Adelaide
South Australia

Presented February 2017 at ‘Waste In Progress’, Girona

by Kat Heinrich, Senior Consultant, Rawtec

Adelaide - Capital city of South Australia

City stats

- 1.30 million inhabitants
- 434,300 dwellings
- 19 municipalities (councils)
- Mostly low density (76%)
- Medium density (22%) and high density (2%)

Data source: .id (2017), Greater Adelaide: available from http://profile.id.com.au/australia/about?WebID=280

This morning

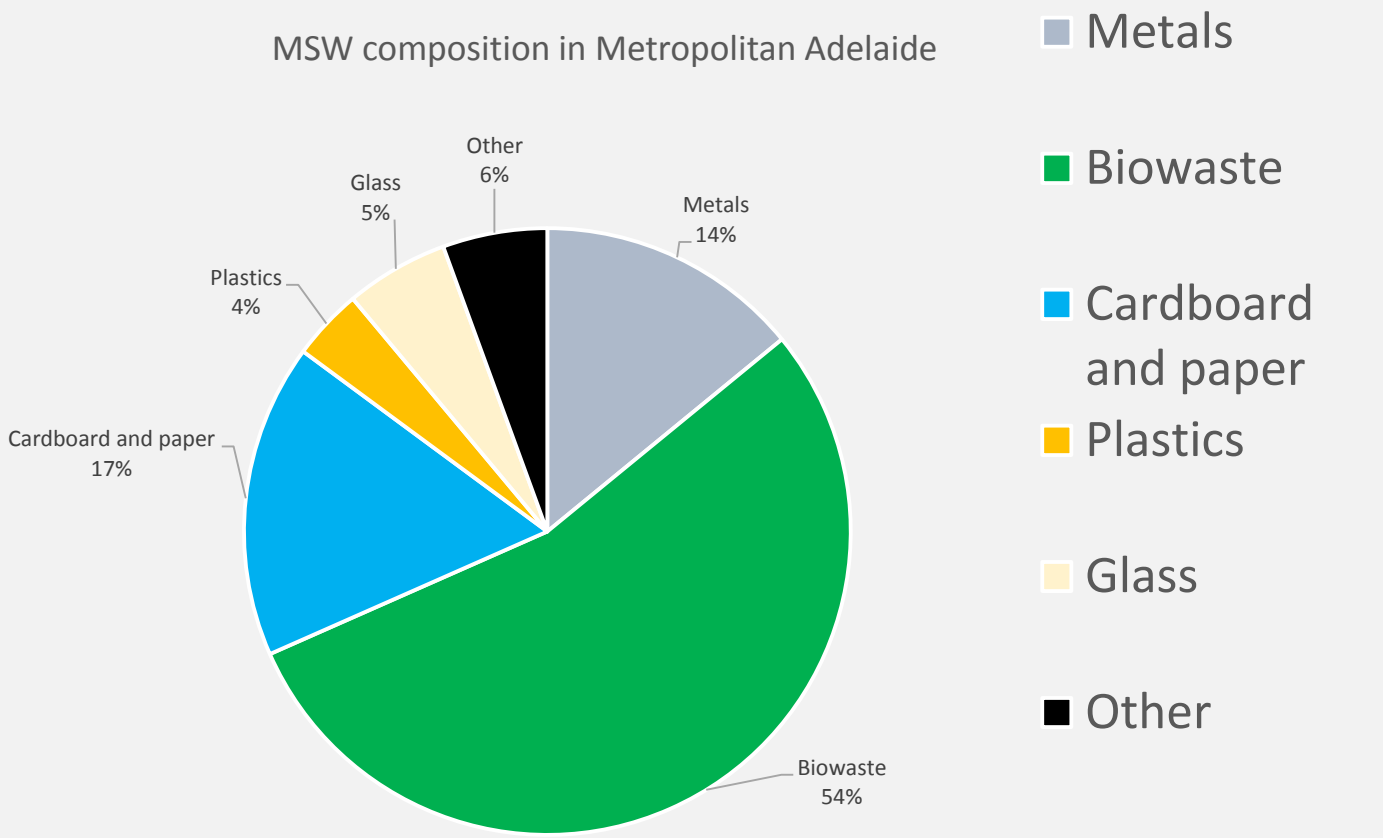
1. Overview of MSW services and systems

2. Assessment of performance

3. The challenge of high density living

Part I: Overview of MSW services and systems

MSW waste generation



483 kg per person per year

Includes waste from households, small businesses using MSW services and council waste

Data source: Estimated from data reported in SA Recycling Activity Survey 2013-14 Financial Year, and kerbside waste audit data. Excludes masonry waste.

