



# Vergeside Bulk Waste Collection Service Review



Prepared for City of Joondalup

18 May 2022

Project Number: TW21061

<b>DOCUMENT CONTROL</b>					
<b>Version</b>	<b>Description</b>	<b>Date</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>
9.0	Final Release	18/05/22	JW	TH	JW
Approval for Release					
<b>Name</b>	<b>Position</b>	<b>File Reference</b>			
Jenni Wroe	Senior Waste Management Consultant	TW21061_Bulk Waste Services Review_9.0			
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## Executive Summary

The City of Joondalup currently provides domestic ratepayers with a range of vergeside collection services including separate collections for bulk hard waste (on request) and bulk greenwaste (scheduled). The City also provides designated drop off locations for e-waste and textiles and provides ratepayers with greenwaste tip vouchers.

The City has the opportunity to review their vergeside bulk waste collection services to ensure the most efficient and effective service continues to be available for residents, while meeting State Government targets under the WARR Strategy 2030.

The City engaged Talis Consultants to review the provision of kerbside waste services and to consider options that will benefit the community, including financial modelling. This report focuses on the bulk waste collection services, a separate report considers the other kerbside waste services. As part of the modelling in this report, various scheduled and on-request collection scenarios were considered for bulk hard waste and bulk greenwaste and compared with current business as usual (BAU) and past service offerings. The shortlisted bulk hard waste and bulk greenwaste options for consideration are summarised in the below table. Additional items collected as part of bulk hard waste include mattresses and white goods.

### Summary of shortlisted bulk hard waste and bulk greenwaste options

Option Considerations	
Bulk Hard Waste	
1a	Past service, uncontained scheduled service – in refuse charge
1b	BAU - Current service - on request & contained (skip bin 3m <sup>3</sup> ) with additional items (whitegoods and mattresses) – in refuse charge
2a	On request & contained (skip bin 3m <sup>3</sup> ) – user pays for skip bin and additional items
2b	On request & contained (skip bin 3m <sup>3</sup> ) charged in refuse charge - user pays for additional items
3a	On request – 1 uncontained 2m <sup>3</sup> and additional items - in refuse charge
3b	On request – 1 uncontained 2m <sup>3</sup> and additional items- user pays
4a	On request & contained (skip bin 3m <sup>3</sup> ) user pays for skip bin – additional items included in refuse charge
4b	On request – uncontained 2m <sup>3</sup> user pays for collection - additional items included in refuse charge
Bulk Greenwaste	
1	<b>BAU</b> - Current service - uncontained scheduled service – in refuse charge
2a	On request – uncontained 2m <sup>3</sup> limit, in refuse charge
2b	On request – uncontained 2m <sup>3</sup> limit, user pays
3a	On request -contained (skip bin 3m <sup>3</sup> ) – in refuse charge
3b	On request -contained (skip bin 3m <sup>3</sup> ) – user pays

Talis conducted industry specific financial modelling on the shortlisted options. The following table summarises the estimated costs and the tonnes per annum of waste to be diverted under each option.

**Summary of Bulk Hard Waste and Bulk Greenwaste Modelling (2022/23)**

Collection Option		Total TPA	% Change in Tonnes from BAU	Cost / Annum	Change in Cost Compared to BAU	Assumed Participation Rate
<b>Bulk Hard Waste</b>						
1a	Past service, uncontained scheduled service – in refuse charge	9,147		\$3,568,028	1,312,218	61%
1b	<b>BAU</b> - Current service - on request & contained (skip bin 3m <sup>3</sup> ) with additional items (whitegoods and mattresses) – in refuse charge	4,860		\$2,255,810		26%
2a	On request & contained (skip bin 3m <sup>3</sup> ) – user pays for skip bin and additional items	3,365	-31%	\$90,068	-\$2,165,742	18%
2b	On request & contained (skip bin 3m <sup>3</sup> ) charged in refuse charge - user pays for additional items	4,860	0%	\$1,775,926	-\$479,884	26%
3a	On request – 1 uncontained 2m <sup>3</sup> and additional items - in refuse charge	6,533	34%	\$2,921,042	\$665,232	40%
3b	On request – 1 uncontained 2m <sup>3</sup> and additional items- user pays	3,266	-33%	\$90,068	-\$2,165,742	20%
4a	On request & contained (skip bin 3m <sup>3</sup> ) user pays for skip bin – additional items included in refuse charge	3,738	-23%	\$569,952	-\$1,685,858	20%
4b	On request – uncontained 2m <sup>3</sup> user pays for collection - additional items included in refuse charge	4,083	-16%	\$569,952	-\$1,685,858	25%
<b>Bulk Greenwaste</b>						
1	BAU -Current service - uncontained scheduled service – in refuse charge	5,277	-	\$1,042,787		70%
2a	On request – uncontained 2m <sup>3</sup> , in refuse charge	2,987	-43%	\$1,349,736	\$306,950	40%
2b	On request – uncontained 2m <sup>3</sup> , user pays	1,867	-64%	\$90,068	-\$952,719	25%
3a	On request -contained (skip bin 3m <sup>3</sup> ) – in refuse charge	2,987	-43%	\$1,362,000	\$319,214	40%
3b	On request -contained (skip bin 3m <sup>3</sup> ) – user pays	1,867	-64%	\$90,068	-\$952,719	25%

The modelling indicates that options 2a, 3b, 4a and 4b for bulk hard waste and options 2b and 3b for bulk greenwaste would provide a substantial cost savings for the City, as a considerable portion of the costs of these services would be paid directly by the user. These options would also likely result in a reduction in the volume of waste mainly due to an expected decrease in use of the services by households. In addition only those that use the service incur a cost. However, based on feedback to the City this may not be the most preferred option by residents. Therefore Talis recommends that the City:

- Considers providing one skip bin collection per household each year within the refuse charge and all additional services including extra skip bin, mattresses and whitegoods become a user pays service as per option 2b;
- Considers moving to an on request skip bin service, with costs within the refuse charge for bulk greenwaste to provide a limit on the amount of material that can be presented for collection;
- Engages a contractor that optimises recovery of recyclable materials for bulk hard waste;
- Investigates the development of a CRC within the City to increase resource recovery, provide the community with additional waste services and reduce environmental impacts; and
- Consider the issues raised in Section 8 Contractual Considerations section of this report to manage the implementation of future proposed services.

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## 1 Introduction

The City of Joondalup (the City) is a local government area that is 15km north of the Perth CBD and is home to over 160,700 people, in 60,100 households, spread across 99km<sup>2</sup>. Like many local governments the City is facing challenges with the management of solid waste and greater community expectation to manage waste in a more sustainable and efficient way.

The introduction of waste reduction and resource recovery targets by the Western Australian (WA) Waste Authority, increases to the landfill levy, revision of the Waste Avoidance and Resource Recovery (WARR) Act, and shifts to traditional local government procurement processes for waste infrastructure and services have been catalysts for local governments to improve waste management planning and practices.

The City has the opportunity to review their vergeside bulk waste collection services to ensure the most efficient and effective service continues to be available for residents, while meeting State Government targets under the Waste Avoidance and Resource Recovery Strategy 2030. The City engaged Talis Consultants (Talis) to review its vergeside bulk waste collection service and to investigate service options that may provide more benefit to the City.

### 1.1 Objectives

The City wishes to progress its waste management and resource recovery services and striving for better practices. The key objectives of this report are to:

- Review past and present vergeside (bulk hard waste and bulk greenwaste) collection services offered to residents;
- Benchmark the current vergeside service levels against other local governments of similar size and demographics; and
- Investigate vergeside collection service options that may benefit the City's community.

## 2 Policy Setting

The following section briefly outlines the key documents, policies, and guidelines relevant to local government waste management.

### 2.1 National Waste Policy

The National Waste Policy (the Policy) developed in 2018 represents the progression of moving towards a circular economy (as opposed to a linear ‘take, make, use and dispose’ model) with businesses and local governments recognising the opportunities waste materials provide and the economic value they maintain.

The Policy aims include:

- Responding to challenges facing waste management and resource recovery in Australia (excluding radioactive waste);
- Reflect the global shift towards a circular economy (including resource-efficient systems, products and services to avoid waste, conserve resources and maximise the value of all materials used); and
- Provide a framework for businesses to incorporate innovation and develop technologies that work to create new opportunities.

The objectives and various projects of the City’s Waste Management Plan 2016 – 2021, as discussed in section 2.6, reinforce the aims of the National Waste Policy, predominantly in diversion of waste from landfill and management of waste.

### 2.2 State Framework

### 2.3 Waste Avoidance and Resource Recovery Act 2007

The Waste Avoidance and Resource Recovery (WARR) Act 2007 came into effect in July 2008. The main objective of the WARR Act is *“to contribute to sustainability and the protection of human health and the environment, in Western Australia and the move towards a waste free society by:*

- *Promoting the most efficient use of resources, including resource recovery and waste avoidance;*
- *Reducing environmental harm, including pollution through waste; and*
- *The consideration of resource management options against the waste management hierarchy:*
  - *Avoidance of unnecessary resource consumption;*
  - *Resource recovery (including reuse, reprocessing, recycling, and energy recovery);*
  - *Disposal.”*

There is currently no statutory responsibility for local governments to provide a bulk waste service.

### 2.3.1 Litter Act 1979

The Litter Act 1979 (the Act) is WA’s primary litter legislation and permits the Keep Australia Beautiful Council (KABC), local government, police and other litter enforcement agencies to take action against litterers. Under this Act, the City has authority to enforce penalties for minor illegal dumping. The Act makes provisions for the following:

- Establishment and membership of the KABC;
- Prevention of litter;
- Enforcement, proceedings and penalties; and
- Regulations and rules.

### 2.3.2 Waste Avoidance and Resource Recovery Strategy 2030

The Western Australian Waste Authority published the Waste Avoidance and Resource Recovery Strategy 2030 (WARR Strategy 2030) in February 2019. The WARR Strategy 2030 vision is for WA to “become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste”.

The WARR Strategy 2030 outlines high level overarching targets for the State under three key objectives namely Avoid, Recover and Protect. These targets are shown in Table 2-1.

**Table 2-1: WARR Strategy 2030 State Waste Targets**

Objective	Target
<b>AVOID</b>	2025 – 10% reduction in waste generation per capita. 2030 – 20% reduction in waste generation per capita.
<b>RECOVER</b>	2025 – Increase material recovery to 70% 2030 – Increase material recovery to 75% From 2020 – Recover energy only from residual waste.
<b>PROTECT</b>	2030 – No more than 15% of waste generated in Perth and Peel regions is landfilled. 2030 – All waste is managed and/or disposed to better practice facilities.

Specific targets have also been set under each objective, which are separated into targets for the community, government and the waste industry as shown in Figure 2-1. The targets are set for municipal solid waste (MSW) and commercial and industrial waste (C&I) for 2020, 2025 and 2030.

The WARR Strategy 2030 states that sustained behaviour change by governments, industry and households is pivotal to the reaching the targets by 2030, with education being identified as a fundamental strategy underpinning the behaviour change approaches to avoid, recover, and protect.



**Figure 2-1: WARR Strategy 2030 State Waste Objectives & Targets**

## 2.4 The Circular Economy and Waste Management Hierarchy

The WARR Strategy 2030 and its Action Plan sets out a roadmap to move the State towards a circular economy.

The circular economy, as depicted in Figure 2-2, is an alternative to the traditional, linear economy model which takes resources, makes goods that are then bought and used, and then disposed of as waste.

Given there is a finite supply of natural resources which are getting increasingly harder and costlier to extract, this traditional process results in unnecessary waste.

A circular economy aims to ‘close the loop’ by recovering and reusing items that would otherwise have been disposed of and returning them to the economy – considering them as a valuable resource rather than waste.



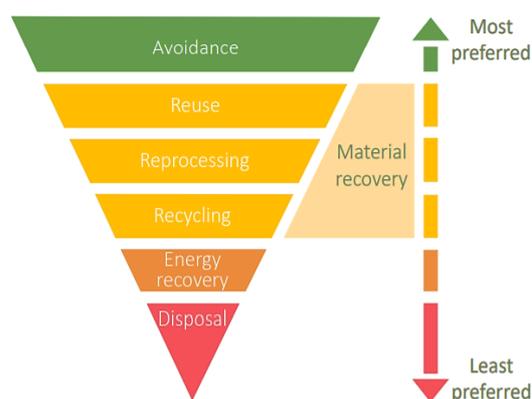
**Figure 2-2: Circular Economy (Waste Authority, 2020)**

Stewardship schemes support the environmentally sound management of products over their life, which includes at the end of their useful life. Product stewardship and extended producer responsibility aim to maximise the continued use of products and materials over their life cycle and play an integral part in achieving a circular economy.

The WARR Strategy 2030 is also guided by the ‘Waste Management Hierarchy’, which is an internationally adopted principle and concept which lists waste management options in order of preference according to their sustainability and environmental impacts.

As shown in Figure 2-3, options which achieve outcomes higher up the Waste Management Hierarchy are preferred over those located further down the Hierarchy.

The Waste Management Hierarchy forms the basis for assessing the various options being considered in the report. Service offerings that facilitate increased recovery by source separation are encouraged.



**Figure 2-3: Waste Management Hierarchy (Waste Authority, 2020)**

## 2.5 WALGA Better Practice Guidelines

The WA Local Government Association (WALGA) developed Better Practice Vergeside Collection Guidelines (the Guidelines) in 2015 with the aim to maximise diversion by identifying better practice solutions for vergeside collection.

In developing the Guidelines, a review of local government vergeside collection services were conducted. The review determined that bulk vergeside collections on average account for 12% of a local government’s entire waste stream, of which 7% of vergeside bulk waste and 95% of vergeside greenwaste is recovered.

As it is often difficult for local government to assess how well their vergeside collection systems are performing the Guideline offers targets and actions to assist with achieving better practice. The actions provided have been developed around the Waste Hierarchy with priority given to actions that work to reduce the amount of material placed on the verge for collection. Part of this approach is to reduce the frequency of collections, one hard waste collection per annum, and the amount of material allowed on the verge to a 2m<sup>3</sup> volume allowance. Table 2-2 gives a summary of the targets and better practice actions.

**Table 2-2: Better practice approach to vergeside collection targets and services**

Targets	Actions to achieve better practice
<ul style="list-style-type: none"> <li>• Average 70kg/hhld of bulk waste.</li> <li>• At least 50% recovery for bulk hard waste.</li> <li>• At least 95% recovery from greenwaste.</li> </ul>	<ul style="list-style-type: none"> <li>• Source separation of different material types i.e. separate collections for green and hard waste.</li> <li>• Reducing the amount of material per household collected i.e.:                             <ul style="list-style-type: none"> <li>○ limiting amount of material allowed for collection (2m<sup>3</sup>),</li> <li>○ reducing the number of collections per year (1 per annum), or</li> <li>○ limiting the type of material allowed.</li> </ul> </li> <li>• Enforcement on requirements put in place.</li> <li>• Use of an on demand service where residents request a service at a time that suits both the resident and the local government.</li> </ul>

## 2.6 City’s Waste Management Plan 2016-2021

The City’s Waste Management Plan 2016 – 2021 (the Plan) focuses on improving and refining the City’s waste management approaches, increasing diversion from landfill and providing adequate foundation to inform long term waste management planning.

The Plan also recognises that waste management is subject to an array of community expectations and is a significant and ever increasing cost for the City and ratepayers.

