Better Bins: Kerbside Collection Guidelines

Reference Report

Waste Authority
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THE GOVERNMENT OF WESTERN AUSTRALIA

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Introduction

In January 2014, the Minister for Environment, Hon. Albert Jacob launched the Better Bins Kerbside Collection Program. The program provides guidance and funding to support local governments in implementing better practice kerbside collection systems to increase resource recovery.

The *Better Bins: Kerbside Collection Guidelines* were released as part of the Better Bins program. *The guidelines* are designed to help local governments select better practice kerbside collection systems.

The *Better Bins: Kerbside Collection Guidelines:*

- present options for kerbside collection systems, including expected performance benchmarks
- contain 'complementary measures' (including information provision and community engagement, training and enforcement) to ensure the community understands the benefits of the system and how to use it effectively
- are flexible, recognising that different local governments have particular characteristics that will influence decisions about collection systems
- **support a three-bin system (general waste, co-mingled recycling and green waste) because it encourages source separation, which is important to maximising recovery.**

The *Better Bins: Kerbside Collection Guidelines* are based on better practice approaches and performance reported locally and in other jurisdictions.

This document provides information that supports the *Better Bins: Kerbside Collection Guidelines.*

Part 1: Background

The Waste Avoidance and Resource Recovery Act 2007

The *Western Australian Waste Avoidance and Resource Recovery Act 2007* (WARR Act) sets out the legislative framework for waste management in the state. The WARR Act contains a requirement for the Waste Authority to develop a waste strategy.

The Western Australian Waste Strategy: Creating the Right Environment

The Western Australian Waste Strategy: Creating the Right Environment (the Waste Strategy) was released in March 2012.

The Waste Strategy outlines objectives and priorities to reduce waste to landfill and increase recycling, and includes the following recycling targets for municipal solid waste (Waste Authority 2012).

	2015 targets	2020 targets
Metropolitan area	50%	65%
Major regional centres	30%	50%

Strategic Objective 3 of the Waste Strategy commits to *develop best practice guidelines, measures and reporting frameworks and promote their adoption*. The Better Bins program is a flagship program that relates to this strategic objective.

Source separation of waste

The Waste Authority released a position statement in support of source separation of waste as an important way of contributing to the objectives and targets in the Waste Strategy (Waste Authority 2014).

Source separation involves separating waste into common material streams or categories for separate collection. One of the ways to achieve greater source separation of household waste is to provide households with separate bins.

Source separation of waste streams is widely supported and adopted in Australia and internationally. Separating waste at its source produces a more homogenous and higher quality waste stream which is less contaminated by other materials, and easier and less costly for recyclers to recover. This in turn represents a higher value to recycling markets.

The Waste Authority recognises source separation of waste as best practice, and strongly supports source separation wherever reasonably technically, environmentally and economically practicable.

Community recycling attitudes

Market research commissioned by the Waste Authority (Colmar Brunton 2013, p. 29) shows that 90% of residents are concerned about the volume of waste produced in WA and are committed to doing what they can to address it.

Recycling was considered important by 87% of respondents, and more than 50% reported that they recycle everything they can most of the time (Colmar Brunton 2013, pp. 23, 39). The research identified that the barriers to recycling include a lack of infrastructure and a lack of understanding about how to recycle.

The research indicates that residents would be willing to use a three-bin system if it is supported by education and information, and if feedback is provided to users on the performance of the system.

Summary

- The *Western Australian Waste Strategy: Creating the Right Environment* contains:
  - ... recycling targets for municipal solid waste in the metropolitan area and major regional centres
  - ... a strategic objective to develop best practice guidelines, measures and reporting frameworks, and promote their adoption.
- The Waste Authority supports source separation as an important way of contributing to the objectives and targets in the Waste Strategy.
- Research confirms that the community is willing to recycle and is willing to use a three-bin kerbside collection system.

Part 2: Kerbside collection systems and performance

Municipal solid waste

Municipal solid waste (MSW) can be defined as *'waste derived from residential and public activities, collected by local governments (or their agents) from households, public places and public buildings. Municipal waste may include waste from small commercial premises or other similar activities where this is collected as part of the standard local government service'* (DER n.d.).

In 2012-13, MSW represented 27% of the waste stream sent to landfill in WA (DER 2014a). The majority of MSW is generated by households and collected by kerbside services. Therefore, it is important to increase kerbside recovery rates in order to achieve Waste Strategy targets. Figure 1 shows the percentage of MSW collected, by collection method.

