waste tonnages from larger councils are measured at weighbridges and individual councils are charged a service fee.

1.3 Context

Since 2005 Green Industries SA (GISA), formerly Zero Waste SA, has funded metropolitan and regional 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.

By 30 June 2022, \$37.3 million had been provided to 67 councils and 12 of their subsidiaries through a range of GISA grants programs such as: *Circular Economy Market Development; E-Waste Collections and Incentives; Illegal Dumping Prevention; Kerbside Performance Incentives; the Kerbside Performance Plus [Food Organics] Incentives* which focuses on food diversion from residual to organics bins; *Kerbside Recycling Campaign; Plastic Bags Reduction; Recycle Right Household Education; Regional Transport Subsidies Program; Regional Infrastructure/Implementation; Business Sustainability Program* and *Reuse and Recycling/Metropolitan Infrastructure* (**Table 1**).

Table 1. Funding provided to metro and regional councils through GISA grant programs cumulative to 30 June 2022.

	Metro	Regional	Total
Funding provided through GISA grant programs	\$26M	\$11.3M	\$37.3M

The Local Government Association of SA (LGASA) 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.

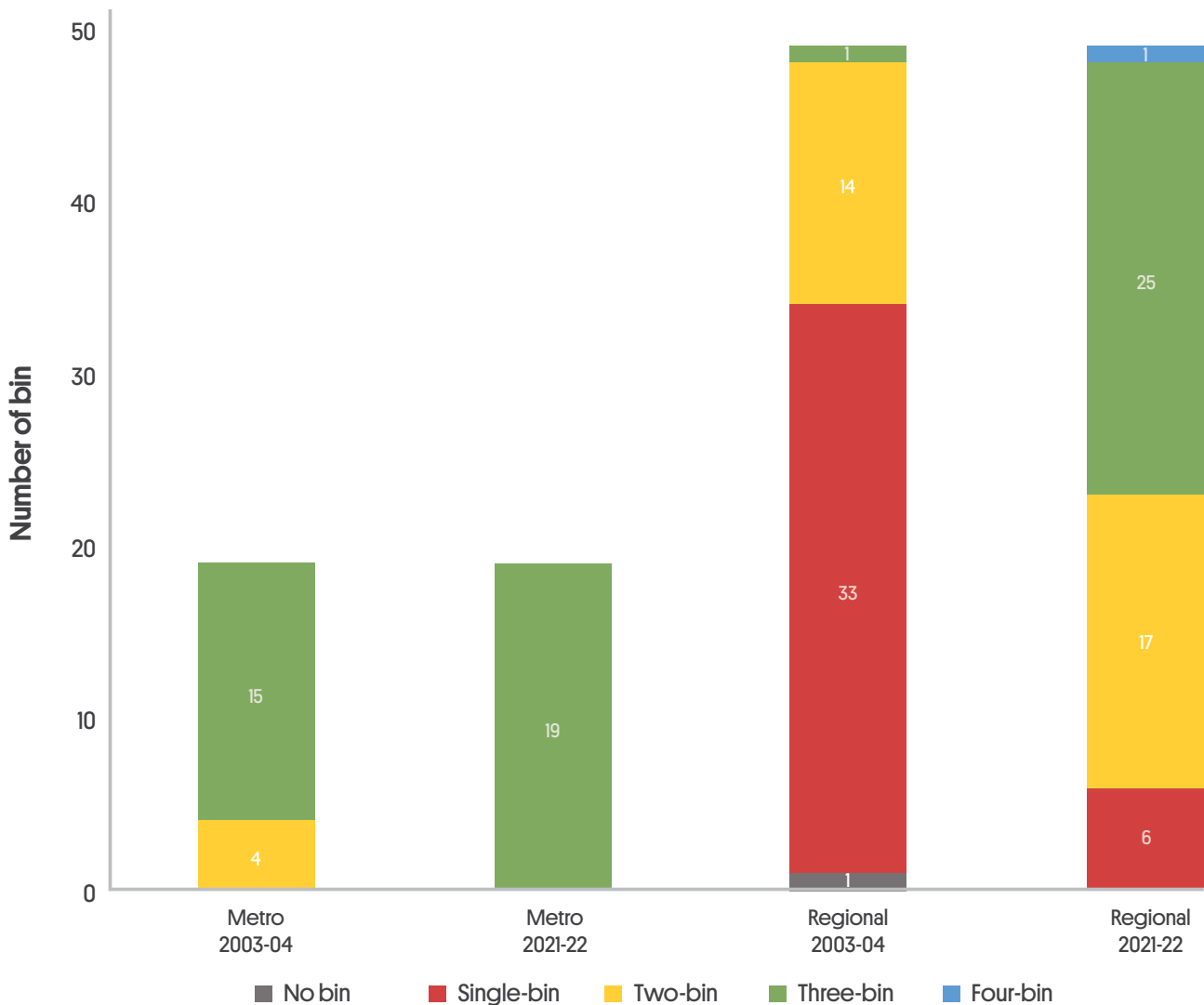
The SA Local Government Grants Commission (SALGGC) requests waste management data from all councils, which is provided on an annual basis. GISA used SALGGC data to quantify costs incurred by councils for kerbside collections and for reporting waste quantities for regional councils. Information on SA's waste management costs can be found in **Appendix 3**.

2 Findings

2.1 South Australia's Kerbside Waste and Recycling Services

South Australia has 68 councils, 49 of which are regional. In 2021-22, 45 councils across the State offered 3-bin systems to their residents (one offering a 4-bin system), compared with 16 in 2003-04. Only 6 councils now offer a 1-bin system. This improvement in recycling services offered is summarised in **Figure 1**.

