Bulk Waste Review

Waste Services

April 2022

City of Wanneroo

Document Control				
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Contents

Executive Summary

On 21 August 2018, Council considered Item No AS02-08/18: Service Delivery Review – Waste Services at its Ordinary Council Meeting, and resolved in part:

1. RECEIVES the "Waste Services Service Delivery Review 2018 – Report";
2. ENDORSES the implementation of the Draft "Waste Services Service Delivery Review 2018 – Transition Plan"

Since then, Administration has made progress within Phase 1 of the Transition Plan, with the review and implementation of actions for kerbside domestic services; commencing a third kerbside bin for separate collection of garden organic waste in June 2021.

The focus now is to continue delivery of the objectives outlined in Phase 1, specifically, a review of Bulk Waste services and the options available to the City to move from the current scheduled vergeside services, to a pre-booked vergeside service model.

The overall approach used to develop the Bulk Waste review is summarised below:

- Stakeholder engagement – discussions have taken place with key internal and external stakeholders;
- Inclusion of previous community consultation in the development of options;
- Research and analysis of various other Western Australian local government practices; and
- Thorough modelling of the costs, advantages and disadvantages of the options identified.

The review identified that the City's existing Bulk Waste service does not reflect the Waste Authority's Vergeside Better Practice principles, and does not align to the objectives of the State Waste Strategy. In addition to the City's obligation to meet the targets of the State Waste Strategy, the City's continued growth applies pressure to the current service delivery method.

This review considered the pre-booked Bulk Waste collection services offered by the City of Joondalup, City of Stirling, City of Swan and the Western Metropolitan Region Council. This research informed the options that are assessed within this report:

- Option 1 – Scheduled verge collection (BAU)
- Option 2 – Pre-booked junk collection via skip bin (& pre-booked recyclables verge collection)
- Option 3 – Pre-booked verge collection (with size restrictions)
- Option 4 – Pre-booked hybrid collection (Option 1 and Option 2)

Comprehensive financial modelling has been carried out for each option. Option 3 provides the greatest cost saving relative to BAU, as demonstrated below:

Total Service Cost		Option 1	Option 2	Option 3	Option 4
2023/24	Net Expense	$ 4,534,439	$ 4,378,589	$ 3,064,468	$ $4,001,705
	Cost Saving	*$ -*	*$ 155,850*	*$ 1,469,971*	*$ 532,733*
	% Cost Saving	**0**	**3**	**32**	**12**
2024/25	Net Expense	$ 4,740,532	$ 4,434,247	$ 3,068,391	$ 4,020,428
	Cost Saving	*$ -*	*$ 306,285*	*$ 1,672,141*	*$ 720,103*
	% Cost Saving	**0**	**6**	**35**	**15**
2025/26	Net Expense	$ 4,963,548	$ 4,498,508	$ 3,082,062	$ 4,034,071
	Cost Saving	*$ -*	*$ 465,041*	*$ 1,881,486*	*$ 929,476*
	% Cost Saving	**0**	**9**	**38**	**19**

Additionally, all service options have been analysed to detail the advantages and disadvantages each would provide to the City, community and environment if implemented. Option 3 has been found to provide the most benefit in terms of visual amenity, ease of service delivery, achieving Waste Strategy objectives, safety, and customer satisfaction.

The recommended pre-booked bulk verge collection service, as described in Option 3, aligns well with the Waste Services Transition Plan, the City's Waste Plan, the City's Strategic Community Plan, the State Waste Strategy, and adheres to the Waste Authority's Vergeside Better Practice guidelines.

It should be noted that waste is intertwined and the different types of waste collection services have an effect on the other collection services. For example, the introduction of the lime green-lidded garden organics bin has decreased volumes of green waste collected via the red-lidded general waste bins, the Bulk Green Waste collection service and at the Wangara Greens Recycling Facility.

To support the management of the Bulk Waste collection services now and into the future, it is therefore recommended that a feasibility study be undertaken for the expansion and development of Community Drop-Off services throughout the City. Investigating the expansion of the City's Community Drop-Off services aligns with the priorities identified in the Waste Services Transition Plan and the Waste Plan 2020 – 2025.

1 Introduction

1.1 Background

On 21 August 2018, a report was brought before Council on the outcome of a Service Delivery Review of the City of Wanneroo's (the City) waste management services. Accordingly, it was resolved, in part, that Council:

> 2. ENDORSES the implementation of the Draft "Waste Services Service Delivery Review 2018 – Transition Plan"

The Waste Services Service Delivery Review 2018 – Transition Plan (Transition Plan), is a summarised version of a wider strategic and operational infrastructure framework (refer **Appendix 1**). The Transition Plan will ensure that all of the City's waste services provide optimum services for the community, maximise resource recovery, minimise costs and cope with the expected population growth for the foreseeable future.

The Transition Plan defines three transition phases as a project pathway towards the City's preferred waste management outcomes for the future. Within Phase 1, the Transition Plan suggests that the City will implement pre-booked collection services for Bulk Junk Waste.

This review of the City's Bulk Waste collection services has been undertaken with a view to move to a pre-booked collection service for both Bulk Junk and Bulk Green Waste. And to further support Bulk Waste vergeside services through development of Community Drop-Off sites.

1.2 Scope

The scope of this review includes the processes and services involved in the delivery of Bulk Waste collection services within the City of Wanneroo.

1.3 Purpose

The purpose of this review is to identify the optimal pre-booked Bulk Waste collection method for the community; one that is safe and operationally practical, and provides for a financial and environmentally sustainable approach now and in the long term.

2 Current Services

The current Bulk Waste services available to City residents include:

- One scheduled vergeside bulk junk collection per year;
- One scheduled vergeside bulk green waste collection per year;
- Four green waste drop-off vouchers for Wangara Greens Recycling Facility (WGRF);
- Recyclables drop-off voucher (unlimited use) for WGRF; and
- Annual community drop-off event.

2.1 Vergeside Bulk Collections

The vergeside bulk collection service involves residents placing their unwanted household "junk" and large green waste items outside on the verge prior to their scheduled collection date. Junk items include bulk cardboard, mattresses, stoves and other whitegoods, steel, and furniture. Green waste items include tree and shrub cuttings, stumps and logs, and untreated timber up to 1.5 metres in length and 300mm in diameter. The City delivers this service in-house and operates its own fleet of seven rear-loading compactor trucks, five skid steers and six trailers, using 13 operators.

Bulk green waste collections are scheduled throughout the City over 21 weeks, January to May. The collected green waste is transferred through the WGRF, and transported and processed by Western Tree Recyclers. The City collects an average of 3,500 tonnes of bulk green waste each year from

the vergeside, and is 100% recycled. Bulk green waste volumes are expected to reduce by 10-15% with the introduction of the third kerbside bin for garden organics.

Bulk junk collections are currently scheduled throughout the City over 29 weeks, May to December. Since 2019, the City has disposed of bulk junk waste via a recycling processor, Suez Recycling and Recovery, at their Landsdale facility. The City utilises MRC contract 13/147 for the Provision of Recycling and Pick-up and Drop-off of Mattresses whereby the contractor collects and processes the mattresses for recycling. Where time allows, any whitegoods and scrap metals identified (prior to full area collection) are separated from the main waste mass, and transported by the City's own fleet to Metal West Recyclers for recycling.

The City recovers 43% of all bulk junk materials, which equates to more than 3,200 tonnes of bulk junk materials diverted from landfill per year and an average of 8,612 mattresses recycled annually.

2.2 Community Drop-Off

2.2.1 Wangara Greens Recycling Facility (WGRF)

Residents can also dispose of bulky green waste at the WGRF, which is owned and operated by the City. The green waste is removed from site by Western Tree Recyclers and processed into shredded green waste, which is made available to residents.

The WGRF also provides for drop-off of some bulky recyclables, including scrap metals, cardboard and polystyrene. It is expected that the Wangara site, currently utilised primarily for the drop-off of bulky green waste, will be developed more fully as one of the City's Community Drop-Off sites. Green waste will be only one of the many waste types received at the site, post redevelopment.

2.2.2 Community Drop-Off Event

The City runs an annual drop-off event at Ashby Operations Centre for e-waste, tyres, textiles and cardboard. The event targets problematic waste items that should not be disposed of via kerbside bins or that need to be taken to a specialised drop-off location for recycling. 1,030 residents attended this popular event in 2022. Since 2018, the City has included the opportunity for residents to drop off a maximum of four tyres per household in a successful effort to reduce the impact of illegally dumped tyres on City managed land. In 2022, a total of 1,300 tyres were responsibly dropped off for disposal.

2.2.3 Non-City Community Drop-Off Sites

The City's residents have access to Tamala Park and the Recycling Centre Balcatta to self-haul and dispose of recyclable items such as household hazardous waste, e-waste, cardboard and whitegoods at no cost. Disposal costs apply to dispose of mattresses and general household junk.

In line with Phase 2 of the City's Transition Plan, Community Drop-Off sites will be developed throughout the City, to allow residents the opportunity to dispose their bulky waste consistently throughout the year, by their own means. The final number and placement of drop-off sites will be determined dependent upon the requirements of residents throughout the City. The aim of Community Drop-Off sites is to effectively and efficiently improve waste service delivery and, over time, phase out vergeside collections once the take-up rate of the drop-off sites increases sufficiently to deal with most bulky wastes.