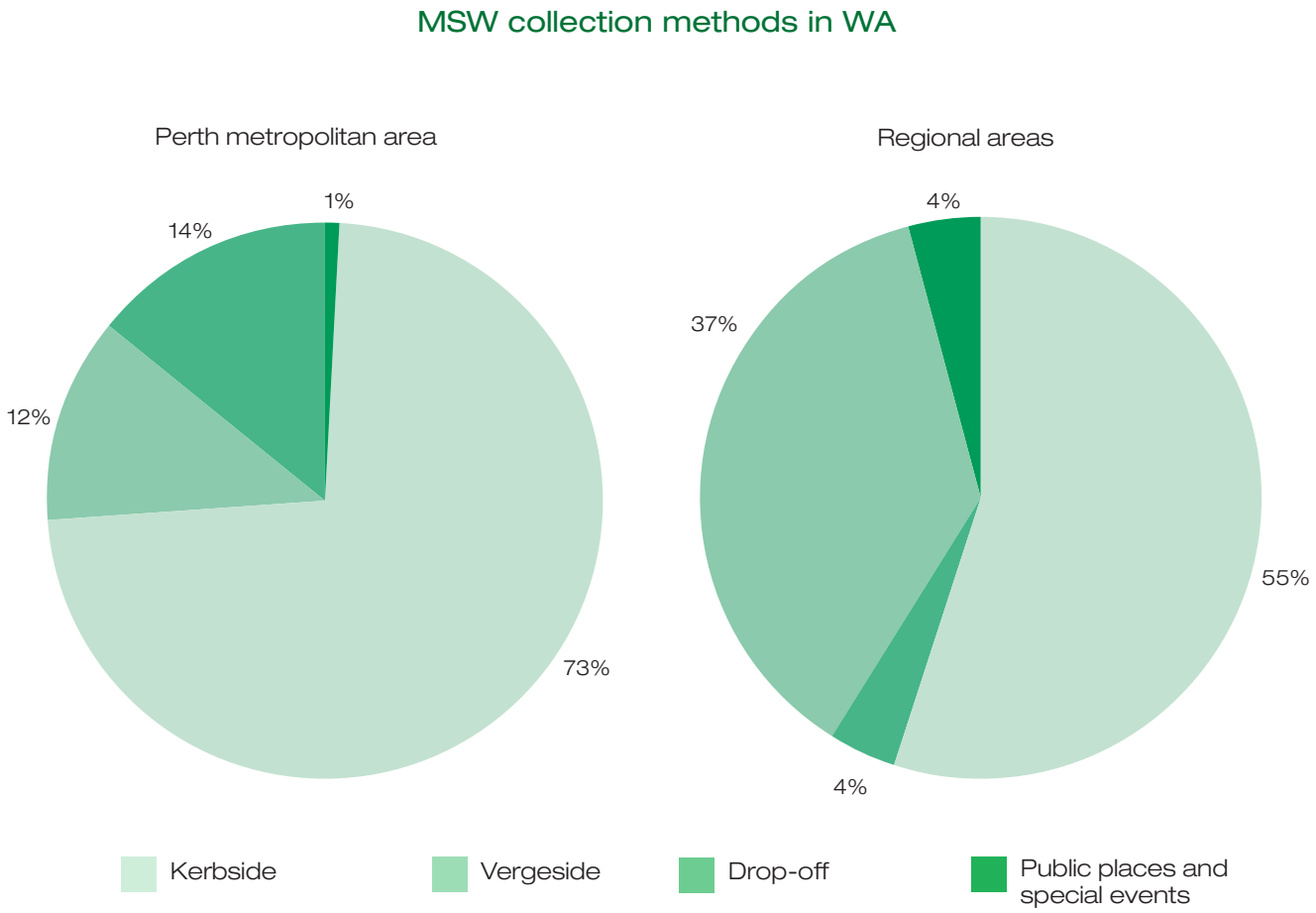

Figure 1: Percentage of MSW collected in 2012-13, by collection method (DER 2014a, p. 10).

MSW kerbside collection systems

The types of kerbside collection systems used by Western Australian local governments vary significantly. The following systems are used by Perth metropolitan local governments (2012-13):

- single bin (with mixed-waste treatment, often referred to as alternative waste treatment or AWT)
- two bins - general waste, co-mingled recycling
- two bins - general waste (with AWT), co-mingled recycling
- three bins - general waste, co-mingled recycling, green waste
- three bins - general waste (with AWT), co-mingled recycling, green waste.

Only 4 of 30 metropolitan local governments in Perth use a three-bin system. A three-bin system is commonly used in other states. Table 1 shows the number of local governments that use each kerbside system in Perth, Adelaide, Melbourne and Sydney.