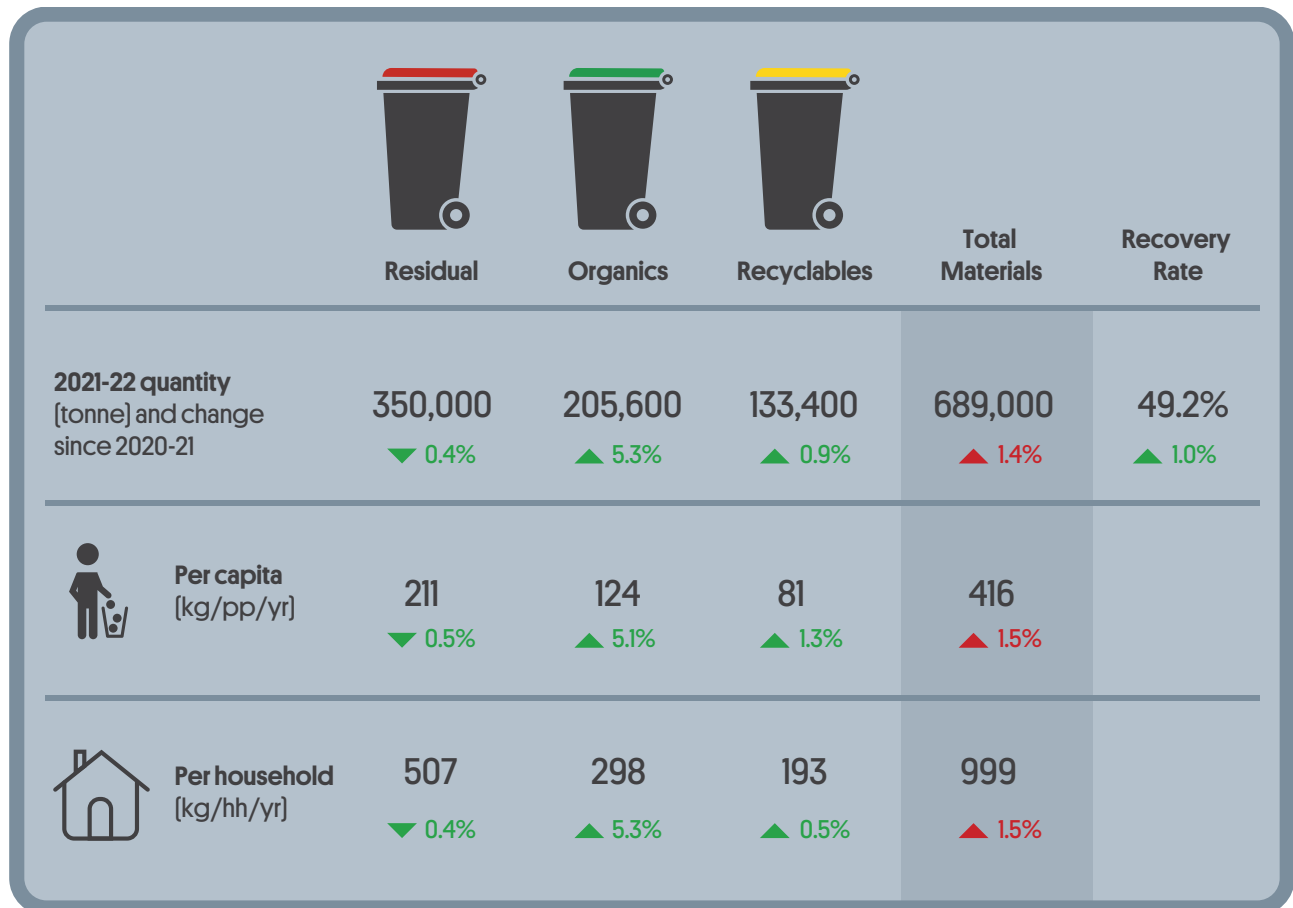
Figure 1. Regional and Metropolitan Adelaide Kerbside bin systems compared in 2021-22 and 2003-04



2.2 South Australia's Kerbside Quantities

In SA in 2021-22, approximately 689,000 tonnes of municipal waste were collected from kerbside, 527,400 tonnes from metropolitan areas and 161,600 tonnes from regional areas. The 49 regional councils account for 23.5% of the total kerbside waste collected in SA.

Figure 2. Summary of South Australia's Kerbside Waste Performance in 2021-22



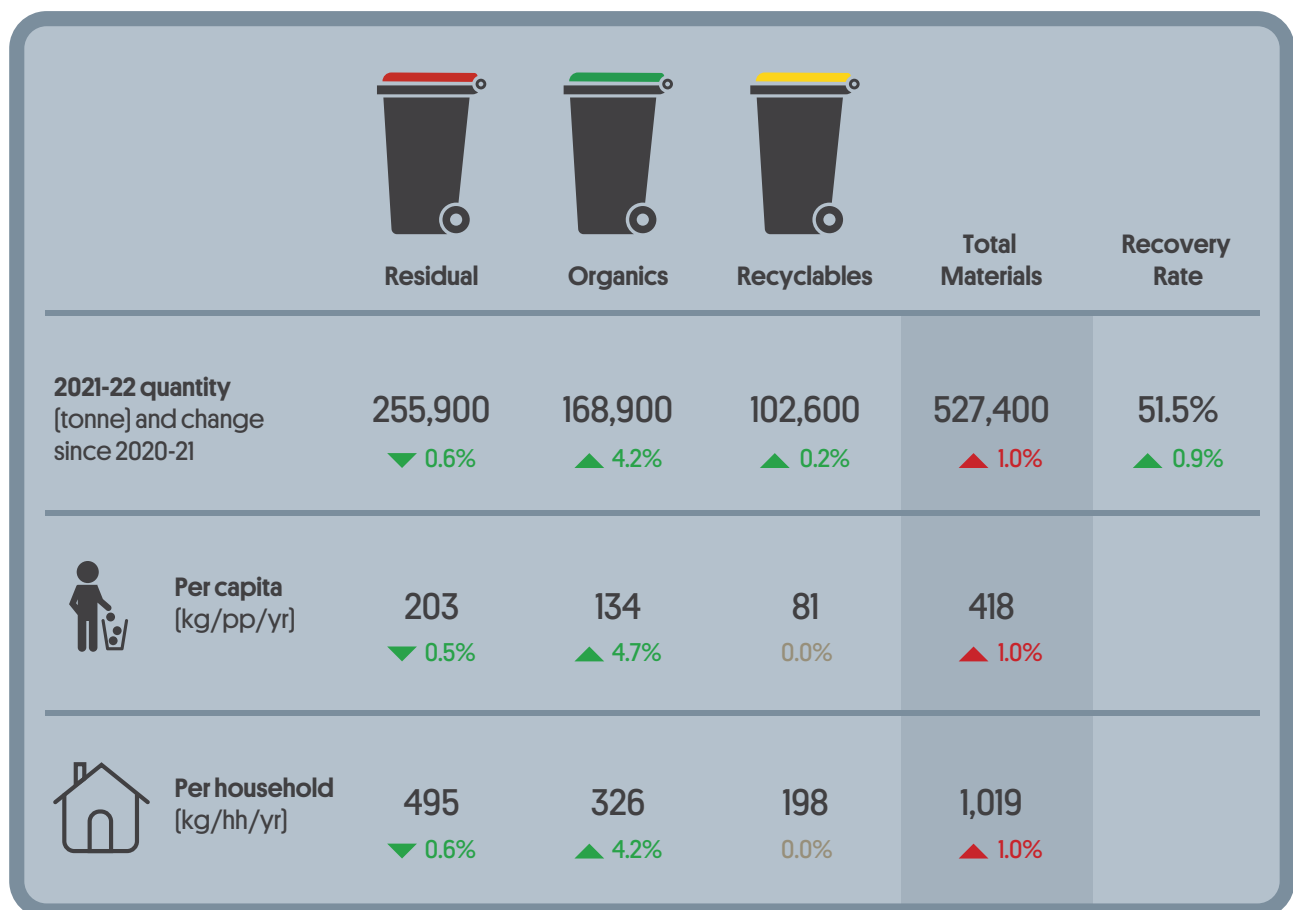
South Australians produced approximately 416kg per person of MSW at kerbside, or 999kg per household serviced (**Figure 2**). There has been an increase in total waste of 10,080 tonnes from the previous financial year mainly due to the increase in organics collected.