3 Strategic Alignment

3.1 Strategic Community Plan 2021-2031

This review aligns with the following objectives within the Strategic Community Plan 2021 – 2031:

- ***Goal 4:*** *A sustainable City that balances the relationship between urban growth and the environment*

  Priority 4.4: Manage waste and its impacts.

- ***Goal 5:*** *A well-planned, safe and resilient City that is easy to travel around and provides a connection between people and places.*

  Priority 5.1: Develop to meet current need and future growth.

- ***Goal 6:*** *A future focused City that advocates, engages and partners to progress the priorities of the community.*

  Priority 6.4: Understand our stakeholders and their needs.

- ***Goal 7:*** *A well-governed and managed City that makes informed decisions, provides strong community leadership and valued customer focused services.*

  Priority 7.1: Clear direction and decision making.

  Priority 7.3: Anticipate and adapt quickly to change.

  Priority 7.5: Customer focused information and services.

3.2 Waste Strategy

In February 2019, the Western Australian (WA) Government released the *Waste Avoidance and Resource Recovery Strategy 2030* (State Waste Strategy). The State Waste Strategy aims to reduce waste generation by 20% and increase material recovery to 75% by 2030. The City's *Waste Plan 2020 – 2025* is aligned with the State's Waste Strategy.

4 Legislation and Guidance

4.1 City Drivers

- Strategic Community Plan 2021 – 2031;
- Corporate Business Plan 2021/22 – 2024/25;
- Waste Plan 2020 – 2025;
- Waste Management Policy; and
- Waste Local Law 2016.

4.2 Western Australian Legislation

- Waste Avoidance and Resource Recovery Strategy 2030;
- Waste Avoidance and Resource Recovery (WARR) Act 2007;
- WARR Levy Act 2007;
- WARR Regulations 2008;
- WARR Levy Regulations 2008;
- Environmental Protection Act 1986;
- Environmental Protection Biodiversity Conservation Act 2016; and
- Public Health Act 2016.

The *Waste Avoidance and Resource Recovery Strategy 2030* provides a long-term strategy for the state, for the continuous improvement of waste management, benchmarked against best practice. It includes targets for waste avoidance, resource recovery and environmental protection.

The State Waste Strategy's overall objectives and state targets are illustrated below:

Figure 1: State Waste Strategy Targets

Avoid Western Australians generate less waste.	Recover Western Australians recover more value and resources from waste.	Protect Western Australians protect the environment by managing waste responsibly.
• 2025 – 10% reduction in waste generation per capita • 2030 – 20% reduction in waste generation per capita	• From 2020 – Recover energy only from residual waste • 2025 – Increase material recovery to 70% • 2030 – Increase material recovery to 75%	• 2030 – No more than 15% of waste generated in Perth and Peel regions is landfilled • 2030 – All waste is mangaged and/or disposed to better practice facilities

A guiding principle of the State Waste Strategy is the waste management hierarchy. Governments across Australia commonly adopt the waste management hierarchy as the ideal structure for moving towards sustainable resource management.

Figure 2: Waste Management Hierarchy

The City's current method for handling residents' bulk junk does not encourage behaviours aligned to the waste management hierarchy. During bulk junk collections, waste is placed on the verge with no material separation (largely without consideration given to recyclability or reusability), or limitations to the size of the pile. This 'bring out your dead' method is also not conducive to the overall objectives of the State Waste Strategy to *"Avoid, Recover, Protect".*

4.3 Better Practice Guidelines

In March 2022, the Waste Authority released *Guidelines for local government vergeside and drop-off services - Better practice principles* (Vergeside Better Practice) to guide local governments in delivering high performing services.

The Vergeside Better Practice considers both vergeside and drop-off services in the management of bulk waste, and highlights that provision of quality drop-off services may reduce the need for

vergeside services. An increase in more 'contemporary' service offerings by local governments is also recognised. The characteristics of these services include:

- A higher focus on resource recovery;
- More restrictions on accepted materials;
- Shorter presentation/servicing periods;
- Higher levels of source separation; and
- Often adopt a pre-booked service approach.

The Vergeside Better Practice provides guidelines and benchmarks for designing a better practice vergeside service, including:

Service Design	Benchmark
Annual service allocation	Mixed hard waste – **maximum of three cubic metres** of allocation per year per household (regardless of whether a service is offered via skip bins or via
Presentation period	Scheduled service – better practice **five days or less**. Pre-booked service – better practice **three days or less**.
Servicing period	Scheduled service – better practice **four days or less**. Pre-booked service – better practice **less than three days**.
Source separation	Hard waste – **provide other source-separated services** for priority wastes, such as white goods (fridges and freezers), mattresses and e-waste. Garden organics – garden organics separate from other collections.
Price signals	User-pays service used in the design of a local government's vergeside collection service, when **extra hard-waste collections** are requested above annual service allocation.
Communications and engagement	Regularly inform households about how to use the service properly and **alternative reuse options**
Processing	Hard waste – **50% recovery** from all processed hard-waste material and separated waste. Garden organics – **90% recovery**
Data	**Data collected** as part of a local government's overall waste and recycling data collection activities.

Administration considers that the City has an opportunity to deliver a better practice service model that achieves the benchmarks defined above, primarily through:

- Increased control over the amount of time waste is presented for collection.
  - Short presentation and service periods can discourage unwanted behaviours associated with the current service, such as systematic scavenging and illegal dumping. These behaviours affect service costs, customer satisfaction and may present safety and environmental risks.
  - Short presentation will help maintain the visual amenity of the City's environment.

- Increased material separation.
  Source separated waste streams are recovered more effectively and at a lower cost than mixed waste. Items such as whitegoods, mattresses, e-waste and metals can be recycled, and when separated, recovery of these items can be prioritised.

- Communications and Engagement
  Pre-booked services will afford the City the opportunity to communicate to residents (via phone, website and email) about other waste management options available to them, how to place waste on the verge, and any safety or environmental considerations.

- Data
  Pre-booked options will allow the City to collect data of waste generated within its region and track it accordingly.

5 Research & Benchmarking

In October 2021, DWER published a report by MRA Consulting Group (MRA). MRA was engaged to report on the impacts and benefits of kerbside systems in a West Australian metropolitan context. Interestingly, the report used data provided by DWER to characterise Perth and Peel local governments into two categories, urban and peri-urban.

The key aspects considered included:

- Number of households;
- Population growth rate;
- Distance to facilities;
- Waste and material quantities; and
- Disposal and processing cost.

Urban local governments		Peri-urban local governments
Town of Bassendean	**City of Joondalup**	City of Armadale
City of Bayswater	City of Melville	City of Kalamunda
City of Belmont	Town of Mosman Park	City of Kwinana
Town of Cambridge	City of Nedlands	City of Mandurah
City of Canning	Shire of Peppermint Grove	Shire of Murray
Town of Claremont	City of South Perth	Shire of Mundaring
City of Cockburn	**City of Stirling**	City of Rockingham
Town of Cottesloe	City of Subiaco	Shire of Serpentine-Jarrahdale
Town of East Fremantle	Town of Victoria Park	**City of Swan**
City of Fremantle	City of Vincent	**City of Wanneroo**
City of Gosnells		Shire of Waroona

The key differences between urban and peri-urban local government characteristics are:

- A peri-urban local government has 44% more dwellings and waste services;
- Peri-urban growth is 7.7 times higher than urban growth; and
- The peri-urban household generates 160kg more general waste and recovers 29kg less comingled recycling per annum than urban households.

The City of Wanneroo is categorised as peri-urban, as such this review has considered the pre-booked Bulk Waste services offered by the City of Swan, also categorised as peri-urban and most comparable to the City of Wanneroo.

Other research has concentrated on relevant neighbouring local governments that currently operate pre-booked Bulk Waste collection services, City of Joondalup and City of Stirling. Additionally, the pre-booked services offered by Western Metropolitan Regional Council (WMRC) has been included to balance the analysis of service methods.

