



# Reusable serviceware/packaging at markets (& events) in Aotearoa New Zealand

In 2022/23 [Reuse Aotearoa](#) and [Takeaway Throwaways](#) co-funded interview-based research with market operators and third-party reuse providers in Aotearoa New Zealand. The research investigated how markets were implementing reusable serviceware systems for food and drink to be consumed onsite. The two key recommendations based on the findings of the research are:

1. **Build a sustainable financial model into the system from the outset, so that it can operate fairly and effectively for the long-term.**
2. **Be aware of the system boundaries unique to each market and build the system accordingly.**

This information sheet offers guidance and details the key considerations for market operators and/or vendors wanting to set up viable reuse systems at events and markets.

**Reusable serviceware** offers an alternative to single-use, with many benefits such as a reduction in waste and greenhouse gas emissions. Reusable packaging also has the potential to reduce packaging related costs, be cost neutral or be cost positive. Setting up an effective reuse system at markets that works well for all users and covers its costs for the long-term requires good planning, the buy-in of all involved, and a sustainable funding model.



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## Who needs to be involved?

Before setting up a reusable serviceware system, identify the key people who need to be at the table to design the system. These people will determine how the system is run, the size and ownership structure of the reusable serviceware fleet (cups, bowls etc) and how both the initial capital expenditure (cap-ex) and operational expenditure (op-ex) are funded. Having key people involved from the beginning, increases the chances of success.

The Market team (operators/owners/managers/workers), food and beverage vendors, and other users of the system (e.g. customers) can work together to design the reuse system.

Other people who might be involved in the creation of the reuse system could be third party providers of reusable serviceware or systems, and external funders. These people can be brought into discussions during system design, if and as required.

## Motivation

When key parties are motivated to establish and support the system, there is a much better chance of success. Keeping up and boosting motivation is critical! You could do this through celebrating the learnings and successes of your reuse system through your social media or internally with your team, by applying for awards for your hard work, putting out press releases and writing newsletters.

## Reusable serviceware system elements

Reusable serviceware systems at markets are made up of several components:

- 1. Fleet:** the complete set of serviceware in the system, for example, cups, plates, containers
- 2. Logistics:** distribution and re-distribution of clean serviceware to the market vendors for use and collection/ retrieval of empty containers for washing
- 3. Preparation for reuse:** washing, sanitising, inspection for damage and repair/ maintenance, stacking
- 4. Storage:** an appropriate location to keep the serviceware between markets





## How much does it cost?

Table 1 shows the different ways of approaching funding, ownership and operation of these system elements:

**Table 1**

System element	Internal (market/vendor)	External
Fleet ownership, storage and logistics	- Market owned - Vendor owned	- Third party provider - Customer BYO
Preparation for reuse services (washing, inspection, repair and maintenance)	- Market delivered (paid or volunteer staff)	- Third party provider - Customer takes home BYO container to wash, or washes using onsite system
Washing infrastructure	- Steriliser and washing system permanently installed in permanent storage space at/near market	- Third party owned/ provided mobile washing trailer/station - Borrowed/hired washing infrastructure (e.g. nearby hall or restaurant)

Develop a budget that covers both short and long-term costs of the system. These costs may be those required for a self-run system, or to subcontract a third-party provider to operate (and in some cases, provide the fleet as well).

The costs of reusable serviceware systems include the initial cap-ex and the ongoing op-ex. Cap-ex covers things like the purchase of the reusable serviceware fleet and washing infrastructure. Op-ex covers things like labour costs for the logistics and washing at each market, and any admin, communications and relationship management associated with running the system.

The set-up and operating costs will depend on the size and scale of the desired system, available space to install, or arrangement to borrow/lease washing equipment. We have given sample budgets to indicate the types of costs likely to be incurred, but these are not intended to be a guide for specific budgets.