The key objectives of the Plan are to:

- Minimise waste to landfill through application of the Waste Management Hierarchy;
- Engage with the community to increase participation in sustainable waste management practices;
- Provide a quality and cost-effective waste management service to the community;
- Minimise the environmental impact of waste generation, collection and disposal;
- Maintain effective relationships with key stakeholders to maximise regional outcomes; and
- Ensure the City's long-term waste planning is informed by research and better practice initiatives.

The Department of Water and Environmental Regulation (DWER) developed a process requiring all local governments to formally submit a Waste Plan to demonstrate alignment with the Waste Strategy 2030. The DWER plan will act as a bridge between the City's previous Plan whilst contributing to a snapshot of the industry which will aid in the development of the City's new Waste Management Plan.

### 3 Vergeside Waste Management System

A vergeside collection service is the collection of waste material from residential ‘vergesides’ by local governments and can be classified as either uncontained or contained (by skip bin). The vergeside service can be collected on scheduled dates set by the local government, or on request at a suitable time for the resident and local government. Waste material can include general waste and/or recyclable materials that may be mixed or separated and is generally categorised as bulk hard waste or bulk greenwaste.

The City currently provides domestic ratepayers across its jurisdiction with a range of services including separate vergeside collections for bulk hard waste (on request) and bulk greenwaste (scheduled) services. The City also provides greenwaste tip vouchers and designated drop off locations for e-waste and textiles.

Waste data from 2011 to 2021 provided by the City was analysed to understand current waste tonnages, the quantity of waste disposed to landfill, and the City’s recovery rates. The City’s vergeside waste collection services, current waste quantities and current performance are discussed in the following subsections.

#### 3.1 Previous Vergeside Collection Service

Until October 2016, the City provided one scheduled, uncontained, combined (same day) collection service for bulk hard waste and bulk greenwaste to all households on a nine-to-ten-month cycle. As part of the bulk collection service City contractors separately collected mattresses on the same scheduled day to facilitate increased resource recovery, and white goods to be compliant with the relevant Ozone Protection legislation.

A service review, conducted in 2014, determined that the City collected more bulk hard waste per household than any other local government reviewed in Australia, and more than double the WA average. The service was characterised as having low diversion, with 96% of all bulk hard waste being sent to landfill in 2014. The greenwaste collection service consistently achieved 100% recovery.

The high tonnages coupled the rising cost of the landfill levy, which increased from \$55 per tonne in 2015 to \$70 per tonne in July 2018, led the City to shift towards the current on request system for bulk hard waste and maintain the bulk greenwaste collection services. As part of the review process the City conducted extensive community consultation.

The City’s previous bulk hard waste and bulk greenwaste collection service has been summarised in Table 3-1. The City’s bulk greenwaste collection service has remained as a scheduled collection. The cost of these services is included within the refuse charges in the annual rates notice.

The suburb by suburb scheduled collection service was undertaken over 9-10 months with a break over the Christmas/New Year period. The combined hard waste and greenwaste collection did see a consistent amount of greenwaste mixed in with hard waste items and so reduced greenwaste recovery. There was no set limit on the collection volume allowed., and this was usually dependant on the resident’s available verge space. The use of vacant blocks and park reserves was also an issue with a general reluctance from some residents to place their own waste on their own verge when close to vacant blocks and park reserves.

**Table 3-1: Previous Bulk Hard Waste Collection**

Service	Frequency	Description
Previous Bulk Hard Waste	<ul style="list-style-type: none"> <li>Scheduled (over 9 – 10 months)</li> <li>Combined scheduled collection</li> </ul>	<ul style="list-style-type: none"> <li>Uncontained collection with no limit on the quantity or volume of bulk hard waste to be placed on the verge</li> <li>Mattresses and whitegoods collected separately from verge by City contractors during scheduled service</li> </ul>
Bulk Greenwaste <i>(system which has been continued)</i>	<ul style="list-style-type: none"> <li>Annual scheduled (over 9-10 months)</li> </ul>	<ul style="list-style-type: none"> <li>No limit on the quantity or volume of greenwaste material allowed to be placed on the verge</li> <li>Residents encouraged not to place any waste on the verge any earlier than ten days before the first day of collections in their zone</li> <li>Greens to be placed neatly on the verge with cut ends facing the street and in an easily accessible area</li> </ul>

The City undertakes an annual Customer Satisfaction Survey. Bulk Collection services have not been included in the annual survey, however the overall satisfaction with weekly waste and recycling collections ranks highly with an average of 96% and 91% respectively over a six year period (2010/11 through 2016/17).

### 3.2 Current Vergeside Collection Service

The City currently provides collection of bulk hard waste and additional items (on request) and bulk greenwaste (scheduled) to all residents. The City also provides 4 greenwaste tipping vouchers for the Wangara Greens Recycling Facility which is open weekends only.

The current vergeside services offered by the City each financial year is summarised in Table 3-2. The cost of these services is included within the refuse charge in the annual rates notice.

Residents can request any of the bulk hard waste services via the City’s website or by calling the collection contractor, Cleanaway, directly and selecting a collection day from a list of available dates. Residents are also entitled to request an additional skip bin.

Residents living in units or a property without a verge (problematic properties) are also entitled to the on request skip service (larger skips can be provided if required) or a special loose collection can be provided if this is more suitable. The collection contractor will visit the property to determine the best location for the skip bin or may provide a loose collection if it will provide a suitable service. No data or addresses are kept on the amount of problematic properties that the City services. Arrangements are made as the booking is received.

**Table 3-2: Current Vergeside Bulk Hard Waste Services Summary**

Service	Frequency	Service Description	Additional Information
Current Bulk Hard Waste	On request	<ul style="list-style-type: none"> <li>One white goods collection (up to 4 items);</li> <li>One mattress collection (up to 6 mattress); and</li> <li>One 3m<sup>3</sup> skip, or one lounge suite</li> </ul>	<ul style="list-style-type: none"> <li>Residents can request any of the bulk hard waste services via the City’s website or by calling the collection contractor, Cleanaway, directly and selecting a collection day from a list of available dates.</li> </ul>
Current Greenwaste	Annual scheduled (9-10 month cycle)	<ul style="list-style-type: none"> <li>No limit on the quantity or volume of greenwaste material allowed to be placed on the verge;</li> <li>Residents encouraged not to place any waste on the verge any earlier than ten days before the first day of collections; and</li> <li>Greens to be placed neatly on the verge with cut ends facing the street and in an easily accessible area.</li> </ul>	<ul style="list-style-type: none"> <li>Residents are supplied with four greenwaste tipping vouchers (up to 500kg per voucher) for use at the Wangara Greens Recycling Facility; and</li> <li>Residents are also able to dispose of garden organics in their 240L garden organics (GO) bin, collected fortnightly.</li> </ul>

### 3.3 Community Drop Off Facilities

The City encourages residents to utilise the community facilities for the disposal of problematic wastes such as e-waste, household hazardous waste, tyres, oils and paints. The facilities are listed in Table 3-3.

In addition to the community facilities the City holds biannual collection days for e-waste and clothing/textiles and has installed recycling hubs for light globes, batteries, mobile phones and printer cartridges at the City’s libraries and administration centre.

**Table 3-3: Community Drop Off Facilities**

✓ Free of charge X Service not available \$ Charges will apply Key * Available on weekends & public holidays only ^Domestic quantities free of charge	Facility		
	Wangara Greens Recycling Facility	Tamala Park	Recycling Centre Balcatta
Managed By	City of Wanneroo	Mindarie Regional Council	City of Stirling
Travel Distance	12-15 minutes	10-15 minutes	15-20 minutes
Greenwaste (free with tipping vouchers)	✓/\$	✓/\$	\$
Batteries (household and car)	✓*	✓	✓
CFL (compact fluorescent light globe)	✓*	✓	✓
Used Motor Oil	✓*	✓	✓
Mobile Phones	✓*	✓	✓
Printer ink cartridges	✓*	✓	✓
Plastic bottle lids	✓*	X	X
Scrap Metal	✓*	✓	✓
E-waste	X	✓	✓
Other Household Hazardous Waste	X	✓^	✓^
White goods	X	✓	✓/\$
Tyres	X	\$	\$
Mattresses	X	\$	\$
Bulk Cardboard	✓*	✓	✓
Polystyrene	X	✓	✓
Charity clothing, other quality items that can be donated and then resold in the reuse shop	X	✓	✓

### 3.4 Advertisement and Education

The City currently undertakes waste education and engagement through printed material/written information, the City's website and various waste education programs, refer Table 3-4.

**Table 3-4: Advertisement and Education**

Advertisement and Education	Overview
Waste Guide	<ul style="list-style-type: none"> <li>• Provided to each residential property each year to provide information on the City’s waste services including:               <ul style="list-style-type: none"> <li>○ Dates for kerbside/vergeside/complementary services;</li> <li>○ Material types allowed/not allowed in the bins (disposal guides);</li> <li>○ Tips/advice for using the waste systems correctly;</li> <li>○ Important/relevant contact details for waste services;</li> <li>○ Greenwaste tipping vouchers and mulch vouchers.</li> </ul> </li> </ul>
Website	<ul style="list-style-type: none"> <li>• Provides users with information on the City’s waste management services and information on ways to reduce the impact of waste;</li> <li>• The web page has links to the Annual waste guide, waste services provided, contact details in relation to queries on bin collection and bin repairs/replacements, FAQ section and relevant waste articles;</li> <li>• Waste related page views account for 8.29% of all page visits on the City’s website, the second most visited webpage to the City’s homepage.</li> </ul>
Social Media	<ul style="list-style-type: none"> <li>• Provides users with information such as upcoming bulk services and community drop off days;</li> <li>• The City’s average social media waste related post reaches 2,921 residents.</li> </ul>
Schools	<ul style="list-style-type: none"> <li>• The City’s kerbside waste collection contractor, Suez, engages with schools and provides curriculum-based education sessions about waste and recycling;</li> <li>• There have been no regional waste education services since August 25, 2020, when the MRC waste education team services were discontinued.</li> </ul>
Community and Events	<ul style="list-style-type: none"> <li>• Waste education sessions / workshops for residents regarding waste minimisation and reduction including at home composting and worm farming;</li> <li>• Plastic Free July;</li> <li>• Promoted and provides support (collects and disposal services) for Clean Up Australia Day;</li> <li>• Keep Australia Beautiful Adopt a Spot and community clean ups.</li> </ul>

### 3.5 Waste Treatment and Disposal

The City is a member of the Mindarie Regional Council (MRC). MRC provides a landfill, community resource recovery centre and the Resource Recovery Facility RRF (until 31 August 2021). The City engages private contractors for the collection of vergeside bulk waste. The City currently utilises the facilities in Table 3-5 for processing of vergeside waste streams.

**Table 3-5: Waste Treatment and Disposal**

Waste Collection Service	Waste Stream	Treatment/ Disposal	Facility	Output
Vergeside	Bulk Hard Waste	Materials Recovery Facility (MRF) for skip waste, Metal recycling plant for white goods Mattresses recycling facility	Cleanaway Perth, Welshpool facility for skip waste. Simms metal for whitegoods metal recycling. Soft Landings for mattress recycling.	Welshpool facility has the capability to recover up to 25% of reusable product from the skips. Simms metal has the capability to recover up to 79% of the white goods. Soft Landings has the capability to recover up to 85% of mattresses.
	Bulk Greenwaste	Organic processing	Community Greenwaste Recycling	100% recovery of greenwaste for commercial markets.
Self-haul	Greenwaste	Greens Recycling Centre	Wangara Greens Recycling Facility	Mulches greenwaste which residents are entitled to collect for free.

### 3.6 Waste Data

Waste data was provided by the City and is based on financial years 2011/12 to 2019/20.

Annual waste quantities and recovery rates for both vergeside services provided by the City are shown in the subsections below. The recovery rate is the proportion of total waste generated that is recovered either through reuse, recycling or treatment and is therefore diverted from landfill.

#### 3.6.1 Bulk Hard Waste Data

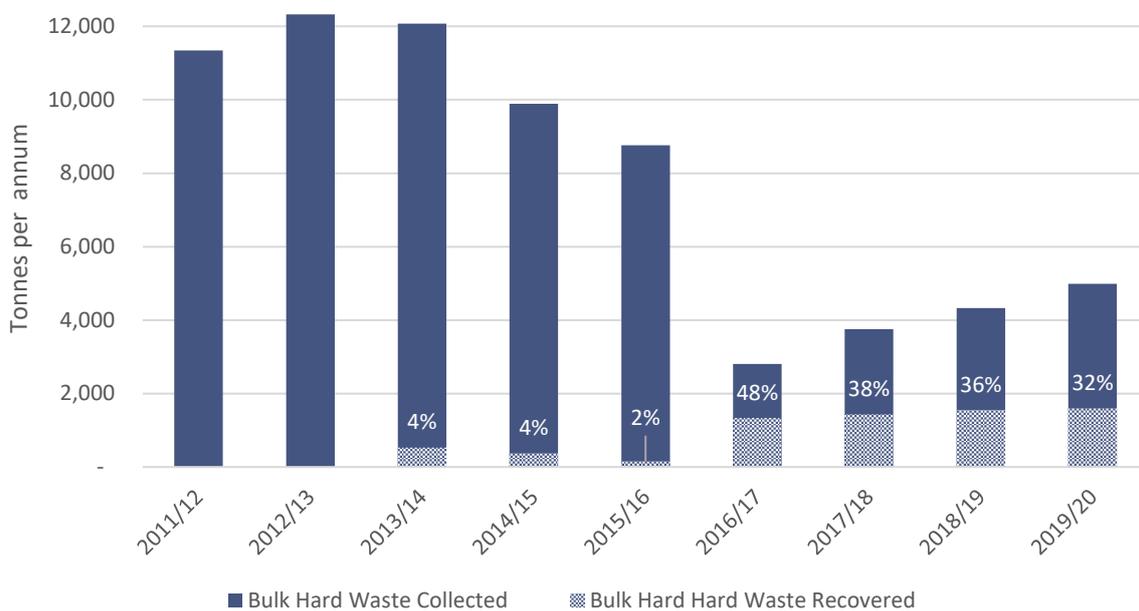
Historical bulk hard waste data is shown in Figure 3-1. From 2013/14 the data includes the tonnes per annum of mattresses and white goods that were recovered.

In 2016/17 (October 2016) the City moved from a scheduled uncontained service to the current on-request contained service. Figure 3-1 shows that the bulk hard waste tonnages dropped considerably from 8,765 tonnes per annum in 2015/16 down to 2,805 in 2016/17 when the new service commenced. There was also a break in the service from July to October in the 2016/17 year. In subsequent years more ratepayers have utilised the service increasing the overall tonnage collected.

Correspondingly, the recovery rate increased from 2% in 2015/16 to 48% in 2016/17 following a change of service provider with the introduction of the on-request collection service. However, after the initial increase, the recovery rate declined due to the original recycling plant, Aurigen, closing.

The skip waste was then diverted to the Cleanaway facility in Welshpool which was not set up for the recovery of the skip material however there was and still is some recovery through their basic conveyer manual picking system. The markets and value of the recovered materials has reduced and there has been a fire at the Welshpool facility which has also caused issues in recovering materials from the skip waste.

Often the high recovery rates for bulk waste are due to the plant recovery rate being high for construction material and the local government receives the benefit of this.