City	Number of local governments using kerbside system						% with three-bin system
	Single bin	Two bins	Two bins with AWT	Three bins	Three bins with AWT	TOTAL	
Perth	1	17	8	3	1	30	**13**
Adelaide	0	0	0	19	0	19	**100**
Melbourne	0	2	0	28	0	30	**93**
Sydney	0	1	3	24	10	38	**89**

Table 1: Kerbside collection systems in Perth, Adelaide, Melbourne and Sydney (2012-13).

Kerbside recovery performance

The recovery performance of kerbside collection systems varies from local government to local government, and is influenced by factors such as housing density, demographics, available processing technologies, and communication and engagement strategies (NSW EPA 2012a; Hyder 2012; EcoRecycle Victoria 2004). While recognising this variation, data from over 100 metropolitan local governments indicate that a three-bin system generally achieves higher recovery rates.

The average recovery rate achieved by local governments that provide a two-bin system is around 25%. In contrast, the average recovery rate achieved by local governments that provide a three-bin system is around 45% (Sustainability Victoria 2013; NSW EPA 2013; Zero Waste SA 2013). Well-performing three-bin systems can achieve around 60% recovery, increasing to 65% or more if food waste is collected (Sustainability Victoria 2013; p. 68; NSW EPA 2013, pp. 47-52; Zero Waste SA 2013, pers. comm.).

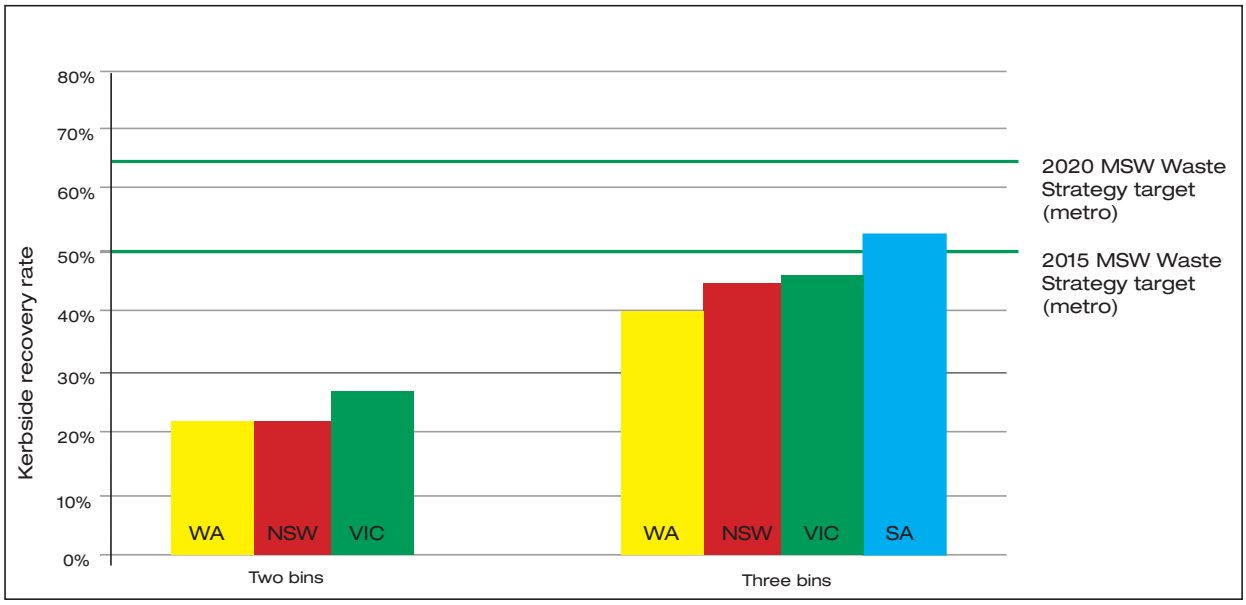

Figure 2 shows the average recovery rates achieved using different bin systems. For the purposes of comparison, the graph excludes the use of AWT facilities[1].

Mixed-waste treatment

Mixed-waste treatment, sometimes referred to as alternative waste treatment (AWT), refers to processes designed to recover resources from the mixed waste stream. Mixed solid waste may be treated using mechanical, biological (aerobic or anaerobic) or thermal processes and converted into energy or useful by-products (e.g. compost). Mixed-waste treatment processes divert some, but not all waste from landfill. Residual waste must still be disposed to landfill.

