



Model for Improved Reuse and Resource Recovery from Cleanup Waste

First Pass Collection Trial

Summary Report

Illawarra Shoalhaven Joint Organisation

April 2021

Authors: Yvette Barrs, Nicole Parsons & Felicity Lochhead

Contents

Executive Summary.....	3
Introduction	4
Methodology.....	5
Limitations.....	8
Findings	9
1. Collection	9
2. Preparation of items for sale	11
3. Marketing.....	14
4. ‘Second time around’ sale	14
5. Charitable redistribution.....	16
6. Residual items.....	16
Summary of findings	17
Outcomes.....	18
Environmental.....	18
Social	19
Economic.....	19
Recommendations	20
Conclusion.....	21
Appendix	22
A: Financial analysis of the first pass collection trial	22
B: Requirements for ongoing implementation.....	23
References	24

Executive Summary

Services aimed at the collection and treatment of household cleanup waste present opportunities for improved reuse and resource recovery, providing significant environmental, economic, and social benefits. In 2018-2019 NSW Council clean up services collected 203,371 tonnes of material with only 11% diverted from landfill¹. With Councils responsible for management of cleanup waste, they have an ability to drive diversion from landfill through the implementation and evaluation of measures that improve kerbside cleanup practices, build networks and advance public awareness and education.

Findings from previous research indicated that there were resources that were not currently being recovered from this stream and that public knowledge and awareness around the treatment of this material post collection was limited. This project aimed to validate these findings by trialling the implementation of a 'first pass collection' model for Council cleanup services focused on reuse. To prove the value of reuse, objectives included gathering information to expand existing datasets; creating partnerships and networks with organisations working in this space; and improving community understanding of the treatment of these materials.

The environmental, social, and economic outcomes of the project support the development of a business case for the addition of a first pass collection service. Over a period of four weeks, this trial collected 72m³ of cleanup waste and achieved a landfill diversion rate of 97%. Application of the Charitable Recycling Australia Reuse Impact Calculator², calculated a saving of 10 tonnes of CO² emissions contributing to Council's emission reduction goals defined in the Sustainable Wollongong 2030: A Climate Healthy City Strategy³. Partnering with Green Connect (charitable organisation), resulted in skills development and temporary employment of young people; provision of furniture for disadvantaged families; and ongoing social impact with over \$6,000 of funds raised from the sale of goods, donated to support work with unemployed young people and former refugees. An additional social indicator of success was the strong level of community engagement and support for this model of reuse. This was attributed to the project being built on a partnership between Government and a charitable organisation and delivered through a retail operating platform. For a model such as this to be sustainable, value needs to be assessed against all indicators including the economic drivers of landfill space saving at a value of \$336/m³.

The project identified practical recommendations related to ongoing implementation of a first pass collection model. Effective partnerships are critical to the success of a project such as this. As ISJO was the entity operating the service, this project would not have been possible without the support of Council, the collection contractor and the charitable partner. Efficiencies in collection of materials from the kerbside are driven by the timing of collection; measures of socio economic conditions across geographic areas; and the weather. The collection of items is directly linked to the retail platform with products, pricing, store location and the whole shopping experience linked back to an identified end market (current social trends = retro / vintage). Being a new concept, broad distribution of marketing materials was key to project success. Messaging provided information on how the community could be involved as well as the social and environmental outcomes. This trial will help to frame efficiencies, challenges, successes, opportunities, and areas for improvement for cleanup waste diversion models assisting Council to move towards the achievements of UN SDG's⁴ 11, 12, 13 and 17.

Introduction

Cleanup waste that enters the municipal solid waste stream is a current space of challenge, and an area that holds opportunity for impact in resource recovery. In 2018-2019 NSW Council clean up services collected 203,371 tonnes of material with only 11% diverted from landfill¹ (see Figure 1). While there have been advancements in resource recovery of various materials in household waste, cleanup waste has remained under-considered¹. With limited understanding of the true impact of this waste stream², and the environmental and social impacts of landfill practices, strategies must be explored to investigate ways to recover and reuse items and increase public avoidance practices.

As the key bodies responsible for the collection and management of household waste, councils have a critical role to play as change makers to achieve improvements in service delivery, collection models, and increased reuse, recycling, and recovery of resources in the move towards a circular economy and the achievements of the UN SDGs.

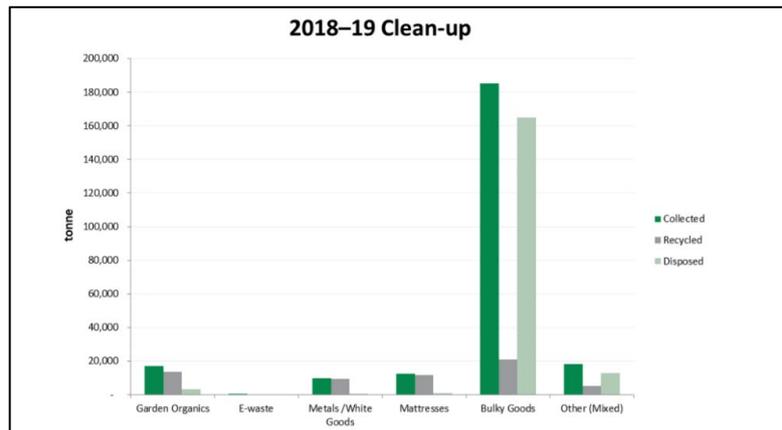


Figure 1. NSW clean-up services waste types and streams 2018-2019 (EPA 2020)

In response to the lack of understanding of the nature, impact and challenges of cleanup waste, ISJO partnered with scholars from the Global Challenges team at the University of Wollongong to produce a research report titled: Benchmarking, characterising and valuing the resources in household bulky waste clean-up services⁵ in 2020. It provided recommendations to Councils in the ISJO region, presenting solutions for the improved management of household bulky waste, including measures to support, grow, and develop new networks and enterprises that reduce disposal of household bulk waste to landfill and how to improve public awareness and education on the issue. It also aimed to engage government and non-government stakeholders in transformation of management of household cleanup waste; providing fundamental motivation for the Illawarra Shoalhaven Joint Organisation Regional Waste Program to initiate a trial project in collaboration with Wollongong City Council in February 2021.