Kerbside collections and contracts

Stream	Bin type	Collection Frequency	Destination
Mixed dry recyclables (paper, cardboard, hard plastics, metals & glass)	Yellow lid 240 litres	Fortnightly	Material recovery facility
Bio-waste (garden & food)	Green lid 240 litres	Fortnightly except one council with monthly	Commercial composting facility
General waste (nappies, non-recyclable waste & other residual waste)	Red/blue lid 140 litres	Weekly	Landfill

- Side-lift collection vehicles
- Collection service organisations varies by council:
  - Commercial contractors
    - 2 contractors, 10 councils
  - Council subsidiaries
    - 2 local government subsidiaries, 9 councils

Image credit: “Kerbside bins” Adelaide City Council

Hard waste services

- For bulky wastes
- Typical service is ‘at call’
- 1-4 times per annum (depending on council)
- 1.5 – 2.0 cubic meters
- Presented on kerbside
- Collected by rear-lift or flat bed truck

Image credit: “Hard waste” Adelaide City Council

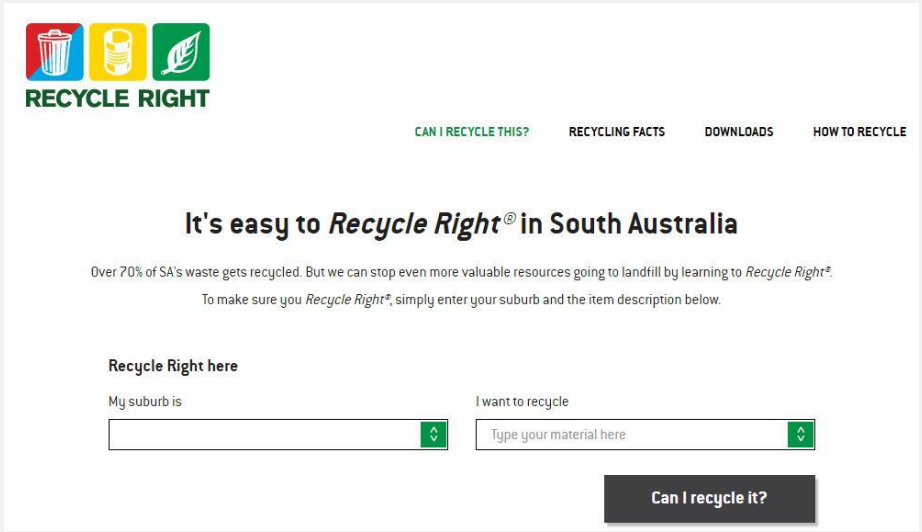
Other systems for MSW waste

- Resource Recovery Centres
- Container deposit system
- Free drop-off of recyclables:
  - Computers and TVs via participating retailers and RRCs
  - Mobile phone recycling via participating retailers
  - Used lighting via participating hardware stores
  - Soft plastics via Coles supermarkets
  - Textiles via charity bins

Awareness and education

Fridge calendar

www.recycleright.sa.gov.au



Adverts

Recycling hotline

1300 137 118

Image credit: Zero Waste SA (2015), Bin Tagging Guidelines for South Australian Councils

The carrot and the stick

- Bin tagging program

Image credit: Zero Waste SA (2015), Bin Tagging Guidelines for South Australian Councils

Illegal dumping program

- People found dumping rubbish or goods can be:
  - issued with an on the spot fine of $315
  - taken to court and fined up to $5,000

Image credit: “Rubbish illegally dumped in the Mitcham Council area” Messenger, 2014

Part II: Assessment of performance

MSW recycling performance in Adelaide

- **59%** overall landfill diversion
- Recycling performance of kerbside system alone (excluding other MSW recycling services) is **48.8%**
- Average contamination rates (%wt.) for kerbside systems:
  - **2%** for bio-waste
  - **13%** for mixed recycling