## Market-run system sample budgets

### Capital expenditure (cap-ex one-off/set-up costs)

- Sanitising (and handwashing) infrastructure
- Fleet of serviceware
- Storage containers
- Flexi-tubs/collection bins
- Signage
- Tablecloth/table
- Trolleys

### Sample cap-ex budget A

Steriliser & racks	\$12,000
Fleet of serviceware	\$500
Storage containers	\$150
Signage	\$200
Tablecloth/table	\$100
Trolleys	\$200
Modification to storage, cabinetry, plumbing, bench, etc	\$10,000
<b>Total</b>	<b>\$23,150</b>

### Sample cap-ex budget B

Bowls & washing equipment	\$150
Fleet of serviceware	\$500
Storage containers	\$150
Signage	\$200
Tablecloth/table	\$100
Trolleys	\$200
Modifications to leased plumbing, bench, etc to have a system capable of sterilisation	\$500
<b>Total</b>	<b>\$1,800</b>

## Market-run system sample budgets

### Operating expenditure (op-ex ongoing costs)

- Staff (ranging from living wage \$26-\$35/hr)
- Power
- Water
- Lease of space to run reuse operation
- Cleaning liquid/sanitiser

### Sample op-ex budget (per market)

Staff (1 dedicated staff for 5 hr @ 35/hr)	\$175
Sanitiser solution	\$5
Travel	\$25
Replenish lost/damaged stock/equipment	\$10
<b>Total per event</b>	<b>\$215</b>

A **Third Party Provider** could be contracted to run the reusable serviceware system at the event, or supply the equipment for the market to deliver the system themselves.

Third party providers may charge for these services in various ways, combining one or more of:

- an hourly rate
- a fixed price service charge
- a charge per attendee expected
- a charge per unit of serviceware
- a charge to travel to the event location

### Sample TPP charges for one event

Staff (2 x staff for 6 hr @ 35/hr)	\$420
Delivery charge	\$50
Fleet charge(.25x1000 units)	\$250
<b>Total</b>	<b>\$720</b>

In the early days of setting up your reuse system, you might need to operate your reusable system alongside waste management, requiring both systems to run (and costs to be incurred) in parallel, with more bins and staff required to deliver both systems. The tasks involved in reusable and single-use systems are different, single-use systems require waste to be sorted and consolidated, whereas reuse system tasks involve collecting, washing and restocking packaging.

## Weighing up the costs of single-use serviceware at markets

Managing single-use serviceware at markets carries costs related to labour, processing and/or disposal. For example separating waste for recycling and/or composting, requires the market team to decontaminate bins to ensure the waste streams are clean. Recyclable waste is often contaminated with food and will be sent to landfill if this residue isn't removed; removing residue from recyclables at markets and events would be via rinsing/washing. Coffee cups are not recyclable but are a common contaminant of market recycling bins.

Sending waste to landfill requires less infrastructure and fewer workers. However, the waste disposal cost is higher, and it has the worst environmental and social outcomes of any market waste system.

The cost and complexity of managing single-use serviceware may also become more difficult over time, and compostable products is a good example of this. Compostable product disposal can be relatively inexpensive, but composters are increasingly refusing to accept compostable packaging due to concerns around contamination, chemical additives and microplastics. There are also no nationally adopted standards and/or labelling requirements for compostable packaging, leaving both composters and market vendors and workers often guessing if the item before them is actually compostable.





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## Funding/generating revenue for operational costs

Revenue to fund the system op-ex can be generated in various ways. Table 2 sets out the revenue-raising options available to markets to cover a reuse system’s operational costs.