Overview - Bulk Junk

Detail	City of Wanneroo	City of Joondalup	City of Stirling	City of Swan	WMRC
Households	**75,375**	**61,000**	**120,000**	**65,000**	**20,000**
LG Area	**685.8 km²**	**98.9 km²**	**105.2 km²**	**1,042 km²**	**44.9 km²**
Category	**Peri-urban**	**Urban**	**Urban**	**Peri-urban**	**Urban**
Primary Method	Scheduled verge collection	Pre-booked skip	Pre-booked skip	Pre-booked verge collection	Pre-booked verge collection - Verge Valet™
Other Method	N/A	Pre-booked verge collection - mattress, whitegoods	Pre-booked verge collection - mattress/whitegoods/e-waste	N/A	N/A
Booking Method	N/A	CoJ website via Cleanaway	Stirling website	CoS website	WMRC website
Paid Extra Collection	N/A	Yes	Yes	Yes	Yes
Tonnage of Bulk Junk	7,524	5,291	4,709	4,801	Varies per council and dependent on individual participation level
Collection	CoW	Cleanaway	Suez/Stirling	CoS	D&M Waste Management
Processing	Suez	Cleanaway	Suez	Various contracts per material type	Perth Bin Hire
Disposal	Suez	Cleanaway	Suez	Landfill - Redhill	Perth Bin Hire
% Recycled	43%	23%	43%	52%	up to 65%
Participation	not measured	30%	20%	36%	38%
Community Drop-Off Sites	Nil	Nil	Recycling Centre Balcatta	Recyling Centre Bullsbrook & Malaga	West Metro Recycling Centre
Community Drop-Off Events	1 x per year	3 x per year	1 x per year	9 x per year	Varies per council (at least 1 x per year at each)

Overview - Bulk Greens

Detail	City of Wanneroo	City of Joondalup	City of Stirling	City of Swan	WMRC
Households	**75,375**	**61,000**	**120,000**	**65,000**	**20,000**
LG Area	**685.8 km²**	**98.9 km²**	**105.2 km²**	**1,042 km²**	**44.9 km²**
Category	**Peri-urban**	**Urban**	**Urban**	**Peri-urban**	**Urban**
Method	Scheduled Verge	Scheduled Verge	Scheduled Verge	Pre-booked verge	Verge Valet
Tonnage	3,419	5,173	3,609	1,291	Varies per council and dependent on individual participation level
Collection	CoW	Incredible Bulk	Stirling	CoS	D&M Waste Management
Processing	Western Tree	Community Greenwaste Recycling	Western Tree	CoS Ops Centre	Western Tree
% Recycled	100%	100%	100%	100%	100%
Participation	not measured	not measured	6%	36%	23%
Community Drop-Off Site	WGRF	WGRF	Recycling Centre Balcatta	Bullsbrook & Malaga Recyling Centres	West Metro Recycling Centre

5.1 City of Joondalup

The City of Joondalup (CoJ) offers their residents an annual scheduled green waste verge collection and a pre-booked bulk junk collection service that includes the following services, per household, per financial year:

- One three cubic metre skip bin, or one vergeside lounge suite collection;
- One vergeside collection of up to four whitegoods; and
- One vergeside collection of up to six mattresses.

CoJ residents have a number of options when booking a skip bin, either:

- 2-day skip (weekdays);
- 4-day skip (over a weekend);
- 6-day skip (weeklong); or
- Residents may swap their skip bin allocation for one lounge suite collection.

For logistical reasons, a skip bin will arrive at a property full with waste from the previous property, and is then emptied by a different truck on the same day. Skip bin services are contracted to Cleanaway; CoJ achieve a 15% recovery rate for waste collected in resident skip bins. Cleanaway sub-contract CoJ's whitegoods and mattress collections and recycling to Soft Landings.

If a skip bin is swapped for a lounge suites collection, these are placed on the verge for collection. Up to four whitegoods and up to six mattresses may also be pre-booked for collection. These items are also placed on the verge and collection is aligned to the property's bin day.

CoJ do not offer pre-booked collections for e-waste, and these items are not permitted in a skip bin. Residents are encouraged to drop off e-waste at Tamala Park or the Recycling Centre Balcatta.

All pre-booked collections can be arranged through the CoJ website, bookings are facilitated by Cleanaway's booking system. Residents who use their allocation and wish to have additional services can book an additional skip bin, whitegoods and mattress collection for an additional fee (additional skip is $107).

CoJ estimates resident participation of pre-booked bulk collections is 30%. Approximately 19,000 skip bins are utilised by residents per year. CoJ's Bulk Waste service collects 5,291 tonnes of bulk junk per year and total recovery is 23%.

5.2 City of Stirling

The City of Stirling (Stirling) offers residents a scheduled green waste verge collection, which occurs once every nine months. Bulk junk is collected as part of a pre-booked service and includes the following services, per household, per financial year:

- One three cubic metre skip bin general household junk;
- One vergeside collection of up to four whitegoods;
- One vergeside collection of up to six e-waste items; and
- One vergeside collection of up to six mattresses.

Stirling also operate a Community Drop-Off facility, Recycling Centre Balcatta. Residents are provided tip passes to dispose of bulk waste free of charge, including:

- Household bulk junk;
- Clean garden waste;
- Construction waste; and
- Two mattresses and two fridge disposals.

Stirling's skip bin services are contracted to Suez Recycling and Recovery, who deliver the waste to a bulk sorting facility in Bibra Lake. Stirling achieve a 38% recovery rate for waste collected in resident skip bins.

Skip bins are delivered Monday – Friday and collected two business days after delivery. However, skip bins delivered on a Thursday or Friday are collected on a Monday and Tuesday, respectively. Residents can request an additional skip bin at a cost of $85.

Like the City, Stirling utilises MRC contract 13/147 for the collection and recycling of mattresses. Stirling collects whitegoods and e-waste in-house using one tail-lift cage truck, these items are transferred through the Recycling Centre Balcatta and sent for onward processing. Stirling have developed their own online booking platform to facilitate resident bookings for the four separate pre-booked collection services.

Stirling have indicated a high proportion of their residences are unable to accommodate a skip bin due to lacking verge space or complications with over-head power lines. There are also a proportion of pre-booked skip bins that cannot be set down upon arrival due to vehicles parked on verges or limited space for the skip truck to manoeuvre. Stirling also utilise in-house operators and a crane truck daily, to skim-off the tops of reported overloaded skip bins and pick up excess waste that gets

left around skip bins (illegal dumping). This crane truck also services bulk collections as an alternative for properties that have no verge space to accommodate a skip bin.

Stirling estimates resident participation of pre-booked bulk collections is 20%. The service collects 5,344 tonnes of bulk junk per year and total recovery is 43%.

5.3 City of Swan

The City of Swan (CoS) provides residents with a pre-booked verge collection service, with a maximum of two collections per financial year. These can be a combination of any of the following:

- Two bulk junk collections;
- Two green waste collections; or
- One of each (i.e. 1 x green waste collection & 1 x bulk junk collection); and
- Mattress collections (up to three mattresses per financial year).

Residents may purchase additional collections if required, $50 per junk collection, and $20 per green waste collection. CoS also operate two Community Drop-Off facilities, Recycling Centre Malaga and Recycling Centre Bullsbrook. Residents are provided entry to dispose of bulk waste free of charge, including (but not limited to):

- Household bulk junk;
- Clean garden waste;
- Construction and demolition waste;
- Mattresses, whitegoods, and e-waste; and
- Tyres.

Pre-booked verge collections began mid-2018 and replaced the annual scheduled collections. Bulk junk collections include a mixture of general bulk items such as furniture, as well as recyclable items such as whitegoods and e-waste. Any of these items can be placed out together on one collection date for use of one bulk junk collection entitlement. Green waste is included in the pre-booked service and can be booked for collection, consuming the respective entitlement. CoS mattresses are booked separately to bulk junk collections due to internal operational needs.

Prior to commencing a pre-booked service, rural properties were not serviced by CoS's scheduled bulk collections. Under the current service, rural properties are provided with a tip pass in place of the pre-booked verge collections. However, those who receive a tip pass can still book a mattress collection.

CoS provide all bulk junk, greens and mattress collections in-house. They operate a fleet of three rear-loader trucks, one hiab truck for metals, one hiab truck for mattresses, and one ute and trailer for e-waste. The separately collected waste streams are delivered to the respective processor by CoS own fleet.

CoS procured a software program to manage the bookings for their bulk collection services. They have acknowledged the booking software in place is not optimal, and since the program began in 2018, have employed a Scheduler to manage bookings and the scheduling and routing.

Nonetheless, the booking process is simple and streamlined, and residents are asked to select the items for collection. This enables CoS to send the appropriate collection vehicles. Residents are advised to put items out on the verge not more than two days prior to the day of scheduled collection, and not to have a pile that is more than three cubic metres in size. Waste items must be separated, CoS uses images such as **Figure 3** to illustrate what is required.

Figure 3: City of Swan "How to set out your waste"

Importantly, a Resident Liaison Officer was also employed upon implementation in 2018 to support the service by ensuring compliance, to provide education, and support for residents in the transition from one service model to another.

CoS deliver a Bulk Waste service that aligns well to Vergeside Better Practice guidelines. Resident participation of pre-booked bulk collections is 36%, the service collects 4,800 tonnes of bulk junk per year and material recovery is 52%.

5.4 Western Metropolitan Regional Council

Western Metropolitan Regional Council (WMRC) is a regional council offering waste management options for its five member councils:

- Town of Mosman Park;
- Town of Cottesloe;
- Town of Claremont;
- City of Subiaco; and
- Shire of Peppermint Grove.

The WMRC offers residents of its member councils pre-booked verge collection services in the form of Verge Valet™. Four of the five member councils participate in Verge Valet™, plus two participating councils, Town of Cambridge and City of Vincent.