This trial sought to verify data and research findings and explore a collection model to divert household cleanup waste from landfill. The findings and recommendations outlined below will provide Council with feasible and practical solutions for the improved collection of reusable household cleanup waste, to help transform the management in the transition to a more circular economy.

Methodology

The methodology for this project was developed to trial a scalable means of recovering resources for reuse from household cleanup waste and has applicability for all Councils that manage cleanup waste. ISJO partnered with Wollongong City Council conducting a first pass collection of reusable items over a period of four weeks between February and March 2021. Wollongong’s service presented the highest opportunity for maximum resource recovery due to their use of a compactor truck in the collection of cleanup waste.

Detailed below the project included six phases:

1. Collection
2. Preparation of items for sale
3. Marketing
4. ‘Second time around’ sale
5. Charitable redistribution
6. Residual items

Phase	Methodology
1. Collection	<p>The trial involved the collection of reusable or repairable household items; primary geographic data; and information on presentation behaviour.</p> <p>Physical collection occurred within the Wollongong LGA over a four week period (14 February - 14 March 2021) on a daily basis from Sunday to Thursday between 12pm and 6pm.</p> <ul style="list-style-type: none"> ▪ The collection contractor provided ISJO with a list of booked cleanup service addresses on the morning prior to booked collection. This list was ordered alphabetically by suburb and provided in a pdf format. ▪ ISJO utilised a navigation and delivery mobile application called Circuit (list required conversion to an excel format) to optimise collection routes based on the number of booked properties, distance between them and the collection window. ▪ Three ISJO staff members attended each booked address to assess recovery of items for reuse. A one-tonne long wheeled base van was hired to facilitate the collection and transport of items. ▪ Items were collected from the kerb that matched the end market social trends of retro / vintage. ▪ Data was collected through the mobile app, providing the opportunity to capture presentation rates and details of reusable items that were collected. A photograph was also taken of items presented at each property. ▪ Correspondence was distributed to each booked address with items presented, communicating information about the project.

<p>2. Preparation of items for sale</p>	<ul style="list-style-type: none"> ▪ A commercial property (shopfront) was secured on a two month short term lease in a high traffic retail precinct in the Wollongong CBD (1B/281 Crown St). ▪ Each day, collected items were transported to the property for storage. ▪ Following the four week collection period, ISJO staff worked with Green Connect staff and volunteers over six days to clean, refurbish and repair items making them suitable for sale. ▪ ISJO staff also catalogued all items collected and produced an inventory sheet detailing: item number and description, weight (kg), volume (m³). ▪ All 394 items prepared for sale were priced and labelled, with price also included on the inventory sheet. Pricing was structured with the aim to sell all items over the period of one weekend. Desktop research was undertaken to assess value of specific items, removing subjectivity. Pricing was then determined by applying a 50-70% discount from online listed prices of similar items. ▪ The items were displayed using retail visual merchandising principles to improve customer navigation through the shopfront.
<p>3. Marketing</p>	<p>As this was a new concept, a multifaceted marketing campaign was required. Messaging was developed to test the responsiveness of an audience which was different to typical op shop or tip shop clients and to test receptiveness to non-typical waste and resource recovery messaging.</p> <ul style="list-style-type: none"> ▪ A sales and marketing company was engaged to design collateral based around the “second time around” theme. This theme was derived through desktop research and market tested with the local community in a retail setting. ▪ A social media event campaign was utilised to reach the targeted audience. Partners (Council and Green Connect) shared the event through social media with their connections. ▪ For a fortnight prior to the sale weekend, key pieces of interest were arranged in a window display as a teaser marketing campaign. Banners were also displayed in the windows in the lead up to the sale weekend. ▪ Posters were distributed through University of Wollongong and TAFE campuses along with supporting businesses. ▪ Bike billboards were deployed during the sale event weekend throughout the surrounding retail precinct and recreational areas. ▪ Media releases engaged with local outlets during the collection phase and in the lead up to the sale. ▪ Report and a case study distributed through ISJO Councils and connections.

