



B2B reusable packaging infrastructure and reverse logistics in Auckland

Scope of current activity, and gap analysis

AUGUST 2023



The Udder Way: Image supplied

WHO WE ARE

Reuse Aotearoa is an organisation dedicated to building the momentum and capability to scale reusable packaging systems in New Zealand. We focus on understanding and telling the story of reuse, and fostering collaboration to bring reusable packaging systems to life and grow their strength and presence across the motu.

The story of this report

In 2023, Auckland Council commissioned Reuse Aotearoa to investigate business-to-business (B2B) reusable packaging systems in Auckland, with a focus on the existing infrastructural capacity and reverse logistics services supporting these systems, and the critical needs for increasing such activity. Analysis also included the potential role of Auckland's waste and resource recovery sector in supporting B2B reusable packaging systems. The study forms part of Auckland Council's preparations to update its waste management and minimisation plan (WMMP) for the region.

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Executive summary

This report is about **business-to-business (B2B) reusable packaging systems** in Auckland, with a focus on the **infrastructure and reverse logistics** that make them work. The research aimed to find out what was happening in the city already in this area, the gaps and critical needs for doing more, and the potential role of the waste and resource recovery sector.

B2B reusable packaging is ‘behind-the-scenes’ packaging that moves between businesses (e.g. suppliers, producers, wholesalers, retailers) in cycles that means the packaging gets repeatedly refilled/repacked with the same or similar type of product. If designed well, B2B reusable packaging systems can help to reduce waste and emissions, strengthen efficiencies within businesses, and promote wider collaboration within the local economy for collective benefit.

Reusable packaging systems differ from single-use packaging systems in that they rely on a **reverse logistics** process that brings used packaging back to the start of the forward supply chain so that it can be used again. Reverse logistics can involve activities like collection, sorting, storing, transporting and reconditioning (washing and repairing). To work well, reverse logistics need a healthy mixture of **infrastructure, people power, and collaborative supply chain relationships**.

The research team conducted a desktop study and drew on interviews and/or online surveys with **26 commercial and community organisations** with actual or potential involvement in B2B reusable packaging systems. This included interviews and/or surveys with Auckland-based operators of B2B reusable packaging systems, as well as organisations from the waste and resource recovery sector.

The study shows that **Auckland is home to various B2B reusable packaging systems that circulate packaging of various types (e.g. pallets, crates, kegs, drums, IBCs, jerry cans etc.), along with the infrastructure to support them**. These systems range from the well-established and mature (e.g. reusable pallets in the groceries sector), through to more novel and niche systems with emerging levels of impact (e.g. reusable kegs for milk, juice and wine). Reusable B2B packaging systems can be found across various sectors, including the Fast Moving Consumer Goods (FMCG) supply chain (e.g. groceries), homeware and durable consumer goods, HoReCa (Hotel, Restaurant and Catering), construction and hardware, healthcare, manufacturing/processing, and waste and resource recovery. These systems feature lots of different supply chain actors playing different roles in the system. Participants can be large commercial operators, SMEs and social enterprises, or non-profit community organisations.

The **waste and resource recovery sector in Auckland is already involved in a number of B2B reusable packaging systems**, primarily those that the sector uses to transport collected waste and recycling (e.g. fadge bags, hook bins and gantry bins). The sector currently has limited involvement in supporting the B2B reusable packaging systems used in other sectors. However, there is interest amongst the waste and resource recovery operators interviewed for this project to do more in this area, provided a business model exists to ensure they are fairly paid for offering this support. The organisations most interested in taking part were Community Resource Recovery organisations.

Despite some established, functional, well-designed and impactful B2B reusable packaging systems in Auckland, many gaps and critical needs exist that should be addressed to extend this impact further. These needs are **infrastructural, operational and relational**. They are:

- Gaps in reuse system provision in many B2B packaging contexts, including:
 - single-use plastic pallet wrap, cardboard boxes and expanded polystyrene fish-bins;
 - the small number of businesses exploring reusable packaging, beyond systems that are already well established and represent business-as-usual for numerous suppliers/users; and
 - untapped potential to use B2B reusable packaging to reduce B2C packaging waste in event and retail settings.
- A lack of viable business models to operate or support B2B reusable packaging systems.
- A need for more collection, warehousing and washing infrastructure, as well as additional infrastructure to help with onboarding supply chain actors to novel B2B reusable packaging systems.
- Difficulties covering the cost of reusable packaging fleets and associated software/tracking systems to protect the asset.
- Freight-related challenges, particularly for the islands of the Hauraki Gulf, who also face heightened challenges in relation to reverse logistics, generally.
- The need for better processes for establishing and developing new B2B reuse systems, to help organisations across supply chains to harness collaboration and devise and run well-designed pilots to trial new systems collectively.