Table 1: Estimate of MSW stream in Metropolitan Adelaide (2013-14)

	Separately collected (recycling)	Residual (landfill)	Total waste (recycling + landfill)
	kg/ inhabitant / year		
Metals	59	9	68
Biowaste	142	120	262
Cardboard and paper	53	28	81
Plastics	3	15	18
Glass	19	7	27
Other	7.8	19	27
Total	**284**	**198**	**483**
% Recycled			59%

Data source: Estimated from data reported in SA Recycling Activity Survey 2013-14 Financial Year, and kerbside waste audit data. Excludes masonry volumes.

3-bin kerbside performance over time

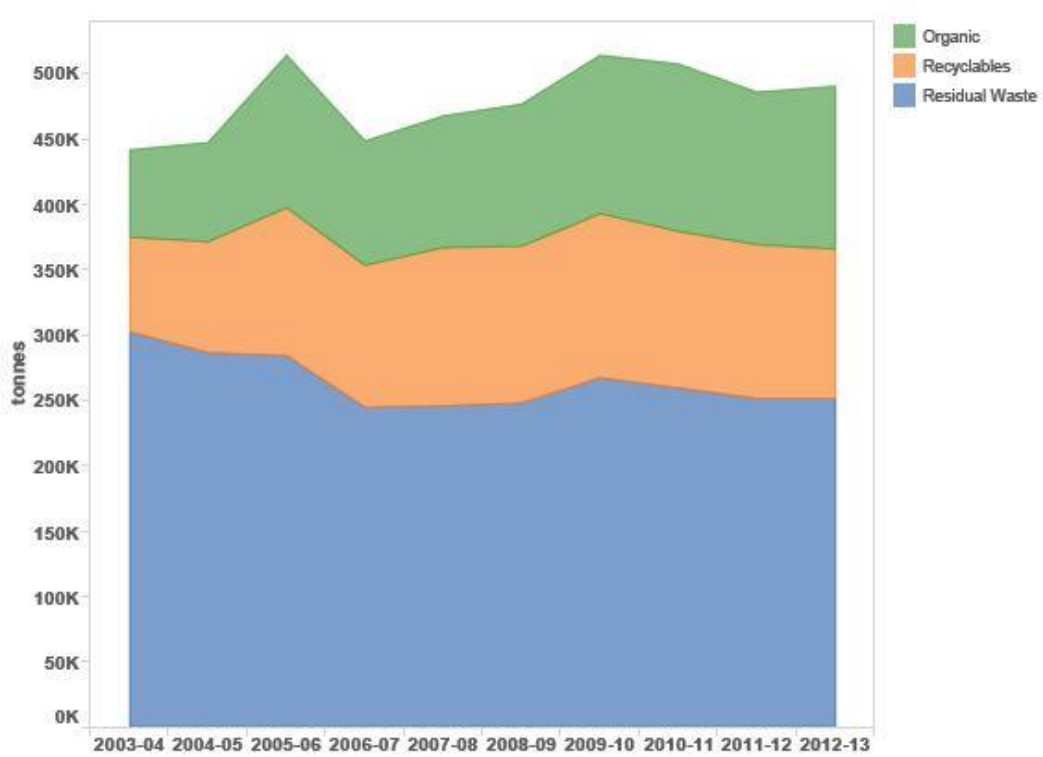


Figure 7 Metropolitan Councils: NineYear Trend of Kerbside Waste Quantities

Data and graph reproduced from: Zero Waste SA (2015), South Australia's Kerbside Three-Bin System Waste Report 2012-13

Between 2003-04 and 2012-13:

- Total kerbside waste was 10% higher
- Recycling rate increased from 31.6% to 48.8%
- Landfill quantities fell by 20%
- Mixed recyclables grew by 36%
- Bio-waste increased by 47%