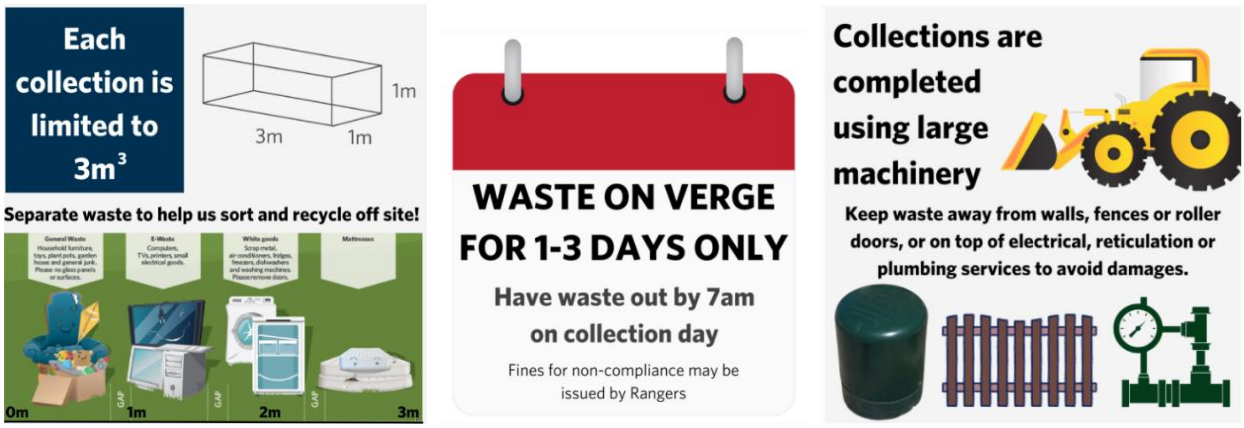
Much like CoS's pre-booked service, Verge Valet™ is a pre-booked bulk junk and green waste vergeside collection service. Each member and participating council offers its residents slightly different entitlements and waste type collections. Where services are offered in full, Verge Valet™ provides pre-booked collections of green waste, household junk including furniture, e-waste, whitegoods and mattresses.

All services are booked in one action, whereby the resident selects the waste types and/or items for collection. All booked waste types can be presented on the verge for one collection. Additional collections can be booked when entitlements have been consumed; each participating council applies their own cost for additional collections.

WMRC have procured and developed the booking platform for Verge Valet™. The booking process prompts residents to consider alternatives to disposing of their waste items by providing alternative avenues for their quality used items such a free charity pick-ups and Buy Nothing Facebook Groups.

The booking process contains a high degree of pictorial information to convey correct waste placement, separation, time on verge, and size limits.

Figure 4: Example Verge Valet™ Pictorial Information



WMRC also manages all bookings centrally on behalf of member and participating councils. Currently the Verge Valet™ model is tied to WMRC's local area, whereby WMRC holds the collection and processing/disposal contracts for this service. However, WMRC have been approached by various Local Governments from beyond their area and are looking to develop a licensed model of the system.

Under a licensed model the licensee would hold collection and processing contracts and WMRC would supply the interface between residents and collectors. It is anticipated that this would be funded through an initial set up fee for training and access to WMRC's intellectual property and an ongoing license fee based around the number of residences.

WMRC also operates a Community Drop-Off facility, West Metro Recycling Centre. Residents of member councils are provided tip passes to dispose of bulk junk and green waste free of charge. Residents can also drop off recyclables such as e-waste, scrap metals and cardboard at no cost.

Verge Valet™ represents a better practice service delivery model. WMRC estimates resident participation of pre-booked bulk junk collections is 38%, and material recovery is up to 65%.

5.5 Community Consultation

In May 2018, Waste Services partnered with a contractor, Metrix, to develop and undertake a Community Waste Survey, asking City residents for their preferences on how the City manages its waste, delivers this waste service, and conducts its waste education. A total of 1,280 residents completed the survey.

With regard to Bulk Waste Services, the majority of respondents felt providing separate pick-ups for large recyclables was important, and for the City to provide drop-off facilities for bulky items. Implementing a purely drop-off facility system for bulk waste is the least preferred option, aligning with convenience being the highest motivation regarding waste behaviours. Keeping the current method for collecting bulk waste was preferred by less than half of respondents, with 53% preferring an alternative. This Community Waste Survey informed the Waste Services Service Delivery Review 2018 and the endorsed Transition Plan.

6 Service Options

In keeping with the Transition Plan, the following methodologies for pre-booked bulk waste vergeside collection services have been identified as available to the City and are described below, in addition to the existing service method.

6.1 Option 1 – Scheduled verge collection (BAU)

A scheduled collection, the existing service, where Waste Services set dates for waste collection (junk and greens cycles) in each area. Households are informed of their collection date via the City's website and Facebook page, local newspaper, and signage posted in the upcoming collection area. Residents are permitted to present material on the verge no more than one week prior to the advertised collection date. Compliant material that is placed on the verge in line with the scheduled date is collected. Non-compliant items are not collected, and is notified through non-compliance cards at the property. This service provides for minimal separation of recyclable material, and there is no limitation to, or enforcement of the amount of material presented on the verge.

Advantages:

- Operational efficiencies – i.e. no booking system required, optimising collection runs;
- Equal service for all residents;
- City has experience with the service and no change or immediate investment required;
- Administration reduced through no requirement to manage bookings; and
- Residents can plan for it.

Disadvantages:

- Visual amenity affected by numerous properties presenting material at the verge over a number of weeks;
- Generates more waste and therefore generally higher cost and reduced landfill diversion;
- Limited opportunity for education regarding non-compliant waste and recycling options;
- Set schedule/dates means that residents who are travelling/away will not be able to partake in the service;
- Inconvenience for the community having to wait for scheduled service and limited access for community drop-off within the region;
- Invites scavenging which adds to the unsightly nature of the waste (materials become strewn about);
- Invites illegal dumping, non-compliant materials are dumped onto the existing bulk waste pile presented (some of this can come from residents outside the Wanneroo region);
- Ability to collect data is poor, leading to inaccuracies in the City tracking waste generated, recycled and disposed, and inaccurate regulatory reporting;
- Lack of space (verge) for some household types;
- City growth will continue to put pressure on service delivery – to complete annual cycles;
- Risk of property damage during collection due to unseparated and unrestricted amounts of waste (i.e. damage to power-domes); and
- Limited community drop-off access in the region places greater demand on this service which is not the most cost effective option.

The existing service model is not consistent with Vergeside Better Practice guidelines and does not align to the objectives of the Waste Strategy. In recent years, the schedule for bulk junk collections has been continually adjusted (lengthened) to cater for the City's growth and therefore increased collections.

Continuing to deliver the service in the existing format, with current resources, will see capacity reached within the next two years; purely with the increasing area to cover. After this point, the service will be unable to meet the demands of the City's growth without rostering longer work hours or adding additional vehicles and staff.

Capital investment is required for procurement of an additional two bulk trucks, one skid steer and trailer for service continuity. The 2022/23 budget for the BAU Bulk Waste service is $4,459,843 and the service cost is modelled at $4,534,439 for 2023/24.

6.2 Option 2 – Pre-booked junk collection via skip bin (& pre-booked recyclables verge collection)

The current service method would be replaced with a pre-booked skip bin service for the disposal of bulk junk items. Residents receive an annual entitlement of one three cubic metre skip bin and can book for a timeframe that suits them, using an online portal or contacting the City's Customer Relations Centre if this is not possible. A skip bin is delivered and residents have 48 hours to fill it before it is removed.

A stand-alone skip bin service offers residents disposal of limited bulky household items, which does not include green waste, whitegoods, mattresses, e-waste, and large household items (e.g.: lounge suites). To maintain the current service level offering, additional services are required to facilitate the collection of those items not accepted via a skip bin service. The City can develop and utilise a pre-booked service for the following recyclable items:

- Mattresses;
- Whitegoods;
- E-waste; and
- Green waste.

Residents would request the separate collection of the above items, within allocated entitlements, for a time that suits them through an online portal.

The City does not have the infrastructure, or vehicle set to undertake a skip bin service in-house; therefore, this is best provided as an outsourced service. Commercial service delivery for skip bins is well established within the Perth area. Additional services could be delivered externally or internally with a change to current plant; i.e. the purchase of a flat bed or similar; this would not be extra vehicles but rather a reconfiguration of the current fleet.

It is anticipated that residents overfilling skip bins will be an issue, as highlighted by other Local Governments, one which any contractor delivering the service will not accept. Skip bins that are seen to contain non-conforming items, or large items overfilling the bin will not be collected and result additional costs to the City for the contractor to return once rectified. The use of skip bins also attracts illegal dumping, either through overfilling, or through waste dumped at the sides of the skip bin. Collection of this waste will require City resources.

The City would require the use of one rear-loading compactor truck, one crane truck and one skid-steer to facilitate the collection of materials from overfilled skips. The City of Stirling, for example, have a vehicle dedicated to rectifying these issues on a daily basis. This would also require one FTE to manage and schedule the booking requests associated with pre-booked services, and to manage the issues with overfilled skip bins.

Advantages:

- Reduced waste tonnages with amount of waste limited to skip bin size;
- Reduced disposal costs due to expected lower participation rate;
- Residents can book services as and when required;
- Visual amenity of the suburbs is better managed, and time on the verge is limited;
- Removes opportunity for illegal dumping in scheduled collection areas;
- Potential to utilise collection contractor's booking system; and
- Increases opportunity to collect more reliable data providing opportunities for better planning and more accurate regulatory reporting.