Council can play a role in supporting organisations to navigate these challenges and fill identified gaps and needs through the following actions:

- Affirm reuse in Council's strategic policy direction for waste minimisation in order to create the certainty needed to guide industry investment.
- Co-invest or offer seed funding for necessary infrastructure and other cap-ex.
- Offer practical support to develop collections, drop-off points, freight and warehousing.
- Use subsidies, grants and procurement to alleviate key operational costs.
- Facilitate collaborative, co-designed pilots of B2B reusable packaging or peer support.
- Promote, advise and highlight reuse in council waste minimisation communications and advice.
- Bring commercial, community, marae, non-profit and social enterprise organisations into discussions and solutions.
- Ensure B2B reusable packaging system designs that Council support follow best-practice, including that important reverse logistics criteria are considered, planned for, or in place.

The report concludes with three suggested areas for further research (intended as complementary to increased support for reusable packaging, rather than a necessary precursor for such support):

- 1 Quantifying single-use and reusable packaging flows in New Zealand to enable improved measurement and reporting of reusable packaging impact.
- 2 A feasibility study of the potential role of the waste and resource recovery sector in reusable packaging system logistics (potentially undertaken as action research in the context of a pilot).
- 3 A cost-benefit analysis or similar that compares the overall economic, social and environmental costs of single-use and reusable packaging systems, across the economy as a whole, including both the private and public sectors.

01. INTRODUCTION

Context for this report

In 2023, Auckland Council asked Reuse Aotearoa to investigate business-to-business (B2B) reusable packaging activity in Auckland, with a focus on infrastructure and reverse logistics. This report looks at:

- Existing infrastructure and reverse logistics services supporting B2B reusable packaging systems in Auckland.
- Key opportunities and critical needs to increase B2B reusable packaging, including infrastructural and logistical gaps.
- The potential to increase the role of Auckland's waste and resource recovery sector in providing services to support B2B reusable packaging systems.

The report will support Auckland Council's preparation to update its waste management and minimisation plan (WMMP). The Council is interested in deepening its understanding of the region's existing infrastructural capacity and critical needs for B2B reusable packaging. This focus on reuse reflects the direction of Central Government's latest Waste Strategy (released this year),¹ which has identified reuse as an important part of achieving the strategy's waste minimisation and circular economy goals. The Strategy also signals the place of reuse infrastructure, such as washing plants, in the resource recovery system. Under the Waste Minimisation Act, Councils must take into account the waste strategy when preparing their WMMPs.

Methodology

The research for this report combines a **desktop study** of relevant operators and of literature on B2B reusable packaging systems and reverse logistics, with content from **26 interviews and/or online survey responses**. Specifically, **12 interviews** with Auckland-based operators of, or participants in, B2B reusable packaging systems, **2 interviews** with third-party reusable packaging providers from a previous research project, and **12 interviews and/or online surveys** completed by waste and resource recovery sites.

Desktop study

The project initiated with a comprehensive scan of actual and potential operators of B2B reusable packaging systems in Auckland, and of waste and resource recovery sites and services. A database was developed of:

- Organisations that operate B2B reusable packaging pooling systems and/or critical infrastructure for reusable packaging, such as washing plants.
- Producers and suppliers who operate or might be operating vertically-integrated B2B reusable packaging systems for their own products.
- Distribution, logistics, retailers or HoReCa (hotel, restaurant, catering) organisations likely to be participating in reusable packaging systems.
- Community resource recovery (CRR) operators.²
- Private waste and resource recovery sites and services.

The database was populated through: prior knowledge of the research team; suggestions from Auckland-based industry and business associations and networks contacted in relation to this project; a list of waste and resource recovery sites and services provided by Auckland Council; and online searches using keywords that paired "Auckland", "New Zealand" and "business-to-business" with: "reusable packaging", "kanban", "refillable packaging", "reusable containers", "refillable containers", "reverse logistics", "returnable packaging", "circular packaging", "reconditioning", "washing", "lean production", "reusable supply chain packaging", "reusable bulk packaging", "packaging waste", "reuse", "kegs", "drums", "IBCs", "pallet wrap", "distribution", "pooling", "asset pooling", "resource recovery", "waste management services" and "recycling services".