3-bin kerbside performance by council

Table 7 Recovery Rates for Each Individual Metropolitan Council

Suburb	2012-13	Comments
	56.4%	Full roll out of caddy
Leafy	55.4%	No caddy at this point
Leafy	55.3%	Full roll out of caddy
Leafy	53.8%	Full roll out of caddy
Leafy	52.8%	Opt-in caddy
	52.8%	Opt-in caddy
	52.7%	No caddy at this point
	52.3%	Opt-in caddy
	52.1%	Full roll out of caddy
	50.6%	Full roll out of caddy
Leafy	49.8%	No caddy at this point
	49.3%	Full roll out of caddy
	48.4%	No caddy at this point
Dry	45.0%	Opt-in green service (pay)
Leafy	44.0%	Caddy, but not full organics coverage
	44.0%	Four weekly green, no food
Dry	43.2%	Opt-in green service (pay)
	35.4%	Caddy but not full coverage
Dry	34.3%	Opt-in green service (pay)

Data and chart reproduced from: Zero Waste SA (2015), South Australia's Kerbside Three-Bin System Waste Report 2012-13

- Average recycling rate is 48.8%
- Over half of councils are recycling at a rate of >50%
- Best performers are those in leafy suburbs with full bio-waste bin coverage and supplemented with a food recycling caddy

rawtec

Strengths

- Source separation model that recovers high-value products with low contamination
- Low cost and efficient collection method
- Competitive market for waste and recycling collection services
- Landfill levy encourages councils to continue investing in recycling programs
- Strong and consistent education messaging through ‘Recycle Right’ campaign
- Commitment and resourcing from State government and councils

Weaknesses

- No price signal to encourage residents to recycle
- Locked into weekly mandated general waste collection
- Low recovery of food waste and high ongoing costs of compostable bags underpinning system
- Kerbside collection not suited to high density environments

Opportunities

- Weighing individual bins on side-lift vehicles and using data to:
  - measure impact of education initiatives
  - provide direct feedback to households on their recycling performance
- Swapping frequency of bio-waste and general waste collections
- Expanding food recycling programs
- Pay-as-you-throw
- Transition to lower carbon footprint collections

Threats

- Lack of community acceptance for any changes to existing system
- Ageing population with limited mobility to use kerbside system
- Increased development of high-density apartments not suited to kerbside service

Part III: Challenge of high density

Emerging high density living in Adelaide

Standard model doesn’t suit high density

Image credit: Outdoor Design Source, http://www.outdoordesign.com.au/

Standard model doesn’t suit high density

No space provided inside property to store bins

Standard model doesn’t suit high density

Bins obstructing fire exits

Standard model doesn’t suit high density

Bins obstructing pedestrian walkways on collection day

Other issues

- Disturbance to neighbours
- Inconvenient for residents
- Low levels of recycling

Costly retrofitting and management through daily waste collections leading to:

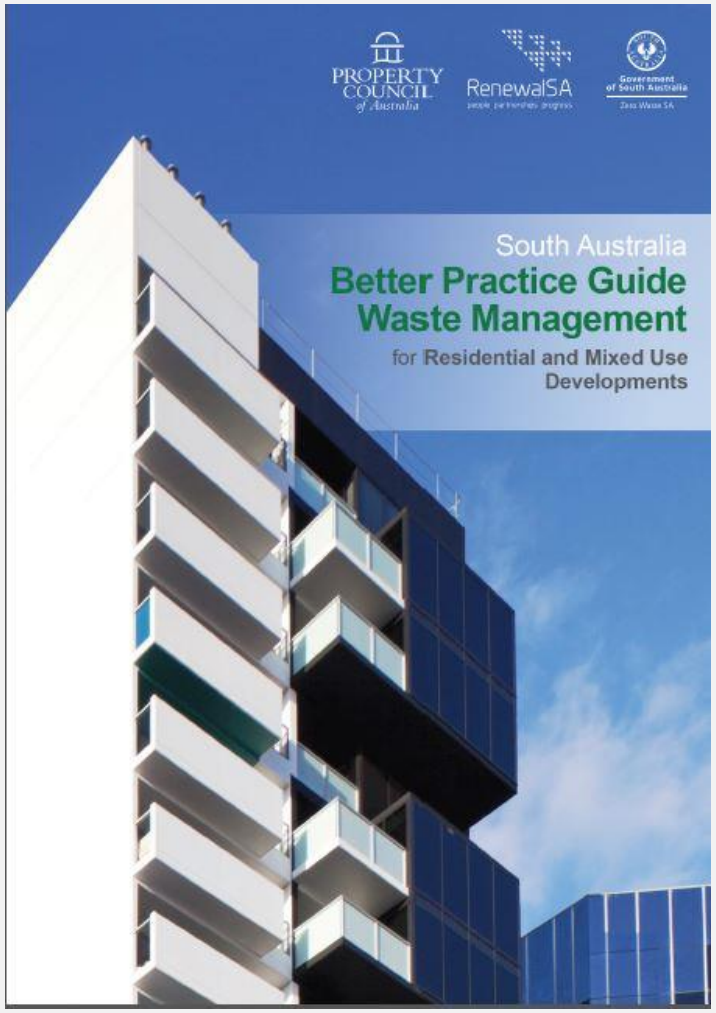
- Higher traffic volumes
- Higher waste costs