2.3 Metropolitan Adelaide Kerbside Quantities

The infographic in **Figure 3** briefly summarises Metropolitan Adelaide’s Kerbside waste performance report [GISA 2023]. In 2021-22, residents in the metropolitan area generated 527,400 tonnes of kerbside materials, of which 51.5% was recovered as recyclables or organics, a 0.9% increase on the previous year. This was driven by a 4.2% increase in organics. These are the raw tonnages presented at kerbside for collection by householders and represent householder behaviour.

More details on metropolitan councils’ performance can be found in that [report](#).

Figure 3. Summary of Metropolitan Adelaide’s Kerbside Waste Performance in 2021-22



2.4 Regional Kerbside Waste and Recycling Services

In 2021-22, of the 49 regional councils, 26 councils offered a 3-bin service (one offered a fourth bin for paper and cardboard) compared with one council in 2003-04, and 17 had 2-bin systems, up from 14 in 2003-04. Of the 26 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 six in recent years from 33 in 2003-04 (**Figure 1**) and has remained constant since. A number of regional areas provide residents with the option to drop off waste directly to transfer stations which would affect the reported recovery rate.

The frequency of waste collections offered in regional townships is shown in **Table 2**. 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 42 councils collecting residual waste weekly and seven fortnightly.

Table 2. Regional services offered by local councils by bin type

Bin Type	Fortnightly	Monthly	Weekly	Not Available
Residual	7	-	42	-
Recycling	41	2	-	6
Organics	22	4	-	23

Recyclables are collected fortnightly by 41 councils (including one opt-in), monthly by 2 councils, and 6 councils have drop-off facilities only for recyclables. Organics are accepted at drop-off facilities at 30 councils, and 22 councils collect organics fortnightly from kerbside. Four councils have a monthly collection service for kerbside organics. Collection services for individual regional councils can be found in **Appendix 4**.

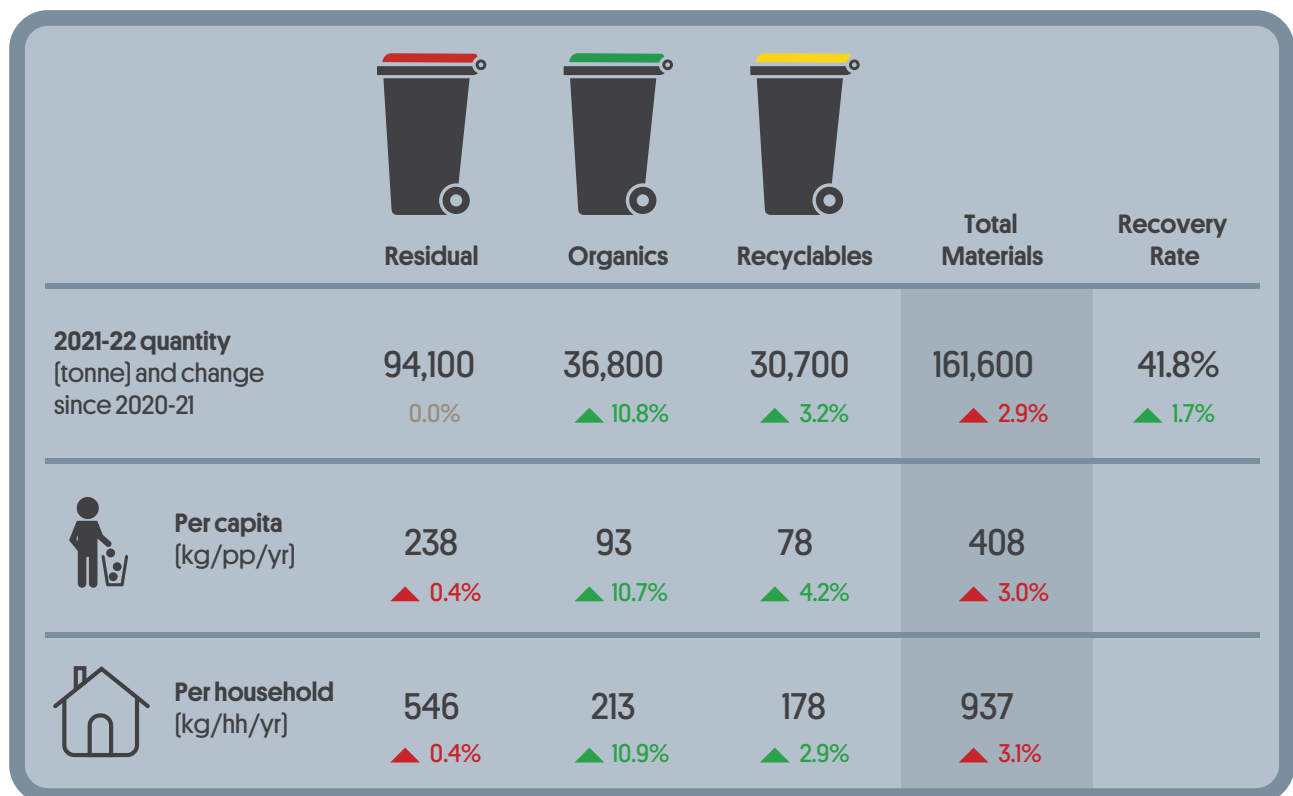
Since 2004, GISA has contributed grants to assist 48 of these councils to expand their kerbside services. This grant recipient number does not include grants to associations or commercial services within a local government area for improvements that would directly affect the council's kerbside collections.

2.4.1 Regional Kerbside Quantities

In 2021-22, residents in regional SA areas generated 161,600 tonnes of kerbside materials, of which 41.8% was recovered as recyclables or organics, a 1.7% increase on the previous year (Figure 4). This was driven by a 10.8% increase in organics.

Approximately 408kg of kerbside waste was collected per person, or 937kg per household serviced in regional areas (Figure 4).

Figure 4. Summary of Regional Kerbside Waste Performance in 2021-22



2.4.2 Regional South Australia Sub-Regions

To provide some comparisons between councils, sub-regional aggregations have been used. Since 2004-05, populations in all sub-regions have increased (ABS 2021), which has contributed to an increase in total waste generated (Table 3).

Per person and per household analysis has been undertaken and can be seen in Figure 5. Three-bin and recyclables recovery rates for each regional sub-region are presented in Figure 6.