CHEP A Brambles Company: Image supplied

Similar keywords were also used in an online search to identify relevant grey and academic literature that addresses B2B reusable packaging systems and reverse logistics (although the literature scan was not limited to New Zealand). Reuse Aotearoa has already traversed key literature in previous reports, which were also drawn on for this study.³

Interviews

From the database, a representative sample of potential interviewees involved in B2B reusable packaging systems was shortlisted. We sought interviewees with experience of different parts of the supply chain and in different sectors. For the waste and resource recovery operators, a short online survey was created to support interviewee selection. The survey also provided an easier way for these operators to identify any B2B reusable packaging activity they already undertake, and to indicate their capacity and willingness to increase involvement in the future.

In total, 24 interviews and/or online surveys were completed for this project and two drawn on from prior Reuse Aotearoa research projects, resulting in **26 unique perspectives** informing this report's findings. Of these, 14 one hour interviews were completed with community and commercial organisations operating or participating in B2B reusable packaging systems, including industrial and FMCG producers/processors, retailers, HoReCa, community groups, and dedicated

packaging providers. Of the shortlisted waste and resource recovery operators, 12 interviews and/or online surveys were completed with 6 community operators, 2 small to medium operators and 4 large operators.

Analysis and report writing

An overview of existing B2B reusable packaging systems, including reverse logistics processes and relevant infrastructure, was drafted based on descriptions from the literature, interviews and survey responses, and information in the public domain about various B2B reusable packaging initiatives in Auckland and New Zealand (including company websites or specific studies). In addition, interview transcripts and survey responses were analysed thematically to inform the report's findings on key gaps, critical needs, and suggested actions for Council to support B2B reusable packaging systems in Auckland. These findings have been supplemented with observations from the grey and academic literature.

As the research drew on materials in the public domain about various B2B reusable packaging initiatives, **specific mention of a particular business or organisation does not mean that organisation was interviewed or responded to a survey.** Furthermore, as interview and survey findings were aggregated, not every organisation that provided us with information is named in this report, even if the content from their interview has influenced the final conclusions.

02. SETTING THE SCENE – B2B REUSABLE PACKAGING IN AUCKLAND

What is business-to-business (B2B) reusable packaging and why is it important?

“[R]euse can dramatically reduce plastic packaging production and greenhouse gas emissions, while producing economic return on investment long term. A shift to reusable packing moves supply chains away from fossil fuel and global sourcing to local employment for filling, washing and logistics, while preventing petrochemical factory pollution.”

- PR3 - RESOLVE (2021)⁴

Business-to-business (B2B) reusable packaging is ‘behind-the-scenes’ packaging that moves between businesses (e.g. suppliers, manufacturers, wholesalers, retailers) in cycles that means the packaging gets repeatedly refilled/repacked with the same or similar type of product. Business-to-consumer (B2C) packaging can also be reusable, but is not in scope for this report. Packaging that is only used once for its original purpose is not considered reusable (even if it is recycled, repurposed or composted after use).⁵

Like B2C packaging, the functional purpose of B2B packaging is to contain or protect a product over the product’s lifecycle (or parts of its lifecycle) to enable effective handling, storage, transportation and use. When describing reusable packaging systems, the “B2B” qualifier generally indicates packaging that is bulk-sized and/or secondary and tertiary transport packaging,

rather than referring to the nature of the commercial transaction alone. Typical B2B packages include boxes, pallets and pallet wraps, crates, drums, buckets, jerry cans, kegs, hook bins, fadges, racks, canisters, strapping or padding.⁶

To ensure packages are reused in practice (not just in theory), reusable packaging requires the use of durable packages that are physically capable of reuse, along with a system of reuse to ensure used packages are collected back, prepared for reuse, and then reintroduced to suppliers for refill/repacking. The combination of these two elements creates a reusable packaging system.⁷

This research does not focus on companies that simply manufacture or use durable packaging for B2B transactions, if they do not also implement or participate in a system of reuse for that packaging.