The city's solution

- Incorporate design of waste management into the development planning approval system

- Waste Management Plans

Better Practice Guide for Waste Management



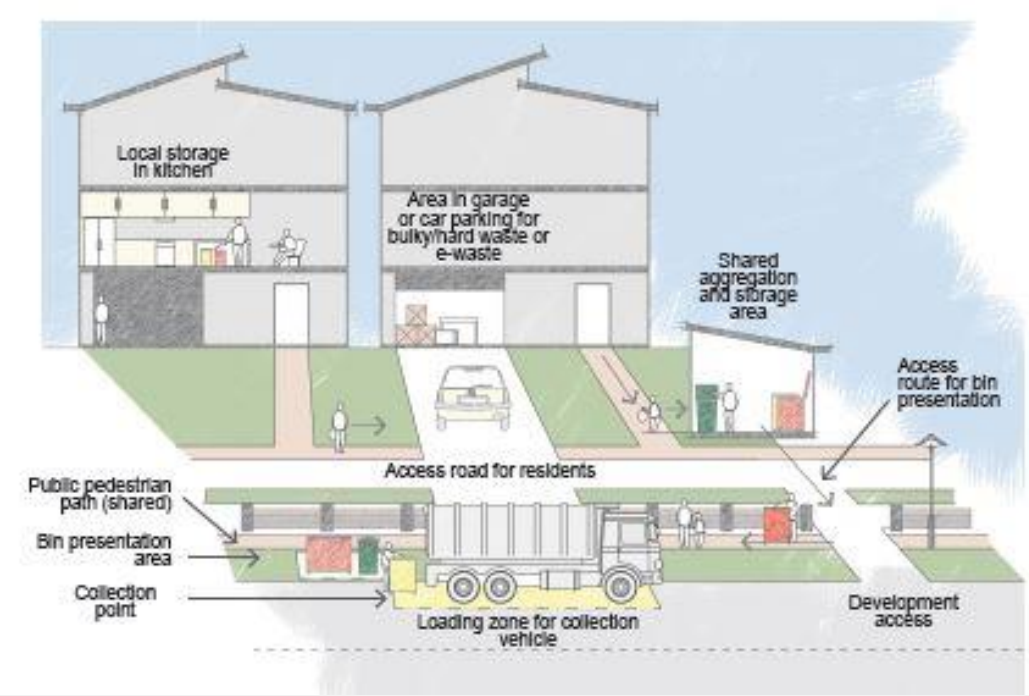
- Aimed at architects, developers and planning authorities

- Design objectives:
  - Environmental sustainability
  - Effective waste and resource management
  - Clean and healthy living environments
  - Affordability