Disadvantages:

- Items accepted are much reduced, due to size and dimension of skip bin;
- The three cubic metre volumes are unable to be realised due to the shape of the skip bin and the waste materials;

- Likelihood that households will overflow skip bins, which will result in an increase in administration to contact residents, and increased costs from collection contractor;
- Potential for residents to hide non-compliant waste at the bottom or within the skip bin;
- Reduced recycling capacity due to some of the waste getting crushed as residents throw it into skip, and during collection of the waste from the skip and unloading at site;
- Potential for other residents to dispose of waste, including non-compliant waste, in skip bins not allocated to them;
- Increased illegal dumping, where additional or over-sized materials are placed around the skip bin;
- Skip bins become common place throughout the City;
- Skip bins can be difficult to place on verges in some areas with a lack of street frontage, affecting footpaths, parking and placement of kerbside bins, which often leads to property damage (i.e. verges and power-domes);
- Residents may find larger/bulkier items difficult to load into the skip bin which raises safety concerns;
- Booking process is not streamlined, different collections will require separate bookings, i.e. one booking for a skip, another for collection of a mattress;
- Additional administration support required to manage booking and scheduling the collection of multiple waste types of the different vergeside collection services, i.e. skip bins, mattresses, whitegoods, e-waste, etc; and
- Limited community drop-off access in the region places greater demand on this service.

This option provides for less visual pollution that the current method, where waste materials are partially containerised. However, when residents are disposing of items not accepted in a skip bin or larger items, these are still required to be placed on the verge alongside the skip bin for separate collection.

Local Governments who operate a skip bin service report an overall reduction in bulk junk volumes collected, driven by a low resident participation rate of 20-30%. Low participation rates may be a reflection of community satisfaction or need. If Community Drop-Off facilities are available and convenient for residents to access, there is less need to utilise a pre-booked skip bin service. Alternatively, if a pre-booked skip bin service does not suit residents' needs (i.e. for disposal of large/bulky furniture items) this may lead to an increase in illegal dumping.

It is estimated this service model will not provide any improvement to the level of material recovery, as the processing method is the same as BAU. The only difference being the mixed junk waste in contained a skip rather than placed on the verge.

Capital investment is required to implement this service option, for procurement of a booking system and potential fleet re-configuration.

The cost to operate a pre-booked skip service (with additional pre-booked item collections) is modelled at $4,378,589 for 2023/24. In comparison to costs for delivering the City's BAU model, option 2 would result in a cost saving of 3%.

Costs are modelled on 30% of City residences utilising this pre-booked service. Research regarding the modelling of pre-booked services (skip bin or other) and consultation with other metropolitan Local Governments has determined that 30% participation rate is a rule of thumb with which to benchmark.

6.3 Option 3 – Pre-booked verge collection

The current scheduled verge collection method would be replaced with a pre-booked verge collection. This service provides convenience for residents to pre-book and dispose of bulky waste items when it suits them. Residents are allocated two Bulk collections per property, per year, consisting of one junk collection and one greens collection. If required, additional collections may be purchased for a fee, above annual allocations.

This service involves residents booking the service through an online portal or contacting the City's Customer Relation Centre if this is not possible. In booking the service, residents will select the types of waste that will be placed on the verge, and a selection of available collection dates are presented, determined by the collection provider. Availability of dates may vary depending on factors such as number of services available and seasonal demand variables.

Once booked, the resident places items on the verge in separate piles, (e.g. whitegoods, e-waste, general waste, mattresses, green waste) no more than two to three days prior to collection date. To drive service efficiency and increase the amount of materials recycled, this option requires an increased level of material separation prior to collection.

This service option encourages residents, through the booking process, to consider the items they are disposing. With the current scheduled bulk verge collection, residents often place smaller general waste items on the verge, which could easily be disposed in the red-lidded general waste kerbside bin. Additionally, residents are encouraged to consider if their items can be reused by someone else, e.g. charity collectors or community reuse options such as Buy Nothing or Gumtree.

In line with Vergeside Better Practice, green waste and junk allowances will be a maximum of three cubic metres per collection. For junk collections, this measure will exclude recyclable items such as whitegoods and mattresses. Education will be provided throughout the transition to and implementation of this service option; residents will be advised how to correctly sort and place their waste on the verge.

Compliance will be managed through measures such as requesting a photo to confirm material placement (provided for through the booking platform). Non-compliance will be treated first through education, and a repeat occurrence will be given a notice in the form of a non-compliance card (refer **Appendix 2**). Depending on the level of non-compliance, the waste may or may not be collected. For continued non-compliance an extra paid collection would be explored.

The City could deliver a pre-booked verge collection service internally with existing fleet and work force. Minor changes to current plant such as the purchase of a flat bed or similar would be required; this would not be an extra vehicle but rather a reconfiguration of the current fleet. This service option would also require one FTE to manage and maintain booking requests, and to support the community's transition to the new service through education and compliance activities.

Advantages:

- Residents book ahead, therefore reduces waste tonnages and increases landfill diversion;
- Aligns with the WA Waste Strategy and the City's Waste Plan, and aligns the most objectives in the City's Strategic Community Plan.
- Safety risks are minimised, especially the risk of waste, residents, operators and machinery coming into contact with power-domes, because of better control of the process from booking a collection through to removal of waste from the vergeside;
- Provides convenient timing for residents who don't have to wait on the scheduled runs or weekend drop-offs (i.e. convenient when cleaning up, doing renovations or moving houses);
- The City currently has the workforce and fleet to carry out this service (fairly new bulk collection fleet of 7 rear-loading compactor trucks, 5 skid steers and 6 trailers);

- Generates less waste because:
    - residents will only be disposing what cannot be recovered by other means, and
    - reduced opportunity for illegal dumping;
- Reduced volumes result in reduced costs incurred by the City for management of collected bulk waste;
- A simpler and single bulk waste collection service than relying on different contractors for skip bins (which come with many restrictions) and on the ground vergeside collection;
- Increases opportunity for greater source separation which results in increased material recovery and reduced landfill disposal costs;
- Increases opportunity to collect more reliable data providing opportunities for better planning and more accurate regulatory reporting;
- Provides interaction with the resident during booking to provide alternatives for reusable, repairable or recyclable items;
- Less street frontage and overhead/parking clearance required than skip bins;
- Improved visual amenity of suburbs in the Wanneroo region;
- Reduce instances of illegal dumping and scavenging, as waste is not presented throughout an entire suburb nor is it presented for long periods as the City will have direct control of the service;
- Reduces clean-up costs associated with going back to suburbs that have litter and illegal dumping dispersed across its streets, verges, roundabouts, parks, etc.;
- Reduced risk of property damage during collections due to organised, separated waste and the amount of waste presented is limited in size; and
- Streamlined booking process - one booking action for multiple waste types.

Disadvantages:

- Additional administration for booking and database management;
- Additional cost to purchase booking and scheduling software;
- Some areas have a lack of street frontage/verge space to place materials; however the City currently manages this issue in its delivery of the current vergeside bulk collection service; and
- Limited community drop-off access in the region places greater demand on this service.

The City of Swan and the Western Metropolitan Regional Council operate a pre-booked verge collection service, and have reported a 26% and 32% reduction in waste collected since commencing with a pre-booked service model. Both Councils provide Community Drop-Off facilities that complement their pre-booked services. City of Swan have achieved a reduction in waste volumes despite an increase in the number of collections and households over time.

This option provides the greatest opportunity to increase material recovery, improve visual amenity, and reduce the amount of waste generated within the City; it is the preferred option. Option 2 does not offer the same level of material separation or opportunity for recovery, as items are disposed collectively into the skip bin. A comparison of material recovery rates per service is provided below:

Local government	Primary service method	Service option	Material recovery rate
City of Joondalup	Pre-booked skip bin	Option 2	23%
City of Stirling	Pre-booked skip bin	Option 2	43%
City of Swan	Pre-booked verge collection	Option 3	52%
Western Metropolitan Regional Council	Pre-booked verge collection	Option 3	65% (up to)

It is estimated this service model will increase material recovery by at least 8% through increased material separation; achieving a minimum 51% bulk junk recovery rate.

Capital investment is required to implement this service option, for procurement of a booking system and fleet re-configuration, if the service is delivered in-house.

The cost to operate a pre-booked verge collection service is modelled at $3,064,468 for 2023/24. In comparison to costs for delivering the City's BAU model, option 3 would result in a cost saving of 32%. The cost model is based upon 30% of City residences utilising the pre-booked service.

6.4 Option 4 – Pre-booked hybrid collection

This service option would provide a skip bin and other pre-booked collection services as described in option 2, to households on lots smaller than 400m², (approximately 25% of properties). Households 400m² or larger would be provided vergeside collection services as described in option 3. Collections would be delivered through a mix of contracted services and/or in-house services, as outlined in the corresponding options above.

This is a complex service offering and will amplify the complications associated with skip bin placement for smaller properties and unit complexes. A standard three cubic metre skip bins is 1.80 metres long and 1.65 metres wide, and requires sufficient room on the verge. Additionally, skip bins should be placed on verges, not private property, and cannot be placed on artificial lawn or textured surfaces such as exposed aggregate.

The below considers the service option as a whole.