Reusable packaging systems are an alternative to single-use packaging, and therefore offer potential savings in waste, resource usage and emissions, and this can translate to cost savings too. Every time a reusable package is reused, a single-use package is avoided entirely. Well-designed reusable packaging systems that operate efficiently can save waste and emissions by reducing the need to make, use, recycle or dispose of large amounts of packaging.⁸ They can also bring cost-savings, as organisations need to buy less new packaging. In some cases, cost savings are significant enough to deliver a return on investment for third-party organisations operating the reuse system. Sometimes these economic outcomes can be realised immediately, although often they are mid- to long-term benefits as supply chains adapt to the new system.⁹



Although B2C packaging (whether single-use or reusable) often receives more public attention because of its visibility, B2B contexts represent an opportunity to reduce large volumes of waste. For example, in Australia, B2B reusable packaging systems prevented 2.8 million tonnes of single-use packaging in the 2020-21 financial year, which is the equivalent of 39% of the total packaging put to market in that same year (see Case Study 1 on waste reduction impact).¹⁰ B2B reusable packaging systems have also been more closely studied than reusable consumer packaging,¹¹ and proven already to be relatively widespread, cost-effective and scalable.¹² For example, 35% of transport packaging, globally, is already reusable.¹³ In New Zealand, at Sustainable Business Network's 2020 Plastic Packaging Masterclass, packaging stakeholders specifically cited the recognition and incentivisation of B2B reuse systems as an opportunity to increase the prevalence of reusable packaging, generally.¹⁴

Why should councils be interested in B2B reusable packaging?

Councils should be interested in B2B reusable packaging systems because the use of reusable packaging at scale is a way to reduce waste and emissions, strengthen efficiencies within businesses, and promote wider collaboration within the local economy for collective benefit.

As noted above, well-designed reusable packaging systems replace the need for single-use packaging, which translates into reduced generation of waste and recycling streams (and associated handling and logistics). In the B2B context, reusable packaging systems reduce often hidden single-use waste through the supply chain that sit outside Council's direct sphere of influence (i.e. dealt with by commercial waste and recycling providers). A programme to promote reusable packaging in supply chains is one way Council can influence waste minimisation and promote circularity in sectors where it does not directly manage resulting waste streams.

"... when we started mapping [the scale of packaging waste] from sourcing all the way through to how it was used in the manufacturing process, we identified that there was a lot of packaging waste actually that sat within the supply chain as things got moved between businesses and there was a whole other part that we needed to have a look at, not just at when it turned up at your fabricator's end or when it turned up at the site to be built - those hidden waste streams within the supply chain, without a visibility, it was quite hard to see those."

- Louise Nash discussing efforts to address supply chain packaging waste by Profile Group, a Waikato-based family of businesses¹⁵

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In addition, B2B reusable packaging can support downstream reductions in the B2C waste and recycling streams that Council does manage (often via complex and costly logistical systems, such as household kerbside collections). B2B reusable packages are often bulk packaging systems that carry large volumes of product without the need for multiple, smaller single-use packages. Where these B2B reusable packages are the final means of dispensing product by end-users in manufacturing, HoReCa or consumer-facing retail settings, their waste reduction potential is vastly increased because they circumvent consumer-sized packaging that would otherwise be passed on to householders. In these contexts, B2B reusable packaging delivers the positive environmental outcomes of a B2C reusable packaging system (i.e. reducing total packaging material reaching final consumers¹⁶), with comparatively less handling, cost and resource usage than B2C systems. They may also be easier to establish, as B2B reusable packaging is easier to track, value chains are more confined, and the risk of attrition easier to manage than for B2C contexts.¹⁷ Down the track, the efficient logistics systems for B2B reusable packaging could potentially be leveraged to support the growth of B2C reusable packaging systems too.¹⁸

In addition to waste savings, associated emission reductions and wider environmental gains, B2B reusable packaging can also increase efficiencies, which can support local economic development. B2B reusable packaging systems that are already established in supply chains generally offer cost savings, material handling efficiencies, improved goods protection and/or align with lean production principles.¹⁹ For organisations at the end of a supply chain, B2B reusable packaging systems also reduce the expense associated with managing packaging waste and recycling. This can be particularly significant for community organisations, such as food banks and food rescue organisations, who already receive a lot of packaging waste with donations. As one

community interviewee told us:

“In terms of donated food, reusables is the best thing for us because we visit stores every day to pick up donated food, so we can swap empty containers for new full ones, and we’re not left with lots of packaging waste at the end of it.”