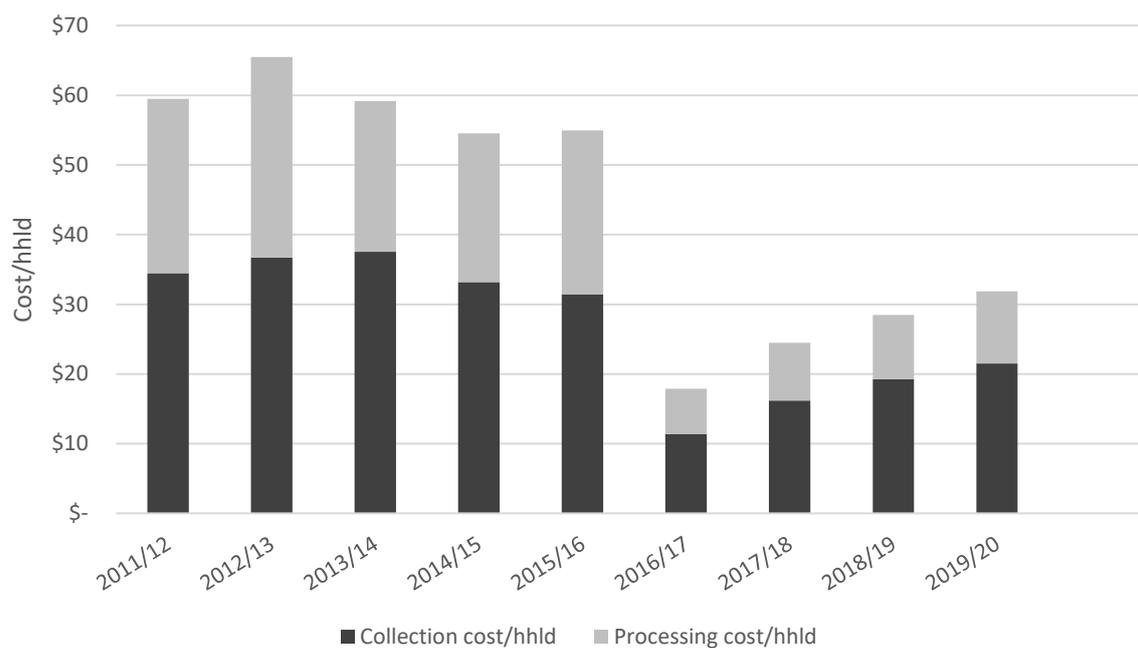


**Figure 3-1: Bulk Hard Waste Generation (tonnes/annum) and Annual Recovery Rates**

The overall expenditure relating to the City’s bulk hard waste service from 2011/12 to 2019/20 is shown in Figure 3-2. The overall expenditure is determined through both the collection and processing costs per household.

The City is aiming to increase recovery while keep processing costs down to work towards the WARR Strategy 2030 targets. This is difficult due to the limited markets for the waste that is recovered from skip bins/furniture due to the low quality of the materials which typically make up bulk hard waste.

Figure 3-2 indicates that the cost per household has decreased from \$55.00 per household in 2015/16 to \$32.00 per household in 2019/20.



**Figure 3-2: Overall Cost of Bulk Hard Waste Service per Household (\$/hhld)**

### 3.6.1.1 Bulk Hard Waste Recycling

An estimation of the City’s bulk waste composition has been provided in Appendix B. The composition breakdown is used to determine the proportion of materials that could potentially be recovered. Due to a lack of comparable local data, the composition is based on audit data from the Southern Sydney Regional Organisation of Councils (2014)<sup>1</sup> in NSW, which is considered representative in determining the anticipated composition for the City.

It should be noted however, that the largest component of bulk hard waste in the skip bins is furniture which is typically made of low quality material (i.e. treated timber, chipboard, vinyl) which contributes to lower recovery rates.

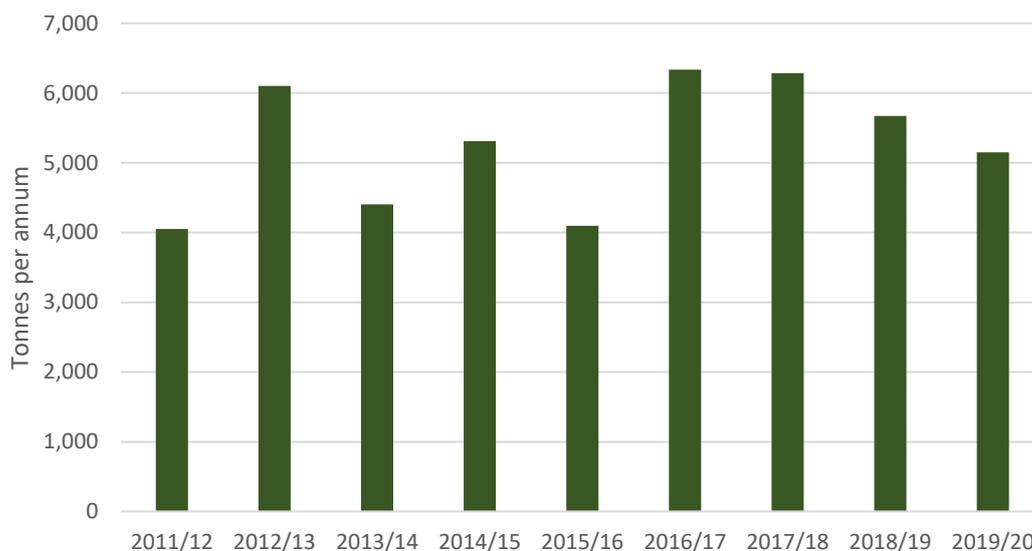
### 3.6.2 Bulk Greenwaste Data

Waste generation and recovery rates for bulk greenwaste are shown in Figure 3-3. The data shows that the volume of greenwaste collected has fluctuated from 2011/12 up until 2016/17, at which time the volume of greenwaste collected was fairly consistent for a two year period.

<sup>1</sup> Source: APC Waste Consultants (2014), SSROC Regional Report, Audit of bulky clean-up waste, adjusted to remove mattresses, garden organics and other materials which are collected separately in the City of Joondalup.

From 2018/19 the volume of greenwaste followed a downward trend, which can be mostly attributed to the introduction of the kerbside garden organics bin in 2018/19, which enables residents to dispose of garden waste in a 240L bin that is collected fortnightly.

The recovery rate for greenwaste from the vergeside collection is typically 100%, as the material is separated at source and any contaminants are removed from the waste before it is collected. The greens are then shredded and processed into mulch and other soil improvers.

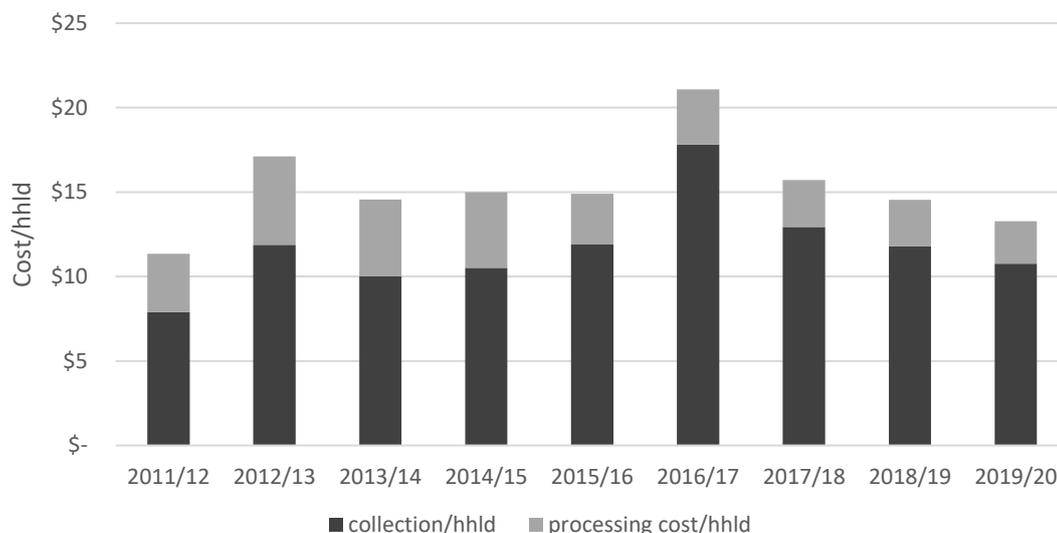


**Figure 3-3: Bulk Greenwaste Generation (tonnes/annum) and Annual Recovery Rates**

The overall expenditure of the greenwaste collection service is determined through both the collection and processing costs. The collection costs are the greater cost as the processing of clean greenwaste is fairly simple.

The overall expenditure per household relating to the City's greenwaste collection service from 2011/12 to 2019/20 is shown in Figure 3-4. It shows a trend in reducing costs over the past three years of service. This may be due to the introduction of the greenwaste kerbside bin and more infill housing which leads to reduced block sizes.

The cost per household of the greenwaste collection service in 2019/20 was \$13.00, equating to \$794,667 per annum.



**Figure 3-4: Overall cost of Bulk Greenwaste Collection per Household per Annum (\$/hhld)**

### 3.7 Bulk Waste Perception Survey

A bulk waste perception survey was undertaken by the City in 2015 to obtain community feedback on the proposed options for future bulk waste collection service. Of the 3,000 ratepayers that received a survey, less than half of the responses (872) were returned.

The majority of respondents indicated that they find the convenience and availability of the vergeside collection service to be important to them, with more than 80% of the respondents utilising the existing bulk waste services.

The survey highlighted the community concern over the environmental impact of the bulk hard waste services and that reusing and recycling bulk hard waste items was extremely important to them.

## 4 Benchmarking of Current Vergeside Collection Services

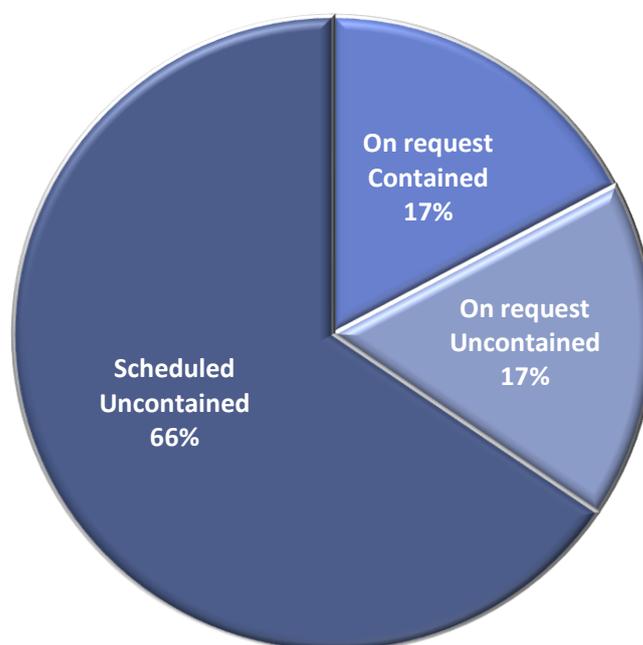
This section assesses the City’s current vergeside collection service level in relation to other local governments of comparable size and population within the Perth metropolitan area and will assist in determining the efficacy of the current service and alternative service options.

The City provides residents with an on request bulk hard waste service. Each household is entitled to one 3m<sup>3</sup> skip bin collection per annum, with separate collection of mattresses and white goods. Households can substitute their 3m<sup>3</sup> skip for one lounge suite collection and request extra skips at a reduced contracted rate. The City also provides residents with one scheduled bulk greenwaste collection each year and 4 greenwaste only tip passes for Wangara Greens Recycling Facility which is only open weekends.

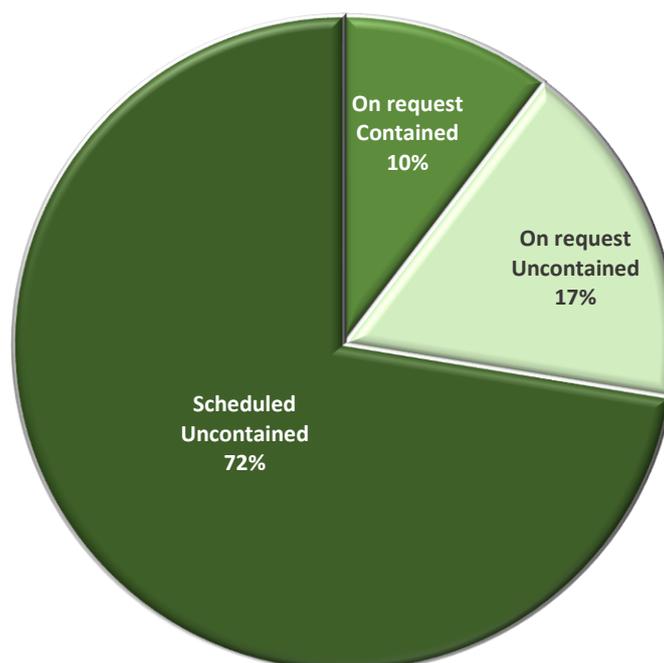
### 4.1 Perth Metropolitan Area Vergeside Collection Services

Vergeside collections are a popular service provided by the majority of local governments in the Perth metropolitan area.

Scheduled vergeside collections take place periodically throughout the year, whilst the on request collections are arranged at time convenient for the local government and resident. Figure 4-1 and Figure 4-2 shows the proportion of the types of bulk hard waste and greenwaste services provided by local governments in the Perth metropolitan area. Scheduled uncontained collections for both bulk hard waste and greenwaste are utilised by most local governments for vergeside collection services.



**Figure 4-1: Proportion of Bulk Hard Waste Services offered in the Perth Metropolitan Area**



**Figure 4-2: Proportion of Greenwaste Services offered in the Perth Metropolitan Area**

A scheduled uncontained bulk hard waste service is offered to residents by 19 local governments, of which 7 restrict the volume and time allowed to present material to the verge. Of the 5 local governments that currently offer an on-request uncontained bulk hard waste service 4 currently utilise the Western Metropolitan Regional Council (WMRC) Verge Valet service.

There are 21 local governments that currently offer a scheduled uncontained collection for greenwaste, of which 14 limit the volume of material that can be presented to the verge. 5 local governments offer an on request uncontained service and 3 offer an on request contained greenwaste service. The Shire of Serpentine-Jarrahdale does not currently offer vergeside collection services for their residents. Local governments that offer each service type is provided in Table 4-1.