Advantages:

- Residents can book services as and when required;
- Reduced disposal costs due to expected lower participation rate;
- Visual amenity of the suburbs is better managed, and time on the verge is limited; and
- Removes opportunity for illegal dumping in scheduled collection areas.

Disadvantages:

- Service delivery complexity is increased substantially;
- Static property planning data used to develop this model and forecast future growth;
- Increased resources and costs for management of service and scheduling of bookings;
- Booking process is not streamlined and is complicated - different collection types and criteria;
- Additional cost to purchase booking and scheduling software;
- Difficult to communicate and educate for various services;
- Risk of confusion amongst residents and increased non-compliance;
- Unequal service for all residents - feeling advantaged/disadvantaged due to their property size;
- Alternative options will be required for households unable to have a skip bin suitably placed;
- Unproven/untested service model (i.e. not offered by other local governments); and
- Limited community drop-off access in the region places greater demand on this service.

As per options 2 and 3, capital investment is required to implement this hybrid service option, for procurement of a booking system and potential fleet re-configuration

The cost to operate a pre-booked hybrid collection is modelled at $4,001,705 for 2023/24. In comparison to costs for delivering the City's BAU model, option 4 would result in a cost saving of 12%.

Costs are modelled on 25% of City residences being entitled to a skip bin services (option 2) and 75% of residents entitled to a pre-booked verge collection (option 3). Both with a 30% participation level.

6.5 Cost Model

A cost model has been prepared for the options presented, with the following assumptions:

- Option 1 – BAU service continues, additional fleet and resources required support the City's growth;
- Option 2 – Pre-booked skip service for waste collection, removal and processing. A separate recyclables (whitegoods, e-waste, mattress, green waste) collection service is provided with materials sent for processing. 30% household participation.
- Option 3 – Pre-booked vergeside collection service is provided, with all materials sent for processing. 30% household participation.
- Option 4 – Pre-booked hybrid collection. Option 2 is available to 25% of households, and option 3 is available to 75% of households. 30% total household participation.

Four-Year Forecast

Total Service Cost		Option 1	Option 2	Option 3	Option 4
2023/24	Net Expense	$ 4,534,439	$ 4,378,589	$ 3,064,468	$ $4,001,705
	Cost Saving	*$ -*	*$ 155,850*	*$ 1,469,971*	*$ 532,733*
	% Cost Saving	**0**	**3**	**32**	**12**
2024/25	Net Expense	$ 4,740,532	$ 4,434,247	$ 3,068,391	$ 4,020,428
	Cost Saving	*$ -*	*$ 306,285*	*$ 1,672,141*	*$ 720,103*
	% Cost Saving	**0**	**6**	**35**	**15**
2025/26	Net Expense	$ 4,963,548	$ 4,498,508	$ 3,082,062	$ 4,034,071
	Cost Saving	*$ -*	*$ 465,041*	*$ 1,881,486*	*$ 929,476*
	% Cost Saving	**0**	**9**	**38**	**19**

While cost savings are indicated for all pre-booked options, Administration considers that any savings realised from the implementation of a pre-booked Bulk Waste service would be consumed by further progress towards the City's Transition Plan.

2023/24 Budget Model

Options	1	2	3	4
Description	Business as Usual	Pre-booked skip service + pre-booked recyclables collection	Pre-Booked verge collection	Hybrid services (skip & verge options)
No. of Households	81385	81385	81385	81385
Household Participation Rate (%)	30%	30%	30%	30%
Rate of Effort (per annum)				
Tonnes - bulk to landfill	4571	3885	3096	3,231
Tonnes - bulk recycled	2935	2424	2533	2,458
Tonnes - separated metal	429	529	594	567
Tonnes - on-demand metals/whitegoods	0	0	0	0
Tonnes - on-demand mattresses	194	182	182	178
Mattress recycled	146	136	136	134
Greenwaste (t)	3693	2354	2354	2,309
Total Junk Waste (t)	8,129	7,021	6,405	6,434
Total Bulk Waste = Junk + Green (t)	11,822	9,375	8,760	8,743
Impact on Waste to Landfill ratio				
T to landfill	4,571	3,885	3,096	3,231
T to recycling	2,935	2,424	2,533	2,458
Income $ per unit				
Income - separated metal (pT)	$ 21,435.45	$ 26,468.85	$ 29,709.94	$ 28,342.83
Expense				
Headcount	16	12	13	17
Scheduler/Admin	0	2	2	3
Skid Steer	5	2	3	4
Trailer	6	2	3	4
Waste Truck	7	2	3	4
Other - tail gate	0	3	2	4
Salary and Wages Normal	$ 1,199,018.95	$ 957,642.79	$ 1,035,349.95	$ 1,346,178.58
Cost per year of plant and equipment	$ 1,149,316.00	$ 277,053.90	$ 372,119.22	$ 519,338.49
Advertising (pa)	$ 42,301.00	$ 42,301.00	$ 42,301.00	$ 42,301.00
Printing	$ 769.00	$ -	$ -	$ -
Materials and Equipment	$ 5,720.00	$ 5,720.00	$ 5,720.00	$ 5,720.00
COW Overheads/On costs	$ 479,607.58	$ 383,057.12	$ 414,139.98	$ 538,471.43
Disposal Expense				
Disposal - Processing (pT)	$ 1,223,492.96	$ -	$ 917,619.72	$ 674,286.39
Greenwaste Processing	$ 125,572.63	$ 80,052.55	$ 80,052.55	$ 78,517.24
Contract/On Demand Expense				
Contract - No of Skips	0	24415	0	6006
Contract - Skip (p Skip)	$ -	$ 1,220,770.58	$ -	$ 300,309.56
Contract - skip processing fee	$ -	$ 1,028,468.61	$ -	$ 253,003.28
Contract - No of refused skips at 15% refusal rate	0	3662	0	901
Cost Contract - Skip Refusal Rate 15%	$ -	$ 183,115.59	$ -	$ 45,046.43
Contract - No of mattresses	9708	9075	9075	9075
Cost Contract - Mattress	$ 330,076.34	$ 226,875.90	$ 226,875.90	$ 226,875.90
Income/Expenditure				
Income	$ 21,435.45	$ 26,468.85	$ 29,709.94	$ 28,342.83
Expense	$ 4,555,874.46	$ 4,405,058.03	$ 3,094,178.32	$ 4,030,048.31
Net Expense	**$ 4,534,439.01**	**$ 4,378,589.17**	**$ 3,064,468.38**	**$ 4,001,705.48**
Cost Saving		**$ 155,849.84**	**$ 1,469,970.64**	**$ 532,733.53**
% Cost Saving		**3**	**32**	**12**
Tonnages				
Total Tonnage to Landfill	4,619	3,931	3,142	3,275
Total Tonnage Recycled	3,510	3,090	3,264	3,158
Recyled per Household (kg)	43	38	40	39
% Junk diversion from landfill	43	44	51	49
% Greenwaste diversion from landfill	100	100	100	100
% Bulk diversion from landfill	61	58	64	63
Per Household				
Collection Cost per Household	$ 55.72	$ 53.80	$ 37.65	$ 49.17
Total Green Waste (kg) per household	45.4	28.9	28.9	28.4
Total Junk Waste (kg) per household	99.9	86.3	78.7	79.1
Total Bulk Waste (kg) per household	145	115	108	107