<p>4. “Second time around” sale</p>	<p>The shopfront was located in an existing retail precinct with high passing foot traffic between public transport links. This tested a point of difference from typical op shop / tip shop locations.</p> <p>Items were only available for sale to the public through a two-day sale weekend with a preview and silent auction held on the Friday evening.</p> <p><u>Silent Auction – 26th March 2021 from 6.30pm – 9pm</u></p> <p>This event was marketed as a (gallery / museum style) preview evening with refreshments and the opportunity to bid on select items.</p> <p><u>Sale Weekend – 27th & 28th March 2021 from 10am – 5pm</u></p> <ul style="list-style-type: none"> ▪ With a Covid-19 safe plan in place, customers were able to purchase items on a first in first served basis. ▪ To complete a transaction, customers took the item and / or price tag to the front counter staff. ▪ Customers were able to pay via cash or eftpos with transactions handled by Green Connect. ▪ Once an item was sold, it was marked on the inventory sheet including any price adjustment made at the point of sale. ▪ Price tags were retained to cross reference with sales and as a method of control. ▪ Small items were able to be taken by the customer, however for the safety of customers and staff larger items were required to be collected outside of the sale trading hours. ▪ Delivery was offered for a nominal fee, completed during the following week by ISJO staff. ▪ Several times through the day, the inventory was assessed, prices were reviewed and the remaining items were rearranged on the shop floor to maintain appeal for new customers.
<p>5. Charitable redistribution</p>	<p>One of the objectives of the project was to support community members in need. Over the period of the sale weekend, such members of the community were identified and assisted through a charitable donation of goods.</p> <p>For a week following the sale weekend, larger remaining items were listed on online marketplaces for sale via Green Connect. Other smaller items were redistributed for sale through the Green Connect op shop.</p> <p>All funds raised through the sale of goods was donated to Green Connect to continue their work with young people and former refugees.</p>
<p>6. Residual Items</p>	<p>Items that could not be repaired on time or in budget were taken to a waste and resource recovery facility with recyclable items sorted prior to drop off.</p>

Limitations

The limitations associated with this trial were most notably related to financial funding, staff resourcing and the constraints of working within the context of an existing collection contract.

This project was funded by ISJO through allocation of existing NSW EPA Better Waste and Recycling (BWR) grant funds and supported by in-kind contribution of ISJO staff time. BWR funding is limited and with ISJO staff allocating time from existing work schedules, this trial could only be undertaken over a four week period.

Council's contract for cleanup waste includes the management and delivery; engagement and communication with residents; booking system and finally collection services for all materials (recyclables including metals, mattresses, e-waste and residual to landfill). This presented some limitations related to how and when the first pass collections occurred. Firstly, with all communications handled by the contractor there were some ineffective feedback loops when residents made contact regarding the project. Secondly, the format and timing of receipt of the collection list provided very little time for ISJO staff to efficiently plan first pass collection routes. Thirdly, with the contractor commencing daily collection services at 6am across two routes – north and south – the first pass collections had to be conducted on the previous day. This resulted in a large non-presentation rate, potentially reducing the available volume of reusable items for salvage. These limitations can be addressed with recommendations as suggested further in this report.

Findings

This section aims to highlight the key findings of the project, providing important reflections on a first pass collection model by assessing the efficiencies and challenges of the six phases of the project. These findings will inform recommendations for how Council can feasibly and practically increase reuse of items from the clean up stream.

1. Collection

This first phase of the project provided insight into householder’s waste presentation behaviours, the types and volumes of waste presented with capacity for reuse, and geographical data identifying distribution of reusable items. Key collection data is outlined in the Figure 2 below.

During the four week collection period, ISJO staff attended a total of 2,051 properties with a booked cleanup service across the Wollongong LGA. This represented 81.3% of all properties scheduled in the period. The remaining properties were not factored in by route optimisation software given pre-set parameters established within resource and time constraints. The software excluding outlying suburbs or residences that could not be attended within a six hour collection widow.

Collection was undertaken by three ISJO staff in two vehicles – a leased one-tonne long wheeled base van and an ISJO utility vehicle. This provided resourcing for data collection through the mobile app, photographs at each property, delivery of resident correspondence as well as handling items. If a first pass collection were to be included as an add-on to an existing service, it could be undertaken by two staff with a single suitable sized vehicle, reducing costs.

This collection phase also presented findings on when and how households presented their cleanup waste for collection. Of the 2,051 properties attended, only 57.8% (1,186) had their material on the kerb between the hours of 12pm – 6pm on the day prior to collection. This finding can be correlated with a number of factors.

Firstly, communication through the contracted booking system and Council’s own website and other collateral direct householders not to place cleanup waste on the kerb more than 24hrs prior to their booked service. Therefore many residents do not present items until after business / school hours. This was supported by higher presentation rates in suburbs with a Monday morning collection, where residents are able to present to the kerb on Sunday (e.g. Helensburgh – 67%, Mt Ousley – 93%). Additionally 72 properties had their items inside their property boundary waiting to be presented to the kerb. This finding indicates that a change to first pass collection times vs. contracted collection, or to household presentation periods to greater than 24hrs, is required to maximise collection of reusable items.

No. of properties	First pass collection period: 14 Feb – 14 Mar 2021
2,525	Scheduled for a cleanup collection service
2,051	Attended on first pass collection routes
1,186	Items were presented on the kerb ready for collection

Reusable items	Collected for diversion
401	# of items collected from kerbside
137	# of properties items were collected from
72 m ³	Volume collected through first pass collection
1.8 tonnes	Weight collected through first pass collection

Figure 2. First pass collection – Key data 14 Feb to 14 Mar 2021

Secondly, geographic data and relative socio-economic index factors found that some of less advantaged suburbs had higher presentation rates during first pass collection times of 12pm – 6pm. Suburbs including Unanderra, Lake Heights and Warrawong with SEIFA⁶ rankings between 10 – 20 percentile of suburbs across the country, averaged closer to 70% presentation rates. This finding indicates householders at home during business hours, whether it be in social housing, older populations or single income households.