**Table 4-1: Local Government Vergeside Services**

Service	Service Type	Local Government
Bulk hard Waste	On request uncontained with size limit	Town of Cambridge, Town of Cottesloe, Town of Mosman Park, Shire of Peppermint Grove and City of Swan
	On request contained (skip)	City of Joondalup, City of Bayswater, City of Belmont, Shire of Kalamunda and City of Stirling
	Scheduled Uncontained no size limit	Town of Claremont, City of Fremantle, City of Gosnells, City of Subiaco, Town of Victoria Park and City of Wanneroo
	Scheduled Uncontained with size limit	City of Armadale, City of Bassendean, City of Canning, City of Cockburn, Town of East Fremantle, City of Kwinana, City of Melville, Shire of Mundaring, City of Nedlands, City of

Service	Service Type	Local Government
		Rockingham, City of South Perth and City of Vincent
Green Waste	Scheduled Uncontained no size limit	City of Joondalup, City of Gosnells, City of Stirling, Town of Victoria Park, City of Vincent, City of Wanneroo and City of Perth
	Scheduled uncontained with size limit	City of Armadale, City of Bassendean, City of Canning, City of Cockburn, Town of Claremont, Town of East Fremantle, City of Fremantle, City of Kwinana, City of Melville, Shire of Mundaring, City of Nedlands, City of Rockingham, City of South Perth and City of Subiaco
	On request contained (skip bin)	City of Bayswater, City of Belmont and Shire of Kalamunda
	On request uncontained with size limit	Town of Cambridge, Town of Cottesloe, Town of Mosman Park, Shire of Peppermint Grove and City of Swan

#### 4.1.1 Additional Services

11 local governments, City of Canning, City of Bassendean, City of Armadale, Town of Cambridge, City of Swan, City of Bayswater, City of Belmont, City of Stirling, and City of Joondalup, offer extra on request collection services in addition to their scheduled or on request bulk hard waste collection service. Bulk items are collected separately and are a combination of mattresses, white goods, lounge suites and/or e-waste.

Typically, local governments that offer an on request service will also offer collection of additional bulk items so that items such as mattresses, white goods and lounge suites can be kept segregated or out of skips.

City of Joondalup and City of Stirling are the only local governments that offer an on request service with two or more collections of additional items of mattresses and/or whitegoods within annual rates charges. City of Vincent and City of Kalamunda offer collection of additional items at a cost per item to the ratepayer.

## 4.2 Comparable Vergeside Collection Services

An assessment was carried out of the service offering, quantity of vergeside material collected and recovery rates in comparable local governments within the Perth metropolitan area. The local governments were chosen for comparison based on the size, density and population of each.

Table 4-2 provides a summary of the current vergeside collection services offered by the City of Joondalup, City of Cockburn, City of Melville, City of Stirling, City of Swan and City of Wanneroo.

City of Joondalup and City of Stirling have very similar bulk waste collections. The main difference is that City of Stirling also offer an on request e-waste collection and tip vouchers to residents.

City of Swan also provide an on request service, however this is uncontained on the verge and restricted to 3m<sup>3</sup> of material. The City of Swan covers an area of 1,043km, and is the largest of the local governments listed and residents have access to a number of Community Recycling Centres (CRCs).

The City of Melville and City of Cockburn provide a scheduled service that is uncontained with a size restriction of 2m<sup>3</sup> which is WALGA best practice. Most local governments provide one bulk hard waste collection each year, with exception of City of Cockburn which provides 2 collections totalling 4m<sup>3</sup> capacity each year.

Currently, City of Wanneroo offers a scheduled uncontained service with no size restrictions, however, they have included the development of a business case for transitioning the current service to an on request service, as detailed in their Waste Management Plan 2020 – 2025.

**Table 4-2: Vergeside Collection Services offered by Comparable Local Governments**

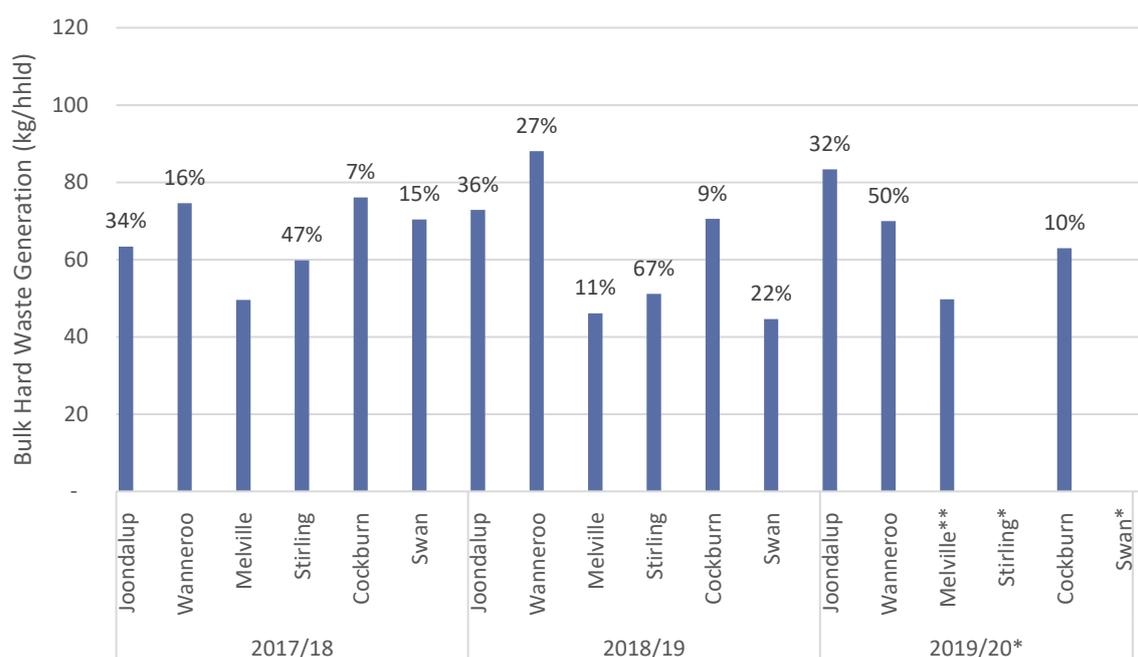
Local Government size and residents	Fleet	Bulk Hard Waste	Bulk Greenwaste	Combined/ Separate Collections	City Owned and Managed Waste Facilities
Joondalup Size 99km <sup>2</sup> 60,109 households	Contract (Bulk Hard Waste and Greens)	1 on request contained collection annually (3m <sup>3</sup> skip bin or 1 lounge suite) 1 white goods collection (up to 4 items) 1 mattress collection (up to 6 items)	1 scheduled uncontained (no size limit) collection 4 green waste tipping vouchers	Separate bulk hard waste and greenwaste collection	None
Cockburn 168km <sup>2</sup> 44,200* households	Inhouse	2 scheduled uncontained collections (2m <sup>3</sup> size limit)	2 Scheduled uncontained (2m <sup>3</sup> ) collections	Separate bulk hard waste and greenwaste collection	Henderson Waste Recovery Park
Melville 53km <sup>2</sup> 44,000* residents	Contract Bulk Hard Waste Inhouse Greens	1 scheduled uncontained collection (2m <sup>3</sup> size limit)	2 Scheduled uncontained (2m <sup>3</sup> ) collection	Separate bulk hard waste and greenwaste collection	None
Stirling 105km <sup>2</sup> 93,300* households	Contract of Bulk Hard Waste Inhouse for Greens	1 on request contained (3m <sup>3</sup> skip bin) collection 1 white goods collection (up to 4 items) 1 e-waste collection (up to 6 items) 1 mattress/base collection (up to 6 items) Plus tipping vouchers for bulk junk, mattresses, bricks sand and building waste etc	1 scheduled uncontained collection (no size limit)	Separate bulk hard waste and greenwaste collection	Balcatta Recycling Centre

Local Government size and residents	Fleet	Bulk Hard Waste	Bulk Greenwaste	Combined/ Separate Collections	City Owned and Managed Waste Facilities
Swan 1,042km <sup>2</sup> 57,800* households	Inhouse	1 mattress collection (up to 3 items): Option 1: 2 on request uncontained 3m <sup>3</sup> bulk hard waste collections or Option 3: 1 bulk hard waste and 1 greenwaste collection	Option 2: 2 on request uncontained 3m <sup>3</sup> greenwaste collections or Option 3: 1 bulk hard waste and 1 greenwaste collection	Residents can choose to have bulk hard and greenwaste collections at the same time	Recycling Centre – Bullsbrook Recycling Centre - Malaga
Wanneroo 87km <sup>2</sup> 87,400* households	Inhouse	1 scheduled uncontained collection (no size limit) with mattresses and scrap steel stacked separately	1 scheduled uncontained collection (no size limit)	Separate bulk hard waste and greenwaste collection	Wangara Greens Recycling Facility

\*Household data WA Tomorrow Report 8 B and C

Figure 4-3 shows the kilograms per household of bulk hard waste generated and annual recovery rates from 2016/17 to 2019/20. Note: at the time of writing this report tonnage data and recovery rates were not yet available for the 2019/20 financial year for the Cities of Stirling and Swan and only tonnage data was available for the City of Cockburn.

This figure indicates the local governments that are achieving higher recovery rates are providing on request services. The exception to this is Wanneroo. Their recovery rate is attributed to scrap metals and mattresses being separated out on the verge and bulk waste being processed by SUEZ material recovery facility over a full 28 week scheduled collection cycle in 2018/19 and 2019/20. In previous years high value materials such as metals were not separated, and processing did not occur across the full collection cycle. However, as previously mentioned the City of Wanneroo will be reviewing the current scheduled service with the aim of moving towards it becoming an on request service.



Bulk Hard Waste Recovery Rate (%)

\*Recovery rate and tonnage data not yet publicly available

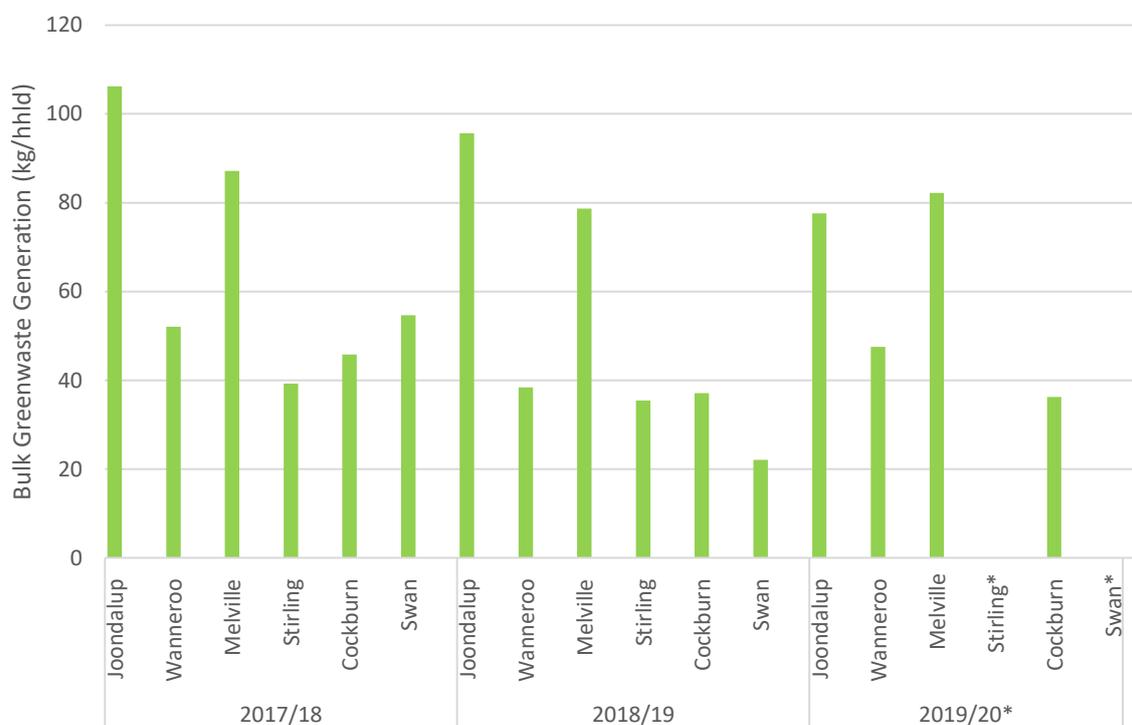
\*\* Recovery rate not yet publicly available

Note: 2019/20 recovery rates sourced from local government annual reports

**Figure 4-3: Comparable Local governments Bulk Hard Waste Generation and Recovery Rates**

Figure 4-4 shows the kilograms per household of bulk greenwaste generated and annual recovery rates from 2016/17 to 2019/20. Note: data was not yet available for the 2019/20 financial year for Cities of Stirling and Swan. This figure shows that the City has the highest greenwaste generation compared to the other local governments, and that the amount of bulk greenwaste collected for the City has decreased since the introduction of the garden organics kerbside bin in 2018/19.

All of the comparable local governments, whether using a scheduled and on request collection service, have consistently achieved a recovery rate of 100%, which is attributed to the collected material being processed and shredded for mulch or soil conditioners. This also highlights that the material being collected is of good quality and not contaminated, compared to the bulk hard waste which is a diverse range of generally poor quality material that is harder to recover and find markets for.



\*Tonnage data and recovery rates not yet publicly available.

Note: 2019/20 recovery rates sourced from local government annual reports

**Figure 4-4: Comparable Local Governments Greenwaste Generation and Recovery Rates**

### 4.3 Bulk Hard Waste Recycling

Local governments typically recover metals, textiles, wood and cardboard from bulk hard waste skip bins. The City currently recovers metals and quality timber/wood. The rates of recovery vary between local governments due to the processing facility that is utilised, and the materials found in the skip bin.

The City provides separate on request collection services for mattresses, white goods and lounge suites (as a substitute for a skip bin) for further recovery of materials. These separate collection items are where the City gets its main bulk hard waste diversion from. In addition, the City currently holds both e-waste and clothing/textile drop off days twice a year.

Table 4-3 provides a summary of additional services provided by other local governments with an on request bulk waste service.

**Table 4-3: Comparison of other LGAs on request bulk waste recycling services**

LGA	Collections					User Pays or In Refuse Charge	Online Booking Portal
	Bed bases	Mattress	White goods	Lounge Suites	E-waste		
Bayswater, City of	In skip	2				In refuse charge	✓
Belmont, City of	✓ with mattresses on request	2	2	1		In refuse charge	✓
Kalamunda, City of	In Skip	\$34 per item	\$34 per item			User pays	Phone Booking
Stirling, City of	✓ with mattresses on request	6	4		6	In refuse charge	✓
Swan, City of	✓ on verge bulk junk	3	✓ on verge bulk junk	✓ on verge bulk junk	✓ on verge bulk junk	In refuse charge	✓
Vincent, City of	✓ on verge bulk junk	\$37.40 per item	\$31.90 per item			User pays	Phone Booking
Joondalup, City of	In Skip	6	4	✓		In refuse charge	✓

The City also provides recovery for mobile phones, globes, batteries and printer cartridges via recycling drop off stations at the City's Libraries and Administration Centre.

There are a number of facilities in the Perth metropolitan area that process bulk hard waste. The facilities operate a basic sorting line including a trommel, screen and picking line to enable the removal of timber, metal and cardboard along with a grabber for larger items. Some of these facilities claim recovery rates of 60-80% where high value materials such as metals form part of the bulk hard waste collection services, however recovery rates of 30-40% are more realistic for a primarily domestic vergeside waste stream. It is important to note that it is hard to separate the plant recovery rate from the actual bulk materials recovery when the materials are mixed with the other wastes. Some of the facilities are mostly used for construction and demolition waste that includes pre-sorting, screening, shredders and magnets to separate materials which can also be used to process material collected from domestic bulk waste services. Facilities that are open to receive bulk hard waste and recyclable materials for source separation are:

- Instant Waste Bayswater;
- Suez Bibra Lake Resource Recovery Park;
- West Tip Waste Malaga;
- Perth Bin Hire;

- Eco Resources;
- Cleanaway Bayswater Transfer Station & Recycling Centre; and
- Cockburn bulk waste facility - Henderson Waste Recovery Park (expected to open in 2022).