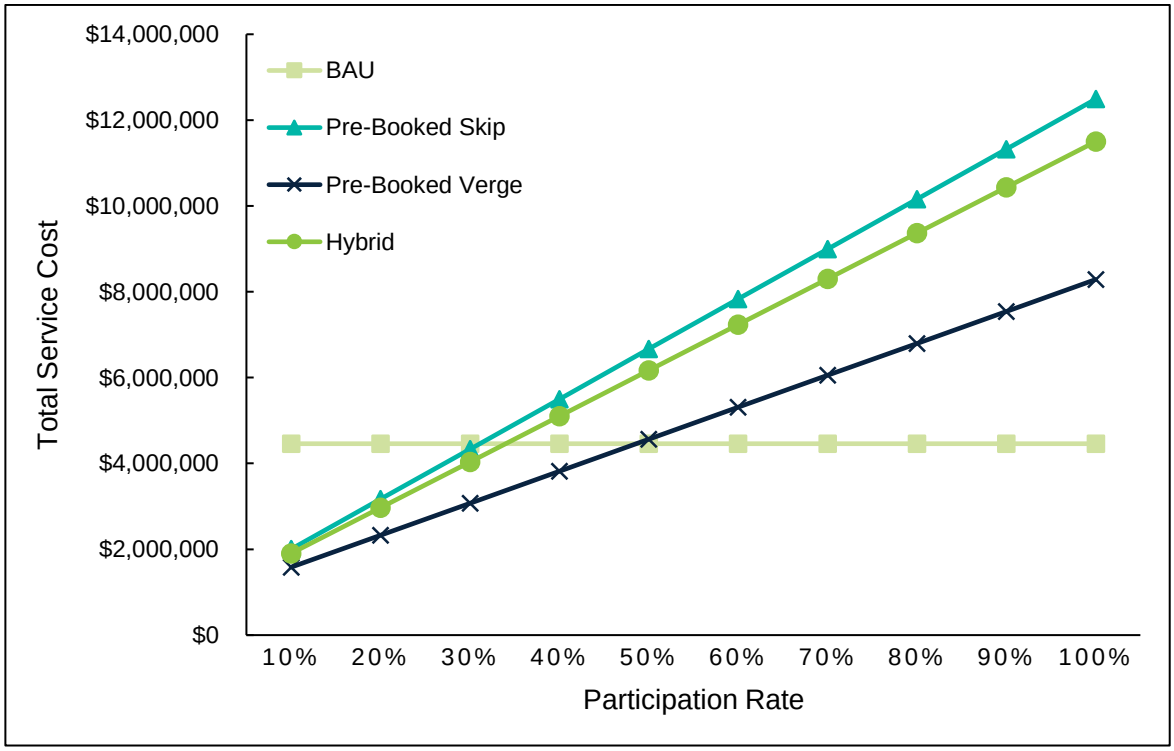
6.6 Risk

Risk	Option 1	Option 2	Option 3	Option 4
	Business As Usual	Pre-booked skip bin + verge recyclables collection	Pre-booked verge collection	Pre-booked hybrid collection
Reputational				
Control of service quality	✓		✓	
Loss of jobs		✓		
Improved visual amenity		✓	✓	✓
Community accesibility	✓		✓	
Operational				
Operationally complex		✓		✓
Community acceptance - simple processes	✓		✓	
Control of presentation and collection periods			✓	
Ability to deliver education/comms			✓	
Data collection		✓	✓	✓
Environment, Quality & Safety				
Increased recovery rate			✓	
Manual handling - risk to residents		✓		✓
Property damage i.e. power domes	✓	✓		
Transparent waste stream i.e. can view non acceptable items	✓		✓	✓
Compliance control - of non acceptable items.	✓		✓	✓
Financial				
Reduction in costs			✓	
Increased cost	✓	✓		✓

7 Financial Analysis

The total Bulk Waste collection costs calculated for different household participation rates from 10% to 100%, is shown in **Figure 5**. Business as usual (BAU) assumes a 100% participation.

Figure 5: Cost of Bulk Waste collection options



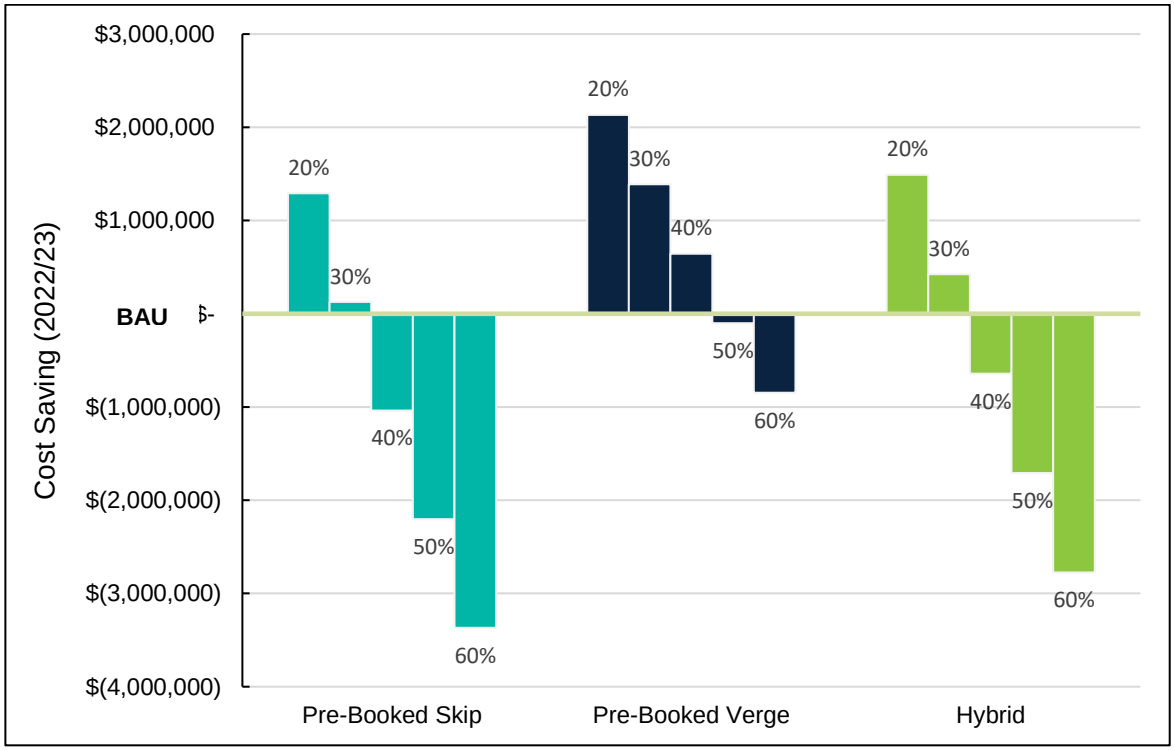
A pre-booked verge collection service is the lowest cost service option relative to BAU for participation rates below 50%. The pre-booked skip and hybrid options show lower service costs relative to BAU at participation rates below 30%.

Above 50% participation, all the pre-booked service options, skip, verge and hybrid cost more than BAU. The cost for providing skip services and hybrid services are consistently higher than the pre-booked verge method across all household participation rates.

The pre-booked skip, verge and hybrid options show similar costs at low household participation rates of less than 20%. The modelling suggests that all services can be implemented as viable options to manage low volume of Bulk Waste collections. However, the total costs for the skip and hybrid services grow at a faster rate than the verge service. This can be attributed the increasing cost contributions from outsourcing of the skip bins to service larger number of households at higher participation rates.

The model suggests that the pre-booked verge service provides a lower cost option relative to the pre-booked skip service. The costs of the hybrid services are expected to be higher than the pre-booked verge but lower than skip services.

Figure 6: Cost savings relative to BAU, by participation rate



The modelling also suggests the need for additional services to complement any pre-booked services, in particular to manage the potential waste volumes and additional costs generated by higher levels of household participation.

As shown in **Figure 6**, the potential for cost savings is reduced by higher participation rates. This supports the concept for having drop-off sites integrated as part of the Bulk Waste collection service. These additional services need to scale well, with relatively stable costs as household participation increases. This may be achieved by adjusting the frequency and/or number of available drop-off sites based on the household demands. Also, the option of pre-paid additional services should be offered to households that require extra services, above their annual household entitlements.

8 Recommendation

The City's existing Bulk Waste service does not reflect the Waste Authority's Vergeside Better Practice, and does not align to the objectives of the State Waste Strategy. In addition to the City's obligation to meet the targets of the State Waste Strategy, the City's continued growth applies pressure to the current service delivery method. In recent years, the schedule for bulk junk collections has been continually extended to cater for the City's growth and increase in the volume of waste presented for collection.

Allied to the Transition Plan, administration recommends that a pre-booked bulk verge collection service should be implemented for bulk junk and green waste, following Vergeside Better Practice, and as described in Option 3:

- One bulk junk collection, up to three cubic meters (excluding recyclable items);
- One green waste collection, up to three cubic meters;
- Waste is presented no more than three days prior to pre-booked collection date;
- Additional collections (above annual allocations) are available at a fee.

Administration considers implementation of a pre-booked bulk verge collection service can be achieved in the next 12 to 18 months, following Council endorsement.

Through the recommended option, the City has an opportunity to reduce Bulk Waste collection tonnages, therefore disposal costs, and divert more bulk junk waste from landfill by encouraging residents to seek alternative management options for their unwanted material.

To further increase recovery rates, the recommended Bulk Waste service will encourage residents to separate 'high value' items into different piles on the vergeside.