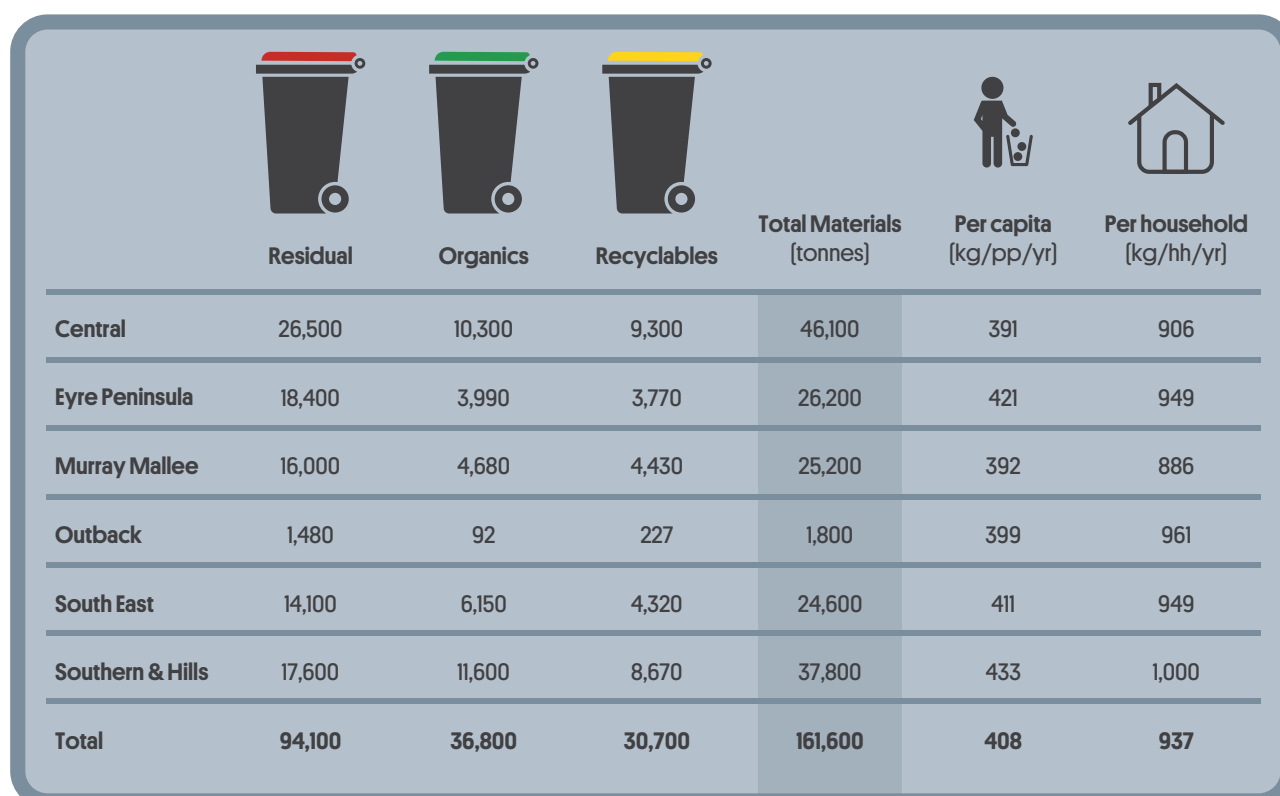
The box plot in Figure 7 illustrates the range of kerbside waste recovery performance within each sub-region. The colour codes indicate the number of bins used by each council and clearly show the higher performance of using a three-bin system. The one council with a 4-bin system performs better than the 2 bin systems but lower than most of the three bin systems.

Table 3. Local Government sub-regions: populations and households

Sub-region	Council	Population [2021]	Occupied Private Dwellings [2021]
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, Wakerfield, Yorke Peninsula	117,657	50,862
Eyre Peninsula	Ceduna, Cleve, Elliston, Franklin Harbour, Kimba, Lower Eyre Peninsula, Port Augusta, Port Lincoln, Streaky Bay, Tumby Bay, Whyalla, Wudinna	62,264	27,607
Murray Mallee	Berri Barmera, Coorong, Karoonda East Murray, Loxton Waikerie, Mid Murray, Renmark Paringa, Murray Bridge, Southern Mallee	64,207	28,391
Outback	Cooper Pedy, Roxby Downs	4,496	1,869
South East	Grant, Kingston, Mount Gambier, Naracoorte Lucindale, Robe, Tatiara, Wattle Range	59,836	25,903
Southern & Hills	Alexandrina, Kangaroo Island, Mount Barker, Victor Harbor, Yankalilla	87,389	37,800
Total		359,849	172,432

Sources: ABS [2021]

Figure 5. Summary of Regional Kerbside Waste Performance by Local Government Regions in 2021-22



Outback
3-bin rate: 17.8%
Recyclables rate: 13.3%

Figure 6. Regional Sub-regions' Three-bin and Recyclables Recovery Rates, 2021-22

Eyre Peninsula
3-bin rate: 29.8%
Recyclables rate: 17.0%

Central
3-bin rate: 42.5%
Recyclables rate: 26.0%

Murray Mallee
3-bin rate: 36.5%
Recyclables rate: 21.7%

Southern & Hills
3-bin rate: 53.4%
Recyclables rate: 33.0%

South East
3-bin rate: 42.7%
Recyclables rate: 23.5%

Council sub-regions

- Central
- Eyre Peninsula
- Murray Mallee
- Outback
- South East
- Southern Hills

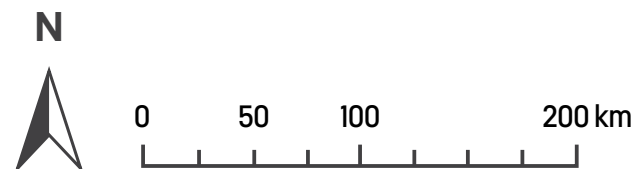
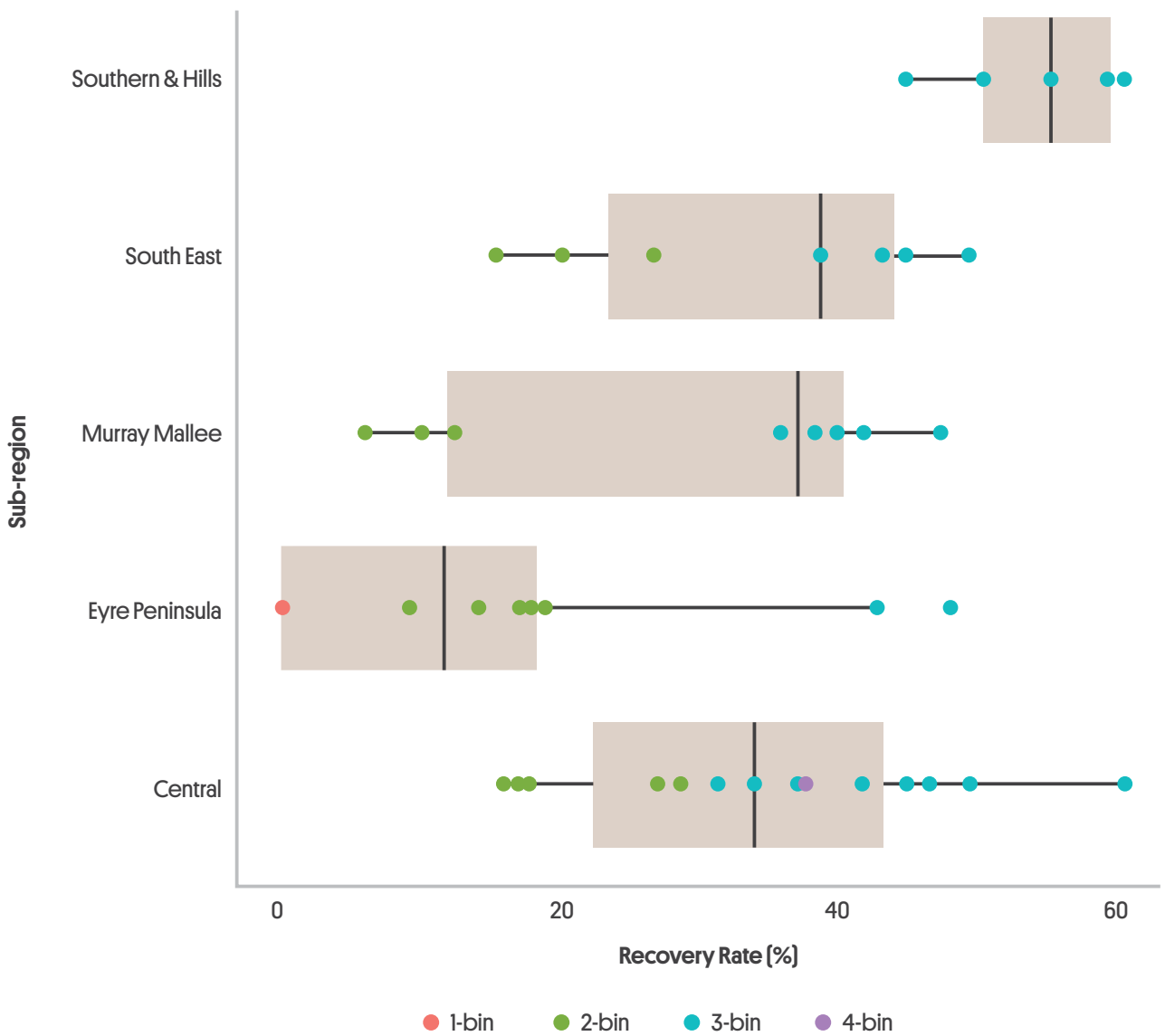