**Table 2**

Revenue type	Detail	Example budget
Borrow fee	Customer pays a non-refundable borrow fee to use the packaging	\$.50 per item borrowed 500 items borrowed per market \$250 revenue
Deposit system + borrow fee	Customer pays a refundable deposit and borrow fee, and receives back only the deposit	\$.50 per item borrowed \$2 deposit applied and refunded on return 500 items borrowed \$250 revenue
Vendor flat rate	Vendor pays a flat rate to use the system, added to their stallholder fee  <i>*example found in research of nominal vendor flat rate being charged, well below covering op-ex</i>	Vendors declare quantity of units normally sold and co-determine flat rate for service  Vendor normally sells 200 coffees per market and spends \$.25 cup+lid = \$50/market in SUP  Vendor flat rate to use reuse system set at \$40/market
All vendor fees increased	All stallholder fees increased to cover complete cost of system	All vendor fees increased by \$10 to cover system regardless of product sold 15 vendors = \$150 revenue
Vendor fee per unit	Vendor pays a fee per item used, similar or less than the equivalent single-use item (a cost they would normally incur)	Vendor pays \$.20 per unit used in system 200 cups used = \$40 revenue
Grants and funding	Funding sought from external funder e.g. territorial authority, community board, sponsor or other grant  <i>*example found in research</i>	\$2,500 grant received from council funder to support one year’s op-ex (\$200/market)



NEVILLE PORTER

## CASE STUDY

### Remarkables Market, Queenstown

Remarkables Market implemented a single-use cup ban in 2019. Their coffee carts switched to using second-hand ceramic cups and their juice bar to repurposed glass jars. Used cups and jars were collected during the day, washed and reused.

In 2023, the Market extended their ban on single-use cups to cover all single-use serviceware for both food and drink. In the first 10 weeks of this policy, the Market avoided the use of almost 13,500 single-use items. To increase capacity, the Market upgraded their dishwashing facility with a second industrial dishwasher and a bespoke dual sink bench funded by Queenstown Lakes District Council's Waste Minimisation Community Fund. Food is served on ceramic or enamel side/dinner plates and bowls, with stainless steel cutlery. The Market team handwashes, sanitises and returns the dishes to vendors during the market day for reuse. Vendors and customers alike are very supportive of the system.

Additionally, the Market has an agreement with DISHrupt (Sustainable Queenstown) to provide storage of their fleet of rentable serviceware and cups. In exchange, the Market borrow some of the DISHrupt-owned fleet to add to their Market-owned fleet on each market day.

### Funding capital expenditure

One-off/set up costs could be funded by a grant.

Grants are distributed both by local councils and central government agencies as well as industry bodies and other private donors. Many local councils have waste minimisation funding available specifically for investment at the top of the waste hierarchy (refuse, reduce, reuse).

These funds often prioritise funding infrastructure, rather than ongoing operational expenses.

WasteMINZ have compiled [a helpful list of all the councils who have funding available for waste minimisation projects on their website.](#)

Ultimately, a self-funding reusable serviceware system will be the most sustainable long-term financial model. Most market and third-party operators interviewed in the research had received some financial support to establish their reusable serviceware system infrastructure. However, none had yet achieved a financial model that fully covered the system's operational costs.



# Fleet

## Ownership model impacts

Fleets could be co-owned by either or both market operators and vendors, the third-party operator, or even owned by the market attendees. Fleet ownership can influence vendor participation rates and may also impact social outcomes from the system.

When markets operate their own systems, there may be better support and uptake from the vendors using the system.

## Material types

When choosing a reusable serviceware fleet, material safety, durability, weight, cost, recyclability and lifecycle impacts are common considerations. Takeaway Throwaways commissioned a report into reusable serviceware materials in 2023 [\*Choosing a Safe and Sustainable Reusable Serviceware Fleet\*](#). The report is a deep-dive into the safety and sustainability of reusable packaging serviceware materials and has both decision-making and cost-comparison matrices to support readers to find the materials best suited for their fleet requirements. Greenhouse gas emissions may also be of concern to markets, for more information see [\*Reuse Wins at Events, A Life Cycle Analysis by Upstream\*](#).

# Washing infrastructure

There are options for undertaking washing/sanitisation of fleets. These include:

- Permanently installing commercial sanitisation equipment (steriliser and racks, sink, benches and plumbing) into onsite locations,
- Borrowing a neighbouring restaurant's commercial kitchen, and
- Using nearby community/council-owned venue's kitchen,
- Outsourcing entirely to third party providers (e.g. mobile dishwashing trailer, or managed offsite).