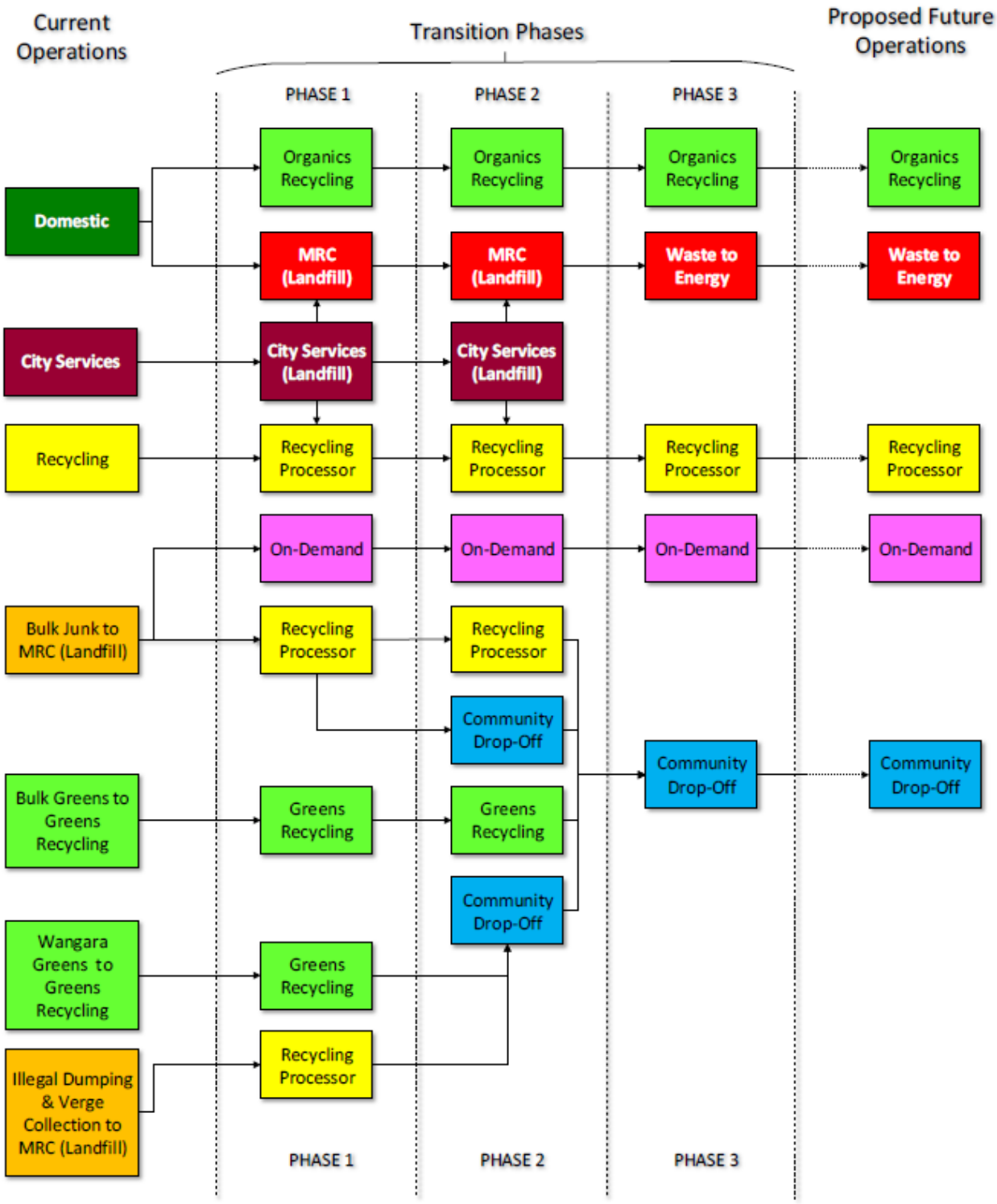
The better-practice Bulk Waste service will offer comprehensive information to residents that helps them identify local alternative options for different materials through a phone or internet-based bulk waste pre-assessment. Customer satisfaction is maximised through increased convenience and accessibility to alternative Bulk Waste management options. Furthermore, the City will be able to evaluate and enhance service provision through systematic data collection.

Provision of Community Drop-Off facilities will further reduce the volume of Bulk Waste collected vergeside and reduce the costs of delivering vergeside Bulk Waste services, as residents transport their own waste. The City's Waste Plan 2020 – 2025 highlights investigating Community Drop-Off sites as a key priority. To support the City's management of Bulk Waste into the future, administration also recommends:

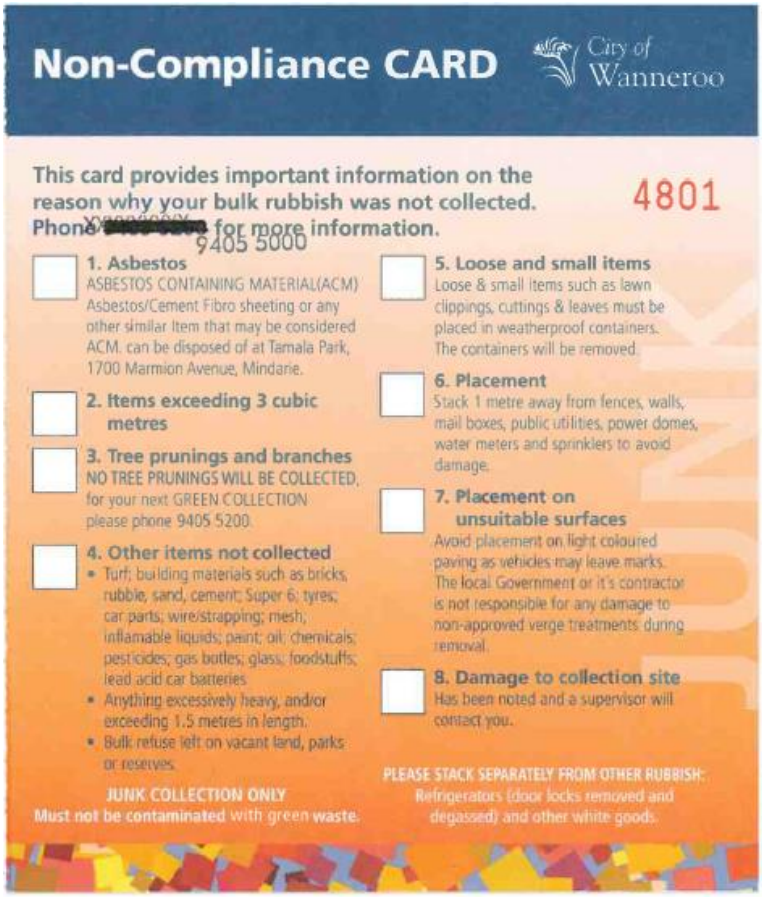
1. Expansion of service offering at Wangara Greens Recycling Facility to accommodate additional waste streams for Community Drop-Off; and
2. A feasibility study be undertaken for the development of new Community Drop-Off site(s) throughout the City.

Appendices

Appendix 1: Waste Service Delivery Review 2018 Transition Plan



Appendix 2: Example of existing Non-Compliance Cards



Non-Compliance CARD

City of Wanneroo

This card provides important information on the reason why your bulk rubbish was not collected.

4801

Phone [redacted] 9405 5000 for more information.

1. Asbestos
ASBESTOS CONTAINING MATERIAL(ACM) Asbestos/Cement Fibro sheeting or any other similar Item that may be considered ACM. can be disposed of at Tamala Park, 1700 Marmion Avenue, Mindarie.

2. Items exceeding 3 cubic metres

3. Tree prunings and branches
NO TREE PRUNINGS WILL BE COLLECTED, for your next GREEN COLLECTION please phone 9405 5200.

4. Other items not collected
- Turf; building materials such as bricks, rubble, sand, cement; Super 6; tyres; car parts; wire/strapping; mesh; inflamable liquids; paint; oil; chemicals; pesticides; gas bottles; glass; foodstuffs; lead acid car batteries.
- Anything excessively heavy, and/or exceeding 1.5 metres in length.
- Bulk refuse left on vacant land, parks or reserves.

JUNK COLLECTION ONLY
Must not be contaminated with green waste.

5. Loose and small items
Loose & small items such as lawn clippings, cuttings & leaves must be placed in weatherproof containers. The containers will be removed.

6. Placement
Stack 1 metre away from fences, walls, mail boxes, public utilities, power domes, water meters and sprinklers to avoid damage.

7. Placement on unsuitable surfaces
Avoid placement on light coloured paving as vehicles may leave marks. The local Government or it's contractor is not responsible for any damage to non-approved verge treatments during removal.

8. Damage to collection site
Has been noted and a supervisor will contact you.

PLEASE STACK SEPARATELY FROM OTHER RUBBISH:
Refrigerators (door locks removed and degassed) and other white goods.

JUNK

Non-Compliance CARD

City of Wanneroo

This card provides important information on the reason why your bulk rubbish was not collected.

08738

Phone [redacted] 9405 5000 for more information.

1. Asbestos
ASBESTOS CONTAINING MATERIAL(ACM) Asbestos/Cement Fibro sheeting or any other similar Item that may be considered ACM. can be disposed of at Tamala Park, 1700 Marmion Avenue, Mindarie.

2. Items exceeding 3 cubic metres

3. Loose and small items
NO BOXES OR BAGS WILL BE REMOVED WITH THE GREEN RECYCLING COLLECTION. Prunings and lawn clippings can be placed in the domestic rubbish bin to assist the recycling of household waste into soil enhancer.

4. Other items not collected
- Turf; building materials such as bricks, rubble, sand, cement; Super 6; tyres; car parts; wire/strapping; mesh; inflamable liquids; paint; oil; chemicals; pesticides; gas bottles; glass; foodstuffs; lead acid car batteries.
- Anything excessively heavy, and/or exceeding 1.5 metres in length.
- Bulk refuse left on vacant land, parks or reserves.

5. Tree prunings and branches
Must not exceed 1.5 metres, trimmed of all side branches and placed neatly on your verge with cut ends facing the street.

6. Logs and tree stumps
Where the diameter of logs is greater than 15cms, they are to be cut into 50cm lengths. Please stack separately from other branches and prunings.

7. Thorn bushes
Please place separately for safe handling.

8. Placement
Stack 1 metre away from fences, walls, mail boxes, public utilities, power domes, water meters and sprinklers to avoid damage.

9. Placement on unsuitable surfaces
Avoid placement on light coloured paving. The local Government or it's contractor is not responsible for any damage to non-approved verge treatments during removal.

10. Damage to collection site
Has been noted and a supervisor will contact you.

GREEN