## 5 Alternative Collection Options

The City wishes to consider the benefits of other vergeside collection service options to meet the future needs of its residents and improve waste recovery.

Based on our review of past and current vergeside collection services, Talis has considered alternative options that will assist in reducing waste, improving recovery rates and delivering cost savings. The key alternatives for consideration are:

- Whether to continue to provide a service;
- Whether to limit the collection volume;
- Whether to reduce the quantity of the service;
- If the service should be on request or scheduled; and
- Whether keep the service charge within the refuse charge or charge users a separate fee.

### 5.1 Scheduled or On request Services

Local governments around WA offer a range of scheduled and on request collection services and there are advantages and disadvantages to each service type. Table 5-1 describes the advantages and disadvantages of the different service types.

A scheduled service is delivered at set times during the year e.g. bi-annually or annually. A scheduled service will provide collection efficiencies; however, residents may not receive a service at a convenient time for them or may be away and unable to participate in the service. Costs for scheduled services are typically included within residents' annual rates.

An on request service has been shown to substantially reduce the volume of waste collected as fewer households tend to participate in the service, and there is less dumping of bulk waste onto other people's properties. The average cost per service typically increases, however the overall cost of the service is reduced as less waste is generated to offset the collection costs. Costs for an on request service may be included within residents' annual rates/refuse charges or may be offered as a 'user pays' service.

Five local governments in the Perth region (Joondalup, Stirling, Bayswater, Belmont and Kalamunda), and some east coast local governments have moved to on request skip bin services. Capital costs for skip bins, specific trucks, the logistics associated with delivery of bins and the correct verge surfaces are all considerations, most of which are managed by the collection contractor. Not having sufficient verge space to place the skip bin can be combatted with an approved loose collection. No local government that has taken up this service has reversed their decision or changed their service.

Eight local governments in the Perth region (Bayswater, Belmont, Cambridge, Cottesloe, Kalamunda, Mosman Park, Peppermint Grove, and Swan) provide an on request greenwaste collection, with the majority of these being an uncontained service with a size restriction of 3m<sup>3</sup>.

**Table 5-1: Service types**

Service Type	Scheduled	On Request
Description	<p>Scheduled collection involves the local government and contractor working together to set dates for waste collection in each area.</p> <p>Households are informed of their scheduled collection date.</p> <p>Compliant materials placed on the verge prior to the scheduled date are collected.</p>	<p>On request collections provide a convenient service, especially where there is a high renting population.</p> <p>This service requires residents to book a collection online or call the City/Contractor.</p> <p>The anticipated wait time for residents may vary depending on number of services available and seasonal demand variables (i.e. busy summers and quiet winters) but generally bookings are conducted within 2-3 weeks.</p>
Advantages	<ul style="list-style-type: none"> <li>• Operational efficiencies – optimising collection runs.</li> <li>• Equal service for all residents.</li> <li>• Administration reduced i.e. no booking system required.</li> <li>• Residents can plan for it.</li> <li>• Economies of scale for collection.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces amount of waste presented.</li> <li>• Provides convenient timing for residents i.e. moving house.</li> <li>• Generates less waste and therefore less cost for the City.</li> <li>• City able to liaise with residents about diversion options.</li> <li>• Less illegal dumping as material is out for a shorter period and is identifiable to a set property.</li> <li>• Costs may be included in refuse charge or allocated on a ‘user pays’ basis.</li> <li>• Local government can request details of waste materials to optimise reuse and recycling.</li> <li>• City amenity – the streets are kept clean and discourages the dumping of junk on the verge expecting the City to clean it up as is done with the verge collection.</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Generates more waste and therefore generally higher cost and reduced landfill diversion.</li> <li>• Set schedule/dates means that residents who are travelling/away may not be able to partake in the service.</li> <li>• Visual amenity affected by numerous properties presenting material at the verge over a number of weeks.</li> <li>• Issues of illegal dumping.</li> <li>• Lack of space (verge) for some residents.</li> <li>• Attract Scavengers.</li> </ul>	<ul style="list-style-type: none"> <li>• Additional administration management for the City – including customer services and integrating the rates database into an online booking system.</li> <li>• Possible high demand for particular weeks (e.g., public/school holidays) and therefore may not meet resident’s expectations of collection timing.</li> <li>• Typically, there is a limit of bookings accepted each day which may cause delays/backlogs in bookings to residents in high demand periods.</li> <li>• May not be the space on verges for a skip bin.</li> </ul>

Service Type	Scheduled	On Request
	<ul style="list-style-type: none"> <li>Scavengers taking high value recyclable materials e.g., copper, stainless steel, aluminium.</li> </ul>	

## 5.2 Cease to Provide a Service

Based on the project cost modelling for 2022/23, ceasing to provide a vergeside bulk collection service has the potential to provide a saving of approximately:

- \$2,255,810 (\$37.16/hhld/year) in collection, processing and administration costs annually;
- \$1,042,787 (\$17.18/ hhld/year) in collection, processing and administration costs annually for greenwaste; and
- \$235,000 for the use of the weekend greens drop off facility tipping vouchers.

Ceasing to provide a service would encourage residents to re-consider the necessity of replacing old household goods, as it takes away a simple method for discarding unwanted goods. Households would also be more likely to consider alternative means of moving on unwanted goods such as charities or online markets. It may also increase illegal dumping as residents may not have the means to pay the full cost of correct waste disposal.

However, as indicated in Section 3.7 there has previously been a strong community interest in the availability of a bulk waste service, so this option has not been considered further.

## 5.3 Limit Collection Volumes

The City currently offers a 3m<sup>3</sup> contained bulk hard waste collection and an unrestricted volume of greenwaste for its annual bulk greenwaste collection. Other local governments that offer an on request skip bin collection like the City are shown in Table 5-2.

The City of Bayswater, City of Belmont and City of Stirling utilise a 3m<sup>3</sup> skip bin for bulk hard waste and bulk greenwaste collections. The City of Kalamunda provide a 3m<sup>3</sup> skip bin for bulk hard waste, and an uncontained service for bulk greenwaste. City of Kalamunda residents must pay for these other collections. Most of these cities offer collections for mattresses, whitegoods, lounges and e-waste in addition to the skips.

**Table 5-2: LGAs with skip bins**

LGA	Refuse charge*	Skip Size	Service	Processed or landfilled	Amount	User Pays – or In Refuse Charge	Additional Services**
Bayswater, City of	\$368	3m <sup>3</sup>	Combined mixed waste collection	Processed	Up to 3 times per annum	In Refuse Charge (Cleanaway)	Mattress White Goods
Belmont, City of	\$303	3m <sup>3</sup>	Mixed waste or greenwaste	Processed	4 times per annum on an 'as needs' basis	In Refuse Charge (SUEZ)	Mattress Whitegoods Lounge
Kalamunda, City of	\$572*	3m <sup>3</sup>	Mixed waste or greenwaste	Landfilled	3-5 skip bins per annum (Depending on property size)	In Refuse Charge (Cleanaway)	Mattress Whitegoods E-Waste user pays for these items
Stirling, City of	\$335	3m <sup>3</sup>	Mixed waste	Processed (SUEZ)	1 skip per annum and can request additional skip at subsidised rate of \$85 Plus vouchers for, 4x 250kgs household mixed waste, 4 x 250kgs clean sand bricks and concrete, 2 fridges, 2 x mattresses, 4 x 250kgs green waste for the Balcatta Transfer Stations	In refuse Charge (SUEZ)	Mattress Whitegoods E-Waste
Joondalup, City of	\$360*	3m <sup>3</sup>	bulk	Processed (Cleanaway)	1 skip or lounge suite per annum and additional skip \$107	In refuse charge (Cleanaway)	Mattress White goods

\*Includes all waste services

\*\*Some additional services are user pay basis

The WALGA Guidelines encourage local governments to limit the amount of material allowed for bulk hard and greenwaste.

The City could introduce this restriction by:

- Reducing the skip bin size to 2m<sup>3</sup> for bulk hard waste; and
- Introduce a limit the amount of bulk greenwaste presented to the verge to 2m<sup>3</sup>.

This would provide a reduction in waste tonnage, however there is potential to encourage increased illegal dumping of excess waste. This may require the City to increase enforcement of the restriction by having rangers inspect the addresses booked in for collection and issue notices of non-conformances to non-complying properties.

Six local governments in the Perth metropolitan area (Bassendean, Cockburn, East Fremantle, Melville, Mundaring and Rockingham) utilise a 2m<sup>3</sup> volume allowance for bulk hard waste with all, except Rockingham, having a 2m<sup>3</sup> limit on their scheduled loose greenwaste collection service. Rockingham allow a 3m<sup>3</sup> limit as part of their scheduled uncontained greenwaste service. The City of Joondalup collects on average 80-85 kg/m<sup>3</sup>.

The City of Swan provide an on request uncontained service for bulk hard waste and greenwaste collections with a 25% participation rate. Residents can request up to two collections (uncontained, 3m<sup>3</sup> volume limit) per annum. Keeping an uncontained system and introducing size limits and on request services has reportedly substantially reduced the volume and cost of their bulk waste service when it was implemented. The land area that the City of Swan covers and the distance between properties makes the logistics of contained collection difficult as each property must be visited twice for skip delivery and removal. The City runs its own collection fleet and would have to purchase and store bins and manage the peak collection times with limited resources. Time and distance that would be required to travel to return to each property would make this service costly.

## 5.4 Verge Valet

WMRC developed 'Verge Valet', a service like the City of Swan's on request service, where residents are provided an on request uncontained service where all materials can be collected on the same day. The service is extended across the west central metro area and aims to reduce overheads for WMRC member councils.

The Verge Valet service is available on an opt in basis for WMRC member councils and other local governments. Current participating local governments include Town of Cambridge (from MRC), Town of Cottesloe, Town of Mosman Park and Shire of Peppermint Grove. City of Vincent will commence the service from January 2022, in place of their current scheduled uncontained bulk hard waste service, and the City of Fremantle are currently considering using the service.

The Verge Valet system provides residents from participating local governments with a year round on request uncontained collection service. Residents are redirected from their local government website to the WMRC Verge Valet website to book their request. An email or text from the Verge Valet team is sent to confirm the date of the collection.

As part of Verge Valet WMRC run the service and provide the website and communications for a fee. Local governments can utilise their own collection contractors and WMRC have multiple collection, processing and disposal contracts they can utilise, depending on location of the local government.

The system allows residents to design their collections on their requirements e.g., swap bulk waste collections for extra greenwaste collections. Residents are only permitted to place items on the verge 1 to 3 days before the collection date. Figure 5-1 shows how residents are to present their 3m<sup>3</sup> in total of materials. Bulk hard waste and greenwaste can be presented on the same day.

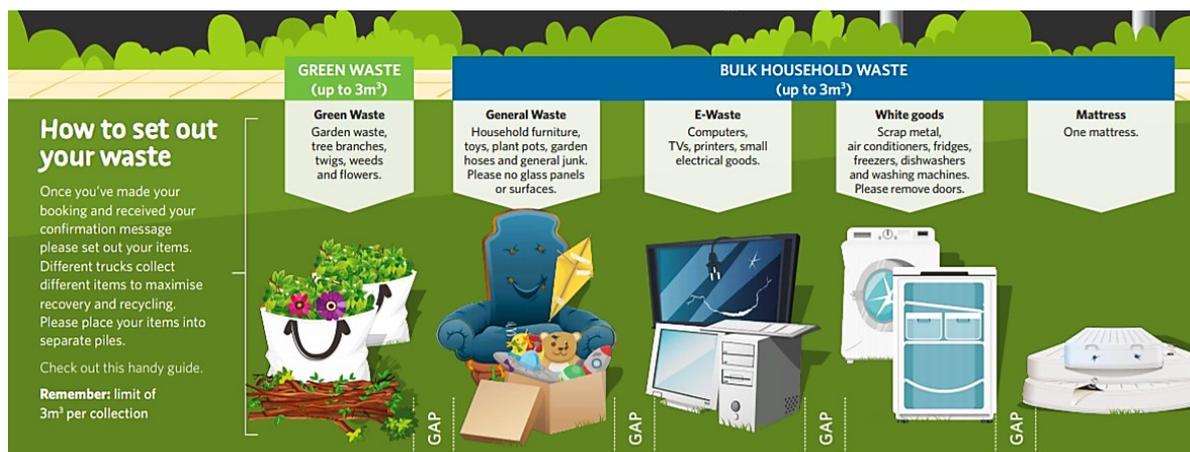


Figure 5-1 WMRC Verge Valet Guide to separating waste

After a 12 month utilisation of Verge Valet by Mosman Park, WMRC reported in March 2021<sup>2</sup> that:

- Volume: Bulk hard waste tonnages for Mosman Park decreased by 33% and bulk greenwaste by 53% equating to an approximate average reduction of 150kg per collection (in comparison 2018/2019);
- Cost: The annual costs of the service were 33% less than was projected and 8% less than their budgeted costs;
- Participation: 34% of households booked a bulk waste collection and 22% booked a greenwaste collection; and
- Satisfaction: 76% of households that booked a bulk waste collection preferred Verge Valet.

## 5.5 Flexible Service Model

The City currently offers a limited (3m<sup>3</sup>) on request vergeside bulk hard waste collection service with the option for households to have one skip bin per financial year or substitute this allowance for one lounge suite collection, and a collection of mattresses and white goods.

Only a handful of local governments offer residents a choice of vergeside collection services with the option to use tip passes in place of vergeside collection. For example, the City of Bayswater offers a combination of up to three skip bins or transfer station passes. Residents can opt for up to three 3m<sup>3</sup> bulk bins each financial year for either bulk or greenwaste or up to three self-haul transfer station passes (allows up to 300kg per pass). City of Stirling offers tip passes for residents to dispose of some items free of charge including bulk waste, mattresses and fridges (two of each only), building rubble and clean garden waste, in addition to the bulk hard waste skip bin.

This is also useful for local governments with a large proportion of high density units, such as the City of Newcastle in NSW that offers on-request self-haul vouchers (tip passes) or use of their on request pick-up service. Each household can request two self-haul vouchers or two on request pick-ups over

<sup>2</sup> Western Metropolitan Regional Council, Minutes, 20 May 2021 (CEOAC 03/2021) <https://www.wmrc.wa.gov.au/wp-content/uploads/2021/05/CEOAC-Minutes-with-attachments-210414.pdf>

a 12-month period. The City of Newcastle provides this service to all rateable properties; however residents must actively request the vouchers.

A flexible model requires increased administration in managing bookings. This option could be offered to residents where a tip pass could be better suited to their requirements, such as properties without a verge. Currently properties without a verge in the City are assessed for the best location close by where a skip bin can be placed for their use, or a loose collection is arranged.

The City could provide residents with the option to use a tip pass at Tamala Park instead of their on-request service. It would be expected that the provision of tip passes only would reduce tonnages as there would be many residents that would be unable to self-haul their waste to a disposal facility. This is unlikely to be a popular option with residents.

## 5.6 User Pays Service

Some local governments across Australia with on request services have moved towards a user pays system. The City currently provides for bulk hard waste collection within the refuse charge. It also allows residents to book an additional skip bin, white goods and mattress collections at contractor rates. If residents opt for a second set of bins and pay a second refuse charge this entitles them to a second bulk hard waste suite of collections. As refuse charges are typically included alongside the annual rates, vergeside collections are perceived to be a 'free' service for residents as part of the overall refuse charge. The refuse charge is mostly perceived to be for the use of the bins.