Figure 7. Range of recovery rates of councils within each sub-region



2.4.3 Regional SA Councils' Recovery Rate Performance

Table 4 shows the three different recovery rates for each of the 49 regional SA councils with the previous year's figures as a contrast. A description of the organics and food waste diversion service these councils offer their residents can be found in **Appendix 4**. 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.

Table 4. Recovery Rates Achieved by each SA Regional Council, 2021-22.

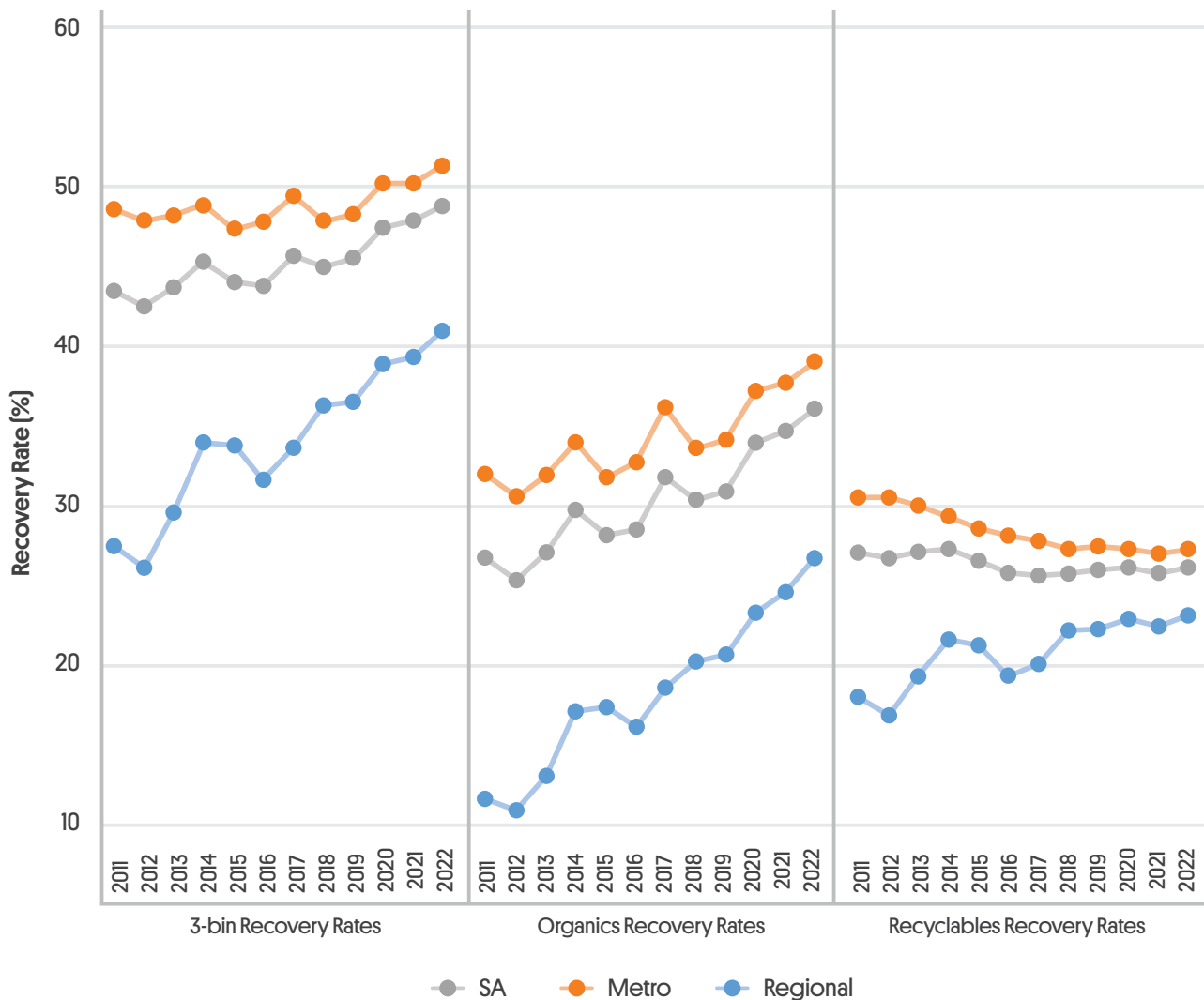
NB: Ceduna, Coober Pedy, Franklin Harbor, Streaky Bay, Tumby Bay and Wudinna councils are not represented in the table as they only offer 1-bin systems