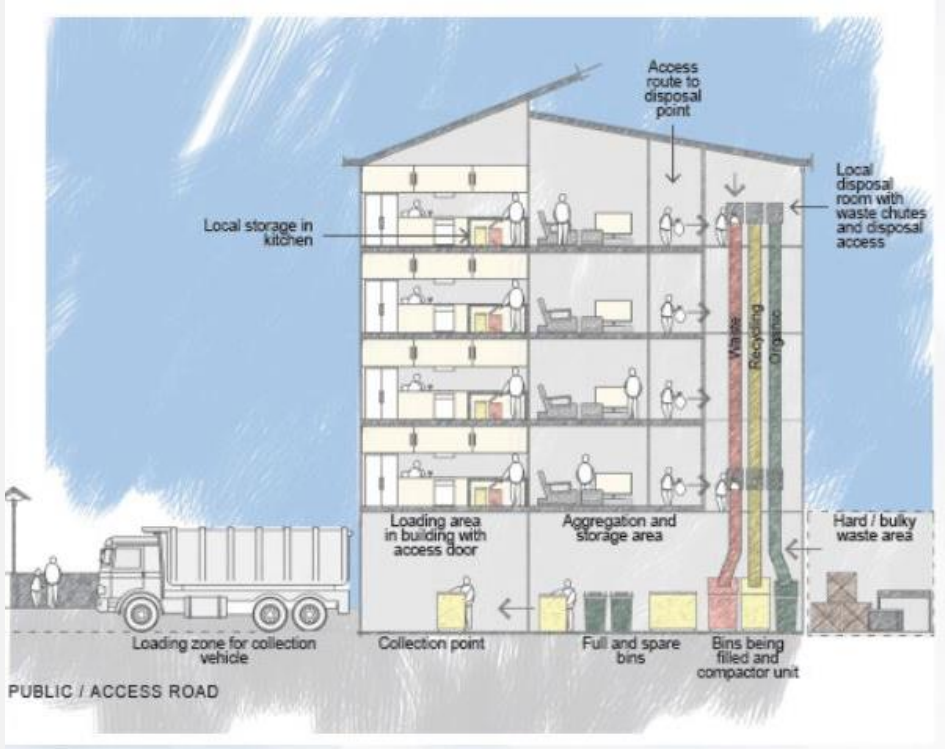
Image credit: Zero Waste SA (2014), Better Practice Guide Waste Management in Residential and Mixed Use Developments

rawtec

Example Better Practice MSW designs in higher density environments



- Shared aggregation and storage area
- Large bins (up to 1100 litre)
- Collection via rear-lift vehicle in designated loading zone



- 3-stream chute systems
- Bin compactor to reduce number of collections required

Image credit: Zero Waste SA (2014), Better Practice Guide Waste Management in Residential and Mixed Use Developments

Outcomes

- Buildings being designed and built with:
  - 3- stream recycling systems
  - Convenient disposal points
  - Suitably sized bins and servicing arrangements
  - Adequate space for storing bins
  - Safe collection vehicle loading
  - Reduced amenity impacts on public

Improving the future sustainability, liveability and safety of the city as it transitions to a greater number of high density apartments.

Take home messages

Take home messages

- Adelaide's standard kerbside system is convenient, cost-effective and efficient for low density housing

- In part this is driven by design of service:
  - 3 stream source-separation model
  - Side-lift vehicles
  - Regular collection of waste and recyclables from households

- Also underpinned by:
  - Strong awareness campaigns
  - Commitment and resourcing from State government and councils
  - Landfill waste levy
  - Availability of drop-off services for other recyclables
  - Type of waste generated (lots of garden waste, adding weight to bio-waste recycling)
  - Competitive market for waste and recycling collection services

Take home messages

- Adelaide has room to improve across:
  - Food waste recycling
  - Providing regular direct feedback to residents on performance

- Our standard kerbside model is ineffective in high density environments
  - Adelaide is successfully tackling this challenge through incorporating waste management design into the planning system, resulting in alternative waste management systems for these buildings

Gracias!

Kat Heinrich
Senior Consultant
Rawtec
kat.heinrich@rawtec.com.au
www.rawtec.com.au

References

1. .id (2017), Greater Adelaide: available from profile.id.com.au/australia/about?WebID=280
2. Rawtec (2015), South Australia's Recycling Activity Survey 2013-14 Financial Year Report: available from zerowaste.sa.gov.au
3. Zero Waste SA (2014), Better Practice Guide Waste Management in Residential and Mixed Use Developments: available from zerowaste.sa.gov.au
4. Zero Waste SA (2014), South Australia's Kerbside Three-Bin System Waste Report 2012-13: available from zerowaste.sa.gov.au
5. Zero Waste SA (2015), Bin Tagging Guidelines for South Australian Councils: available from zerowaste.sa.gov.au