The City could place limitations on the use of the vergeside collection service and allow residents to utilise one on request service per annum, and then offer all additional services on a user pay basis or move to a full user pay system where all residents pay only for the services they require.

A user pay system would allocate the cost of providing the service to the user as they make the booking. This would provide a more equitable service for residents, as residents that do not utilise the vergeside collection service would not be subsidising residents that do use the service. However, a user pay option is generally less popular with residents as the costs for on request services are typically perceived to be higher than if they are included within the refuse charge.

A user pay system allows City of Swan to charge \$50 for any additional bulk waste services beyond their allowance of two bulk vergeside collections included in their rates. Some east coast local governments such as City of Brimbank (Vic) charge \$85/collection, Shellharbour City Council (NSW) charge \$80/collection and Coffs Harbour City Council (NSW) charge \$44/collection. City of Stirling charge \$85 per extra skip bin and the City charges \$107 for an extra skip, \$22.40 for a white good or \$39.90 for a mattress collection. There is more uptake by residents for the skip bin than the other items.

A charged service requires extra administration and the ability to collect and receive the funds prior to or at the time of booking. However, this service type has been shown to reduce uptake by residents and therefore reduces waste.

There are several options for setting up this service which the City would need to consider. If the service is managed by the contractor, the first option would be whether the booking is recorded/processed in their system or the City's system. If managed by the contractor, monthly reports are generally sent to the City displaying all services carried out and the breakdown of the type of service provided. This can make for a transparent reporting/recording system for all parties involved. An accurate reporting system ensures that each household only accesses one bulk waste service.

The City would need to consider how this would be managed if there was a change of tenants/residents during the service year. Services for multi-unit dwellings would also need to be considered. The City may opt to provide a quarterly collection for multi-unit dwellings with a maximum number of skips/collections based on the number of properties in the complex. If the City takes the bookings and processes the fees, they will need to consider payment options (whether to integrate one or multiple payment methods). These would include accepting fees through online payments and/or payment at the City's front desk, and then these would need to be recorded against the property. Depending on the system implemented by the City, differential pricing for multi-unit dwellings may need to be considered.

## 6 Options Evaluation

Talis has identified a number of service options that have potential to advance the current vergeside collection services. To determine the feasibility of implementing such options, Talis has undertaken an assessment of the advantages and disadvantages associated with each option.

### 6.1 Bulk Hard Waste

Below is a description of bulk hard waste service options and an analysis of the advantages and disadvantages of each. It covers the service type on request or scheduled, the way it is collected (contained or uncontained) and the way residents pay for it (in the refuse charge or user pays). The following has been considered:

- Previous service – scheduled, uncontained - charged in refuse charge;
- Current service (BAU) – on request, contained (skip bin/furniture 3m<sup>3</sup>) and additional services (whitegoods and mattresses) - charged in refuse charge;
- On request, contained (skip bin/furniture 3m<sup>3</sup>) charged in refuse charge - user pays additional services (whitegoods and mattresses);
- On request, contained (skip bin/furniture 3m<sup>3</sup>) and additional services (whitegoods and mattresses) – user pays for all services;
- On request, uncontained (2m<sup>3</sup> including furniture) and additional services (whitegoods and mattresses) – charged in refuse charge;
- On request, uncontained (2m<sup>3</sup> including furniture) and additional services (whitegoods and mattresses) – user pays for all services;
- On request & contained (skip bin/furniture) user pays for collection - all other services (whitegoods and mattresses) included in refuse charge; and
- On request – uncontained (2m<sup>3</sup> including furniture) user pays for collection - all other services (whitegoods and mattresses) included in refuse charge.

Table 6-1 and Table 6-2 discuss past and current bulk hard waste collection services. Table 6-3 and Table 6-4 shows advantages and disadvantages of the options.

**Table 6-1: Previous Service**

<b>Previous Service: scheduled – uncontained – charge in refuse charge</b>	
<p>The previous collection service was a scheduled uncontained service. The City and the collection contractor worked together to set collection dates by zone and informed households. Material was placed on the verge by residents during their allocated collection period. Historically, residents were not limited on the volume of material allowed to be put out for collection, though it was supposed to be only 3m<sup>3</sup>, and only set out 10 days prior to the first day of collection. This service type had minimal recovery of recyclables (approximately 4%) mostly due to unsorted material presented to the verge and being compacted upon collection. Also there were fewer collection contractors with facilities to sort compacted materials at the time.</p>	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Operational efficiencies – i.e. optimising collection runs.</li> <li>• Reduce administration services through no booking system being required.</li> <li>• Equal service for every household.</li> <li>• Residents could plan for it.</li> </ul>

**Previous Service: scheduled – uncontained – charge in refuse charge**

**Disadvantages**

- Generates more waste and therefore typically higher cost and low landfill diversion.
- Set schedule/dates means that residents who are travelling/away will not be able to partake in the service.
- Visual amenity affected by numerous properties presenting material at the verge over several weeks.
- Safety and amenity issues associated with scavenging.
- More work for rangers to inform residents that have put material out too early to remove the waste.
- Encourages illegal dumping on verges, often on verges of vacant lots, due to known schedule.
- Confirms public notion that City will remove your junk if you set it out whenever it's on the verge.

**Table 6-2: Current Service**

**Current Service: on request - contained (skip bin 3m<sup>3</sup>) - charge in refuse charge**

The current service provides a 3m<sup>3</sup> skip bin/furniture collection, on request, using hook lift skip trucks for deployment and transfer to the next property with an overhead lift truck to empty the waste from the skip bins. This waste is then transported to the processing plant via the skip waste truck. Residents contact the collection contractor through the City's online booking system on their website or by phoning the collection contractor directly. The charge for the service is within refuse charge which is listed separately in the annual rates.

**Advantages**

- Limits the volume of waste materials.
- Better contains the waste for improved urban amenity and lessens the notion that putting your waste on your verge becomes the City's problem.
- Safer, easier collection for the contractor.
- Reduce waste tonnages with lower participation rate.
- Provides convenient timing for residents.
- Less illegal dumping due to unknown schedule and containment of the waste.
- Generates less waste and therefore less cost incurred by the City for management of waste materials.
- Provides flexibility in service for residents who are unable to self-haul their waste.
- Provides interaction with the resident during booking to provide alternatives for reusable, repairable or recyclable items.
- Bookings can be made online anytime, and by phone during office hours.

**Disadvantages**

- Administration for booking and database management.
- Potential for households to still overflow skip bins, resulting in enforcement/administration to contact residents.

**Current Service: on request - contained (skip bin 3m<sup>3</sup>) - charge in refuse charge**

	<ul style="list-style-type: none"> <li>• Potential for other residents to dispose of waste, including non-compliant waste, in skip bins not allocated to them.</li> <li>• Lack of street frontage to place skip bins, affecting footpaths, parking and placement of other bins.</li> <li>• Less ability to see if non-compliant wastes, such as hazardous materials, have been placed under other items.</li> <li>• Not all residents physically able to lift items into a skip bin.</li> <li>• Skips can be graffitied from time to time and also require upkeep and painting.</li> </ul>
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**Table 6-3: On Request Contained Service Offerings**

**On request – contained (skip bin 3m<sup>3</sup>) – limit to 1 service in refuse charge then user pays**

There is an option to move towards a user pays system for on-request services. Limiting the number of services available to 1 per annum within the refuse charge. Then households pay for additional services such as skips, white goods and mattresses as needed.

**Advantages**

- Only residents that use additional services pay for them, and still provides flexibility for households that require additional services.

**Disadvantages**

- Increases the City’s administration for booking and collecting payment.
- Potential for increase in incidence of illegally dumped waste.
- Disadvantages those that cannot transport the waste to free drop off sites. (white goods)
- Residents have trouble transporting mattresses to the tipping sites.

**On request – contained (skip bin 3m<sup>3</sup>) – user pays all services**

There is an option to move towards a user pays system, particularly with the on-request service provided. The City would need to consider removing the bulk costs from the refuse charge as part of introducing this service. The City would still manage the contract and organise a contracted rate for the residents to access. The City may also consider subsidising some portion of the rates offered.

<b>Advantages</b>	<ul style="list-style-type: none"> <li>• User pays service, only residents that use the service pay for it.</li> <li>• People aware of actual service cost, therefore, think more carefully about whether they use it, therefore reduces waste tonnages.</li> <li>• Fewer vehicle movements required to deliver and service the material.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Residents less likely to be satisfied with ‘paying’ for the service as the actual service cost per household would be apparent and paid by the user rather than subsidised by all households.</li> <li>• Increases the City’s administration for booking and collecting payment.</li> <li>• Potential for increase in incidence of illegally dumped waste.</li> </ul>

**Table 6-4: On Request Uncontained Service Offerings**

<b>On request – uncontained 2m<sup>3</sup> – charge in refuse charge</b>	
<p>This is an alternative on request service that does not require delivery and removal of skip bins. The logistics associated with delivery of bins and having sufficient verge space to place the skip bin may be a barrier to the uptake. An uncontained service can facilitate source separation of items that are recoverable.</p>	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Increases likelihood of material being reused or recovered via scavenging.</li> <li>• Less street frontage and overhead lift/parking clearance required than skip bins.</li> <li>• Can reduce booking waiting periods for residents as more bookings can be taken on any day when compared to skips - as contractors are not required to supply and remove skip bins.</li> <li>• Fewer vehicle movements required to deliver the service.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Administration for booking and database system.</li> <li>• True cost of service may be difficult to project as uptake would be unknown.</li> <li>• Potential for increase incidences of illegally dumped waste or new residents from local governments with scheduled services also presenting waste to the verge.</li> <li>• Collection volumes may be exceeded and may require enforcement (although this can be more closely managed for on-request services).</li> <li>• Confusing for residents, encourages dumping of waste on verge due to notion that “City to clean up”.</li> <li>• Issues may arise if residents don’t get their waste out in the allocated time.</li> </ul>
<b>On request – uncontained 2m<sup>3</sup> – user pays</b>	
<p>An uncontained service can facilitate the source separation of uncompacted items that are recoverable. The materials or items can be stipulated, and residents will be required to separate them on the verge. Residents are given a specific time that materials should be placed on the verge for pick up. Discounts for non-peak booking periods could be provided to encourage a spread of services across the year. The City would need to consider reducing the refuse charge if residents are required to pay for the service.</p>	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Increases likelihood of material being reused or recovered via scavenging.</li> </ul>

	<ul style="list-style-type: none"> <li>• User pays service, only households that use the service pay for it therefore provides more equity in the service.</li> <li>• Less street frontage and overhead lift/parking clearance required than skip bins.</li> <li>• Fewer vehicle movements required to deliver the service.</li> <li>• Can reduce booking waiting periods for residents as more bookings can be taken on any day when compared to skips - as contractors are not required to supply and remove skip bins.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Increases administration for booking and collecting payment.</li> <li>• Potential for incidences of illegally dumped waste or new residents from local governments with scheduled services also presenting waste to the verge.</li> <li>• Collection volumes may be exceeded and may require enforcement (although this can be more closely managed for on-request services).</li> <li>• More risk to community with loose items on verge.</li> <li>• Confusing for residents, encourages dumping of waste on verge due to notion that “City to clean up”.</li> <li>• Issues may arise if residents don’t get their waste out in the allocated time.</li> </ul>

**Table 6-5: User pays for bulk waste services, additional services charged in refuse charge**

<b>On request – contained (skip bin 3m<sup>3</sup>) – user pays, additional items charged in refuse charge</b>	
<p>There is an option to move towards a user pays system for on-request services, then households pay for additional services such as skips, lounges, white goods and mattresses as needed. The City would need to consider removing the bulk costs from the refuse charge as part of introducing this service. The City would still manage the contract and organise a contracted rate for the residents to access. The City may also consider subsidising some portion of the rates offered.</p>	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Only residents that use the services pay for them, and still provides flexibility for households that require additional services.</li> <li>• People aware of actual service cost, therefore, think more carefully about whether they use it, therefore reduces waste tonnages.</li> <li>• Fewer vehicle movements required to deliver and service the material.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Residents less likely to be satisfied with ‘paying’ for the service as the actual service cost per household would be apparent and paid by the user rather than subsidised by all households.</li> <li>• Increases the City’s administration for booking and collecting payment.</li> <li>• Potential for increase in incidence of illegally dumped waste.</li> </ul>
<b>On request – uncontained 2m<sup>3</sup> – user pays, additional items charged in refuse charge</b>	
<p>This service is as described above with the bulk hard waste collected uncontained rather than in a skip.</p>	

<b>Advantages</b>	<ul style="list-style-type: none"> <li>Increases likelihood of material being reused or recovered via scavenging.</li> <li>Less street frontage and overhead lift/parking clearance required than skip bins</li> <li>User pays service, only residents that use the service pay for it.</li> <li>People aware of actual service cost, therefore, think more carefully about whether they use it, therefore reduces waste tonnages.</li> <li>Fewer vehicle movements required to deliver and service the material.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>Increases the City’s administration for booking and collecting payment.</li> <li>Potential for increase in incidence of illegally dumped waste.</li> <li>More risk to community with loose items on verge.</li> <li>Confusing for residents, encourages dumping of waste on verge due to notion that “City to clean up”.</li> </ul>

## 6.2 Greenwaste

Table 6-6 discusses the City’s current greenwaste collection service. Table 6-7 and Table 6-8 provides a description of greenwaste options and provides analysis of the advantages and disadvantages of each. The following has been considered:

- Current service (BAU) – Scheduled, uncontained – charged in refuse charge;
- On request, uncontained 2m<sup>3</sup> limit – charged in refuse charge;
- On request, uncontained 2m<sup>3</sup> limit – user pays;
- On request, contained (skip bin 3m<sup>3</sup>) – charged in refuse charge; and
- On request, contained(skip bin 3m<sup>3</sup>) – users pays.