Sub-Regions	2021-22			2020-21		
	3-bin RR	Rec. RR	Org. RR	3-bin RR	Rec. RR	Org. RR
Central	60.7	37.7	48.5	33.7	23.8	16.4
Sthn & Hills	60.7	37.1	48.8	62.0	38.7	50.1
Sthn & Hills	59.6	36.7	47.3	59.3	36.7	46.7
Sthn & Hills	55.4	34.8	41.5	56.4	35.3	42.7
Sthn & Hills	50.6	36.8	30.6	48.4	35.0	28.6
Central	49.6	29.4	36.1	41.3	28.1	23.9
South East	49.5	25.1	39.2	47.3	25.4	35.7
Eyre Penin.	48.2	24.7	37.7	43.3	25.0	30.1
Mur. Mallee	47.4	26.7	35.0	45.0	24.9	32.7
Central	46.7	26.9	33.7	46.7	28.0	32.7
Central	45.1	25.4	32.4	45.8	26.2	32.8
Sthn & Hills	45.0	28.1	30.0	49.5	27.5	37.5
South East	44.9	25.1	32.4	45.0	20.3	36.0
South East	43.3	22.8	31.9	43.6	22.3	32.6
Eyre Penin.	42.9	23.4	30.8	40.7	22.4	28.4
Mur. Mallee	42.0	20.2	32.0	39.3	23.6	25.3
Central	41.8	26.6	26.3	40.9	26.2	25.2
Mur. Mallee	40.0	25.4	24.7	39.6	25.9	23.3
South East	38.8	20.7	27.2	38.1	20.1	26.7
Mur. Mallee	38.4	25.6	21.9	38.3	25.9	21.4
Central	37.7	25.6	20.7	27.8	19.9	12.1
Central	37.4	27.9	17.4	37.1	28.6	16.0
Mur. Mallee	36.0	21.9	22.0	37.5	22.5	23.7
Central	34.1	22.1	19.0	35.0	22.2	20.3
Central	31.4	12.6	23.9	13.1	13.1	-
Central	28.7	28.7	-	26.4	26.4	-
Central	27.2	27.2	-	22.2	22.2	-
South East	26.8	26.8	-	21.5	21.5	-
Outback	26.7	20.6	9.5	25.7	20.3	8.4
South East	20.3	20.3	-	19.2	19.2	-
Eyre Penin.	19.0	19.0	-	14.9	14.9	-
Eyre Penin.	18.0	18.0	-	18.0	18.0	-
Central	17.8	17.8	-	17.4	17.4	-
Eyre Penin.	17.4	17.4	-	21.3	21.3	-
Central	17.2	17.2	-	17.2	17.2	-
Central	17.0	17.0	-	17.7	17.7	-
Central	16.1	16.1	-	18.3	18.3	-
South East	15.5	15.5	-	16.2	16.2	-
Eyre Penin.	14.3	14.3	-	14.3	14.3	-
Mur. Mallee	12.5	12.5	-	13.6	13.6	-
Mur. Mallee	10.2	10.2	-	11.3	11.3	-
Eyre Penin.	9.3	9.3	-	-	-	-
Mur. Mallee	6.1	6.1	-	13.6	12.0	-

2.5 Long term trends

The long-term recovery trends for metropolitan Adelaide versus Regional SA are represented graphically in **Figure 8**. The recovery rate has improved 1.7% over the previous year for regional South Australia compared with 13% improvement against 2010-11 performance. Regional improvements are due to increased numbers of three-bin services introduced by councils and more recently due to fortnightly residual collections in some councils.

Figure 8. Comparison of three-bin recovery rates for Metro Adelaide and Regional areas from 2010-11 to 2021-22



3

Factors Affecting Recovery Rates

3.1 Food Waste Collection Systems

A full council-wide rollout of food waste diversion systems, including to multi-unit dwellings, across South Australian councils would be expected to lift the recovery rate significantly. Councils with opt-in organics collections should complete the organics bins rollout to as many households as practicable. One source has found that “typically a third of household landfill quantities is organic material. This includes food waste [28% by weight] and garden waste [5% by weight]”¹. As the introduction of kitchen caddies in general diverts more food waste, this raises the recovery rate. Councils not adopting these tactics will continue to achieve low recovery rates at kerbside until they do so.

In regional areas, 13 out of 26 councils that provide an organics bins service also offer an opt-in food waste system to at least townships. Details can be found in **Appendix 4**. 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. 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.

3.3 Recyclables

The trend to reduce the weight of glass and steel packaging or to replace these materials with lighter plastics resulted in lower recovery rates as lower weight of packaging is discarded. Consumers are also 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)]. Major newspaper publishers have since opted to report on readership numbers rather than sales which makes continued trend analysis difficult.

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

Waste avoidance can lead to less waste produced which may lower the recovery rates if this results in less recyclables presented at kerbside. To offset this drop, less material must be presented in residual bins and changes to householder behaviour such as food waste diversion are essential.

¹ SA Better Practice Guide: Sustainable Kerbside Services can be found at <https://www.greenindustries.sa.gov.au/resources/sa-better-practice-guide-sustainable-kerbside-services>

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. With more waste generated there is the possibility of more recyclables generated. 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.

Each council has a mix of residents – from young families to older couples – which affects the profile of waste presented. 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.

There are also many other factors that underlie this situation – such as awareness programs and education levels of households.

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.

4

Conclusions

The most effective kerbside bin systems of those in use in 2021-22 implemented a three-bin system with more frequent organic waste collection that included food waste. Fortnightly recyclables collection is optimal at both metropolitan and regional levels.

Many regional councils have introduced a three-bin system, at least in townships, but some are opt-in only for the organics service. The councils [both regional and metro Adelaide] that have the best recovery rates were generally those in which all households have a three-bin system supplemented with a food waste caddy, which has achieved up to 60% recovery rate at certain times of the year. Trials to divert more organics by reducing residual waste bin collection frequency to fortnightly show that recovery rates can be raised further that way.

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, or with materials not recyclable at kerbside
- 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.

Non-kerbside bin waste collections

In 2021-22, South Australian councils reported collecting 689,000 tonnes of waste from bins placed at kerbside, but also handled an additional 144,800 tonnes not arising from the householder kerbside bins. The material discussed in this section is householder waste which is not collected in a kerbside bin but is usually presented in drop-offs by residents at transfer stations and council depots. As it is a mixture of MSW, C&I and C&D streams, it is not possible to separate the portions for each stream. The data provided by councils is the aggregate totals of the waste only at their transfer stations.

The non-kerbside waste collections include drop-offs of food and garden organics (FOGO), recyclables and residual wastes, the quantities of which are affected by the bin services offered in a given council area. For example, it would be expected that a regional council that does not offer a green or yellow bin may make provisions for householders to drop-off green organics or recyclables waste at depots such as transfer stations. Due to lesser numbers of 3-bin systems deployed regionally, the patterns in waste drop-offs are not the same in metropolitan Adelaide versus regional council areas.

In addition to residual, recyclables and organics wastes, there are also non-kerbside bin wastes such as street sweepings, street litter bins, hard waste, e-waste and hazardous waste. **Table A1.2** shows the tonnages of non-kerbside bins waste collected in metropolitan Adelaide and regional areas.