The type of washing infrastructure required will be determined by the type of site, funds available, size of the market and required fleet size.

### Plastic

Polypropylene "PP" (and less commonly High-Density Polyethylene "HDPE") is a type of plastic commonly used for reusable serviceware due to its lightweight, durable properties, and price point. However, some plastics can contain harmful chemicals and may shed micro and nano plastics when heat is applied over time, such as during washing processes.

### Glass

Glass is commonly used for reusable packaging systems. Glass jars and bottles are durable, cost effective and carry low risk of containing harmful chemicals. Some markets build their fleet by taking glass jars that would otherwise be recycled or discarded, removing the labels and then repurposing them as hot and cold drink cups (for free).

Glass does come with the risk of being broken. Glass is also heavier than other materials and requires robust storage and transportation equipment. This could pose a risk to workers when lifting on and off trolleys or carrying packaging.

### Ceramic

Ceramics are commonly used at markets, particularly in "mug libraries" and are often sourced from second-hand stores. Ceramics can also be used for plates and bowls.

Ceramics can also be broken/chipped and are heavier than some other material types.

### Steel

Stainless steel is commonly used for cups and cutlery at markets due to its durability. Stainless steel can be more expensive to procure initially, but requires less replacement and maintenance.

When sourcing stainless cups, ensure the cups are not polymer lined (which will visibly deteriorate following repeated sterilisation) and if lead has been used to seal the cups' layers (in double-walled cups), ensure the lead dot is securely covered and regularly inspect for any sign of deterioration and replace if necessary.



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## Determining the right sized fleet and working within system limits

The size of the market and correlating fleet is critically important to ensure the success of the reusable serviceware systems. Reusable systems cannot grow at the same pace that single-use serviceware can in a market system. Reusable serviceware operates within a system, and each system is a unique size, based on a number of factors. This system is not endlessly scalable without multiplying out infrastructure (more sterilisers) and staff, or growing fleet size, all of which have time, resource and/or space implications.

Markets can calculate the capacity of their reuse system by determining the:

- Fleet size (number of crockery/cutlery items owned/hired), affected by:
  - Available real estate for storage
  - Cap-ex available for fleet purchase, or
  - Op-ex available for fleet hire
- Rotation frequency of fleet, affected by:
  - Staff to return fleet for preparation for reuse (washing)
  - Capacity and throughput of washing infrastructure, affected by
    - Available real estate for infrastructure to be located and/or
    - Wash-cycle time and capacity of the washing infrastructure
    - Time available for running infrastructure
  - In mobile trailers, the volume of water available for washing (tank size and refill capacity) and capacity of greywater tank storage (or ability to empty), or
  - The rotation frequency the third-party can provide (for the agreed price).

It is critical to have the right size fleet to support vendors with enough reusable packaging to service the market customers. To determine the fleet size, ask the following questions:

1. Determine how many vendors (and what type of vendor e.g. coffee) that the system will need to support?
2. How many units are sold per vendor during their busiest market (e.g. coffee = 50/hr, food = 200 plates/market)?
3. Determine what the rotation frequency needs to be:
  - What size steriliser is available? How many of each type of unit can fit into a steriliser tray (e.g. 25)? How many cycles can the steriliser do per hour (e.g. 80)? What is the duration of the steriliser availability or staff member assigned (e.g. 4 hours so 25 x 80 x 4 hours is maximum washing capability)?
  - If mobile: what is the volume of the available wash water and/or greywater tank?
  - How long does it take to collect the dirty packaging?
  - How many staff are available to collect and wash packaging (or the volume of reserve packaging)?