While mixed-waste treatment generally increases recovery, systems that use both source separation and mixed-waste treatment can achieve even higher recovery. Mixed-waste treatment technologies can divert substantial amounts of waste from landfill. As such, they can be important for achieving the waste diversion targets. However, these sophisticated technologies are much more expensive to build, and in some cases to operate, than facilities that process source-separated materials. Further, the outputs from processing source-separated recyclable material tend to be of higher quality and a higher market value.

[1] Data sources: DER 2014a; Zero Waste SA 2013 pers. comm.; NSW EPA 2013; Sustainability Victoria 2013. Data are sourced from publicly available reports and, in some cases, direct communications with officers responsible for managing the data. For each state, the most recent available data are used. Only data from local governments that do not send their waste to an AWT facility have been included to allow comparison of collection systems.

Summary

- MSW is a significant proportion of the total waste stream.
- Kerbside systems collect most of the MSW stream.
- Improving kerbside recovery is important to achieving Waste Strategy targets.
- A three-bin system generally achieves higher recovery than other systems.
- A three-bin system is commonly used in major metropolitan centres (Adelaide, Melbourne and Sydney).
- Mixed-waste treatment can play an important role in resource recovery and can work well with better practice source separation systems.

Part 3: Better Bins: Kerbside Collection Guidelines

This section provides information, including reference material and examples, for the *Better Bins: Kerbside Collection Guidelines*.

BIN TYPES

The Waste Authority supports a three-bin system (general waste, co-mingled recycling and green waste) because it encourages source separation, which is important to maximising recovery. The average recovery rate achieved by a three-bin system is higher than a two-bin system (Figure 2).

The Guidelines refer to mobile garbage bins (MGBs) as the preferred container type for occupational health and safety reasons and because greater yields are achieved (Cardno 2008; Zero Waste SA 2006; LGAQ 2002; EcoRecycle Victoria 2004). MGBs are by far the most common kerbside container used in Australia.

General waste

Bin size

A smaller general waste bin is preferred. When faced with limited space in the general waste bin, householders are likely to consider what items could go in the recycling bins instead.

Reports indicate that a smaller (80L, 120L or 140L) general waste MGB, in conjunction with standard 240L co-mingled recycling and green waste bins, encourages greater recycling yields and lower contamination than other bin combinations (Cardno 2008; NSW EPA 2012a; WMRC 2011; Lloyd 2010).

In Victoria, nine local governments offer an 80L general waste bin. The Victorian Local Government Annual Waste Survey shows a clear relationship between the amount of general waste generated and the volume of the bin (Sustainability Victoria 2013).

In New South Wales, five local governments use an 80L bin. The NSW Local Government Waste and Resource Recovery Data Report indicates that less waste is presented where smaller general waste bins are used (NSW EPA 2013).

Collection frequency

A weekly service for general waste is standard across jurisdictions. Some local governments have reduced general waste collection to a fortnightly service where food waste is being collected in the green waste bin and residents are highly engaged and aware of their waste system (Hyder 2012, p. 23; DEC NSW 2007, p. 2; WRWG 2013).

Co-mingled recycling

Bin size

The most common size for co-mingled recycling bins is 240L. Some local governments in WA provide greater recycling volume by offering a second recycling bin (e.g. City of Nedlands, Town of Cambridge) or a larger (360L) bin (e.g. City of Swan, Town of Cambridge).

Collection frequency

Cardno (2008) identified a fortnightly collection service to be appropriate. A fortnightly collection service (240L bin) had slightly lower yields, but was less expensive, than a weekly service. Local governments in other states normally provide a fortnightly co-mingled service, although some provide a weekly service (Sustainability Victoria 2013, NSW EPA 2013).

The NSW preferred standards indicate that more frequent services should be considered for large families and good recyclers (NSW EPA 2012a, p. 2), while Cardno (2008, p. vi) cites a weekly service as a preferred advanced standard.

Yield

The Guidelines identify the following yields:

Baseline: 4kg per household per week
Target: 5kg per household per week

Cardno (2008, p. 7) reported that WA households place an average of 8kg of recyclable material at the kerbside per week. Much of this material is placed in the general waste bin (or other bins) and is often not recovered.

Based on the 2012-13 WA local government census data, the average yield of recyclables from kerbside collection was 3.8kg per household per week for metropolitan local governments and 3.2kg per household per week for non-metropolitan local governments (DER 2014b).

Guidelines from other Australian states indicate that a baseline for total dry recycling yields, excluding contamination, should be 3-4kg per household per week for metropolitan areas and that local government should aspire to 5-6kg (NSW EPA 2012a; EcoRecycle Victoria 2004; LGAQ 2002; Zero Waste SA 2006).