Table A1.1. Total tonnes of waste collected by South Australian councils by presentation type

Waste types presented	Waste Tonnages
Kerbside bins	689,000
Drop-offs, special collections, sweepings etc	144,800
Total	833,300

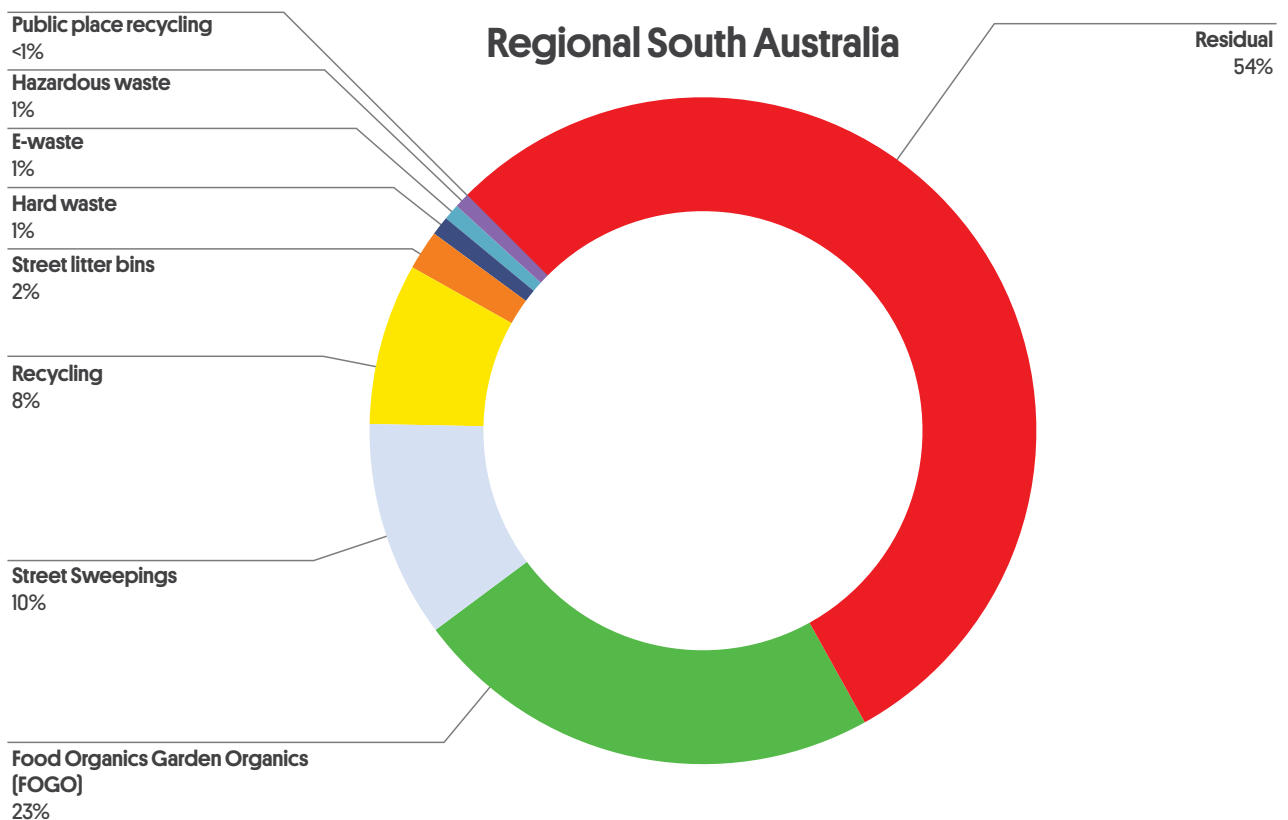
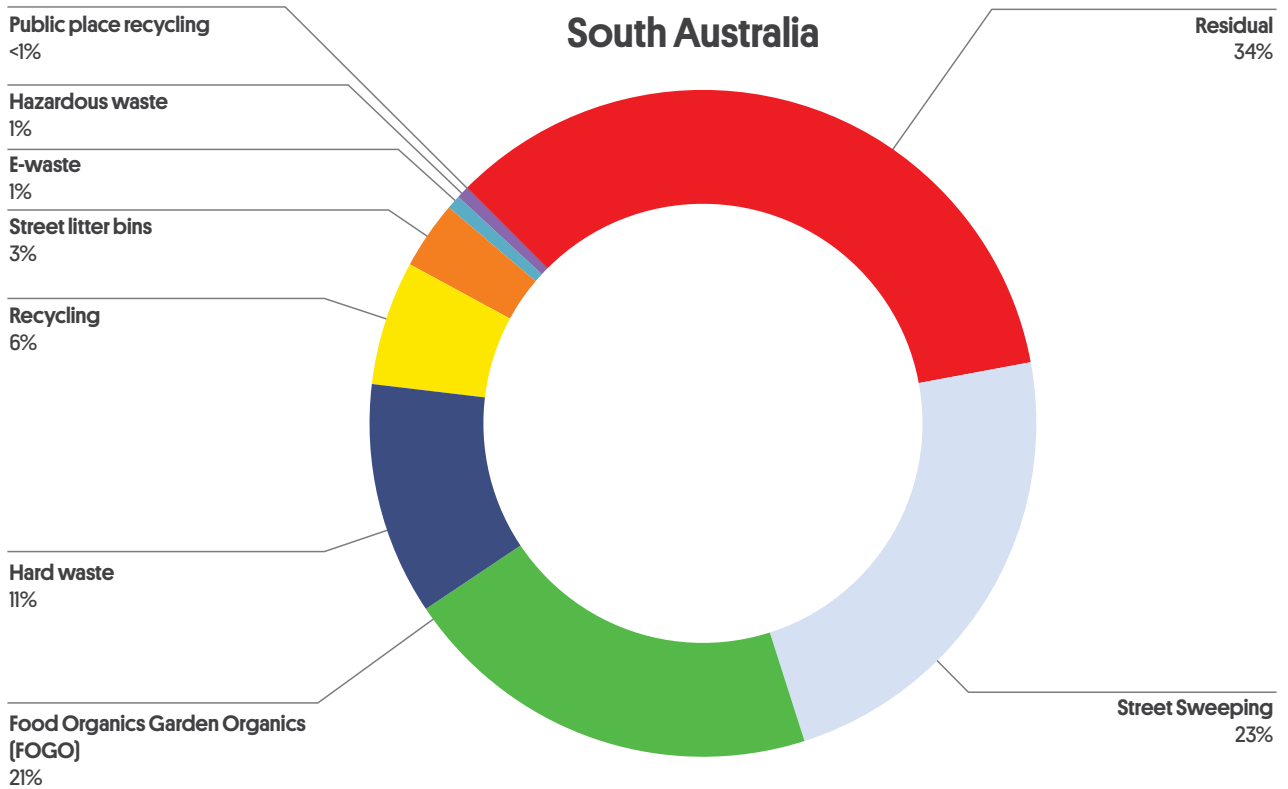
Table A1.2. Total tonnes of non kerbside bin waste collected by South Australian councils by region

Waste Type	Metro	Regional	SA	% SA difference to 2020-21
Residual (drop-off point)	4,600	45,430	50,040	▼ 8%
FOGO (drop-off point)	10,740	18,960	29,960	▼ 7%
Recycling (drop-off point)	2,060	6,530	8,580	▼ 74%
Street Sweepings	24,570	8,710	33,280	▲ 12%
Hard Waste	15,490	770	16,270	▼ 38%
Street Litter Bins	3,330	1,560	4,890	▲ 6%
e-Waste	270	650	930	▼ 38%
Hazardous Waste	250	620	870	▼ 21%
Public Place Recycling	0	10	10	◀ ▶
Total	61,320	83,230	144,830	

About 78% of the SA non-kerbside bins waste consists of organics, street sweepings and residual waste similar to the material presented in kerbside bins. When recycling and hard waste are added, these collectively total to 95% of non-kerbside bins waste.