**Table 6-6: Current Service**

<b>Current Service: uncontained - scheduled – charged in refuse charge</b>	
<p>A scheduled uncontained collection allows residents to dispose of bulk garden organic waste on an allocated date. Households are informed of their collection date and residents present compliant material to the verge. There is no volume limit on what can be presented however the greenwaste must be presented 10 days before collection. The City also provides four tip vouchers per household for up to 500kg of clean greenwaste per voucher which can be dropped at the Wangara Greens Recycling Centre.</p>	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>Operational efficiencies – i.e., no booking system required, optimising collection runs.</li> <li>Reduce administration services through no booking system being required.</li> <li>Equal service for every household.</li> <li>Residents can plan for it.</li> <li>Familiarity of the service.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>Typically generates more waste than on request services and therefore typically higher cost.</li> </ul>

	<ul style="list-style-type: none"> <li>• Visual amenity affected by numerous properties presenting material at the verge over several weeks.</li> <li>• Safety and amenity issues associated with wind-blown materials.</li> <li>• Potential issues near City’s boundary due to different approaches to bulk waste collections between local governments, with potential to result in illegal dumping with persons outside of the City putting bulk waste on City verges.</li> <li>• Not enough verge space at some residences.</li> <li>• Potential for other residents to dispose of waste, including non-compliant waste, on the verge.</li> <li>• Scheduled collection does not allow for seasonal growth and as suburbs are collected at the same time each year there is potential for this to be less utilised consistently by some suburbs due to the slower plant growth.</li> </ul>
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**Table 6-7: On request uncontained service offerings**

<b>On request – uncontained 2m<sup>3</sup> – charged in refuse charge</b>	
<p>There is an option for the City to move the current service to an on request service. An on request uncontained service would provide a flexible service that will allow residents to organise a collection at a convenient time for them. There would be an allowance of 3m<sup>3</sup> for the greenwaste verge collection.</p>	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Limits can be applied to the volume of greenwaste presented on the verge.</li> <li>• Reduce waste tonnages with lower participation rate.</li> <li>• Provides convenient timing for residents.</li> <li>• Provides flexibility in service offering for residents who are unable to self-haul their waste.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Administration for booking and database management.</li> <li>• Potential for households to present more than the volume limit resulting in an increase in enforcement/administration to contact residents.</li> <li>• Potential for other residents to dispose of waste, including non-compliant waste, on the verge.</li> <li>• May not meet customer expectations of collection timing in peak booking periods i.e.: public holidays and seasonal events.</li> <li>• Booking processes may be a barrier for some residents.</li> <li>• Not enough verge space for some residents</li> </ul>
<b>On request – uncontained 2m<sup>3</sup> – user pays</b>	
<p>There is an option to move to a user pays system for on request services. There would be an allowance of 3m<sup>3</sup> for the greenwaste verge collection. This would provide more equity in the service for households that do not use the service as they would not be subsidising households that do. The City would need to consider removing the cost of the current service from the refuse charge before the user pays service could start.</p>	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Only residents that use the services pay for it.</li> </ul>

	<ul style="list-style-type: none"> <li>• Discourages use of the service, therefore reduces waste tonnages.</li> <li>• Fewer vehicle movements required to service the material.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Increases the City’s administration for booking and collecting payment.</li> <li>• True cost of service may be difficult to project as uptake would be unknown.</li> <li>• Potential for increase in incidence of illegally dumped waste.</li> <li>• Other residents may dump their greens on those paying for the service.</li> <li>• Extra waste outside of the 3m<sup>3</sup> allocation may need Ranger compliance services.</li> </ul>

**Table 6-8: On request contained service offerings**

<b>On request – contained (skip bin 3m<sup>3</sup>) – charge in refuse charge</b>	
<p>A contained (skip bin), on request service would provide a flexible service for residents. The City could allow flexibility in the vergeside collection and allow residents to swap bulk hard waste collections for extra greenwaste collections if both verge collection services are on request and contained.</p>	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Limits the volume of waste materials presented.</li> <li>• Generates less waste and therefore less cost incurred by the City for management of waste materials.</li> <li>• Better contains the waste for improved urban amenity.</li> <li>• Provides convenient timing for residents.</li> <li>• Still provides flexibility in service offering for residents who are unable to self-haul their waste.</li> <li>• Can be booked for a time that suits the resident.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Administration for booking and database management.</li> <li>• Potential for households to still overflow skip bins, resulting in an increase in enforcement/administration to contact residents.</li> <li>• Potential for other residents to dispose of waste, including non-compliant waste, in skip bins not allocated to them.</li> <li>• Lack of street frontage to place skip bins, affecting footpaths, parking and placement of other bins.</li> <li>• Harder to see if non-compliant materials have been placed under the greenwaste.</li> <li>• Not all residents physically able to lift items into a skip bin.</li> <li>• Greenwaste pruning may be more favourable in certain seasons creating uneven demand and peak seasons.</li> </ul>
<b>On-request- contained (skip bin 3m<sup>3</sup>) - user pays</b>	
<p>There is an option to move to a user pays system for on-request services, where residents pay for what they require.</p>	

<b>Advantages</b>	<ul style="list-style-type: none"> <li>• User pays service, only households that use the service pay for it therefore provides more equity in the service.</li> <li>• Discourages use of the service, therefore reduces waste tonnages.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Increases the City’s administration for booking and collecting payment.</li> <li>• Potential for increase in incidence of illegally dumped waste.</li> <li>• Not enough verge space at some residences, or clearance for collection vehicles for truck to safely deliver and service the vehicle via hook lift truck.</li> <li>• Not all residents may be physically able to lift items into a skip bin.</li> </ul>

### 6.3 Future Options

Due to increased costs and poor performance in recovery it is expected that local governments across Australia will move away from providing vergeside collection services in the future. To facilitate correct disposal and recovery of household items not suitable for kerbside collection increased community facilities will need to be made available for residents across local governments.

#### 6.3.1 Community Recycling Centre

A CRC will allow the community to safely and efficiently drop off materials for reuse, recycling and disposal. There are numerous benefits associated with the establishment of a CRC, which can include:

- Alignment with the WARR Strategy 2030;
- Alignment with the Waste Hierarchy;
- Resource recovery;
- Reducing environmental impacts by increasing source separation, particularly for problematic wastes, and facilitating the circular economy/ extended producer responsibility;
- Providing the community with additional waste services;
- Potential to reduce illegal dumping;
- Encouraging residents to be responsible for their own waste disposal.
- Deliver useability and operational efficiency through organised design, logical configuration and flow through the various key components; and
- Creating job opportunities both directly and indirectly through the construction and operation of the CRC.

CRCs are typically designed with consideration of the Waste Hierarchy, as discussed in Section 2.4, as a well-designed and efficiently operated CRC can achieve a high degree of source separation of waste materials and maximise the diversion from landfill. The implementation of a CRC could result in improved resource recovery through the operations of a better practice facility.

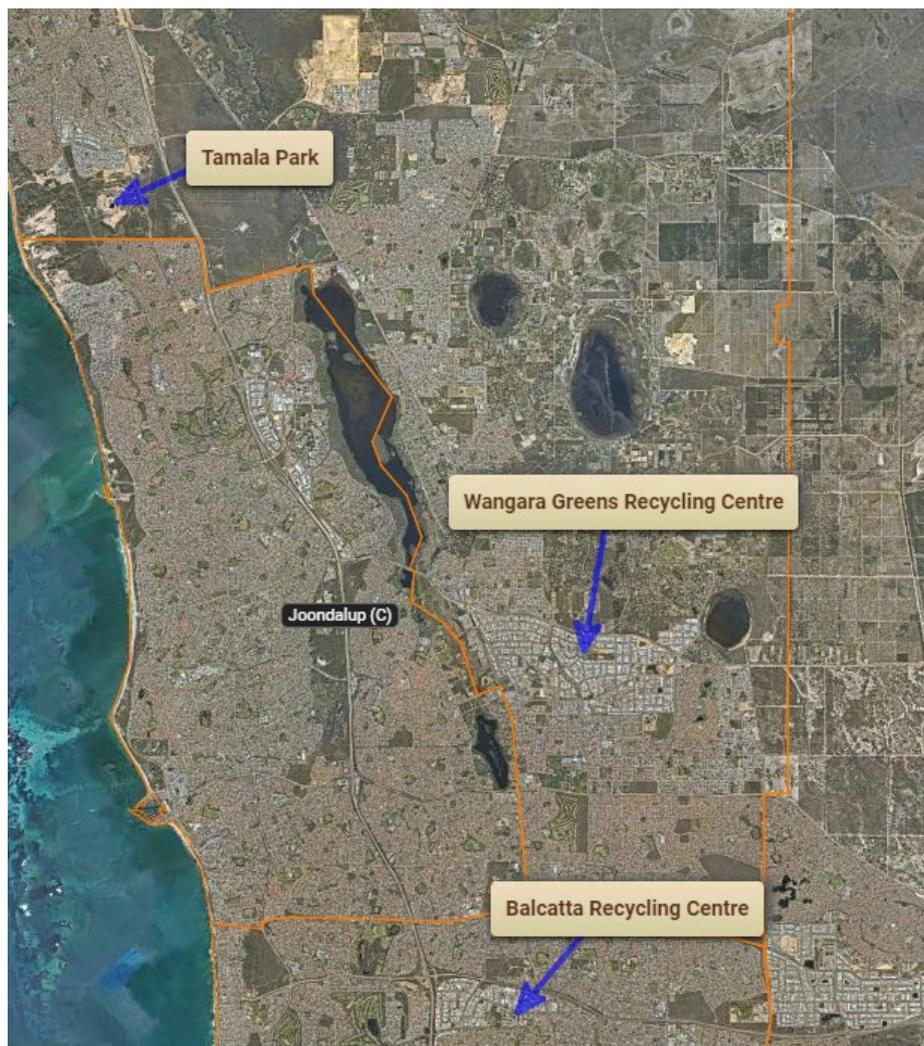
If the City were to progress with the development of a best practice CRC facility, then consideration would need to be given to anticipated costs, as well as the appropriate siting of such a facility. The City could look to develop cost estimates based on a conceptual design of a best practice CRC facility which would assist the City in determining both a suitable location and logical timeframes for construction. A fully integrated facility would potentially cost in the order of \$3,000,000 to \$5,000,000.

Across the Perth metropolitan region, there are a number of CRC facilities owned and operated by local government. Internationally, it has been demonstrated that a well-designed and efficiently

operated CRC can achieve high degree of source separation of waste materials and maximum diversion from landfill.

As discussed in Section 3.3 the City is currently serviced by three CRCs located within 20 minutes of the Joondalup central business district (Figure 6-1) and which are all owned by other entities. A CRC facility, owned and operated by the City, would be well placed to offer services to the City's residents as well as neighbouring local governments such as the City of Wanneroo, which would likely result in improved resource recovery and financial outcomes for all parties. However, if land is limited within the City a regional collaboration with a neighbouring Local Government to develop a City owned and managed CRC could provide an effective solution for waste management. When used strategically, regional collaboration produces positive impacts and strengthens capacity of those involved. Given the current economic environment of limited resources, changes in Government legislation and policies increasing demands on services and complex community expectations, it is important for local governments to look at strategic collaboration and partnerships as ways to respond to these challenges.

If the City were to develop a CRC in the future (solely or in partnership), then the use of this facility could be encouraged and result in a reduced requirement for skip bin collection services. This would provide further cost savings to the City as well as improved resource recovery through the operations of a best practise the CRC facility.



**Figure 6-1: Community Drop off Facilities**

## 7 Collection Options Modelling

This section outlines the modelling undertaken for vergeside bulk hard waste and bulk greenwaste collection services, based on the option evaluation in Section 6.

### 7.1 Bulk Hard Waste Collection Options

Talis shortlisted a number of bulk hard waste collection options to model the expected costs and diversion rate of each of the different service types. Table 7-1 provides a summary of modelled options. Each of the options vary in their service type (scheduled or on request), limitation of the amount residents can have collected (volume reduction), charging arrangement (in refuse charge or user pays) and how bulk waste is presentation to verge (uncontained or skip bin).

**Table 7-1: Summary of shortlisted bulk hard waste collection options**

Collection option	Service Type		Limitation	Charges		Presentation	
	Scheduled	On request	Volume reduction	User pays	In refuse charge	Uncontained	Contained (skip bin)
1a	✓		No limit		✓	✓	
1b		✓			✓		✓
2a		✓	✓	✓			✓
2b		✓	✓	✓	✓		✓
3a		✓	✓		✓	✓	
3b		✓	✓	✓		✓	
4a		✓	✓	✓	✓		✓
4b		✓	✓	✓	✓	✓	

The modelling is based on a projected 60,712 households for the year 2022/23. The household participation rates for each type of collection option will vary depending on whether the service was included within the refuse charge or paid by the user, and if it was a scheduled or on request service.

## 7.2 Bulk Hard Waste Service Modelling

The shortlisted bulk hard waste collection options were modelled to show how each option compares in costs to the current service. The results are shown in Table 7-2.

**Table 7-2: Waste diversion and costs for bulk hard waste collection options (2022/23)**

Collection Option		Total TPA	% Change in Tonnes from BAU	Cost / Annum	Change in Cost Compared to BAU	Estimated Household Participation Rate
1a	Past service, uncontained scheduled service – in refuse charge	9,147		\$3,568,028	1,312,218	61%
1b	<b>BAU</b> - Current service - on request & contained (skip bin 3m <sup>3</sup> ) with additional items (whitegoods and mattresses) – in refuse charge	4,860		\$2,255,810		26%
2a	On request & contained (skip bin 3m <sup>3</sup> ) – user pays for skip bin and additional items	3,365	-31%	\$90,068	-\$2,165,742	18%
2b	On request & contained (skip bin 3m <sup>3</sup> ) charged in refuse charge - user pays for additional items	4,860	0%	\$1,775,926	-\$479,884	26%
3a	On request – 1 uncontained 2m <sup>3</sup> and additional items - in refuse charge	6,533	34%	\$2,921,042	\$665,232	40%
3b	On request – 1 uncontained 2m <sup>3</sup> and additional items- user pays	3,266	-33%	\$90,068	-\$2,165,742	20%
4a	On request & contained (skip bin 3m <sup>3</sup> ) user pays for skip bin – additional items included in refuse charge	3,738	-23%	\$569,952	-\$1,685,858	20%
4b	On request – uncontained 2m <sup>3</sup> user pays for collection - additional items included in refuse charge	4,083	-16%	\$569,952	-\$1,685,858	25%

If the City continues to provide a bulk waste collection service in its current form, it is anticipated that there would be approximately 4,860 tonnes of bulk skip waste requiring collection in 2022/23. This would cost the City an estimated \$2,255,810 in collection and disposal, equating to a cost per

household of \$37.16. When compared to the scheduled and uncontained service cost in option 1a, there is a saving of an estimated \$1,312,218 for collection and processing costs.

Of the options modelled, the least costly options were 2a and 3b with an estimated \$90,068 in overhead costs for providing the service. For both of these options the majority of the costs would be removed from the refuse charge and only those households that require either a skip bin or loose verge collection for bulk junk waste would pay for it. The City would still have the overheads such as administration booking systems and customer service costs associated with either of these services. It is expected that option 2a and 3b would also result in the highest overall reduction in waste to landfill as household use of the service would decrease. These options also have the potential to increase illegal dumping events as residents that don't want to pay will potentially find other ways to dispose of their bulk waste for free.

Option 2b would provide an estimated saving to the City of \$479,884 compared to the current service (option 1b), as households would pay for collection of additional items (mattresses and whitegoods). The cost per household is \$29.25. This option would also move residents towards a user pays service if the City wanted to transition to full user pays system in the future. As the skip bin costs remain within the refuse charge it is not expected that there would be a change in the number of skip bookings.

Option 3a, an on request uncontained service shows an increase in costs of \$665,232 compared with the current service (option 1b), and a cost per household of \$48.11. This option has the potential to increase the volume of waste to landfill. Skip bins often create perceived barriers for residents who feel they need to have enough waste to justify ordering a skip, have room for it on the verge, have the ability to lift bulk waste into the bin or that they are unsightly, therefore it is expected that moving to a service where residents put loose material on the verge would likely bring with it increased incentive for residents to use that service. In addition there is potential for residents to perceive that they can present unlimited volumes of waste to the verge, which is what led the City to conduct the 2012 bulk waste review due to the extremely high volumes of bulk hard waste the City was collecting with the past service (option 1a).

For options 4a and 4b residents would pay for either an on request skip bin or loose verge collection with all other items (mattresses and whitegoods) kept within the refuse charge. Both of these options would provide decreased costs for the City as it is likely that only residents that have a need to get rid of bulk junk waste would pay for it, however these options also have potential to see illegal dumping events increase.