Finally, householders are taking care to preserve items they may feel have an inherent reuse or resale value. This was demonstrated by the number of households taking measures to ‘protect’ items from weather by wrapping or covering them in plastic, tarps or placing them in crates (see Figure 3). This was supported by the way some households also presented items on the kerb – neatly ‘displayed’ for a passer-by. Some even displaying ‘free’ signs with details that a Council collection was booked. This indicates either an interest in informal reuse by a neighbour or potentially the understanding of cleanup services that items with reuse value are sorted prior to landfill.



Figure 3. Items protected from weather as presented during first pass collection trial

Per Figure 2 above, of the 1,186 properties attended that had their material presented for collection, items of assessed reuse value for this trial were collected from only 137 properties – 11.6% in total. This statistic assists in understanding a baseline for the percentage of immediately reusable items in the cleanup waste stream. It must be noted however, that not all items with reuse value were collected. ISJO staff sought out items that were on social trend for the intended audience and would not require substantial time or financial investment to refurbish. Other items not collected, regardless of condition - electrical items, lounges and other bulky goods and many children’s toys and sporting goods with potential health and safety implications for resale. There were however definitive

geographical trends aligned to where items were collected through this trial, which supports this projects recommendations to Council.

Data produced through this collection phase of the project shows a direct correlation between ABS socio-economic indexes, suburb household average income data and suburbs with the highest collection rates, i.e. number of households presenting items / number of households collected from. These areas are predominantly northern suburbs of the Wollongong LGA – Figure 4 shows the four suburbs with the highest collection rate have strong relative socio-economic advantage, all with SEIFA rankings above 1060 – demonstrating they are in the top 12% of the most affluent suburbs in Australia⁶.

Suburb	2016 SEIFA percentile ranking with Australia	Collection rate - % presented / collected
Thirroul	93	26
Wombarra	97	25
Helensburgh	88	24
Coledale	97	22

Figure 4. Suburbs with highest collection rates and SEIFA percentile (ABS 2018)

This contrasts to areas where very few items were collected with reuse / resale value in comparison to the number of households that presented in those suburbs. These areas include Cringila and Warrawong, ranked 3 and 2 respectively in the SEIFA percentile ranking and where reusable items were only collected from one household in total. While not conclusive evidence, a trend that geographically concentrated socio-economic inequity correlates with waste behaviours, is also evidenced through the fact that median household income in Thirroul \$1947 p/w, in contrast with Cringila being \$901 p/w⁷. It may be deduced that with higher household incomes, the volume of usable and saleable items presented in cleanup services increases. This finding supports a recommendation for further data collection.

With 72m³ of furniture and homewares collected over one month that could be reused or sold with minimal repairs or refurbishment, this phase demonstrates a percentage of Wollongong’s household waste stream that can be diverted from landfill. It also supports conclusions made by Stanes et al. (2020)⁵ that primary reasons for disposing of unwanted goods included decluttering and items no longer having a use – indicating that some items disposed of through cleanup were still safe, functional and held value.

2. Preparation of items for sale

All items assessed as reusable were collected and transported each day to a leased commercial space in the Wollongong CBD. Negotiation with various real estate agents revealed an aversion to short-term leases in central properties for projects such as this. Colliers International was the only agency which was able to provide such a space – and Shop 1B / 281 Crown St Wollongong was secured. The properties size was adequate at 391m² providing space for repairs, storage and display. It did not however have loading dock access and with busy street frontage and limited parking, difficulties were encountered in bring items in and out of the property. However, as reflected in community feedback,

the location was accessible and great advertisement to passing traffic. Again, it also differed from a typical op shop / tip shop location being in a high traffic central retail precinct. Findings from this trial regarding location for storage and sale of items relate to economic sustainability. The cost of a commercial lease was a financial challenge, but was found to add value given this is a new concept. If the recommendation to include a first pass collection as a quarterly add-on to existing cleanup services was taken up by Council, storage of items on Council land in secure containers and set up for sale at Council assets such as community halls or stadiums would be preferred to a commercial lease.

During this phase, items were also cleaned, repaired and refurbished by ISJO and Green Connect staff. Most items simply required a good clean, a screw or a bit of glue. Others needed a coat of paint or a new handle. Some required skilled repairs and tools which were provided by a Green Connect staff member. The time and cost of undertaking this was considered at the kerb when collecting each item with the trial finding that cost benefit analysis for each item is important in effectively allocating resources for these tasks. Some examples (see Figure 5 below) included a set of retro dining chairs that had 30mins time spent cleaning them and sold for \$338; a spend of \$9 on bamboo and 45mins labour for an outdoor chaise that sold for \$100; versus a Danish teak click clack that sold for \$300 and had \$114 of new materials and 1.5hrs labour invested. Repairs and refurbishment could also incorporate assistance from TAFE students, high school VET students or local Men's Sheds and similar community groups, providing additional social outcomes.