As previously shown in **Figure 1** in the main report, a lesser number of regional councils have 3-bin collection systems at kerbside and of those that do, many restrict collections [particularly of organics] to townships only. As a result, councils often put in place drop-off provisions for their residents. This explains the higher quantity of FOGO drop-off in regional areas. Similarly, the larger quantities of e-waste collected regionally would also reflect the lesser number of drop-off options compared to drop-off sites in metropolitan Adelaide, many of which are not council owned or managed.

Figure A1.1. Contrasting pie charts of the percentages of non-bin waste collected in South Australia as a whole and in regional SA only



Appendix 2

Methodology

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

Metropolitan Adelaide 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. 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.

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 accuracy.

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:

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

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 2021 Census data.

Appendix 3

South Australia's Waste Management Costs

The South Australian Local Government Grants Commission (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 publicly 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, but in many cases the data provided by some councils lacks detail to cost services for kerbside alone. The only uniform indicator of council costs is the waste management total which is inclusive of other waste management issues besides kerbside.

In 2021-22, the 68 SA local government councils spent \$260.1 million in operating expenses on waste management of which \$180.5 million was incurred in Metropolitan Adelaide and \$79.6 million in regional councils. Across South Australia councils spent an average \$377 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 [\$66 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 A3.1. South Australia's LG Councils total and per occupied dwelling operating expenditure on waste management (not only kerbside), 2021-22

	Metropolitan	Regional	SA
Total (\$ millions)	180.5	79.6	260.1
Per occupied Household (nearest \$)	349.0	462.0	377.0

Appendix 4

Regional kerbside bin collection frequency 2021-22

Council	Number of bin	Waste	Recycling	Organics collection	Food Waste System
Adelaide Plains	Towns 3-bin, Rural 2-bin	Fortnightly	Fortnightly	Fortnightly	Opt-in townships
Alexandrina	Towns 3-bin	Fortnightly	Fortnightly	Fortnightly	Opt-in townships
Barossa	Towns 3-bin (green opt-in), Rural 2-bin	Weekly	Fortnightly	Fortnightly	Opt-in townships
Barunga West	4-bin	Weekly	Fortnightly	Monthly	None
Berri Barmera	3-bin	Weekly	Fortnightly	Fortnightly	None
Ceduna	1-bin	Weekly	-	-	None
Clare and Gilbert Valleys	2-bin	Weekly	Fortnightly	-	None
Cleve	2-bin	Weekly	Fortnightly	-	None
Cooper Pedy	1-bin	Weekly	-	-	None
Coorong	3-bin	Weekly	Fortnightly	Fortnightly	None
Copper Coast	3-bin (green opt-in)	Fortnightly	Fortnightly	Fortnightly	Area-wide Township
Elliston	2-bin	Weekly	Fortnightly	-	None
Flinders Ranges	2-bin	Weekly	Fortnightly	-	None
Franklin Harbour	1-bin	Weekly	-	-	None
Goyder	2-bin	Weekly	Fortnightly	-	None
Grant	2-bin	Fortnightly	Fortnightly	-	None
Kangaroo Island	Towns 3-bin	Fortnightly	Fortnightly	Fortnightly	Opt-in townships
Karoonda East Murray	2-bin	Weekly	Monthly	-	None
Kimba	2-bin	Weekly	Fortnightly	-	None
Kingston	2-bin	Weekly	Fortnightly	-	None
Light	Towns 3-bin, Rural 2-bin	Weekly	Fortnightly	Fortnightly	Opt-in townships
Lower Eyre Peninsula	1-bin	Weekly	Fortnightly	-	None
Loxton Waikerie	Towns 3-bin, Rural 2-bin	Weekly	Fortnightly	Fortnightly	Opt-in townships
Mid Murray	2-bin	Weekly	Fortnightly	-	None
Mount Barker	Towns 3-bin, Rural 2-bin	Weekly	Fortnightly	Fortnightly	Opt-in townships
Mount Gambier	3-bin	Weekly	Fortnightly	Fortnightly	Opt-in townships
Mount Remarkable	2-bin	Weekly	Fortnightly	Fortnightly	None
Murray Bridge	Towns 3-bin, Rural 2-bin	Weekly	Fortnightly	Fortnightly	Opt-in
Naracoorte Lucindale	3-bin	Weekly	Fortnightly	Fortnightly	None
Northern Areas	2-bin	Weekly	Fortnightly	-	None

Council	Number of bin	Waste	Recycling	Organics collection	Food Waste System
Orroroo Carrieton	2-bin	Weekly	Fortnightly	-	None
Peterborough	2-bin	Weekly	Fortnightly	-	None
Port Augusta	3-bin	Weekly	Fortnightly	Fortnightly	Accept FOGO but no caddy provided
Port Lincoln	2-bin	Weekly	Fortnightly	-	None
Port Pirie	3-bin	Weekly	Fortnightly	Fortnightly	None
Renmark Paringa	3-bin	Weekly	Fortnightly	Fortnightly	None
Robe	2-bin	Weekly	Fortnightly	-	None
Roxby Downs	3-bin	Weekly	Fortnightly	Monthly	None
Southern Mallee	2-bin	Weekly	Monthly	-	None
Streaky Bay	1-bin	Weekly	-	-	None
Tatiara	Towns 3-bin, Rural 2-bin	Weekly	Fortnightly	Fortnightly	None
Tumby Bay	1-bin	Weekly	-	-	None
Victor Harbor	Towns 3-bin	Fortnightly	Fortnightly	Fortnightly	Opt-in townships
Wakefield	3-bin	Weekly	Fortnightly	4-Weekly	None
Wattle Range	3-bin	Weekly	Fortnightly	Fortnightly	Townships
Whyalla	3-bin	Weekly	Fortnightly	Fortnightly	Opt-in townships
Wudinna	1-bin	Weekly	-	-	None
Yankalilla	3-bin	Fortnightly	Fortnightly	Fortnightly	Townships
Yorke Peninsula	3-bin	Weekly	Fortnightly	Monthly	None

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.
Food caddy	A kitchen benchtop food container for the collection of household food waste, to be placed in the organic waste bin. It also accepts AS 4736 / AS 5810 barrier bags and fibre-based materials.
FOGO	Food Organics Green Organics, a common name used for the green organics bin
Food Organics	Organic waste derived from food preparation and/or surplus food. It includes compostable items such as paper straws and contaminated pizza boxes.
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.

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