Options 2a, 3b, 4a and 4b will all require the removal of bulk waste charges from within the refuse charge as residents will pay for all or part of the service, which would see only those residents that use the service incur the cost, however based on resident feedback and responses to previous surveys undertaken by the City, these options are expected to be unpopular with residents.

Table 7-3 gives a summary of the cost per household and cost per service for each of the options.

**Table 7-3: Modelled bulk waste charges (2022/23)**

Service Type	Option	Cost/Household	Cost/Service
Scheduled	1a	\$58.77	\$96.34
Contained (skip bin 3m <sup>3</sup> ) and on request	1b	\$37.16	\$142.91
	2a	\$1.48	\$8.24

	2b	\$29.25	\$112.51
	4a	\$9.39	\$46.94
Uncontained 2m <sup>3</sup> (loose on verge) and on request	3a	\$48.11	\$120.28
	3b	\$1.48	\$7.42
	4b	\$9.39	\$37.55

### 7.3 Bulk Greenwaste Collection Options

A number of bulk greenwaste collection service options were shortlisted to model the expected costs and diversion rates. Each of the service options vary in their service type (scheduled or on request), limitation, charging arrangement (in refuse charge or user pays) and receptacle (uncontained or skip bin).

The modelling is based on a projected 60,712 households for the year 2022/23. The household participation rate for each option is expected to vary depending on whether the service is user pays or included within the refuse charge, and if it was a scheduled or on request service. Table 7-4 provides a summary of modelled options.

**Table 7-4: Summary of shortlisted bulk greenwaste collection options**

Collection option		Service type		Limitation	Charges		Receptacle	
		Scheduled	On request	Volume reduction	User pays	In refuse charge	Uncontained	Contained (skip bin)
1	BAU - Current service - uncontained scheduled service – in refuse charge	✓				✓	✓	
2a	On request – uncontained 2m <sup>3</sup> , in refuse charge		✓			✓	✓	
2b	On request – uncontained 2m <sup>3</sup> , user pays		✓		✓		✓	
3a	On request -contained (skip bin 3m <sup>3</sup> ) – in refuse charge		✓	✓		✓		✓
3b	On request -contained (skip bin 3m <sup>3</sup> ) – user pays		✓	✓	✓			✓

## 7.4 Bulk Greenwaste Service Modelling

The shortlisted greenwaste collection options were modelled to show how they compare in costs to the current service (BAU). The results are shown in Table 7-5.

**Table 7-5: Modelled costs for greenwaste collection options (2022/23)**

	Collection Option	Total TPA	% Change in Tonnes from BAU	Cost / Annum	Change in Cost Compared to BAU	Estimated Household Participation Rate
1	BAU - Current service - uncontained scheduled service – in refuse charge	5,227		\$1,042,787		70%
2a	On request – uncontained 2m <sup>3</sup> , in refuse charge	2,987	-43%	\$1,349,736	\$306,950	40%
2b	On request – uncontained 2m <sup>3</sup> , user pays	1,867	-64%	\$90,068	-\$952,719	25%
3a	On request -contained (skip bin 3m <sup>3</sup> ) – in refuse charge	2,987	-43%	\$1,362,000	\$319,214	40%
3b	On request -contained (skip bin 3m <sup>3</sup> ) – user pays	1,867	-64%	\$90,068	-\$952,719	25%

If the City continued to provide a bulk greenwaste collection service in its current form, there would be an estimated 5,277 tonnes of bulk greenwaste in 2022/23 and cost the City approximately \$1,042,787 in collection and disposal, equating to a cost per household of \$17.18.

Of the options the least costly option modelled was options are 2b and 3b with an estimated \$90,068 in overhead costs for providing the service. For both of these options the majority of the costs would be removed from the refuse charge and only those households that require either a skip bin or loose verge collection for greenwaste collection would pay for it. The City would still have administration booking systems and customer service costs associated with either of these services. It is expected that option 2b and 3b would also result reduced greenwaste tonnages as household use of the service would decrease. However, these options have the potential for residents to put their bulky green waste in the garden organics bin and to increase illegal dumping events as residents that don't want to pay will potentially find other ways to dispose of their bulk greenwaste for free.

The costliest option was option 2a the on request uncontained service at \$1,349,746, equating to a cost per household of \$22.23. This is due to the increased costs associated with on request collection of loose greenwaste on the verge. The participation in this service is expected to be slightly higher than the other options, as there is slightly more incentive for households to use this service as costs are in the refuse charge and there are none of the perceived issues the comes with the use of skip bins.

Option 3a costs at \$1,362,000 are slightly higher than option 2a, with an estimated cost per household of \$22.43. Moving to the use of a skip bin for greenwaste will provide a limit on the amount of bulk greenwaste that can be presented to the verge, which would likely result in in an estimated 43% decrease in greenwaste tonnes/annum when compared to the current BAU system.

Table 7-6 gives a summary of the cost per household and cost per service for each of the options.

**Table 7-6: Modelled greenwaste charges (2022/23)**

Service	Option	Cost/Household	Cost/Service
Scheduled - Current Service	1	\$17.18	\$24.54
Uncontained 2m <sup>2</sup> (on verge) and on request	2a	\$22.23	\$55.58
	2b	\$1.48	\$5.93
Contained (skip bin 3m <sup>3</sup> )	3a	\$22.43	\$56.08
	3b	\$1.48	\$5.93

## 8 Contractual Considerations

The City should align the contract considerations with the policy objectives, education messages and operational considerations. Some contractual considerations include:

- Duration of Contract;
- Services to be provided by the contractor such as leaflet drops for non-compliance, collection, sorting, material recovery or disposal and recovery rate target;
- Timing of the service, number of collections to be provided each year, materials and collection limit;
- Management arrangements for priority materials (hazardous, metals, cardboard, organics, timber, white goods and e-waste at a minimum);
- Key performance indicators (KPIs) for diversion rates, service data collection, analysis and reporting service costs;
- Innovation in service delivery, including working with charity groups;
- Encourage the identification of other local management options for different materials through a phone or internet-based pre-assessment before booking a collection;
- Specify whether local government or contractor is responsible for providing information to residents about the service, booking arrangements or timing, community education measures, enforcement activities and post collection clean-up;
- Specify provision for a mechanism to record and deal with residents' complaints/positive feedback;
- Consider performance payments to the contractor if KPIs are exceeded and penalties if they aren't reached;
- Requirements to clean up spills and breakages; and
- Provision of summary performance data reporting that includes:
  - Number of properties serviced;
  - Presentation rates;
  - Number of collections per year;
  - Quantity of hard waste collected (tonnes);
  - Average quantity of hard waste per residential unit (tonnes);
  - Quantity of hard waste diverted from landfill (tonnes);
  - Percentage diversion from landfill;
  - Cost of providing annual service;
  - Average cost per rate paying household; and
  - Cost per collection.

Key points to specify under the contract should include:

- Contractor being responsible for the collection of all household bulky waste from households within the local government;
- How the contractor is to invoice local government, including additional or futile services;
- Who is responsible for communications with residents;
- Whether the contract includes the collection of bulky waste from commercial premises or civic offices at a separate rate;

- Whether the contract includes collection of illegally dumped material at a separate rate, and maximum service response times; and
- The contractor is responsible for collection and processing of all material that is placed out and should arrange appropriate safe collection, storage and handling of hazardous wastes.

### **8.1 Apartment blocks**

The Contractor should be required to collect all compliant material presented at apartment blocks. Depending on the policy that is in place a differential rate may be provided for apartment block collections and an appropriate location for safe collection of materials may need to be determined. A differential rate would only apply for a user pays service and may be determined based on a single service charge for the entire apartment block, rather than charging each unit individually. For example a monthly or quarterly service and rate may be more appropriate depending on the size of the block.

### **8.2 Illegal dumping**

Illegal dumping, of bulk waste material, or any illegally dumped waste, could be included in the contract as an additional service charged at the standard service rate. The Contractor should be required to photograph and record any details of the material presented and mark the collection against the property where the material was collected. This should be reported to the local government for further investigation or management.

### **8.3 Futile services**

A contractual consideration is who is responsible for the cost of futile services. For example:

- If residents request a service but don't present the material the contractor should photograph the vergeside, time and date stamped, and the record placed against the property; and
- If residents place material out, but not in the correct location the resident could be required to place the material at the correct location and a re-visit may be considered at cost to the local government or resident if there is the option to purchase additional services.

## 9 Recommendations

The bulk hard waste modelling indicates that the City would find substantial savings if it changed to user pays services, where households pay for the bulk hard waste collections they require. The user pays options would likely result in a reduction in bulk waste to landfill, mostly due to the decrease in use of the services by residents. However, they introduce a range of other perception, behaviour change and potential illegal dumping issues, and based on resident feedback this may not be the most desired option by residents, therefore options 2a, 3b and 4a have been ruled out for this reason.

The uncontained on request services are only slightly more expensive than the skip based services, and they also they introduce behaviour change and potential illegal dumping issues therefore options 3a, and 4b are also not considered.

If the City adopted option 2b the total service cost would be similar to BAU, however the City would reduce the volume of waste to landfill. This option would also make residents more familiar with the user pays service if the City decided to transition to a full user pays system in the future. Therefore Talis recommends that the City:

- For bulk hard waste considers providing one skip bin collection per household each year within the refuse charge and all additional services including extra skip bin, mattresses and whitegoods become a user pays service as per option 2b;
- Engages a contractor that optimises recovery of recyclable materials for bulk hard waste;
- Investigates the development of a CRC within the City to increase resource recovery, provide the community with additional waste services and reduce environmental impacts; and
- Consider the issues raised in Section 8 Contractual Considerations section of this report to manage the implementation of future proposed services.

For bulk greenwaste the modelling indicates that moving to a user pays, on request contained service would provide the most benefit to the City. As this is a charged service most of the costs would be absorbed by the user of the service and households could be offered multiple services each year. However, this is also not likely to be a popular option with residents therefore Talis recommends that the City considers moving to an on request and contained system with costs within the refuse charge. The cost for this service is higher than current BAU service, however it is expected to reduce the volume of bulk greenwaste per annum.

# APPENDIX A

## Table of Assumptions

### Bulk Hard Waste Assumptions

Factor	Input	Source
CPI	2.5%	Department of Treasury forecast
Adopted growth rate	0.5%	Forecast Id
Number of households	60,712	City's data (2022/23)
Overheads (admin & booking systems)	\$90,068	City's data (2022/23)
Skip bin / furniture collection services	15,786	City's data (2022/23)
Skip bin / furniture tonnages	4,860	City's data (2022/23)
Collection cost per skip/furniture	\$47.43	City's data (2022/23)
Processing cost per skip/furniture	\$46.42	City's data (2022/23)
Mattresses collection and processing costs	\$306,013.00	City's budget data (2022/23)
Whitegoods collection and processing costs	\$173,871.00	City's budget data (2022/23)
Scheduled collection service - cost per tonne	\$177.00	Based on current market rates from comparable councils
Uncontained and on request collection - cost per service	\$47.83	Based on current market rates from historic contracts
Processing - cost per tonne	\$150.76	Based on current market rates from comparable councils
Resident Participation Mattress and white goods collection (% of services)	100%	Assumption - residents' use of mattress and whitegoods collection services would not change as it is already used as an 'as needed' basis
Participation rate - past scheduled service	61%	Based on City data (2015/16) (collection services at 33,712 in 2015/16 divided population in 2015/16 of 55,631)

Factor	Input	Source
Household participation rate - BAU - current service - on request & contained (skip bin) with additional items – charge in rates (% of households)	26%	City’s data
Household participation rate - on request & contained (skip bin) – user pays for skip bin and all additional items (% of households)	18%	Assumed – households significantly less likely to participate in service if they have to pay
Household participation rate - on request & contained - reduced service to 1 uncontained (skip bin), then user pays for all additional items (% of households)	26%	Assumed – no change to household participation as cost for skip still in refuse charge
Household participation rate - on request – 1 uncontained 2m <sup>3</sup> limit and additional 2 items – in refuse charge (% of households)	40%	Assumed – residents likely to participate in the service more when cost in the refuse charge and not have to worry about perceived difficulties associated with skip bin
Household participation rate - on request – 1 uncontained 2m <sup>3</sup> and 2 additional items- user pays (% of households)	20%	Assumed – residents likely to use service less than BAU, but will have slightly more incentive to participate in the user pays service when a skip bin is not involved
Household participation rate - on request & contained (skip bin) user pays for skip bin all other collections included in refuse charge (% of households)	20%	Assumed – residents less likely to participate in service if they have to pay
Household participation rate - on request – uncontained user pays for collection other additional items included in refuse charge (% of households)	25%	Assumed – residents have slightly more incentive to participate in the user pays service when a skip bin is not involved

### Bulk Greenwaste Assumptions

Factor	Input	Source
CPI	2.5%	Department of Treasury forecast
Adopted Growth Rate	0.5%	Forecast Id
Greenwaste Tonnages	5,227	City’s Waste Data (2022/23)

Factor	Input	Source
Number of households	60,712	City's data (2022/23)
Overheads (admin & booking systems)	\$90,068.00	City's data (2022/23)
Greenwaste Recovery Rate	100%	City's data
Greenwaste scheduled collection cost	\$163.40	Based on market rates from comparable councils
Greenwaste Processing Cost	\$36.10	Based on market rates from comparable councils
On request, skip bin 3m <sup>3</sup> collection cost – based on bulk hard waste	\$47.43	Based on market rates from historic contracts
On request, uncontained 2m <sup>3</sup> collection cost	\$47.83	Based market rates from comparable councils
Participation rate - on request and uncontained (% of households)	40%	Assumption – residents less inclined to use on request services unless needed
Participation rate – uncontained and user pays (% of households)	25%	Assumption –residents less inclined to book and pay for the service unless really needed – particularly if they have a garden organics bin
Participation rate - on request & contained - charged in refuse charge (% of households)	40%	Assumption – residents tend to use this service slightly more than user pay as they perceive it to be at no cost for when in refuse charge, but lower participation from the need to book a service
Participation rate - contained & user pays (% of households)	25%	Assumption – residents less likely to use service unless really needed as they would have to pay for service and have skip on verge - particularly when the have a garden organics bin

## APPENDIX B

### Bulk Waste Composition

Material	Proportion of materials (by weight)	CoJ Projected Tonnes for Collection 2020/21 (based on current contained service)	Material Recoverable	Recycling		Reuse		Total Material for Recovery
				%	tonnes	%	tonnes	
Timber	15.4%	731	Yes	75%	549			549
General waste	18.4%	874	Partially			10%	87	87
E-waste	8.7%	413	Yes	100%	413			413
Furniture	35%	1662	Partially			30%	499	499
Scrap metal	4.8%	228	Yes	100%	228			228
Cardboard	3.6%	171	Yes	100%	171			171
Carpet	4.5%	214	-					0
Plastics	5.9%	280	Yes			30%	84	84
Glass	0.9%	43	-					0
Building waste	2.2%	104	-					0
Hazardous	0.6%	28	-					0
<b>Total</b>	<b>100%</b>	<b>4749</b>	<b>-</b>		<b>1361</b>		<b>670</b>	<b>2031 (43%)</b>

Note: Composition based on Southern Sydney Regional Organisation of Councils (2014<sup>3</sup>)

<sup>3</sup> Source: APC Waste Consultants (2014), SSROC Regional Report, Audit of bulky clean-up waste, adjusted to remove mattresses, garden organics and other materials which are collected separately in the City of Joondalup.



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