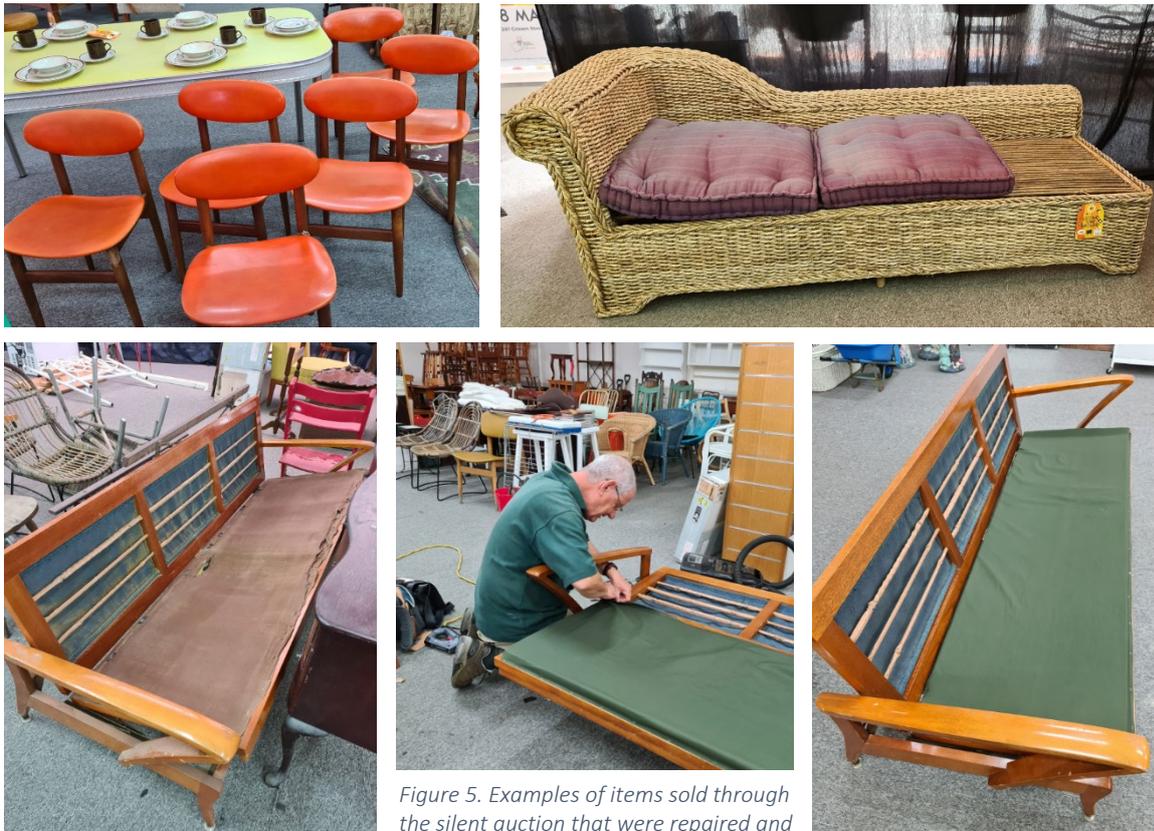


Figure 5. Examples of items sold through the silent auction that were repaired and refurbished

During this preparation phase, items were catalogued in an excel inventory sheet. Each item was given a number and description and was measured with weight and volume recorded.

All items were also priced and labelled with desktop research undertaken to determine on-line market place prices for similar items, with pricing structured at 50-70% less to motivate sales. The key objective was to 're-home' all 394 items over the period of one weekend. This pricing structure was found to be effective with more than half of all items sold in the first 4 hrs of opening on Saturday.

The effectiveness of displaying items using retail visual merchandising principles cannot be underestimated (see Figure 6). It provided customers with a clear path to navigate the 'store', see items as they would be set up in their own homes or yards and provide for add-on sales.



Figure 6. Visual merchandising principles provided appealing displays of items

3. Marketing

For this trial, direct and targeted marketing was through the following means:

- Banners displayed in the shop window
- Posters in select sites at the University of Wollongong, TAFE and Green Connect – NB. libraries were contacted but no response was received
- Bike billboards in Crown Street Mall during sale weekend (ISJO assets)
- Social media linked to partner pages (Wollongong Council and Green Connect)
- Media releases through ISJO’s media partner Waples resulting in interviews with ABC, Illawarra Mercury and community profile announcement on i98FM and 96.5FM

Some of the suggestions for a broader approach included posting on community social media pages e.g. ‘What’s on in the Gong’, as well as posters being displayed in public places including the mall and at the markets. These ideas should be considered for future similar initiatives.

4. ‘Second time around’ sale

With one measure of success being the clearance of items over the sale weekend, this pilot was successful. 92% of the goods collected from the kerb sold over the two day weekend event (see Figure 7). The nature of the sale being a limited ‘pop-up’ proved effective in hyping up the novelty of the event and attracting customers. A queue started forming at 9.30am on Saturday with over 60 people in the line by opening at 10am. Approximately 750 people walked through the doors during Saturday and Sunday, with an additional 55 people attending the silent auction preview on Friday evening.

The size and speed of sales reflected interest and a market which values reuse initiatives and opportunities to purchase second-hand goods. It also reflects the effectiveness of the sale processes on the day in terms of merchandising, pricing, and clear instructions at the door for how customers could purchase items. The date and time of sale of each time was recorded on the inventory sheet which provides additional data to illustrate social trends in second hand goods. As previously noted, 55% of items sold in the first 4 hrs of opening on Saturday morning. Effective pricing, labelling, merchandising, payment and delivery options are key to future reuse sales events.