It is important to recognise that waste avoidance is preferable to waste generation. Avoidance behaviours would result in a lower yield of recyclables.

Contamination

For the purposes of the Guidelines, contamination refers to incorrect materials being placed in recycling bins. The Guidelines contain a co-mingled recycling contamination rate of less than 5%.

The NSW preferred standards quote the same benchmark (NSW EPA 2012a). In South Australia, a contamination rate was quoted to be 4.75% (Zero Waste SA 2013, pers. comm.) while in the City of Brisbane it is 6-8% (City of Brisbane 2013, pers. comm.).

Green waste

Bin size

The most common size for green waste bins is 240L. Some local governments provide smaller bins (typically 120L) (Sustainability Victoria 2013; NSW EPA 2013).

Collection frequency

Fortnightly green waste collection services are common interstate and are used in the Cities of Nedlands and Bayswater, and Towns of Cambridge and Cottesloe. Some local governments in Victoria and NSW offer a weekly collection (Sustainability Victoria 2013; NSW EPA 2013), as do the regional WA local governments of City of Bunbury and Shire of Capel.

A NSW report found that a weekly garden and food organics service appears to provide the highest diversion and participation rates. Diversion can be further improved in engaged communities by coupling the weekly collection of organics to a fortnightly general waste collection (DEC NSW 2007, p. 2; WRWG 2013).

Yield

The Guidelines identify a yield of 5kg per household per week for green waste.

The yield of green waste collected at the kerbside in NSW increased from 5kg per household per week in 2009-10 (NSW EPA 2012b, p. 5) to 6.1kg per household per week in 2011-12 (NSW EPA 2013, p. 2). Of the 61 NSW local governments providing kerbside green waste collection services, 14 include food waste in their collections.

In Victoria, the yield was about 7kg per household per week in 2010-11 (Sustainability Victoria 2013, p. 5[2]).

Data from WA local governments is limited because of the small number of local governments that provide a green waste kerbside service. The Local Government Census indicates that yields from metropolitan local governments averaged 4 kg per household per week (DER 2014a, p. 14[3]).

Contamination

It is important that contamination of green waste is as low as possible. This provides a cleaner stream of materials to the processor, lowers processing costs and increases the quality and value of materials. This in turn helps to keep costs to local government low.

The contamination rate presented in the Guidelines for green waste is less than 1%, which is consistent with NSW preferred standards (NSW EPA 2012a, p. 7). In Melbourne the contamination rate is about 4% (Sustainability Victoria 2013, p. 41).

[2] The average collection of green waste per household for the year was 367kg.

[3] The average collection of green waste per household for the year was 210kg.

BIN LID COLOURS

The Guidelines encourage the use of the Australian Standard (*Australian Standard 4123.7-2006 Mobile Waste Containers - Colours, markings, and designation requirements*) for bin lid colours to achieve greater consistency, which in turn supports messaging and engagement.

The Australian Standard specifies bin bodies should be dark green or black, and bin lid colours should be as follows:

Bin type	Bin lid colour
General waste (garbage)	Red
Dry recyclables (fully co-mingled or containers only)	Yellow
Paper and cardboard only	Blue
Garden organics and combined garden and food organics	Lime green

COMPLEMENTARY MEASURES

In addition to infrastructure, the Guidelines recognise that a high quality kerbside collection system requires measures to ensure the community understands the benefits of the system and how to use it effectively.

The Guidelines include complementary measures that local governments should consider when introducing a new kerbside collection system.

Information provision and community engagement

As standard practice, local governments typically provide information about waste management services through websites, brochures, calendars, newspapers and community events. Additional measures used by local governments around Australia include:

- ongoing community education, rather than one-off campaigns
- targeting new residents
- multilingual communications
- regular feedback to the community on waste and recycling data.

Effective approaches are normally dynamic and respond to the changing characteristics and needs of the community. Examples of community engagement include:

- Wellington Regional Waste Group: Waste Education Strategy – Residential Kerbside Organics Collection
- Earth Carers - www.earthcarers.org.au
- Living Smart - livingsmart.org.au
- Waste Wise Schools - www.wasteauthority.wa.gov.au/programs/waste-wise-schools

Training

Training is important, particularly for front-line staff in local governments that deal with the community. Zero Waste SA and the Wellington Regional Waste Group are examples of organisations that provide training to local government staff.

Enforcement

The Guidelines recognise that enforcement is sometimes necessary to help increase community participation or manage contamination issues. Examples of local government enforcement activity include:

- City of Canterbury (Hyder 2012, p. 97)
- SA Local Government Association (Flinders Bioremediation 2006).

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