Food vendors implementing reusable serviceware have certain parameters they need to operate within. In much the same way that they would need to stop selling their product if they ran out, there is a “run out” point for the reusable packaging in the system. The key is for the market to identify what the run-out point is for the system and ensure vendors are aware of this and communicated to throughout the event day. The most robust and effective reuse system will be designed alongside vendors from the get-go and ensure ongoing feedback and responsiveness to tweak the system once implemented, in order to iron out any difficulties.





## Communication

Communicating is critical to the success of the reusable packaging system. This might include but not be limited to:

- Onsite signage for attendees explaining how the system works and encouraging them to participate
- Social media posts and/or press releases prior to launch, and then ongoing at each market
- Giveaways, activations around participation
- Vendor consultation and co-design, and ongoing communications explaining how and why to participate

The key is to time communications to ensure everyone is on-board and engaged in the reuse system. Telling the story of the success, and the learnings as the system evolves is recommended, to continue to engage participants and embed the culture of reuse in the market community.



## Key takeaways

When market operators and vendors work together to design a system that works for all parties, reusable systems have excellent outcomes for people and the planet.

**Reusable serviceware is an excellent choice for markets where there is motivation to reduce packaging waste.**

**Vendors should be consulted with early, to co-design a system that works for the event.**

**Market operators and vendors should work together to design a sustainable method of financing the operational expenditure, such as charging customers a small “borrow fee” and/or incorporating system costs into the stallholder fee so that vendors contribute to the service.**

**Markets should determine the right fleet size, made of appropriate materials, to support participating vendors to sell a quantity of goods agreed, and appropriate infrastructure to support moving the fleet around the site and sanitising for restocking or storage.**

**Staff should be appropriately fit and able to manage the materials chosen by the market and vendors.**



## Appendix

# Research methodology

Researcher: Kim Renshaw, Reuse Aotearoa & Beyond the Bin

A light literature review and web-search was undertaken to gain insight into possible reusable packaging activities at markets in Aotearoa New Zealand, and to identify possible interviewees. Some international literature was also considered where relevant.

Three market operators and five third-party reusable serveware providers across the motu were interviewed remotely to understand their experiences with implementing reuse systems at markets and events. The aim was to identify best-practice in New Zealand and establish whether viable funding models existed.

Participants were asked a range of quantitative and qualitative questions, which were recorded in a spreadsheet and aggregated to provide insights.

Interviewees were given the opportunity to speak freely and decline to answer questions, if preferred.

Any relevant case studies were approved by the interviewee prior to publishing the information sheet.

The project team initially prepared a research paper, which was peer reviewed. Based on feedback received during the review process that the purpose and target audience of the research paper was unclear, a decision was made to condense the research findings into a practical information sheet. The information sheet uses plain language to support market operators and vendors looking to develop reuse systems at their events.

## Interview questions

1. How did your reuse initiative come about?
2. How many vendors are at the event? Food/beverage: Non-food:
3. How many attendees are at the event?
4. How does the system for reuse work at the event?
5. How does the sterilisation work?
6. How many packaging units are used per event?
7. What is the packaging material made of and how was this decided?
8. Is the system voluntary or mandatory for vendors?
9. How do the vendors feel about the system?
10. Does the packaging get distributed to the vendors or do the public collect them and present them for plating?
11. What is the percentage of lost or broken packaging?
12. How do attendees feel about the system?
13. How do you feel about the system?
14. Do attendees pay a hire/borrow fee or deposit?
15. How many staff deliver the system?
16. Do the vendors pay a fee to use the system?
17. Do you have estimated cost to run the sanitisation system?
18. Have you received grants for infrastructure, ops or fleet?
19. Do you know the price vendors pay for single use packaging?
20. Do you have mandatory H&S or waste requirements for vendors?
21. Do you know the cost of delivering the reuse system?
22. Are you also delivering the waste mgt for rest of event?
23. How is the rest of waste mgt funded? And do you know the cost?
24. Does the reuse activity decrease the rest of the waste at the event?
25. Is the single use waste sorted?
26. How do you receive returns (of the reusable packaging)? Describe the system.

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