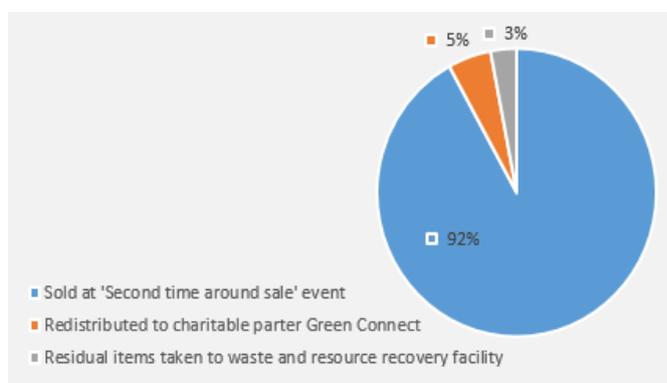


Figure 7. Redistribution of items from first pass collection trial

Attendee feedback was collected during the sale (see Figure 8). These responses can be summarised as suggesting strong support for:

- regular future events
- central and accessible locations
- quality and quantity of items
- marketing to increase customer base

	Attendee Feedback Notes	Learnings
Request future events	<ul style="list-style-type: none"> Again please Fab idea- would love to see this again Awesome!!! Please yes do it again Fabulous do it again Do it again x 18 Quarterly would be great! Love it. Do this again please, every month Great initiative!! Please do it again- more often would be cool! 	Overwhelmingly positive response to the event, with many requests for it to be a regular event
Location	<ul style="list-style-type: none"> Central location is great Liked central venue! Outdoors would be great, at a park or something! Good location 	Central accessible location is important to community
Positive comments	<ul style="list-style-type: none"> Lovely friendly staff & some great finds, would love to see this again! Yes, you should definitely do this again. Advertise more next time though. This was great! Such good items and good prices. Will come again. Yes! Do this as often as possible! (every 3-4 months) Thank you, so great for the Gong! Would love to see it again. Love that it is from the kerb! I got a bargain! Great shop, good products, right price. Would like this to stay! A great initiative promoting sustainability. Love to see this again! What a wonderful initiative-definitely regular please. Thank you and great job team! The photos on the face book page were good! Please do it again. Great selection, good venue, and information on some of the items was great. Congratulations that these were saved from landfill. I love my stash! Great, would love to see this more often. Win for planet & people. A fantastic idea & service to our community, thanks for your work. A great idea well worth the visit. Great fun, keep up the good work. Well promoted. Good selection and was well organized. Fantastic! Would love for this to continue. Can't wait for next on. Brilliant idea. Thank you! Fantastic initiative. Great! Love it! Terrific Fantastic 	<p>Overwhelmingly positive community response to the project</p> <p>Much of the community that attended would like to see it again, with requests for regular sales</p> <p>Positive feedback on the method of sales (take price label to counter for payment)</p>
Suggestions	<p>Marketing suggestions:</p> <ul style="list-style-type: none"> Post on community social media pages, e.g. what's on in the gong Public posters at markets/mall <p>General suggestions:</p> <ul style="list-style-type: none"> Formal receipts Provide a donation point Extra eftpos terminal to make queue quicker Using the price tickets to take to the counter was a good idea A longer time for the sale to run would be good Heard you had a silent auction before the store opened and it seems a bit unfair 	<p>Expand marketing strategies in future models</p> <p>People would like to be able to donate items</p> <p>Pricing / payment method was effective</p>

Figure 8. Written feedback provided by attendees at the sale event

Beyond the overwhelmingly positive verbal and written response to the project, the sales data (reflected in Figure 7) demonstrates a strong market for this type of initiative and the types of products salvaged (particularly small and large furniture items, household goods, and camping and outdoor items). Inventory was reassessed at several stages throughout the event, pricing was amended and items re-arranged. This was important for maintaining appeal for new customers over the second half of the weekend when fewer items were available. The items that remained after the sale was limited but included a small amount of larger furniture (table and chairs, dresser) and some children's items including small furniture and some toys.

Partnerships during the sale were effective, with both ISJO and Green Connect staff and volunteers providing efficient sale processes during the event and all partners including Council promoting the event through their social media platforms. The relationship with a social enterprise / charitable partner was an important element of the project, amplifying the social benefits and positive externalities produced by the initiative for the community. For future approaches this collaborative approach is recommended. Making this event a regular service feature could provide for partnerships with a range of different groups and charitable organisations, expanding the impact and assisting different communities across the LGA.

5. Charitable redistribution

As the partner charitable organisation, Green Connect supported ISJO in the sale and after sale processes. With only 8% of items not sold, Green Connect staff advertised larger items through on-line marketplaces and assisted in redistributing smaller items through their op-shop in Unanderra. They were able to re-home 5% of remaining items, with a total volume on 4m³.

Throughout the sale event, opportunities were identified to immediately assist members of the community in need and items were reduced in price at the point of sale or 'bundled' to effectively provide items for free. ISJO assisted with delivery at no cost to customers' homes on 3 occasions.

The social benefits of this trial are ongoing with all sale proceeds donated to Green Connect. Support of over \$6,000 will continue work with local youth and former refugees in the Wollongong community.

6. Residual items

The items that were unable to be sold or redistributed, were sorted and taken to a waste and resource recovery facility. Only 3% of total item collected were not placed on the floor for sale as they could not be repaired on time or budget. Most of these items were collected in the first week and hindsight should have been left on the kerb for cleanup collection. Again, this reflects the importance of trained collection staff and a knowledge of repair and where and how items can be sold or redistributed.

Summary of findings

Overall, the project was effective in identifying the successes and challenges of a first pass collection model.

- The collection phase provided resource challenges in labour and time, however also proved a significant volume of items with immediate reuse and sale value are being disposed of.
- The preparation of items for sale phase showed that a central location attracted a high level of foot traffic and was received by customers well. However, rental of this space for storage and sale processes were costly requiring rethinking for future initiatives.
- Marketing could be improved through greater reach i.e. advertising in libraries and community centres. “Second Time Around” brand recognition would grow with quarterly pop up events rather than a one off sale event.
- The sale process was effective and collaboration with a charitable partner assisted in this being a simple process for customers. Delivery was a vital service offering for some of the larger furniture items and assisted in accessibility and equity for customers.
- The redistribution process was simple and effective, with the charitable partner having responsibility for re-homing remaining items.
- Disposal of unrepairable items disposed of was minimal due to trained collection staff and consistency in approach.

Challenges encountered during the project were primarily resource limitations and efficiency during collection, with presentation behaviours and collection times resulting in a low presentation rate.

Clear successes include the volume of goods diverted during the sale which demonstrated the apparent market for these types of goods.

Arguably the most important successes were the environmental and social outcomes produced by the project, as significant motivators for Councils to invest in such initiatives. These outcomes are discussed below.

Outcomes

Environmental

Positive environmental outcomes of a first pass collection service were demonstrated through this trial project. The total volume of waste collected from the kerb was 72m³, with only 2m³ of material that was unrepairable or not financially viable to repair sorted and taken for recycling or disposal.

Reusable items destined for landfill totalling 66m³ were sold during the sale weekend. An additional 4m³ was redistributed through Green Connect for sale through their op shop or to members of their networks in need.



Figure 9. Total volume and weight of cleanup waste items diverted from landfill through this four week trial

This diversion of waste from landfill through the project has not only resulted in resource recovery. A reduction of over 10 tonnes of CO² emissions can be attributed to this trial. Ongoing this could support Council in meeting emission reduction targets.

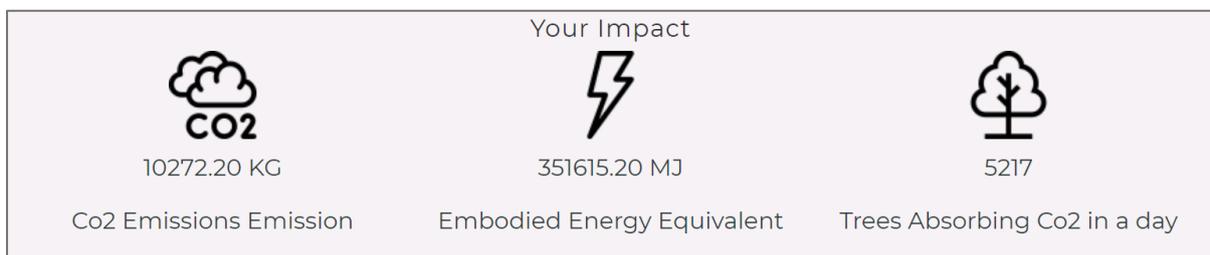


Figure 10. Environmental impact of diversion of materials from landfill

Social

The project benefited all partners involved through short term employment, skills development and direct funding for ongoing work with less advantaged communities.

Broad social impacts included improving community awareness regarding end-of-life for cleanup waste and opportunities for the purchase of good quality items at low cost. Comments at the door during the sale included *'This will make me think twice about throwing something out'* and *'This is amazing that all this has been rescued from landfill!'*

Economic

There were several economic benefits and challenges associated with the project. Benefits include sale proceeds donated to the partner charity extending to the local community; employment opportunities; financial savings to Council of reduced landfill; and confirmation that there is an appetite and market for such an initiative.

With success of the trial demonstrated through sale proceeds, an overwhelmingly positive community interest and response and 70m³ diverted from landfill, improvements for future models would be to reduce operational costs for economic sustainability.

With daily north and south cleanup service routes in Wollongong, repair and refurbishment and the delivery of pop up sales events there are significant employment opportunities within this model. These roles could be facilitated through Government supported programs, attached to Council contracts or delivered by charities and social enterprises. The model can also be designed to facilitate training and skills development for marginalised and disadvantaged unemployment groups in Wollongong.

As already noted, the financial cost of this trial in its current form would not be economically viable long term purely based on savings over the weighbridge. However, factoring in landfill space savings at \$336m³, extrapolating the diverted 70m³ to a minimum of over 800m³ over the period of a year and making changes to storage and sale location away from a commercially leased space, it starts to become sustainable. Include the social and environmental benefits produced and the value of an ongoing approach by Council is tangible.

Recommendations

Findings from this project, provide opportunities for Council to improve recovery of reusable items from the cleanup waste stream and assist with meeting emission reduction targets³.

1. Implement a first pass collection service for reusable items

The volume of reusable items redistributed through this trial and the positive community response indicates viability for a permanent first pass collection service with quarterly pop-up sales events. This would be an add-on to the existing contracted cleanup collection service. It would provide Council with reportable social and environmental outcomes and move Council toward leading practice in management of household cleanup waste.

2. Collaborate with partners and networks

Council should utilise and enhance collaborative partnerships to increase impact and resilience of programs and services and provide social outcomes. A primary organisation (Government or non-Government) should be engaged to lead the service, with a tender process engaging multiple charitable partners to provide for increasing impact across the community.

3. Define collection parameters

A change in collection logistics (including potential for drop-off) from what was employed in this trial is required to maximise recovery of reusable items. As demonstrated in the findings, items were collected from only 137 out of the 2,051 households attended. This was in part due to the timing of the first pass collection and in part due to socio-economic indexes of geographic locations / suburbs. For example, a change to the contracted cleanup collection start time to 8am would allow the first pass collection to commence at 6am. Consistency in sharing information and route planning between the contracted and add-on services could be achieved through the use of route planning software.

4. Coordinated storage of items and quarterly sale events

A centrally located sale event assists effectiveness through accessibility and higher general foot traffic. However, the cost of a large central commercial property year-round is economically unsustainable. With quarterly sale events recommended, salvaged items could be stored in shipping containers at Wollongong Waste & Resource Recovery Park. Refurbishment and sales would then be held at either Council run community halls / sporting stadiums / parks across the LGA; or vacant spaces in the CBD through Renew programs. This would benefit all stakeholders and assist Council with its Creative Wollongong Strategy 2019-2024⁸, seeing underused and underutilised spaces activated.

5. Create a brand

Marketing and communications should be developed in collaboration with internal and external stakeholders for defined core messaging leading to a brand being established and recognised by the community. Consistency is important in raising brand awareness of a new concept and having all partners distribute messaging will provide reach into communities which may otherwise not be receiving Council communications. Messaging needs to translate to general Council waste education, including the contracted cleanup service. Delivery should be across a range of media for accessibility and maintaining up-to-date information for on-line platforms. With quarterly events scheduled, the aim is for the community to be aware of regular sale events in their local area.

Conclusion

As the bodies responsible for the collection and management of waste, Councils have critical change making power in improving service delivery, collection models, and increased reuse, recycling, and recovery of resources in the move towards a circular economy.

This project trialled a first pass collection service for cleanup waste with the aim of exploring alternative service models and validate previous research into household behaviours. The initiative was well received by the community and a success: redistributing 97% of items collected; validating previous research findings; and providing practical recommendations to inform future service delivery.

Effective management of the household cleanup waste stream presents opportunity for positive environmental, social, and economic outcomes for council and community. Through the addition of a first pass collection service, annual emission reductions of 134 tonnes of CO² are conservatively estimated by diverting these material from landfill. Employment opportunities and skills development as well as social benefits through partnership with a local community groups will lead to positive social benefits. Economically, at \$336/m³ to manage landfill space, services to divert any volume of material are financially prudent.

The finding and outcomes of this project provide opportunities for Council to improve management of cleanup waste in turn meeting UN SDG's, internal targets, community requirements and the broader endeavour to move toward a circular economy.

Appendix

A: Financial analysis of the first pass collection trial

Service coordination	Project management	ISJO – in-kind	(\$ 7,000)
	Route coordination – Circuit routing app	ISJO – BWR	\$ 130
	Charitable partner – donation (45hrs repair / 18hrs sale event / communication)	ISJO – BWR	\$ 3,000
	Delivery of items post sale event	ISJO – BWR	\$ 470
	Collateral development, printing and distribution - reusable	ISJO – BWR	\$ 2,520
	Media campaign – targeted social media advertising	ISJO – BWR	\$ 380
	Media campaign – bike billboard advertising	ISJO – BWR	\$ 640
Infrastructure & materials	Commercial property – leased for storage, refurbishment and sale event	ISJO – BWR	\$ 10,000
	Vehicle – leased / fuelled for 4 weeks for collection and transport of items	ISJO – BWR	\$ 2, 844
	Refurbishment and repair materials	ISJO – BWR	\$ 700
	Catering – auction / preview event	ISJO – BWR	\$ 165
Personnel resourcing	Collection – 3 staff x 5 days per week over the 4 week period	ISJO – BWR	\$ 3,825
		ISJO – in-kind	(\$ 11, 475)
	Sale event – 4 staff x 2 days + 1 evening	ISJO – BWR	\$ 600
		ISJO – in-kind	(\$ 2,500)
TOTAL	ISJO – Better Waste and Recycling grant funds		\$ 25,274
	ISJO – in-kind		(\$ 20,975)
			\$ 46,249

B: Requirements for ongoing implementation

Service coordination	Project management		
	Route coordination with contractor, i.e. use of app or other software		
	Tender for partner charitable organisations for refurbishment, repair, sale events and even collection		
	Collateral development, printing and distribution		
	Media campaign		
Infrastructure & materials	Secure and dry storage – 2 x 40ft shipping containers or equivalent space		
	Sale event space – minimum 500m ² for quarterly events		
	Collection and transport vehicle – one-tonne LWB van or equivalent		
	Refurbishment and repair materials		
Personnel resourcing	Task	# of staff	# days
	First pass collection	2	4 / week
	Cataloguing, repair, refurbishment, cleaning, etc of items	2	1 / week
	Transport items to sale event location and visual merchandising	2	5 / quarter
	Sale event	4	2 / quarter
	Redistribution and disposal post sale event	2	2 / quarter

References

1. <https://www.epa.nsw.gov.au/publications/wastestrategy/20p2373-waste-resource-recovery-report-2108-19>
 2. <https://www.charitablerecycling.org.au/wp-content/uploads/2020/08/Reuse-Impact-Calculator-Methodology.pdf>
 3. https://www.wollongong.nsw.gov.au/_data/assets/pdf_file/0011/121214/Sustainable-Wollongong-2030.pdf
 4. <https://www.un.org/sustainabledevelopment/>
 5. <https://documents.uow.edu.au/content/groups/public/@web/@gc/documents/doc/uow268897.pdf>
https://www.isjo.org.au/assets/b79ea50da9/Benchmarking-kerbside-cleanup-Summary-and-recommendations-report_Feb-2021.pdf
 6. http://stat.data.abs.gov.au/Index.aspx?DataSetCode=SEIFA_SSC
 7. https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SC11116?opendocument
 8. https://wollongong.nsw.gov.au/_data/assets/pdf_file/0016/8215/Creative-Wollongong-2019-2024.pdf
-