Despite potential efficiencies, individual companies or industries can struggle to clear the initial hurdle of establishing new systems from scratch. If Councils can proactively facilitate the growth of new B2B reusable packaging systems, they may help to unlock potential efficiency gains, thereby supporting business and enhancing Auckland’s economic resilience and prosperity. Another economic outcome of establishing B2B reusable packaging systems within a supply chain or distribution channel is that it encourages collaboration between local businesses and organisations who collectively benefit from the activity. Auckland Council’s Waste Solution department is often involved in identifying new waste reduction initiatives and ways to improve existing services in the region. This type of work typically requires taking on a brokering or facilitating role to create the necessary collaboration between local businesses and other organisations. Council’s Waste Minimisation and Innovation Fund (WMIF) is also often used to accelerate the outcomes that can come from such collaborations.²⁰ Investigating how Auckland Council’s existing roles can be used to support B2B reusable packaging systems in the region is therefore an area of interest also.

System set-up for B2B reusable packaging and key actors

Reusable packaging systems can be set up and run in different ways. They may be vertically integrated (i.e. operated by an individual producer or supplier for their product) or shared across multiple businesses in a pooling system.²¹ Vertically integrated systems are more likely to use bespoke or branded packaging and in-house logistics. Pooling systems usually involve standardised packages (making it easier for businesses to share), shared reverse logistics infrastructure, and the packaging fleet/pool is often owned by a company separate to those who use the packaging, who is dedicated to operating or managing the system. Generally speaking, unless producers are of a sufficient size or scale, vertically integrated systems are less efficient than pooled/standardised systems.²²

As B2B reusable packaging moves through supply chains, a number of actors can participate in the system. Key roles include:

- **System operator:** takes responsibility for circulating and maintaining the fleet of reusable packaging assets (usually also the packaging asset owner).
- **Asset end-user:** the organisation where the product is finally removed from the reusable packaging asset; usually the last organisation in the forward supply chain to handle the reusable packaging.
- **Producer/supplier:** makes and/or supplies the products to be contained in the reusable packaging or uses products that are supplied in reusable packaging.
- **Reconditioner:** prepares the packaging assets for reuse after each cycle (or as necessary), for example, by cleaning, sanitising and/or repairing.
- **Logistics provider:** gets the reusable packaging assets from A to B as they travel around the supply chain and stores packaging in-between movements.

Depending on how the system is set up and the type of product contained, these roles can occur within one organisation. For example, a producer can be an asset end-user if the product contained is componentry for fabrication or ingredients supplied to them for processing. Alternatively, producers may sometimes be system operators if the reusable packaging system is vertically-integrated. System operators may be reconditioners or logistics providers (e.g. if they own the relevant infrastructure for washing and/or repairing), or they may outsource these roles to third-parties that specialise in these activities. Sometimes in a pooling system, producers undertake the role of reconditioning B2B reusable packaging for their own use, even if they are not system operators. Finally, any of the actors in a B2B reusable packaging system could be commercial, a social enterprise or a non-profit.



The Udder Way: Image supplied



The Kai Ika Project: Image supplied

Types of B2B reusable packages currently flowing through Auckland

In Auckland, various B2B reusable packaging systems and the infrastructure to support them can be found across various sectors, including the Fast Moving Consumer Goods (FMCG) supply chain (e.g. groceries), homeware and durable consumer goods, retail and HoReCa, construction and hardware, healthcare, industrial manufacturing/processing, and waste and resource recovery. Participants can be large commercial operators, SMEs and social enterprises, or non-profit community organisations, including marae and environment centres.

Table 1 provides a snapshot of examples, categorised by the packaging type used. The companies referenced are reusable packaging system operators (including producers or suppliers that operate vertically-integrated B2B reusable packaging systems for their products). Additionally, some reconditioners are listed (even if they are not system operators) because they control facilities and equipment that perform a function necessary to recirculate B2B reusable packaging and therefore give a sense of existing infrastructure. Some of the companies

listed in Table 1 are not Auckland-based, but are included if their system services organisations in Auckland.

It is important to note that a business' use of the packaging types in Table 1 is not sufficient to indicate the existence of a reusable packaging system, given some of these packaging types can also be treated as single-use in some contexts. Packages only count as reusable if they are deployed in a reusable packaging system that ensures they are refilled/repacked with the same or similar product, multiple times (as is ensured by the example organisations listed).²³

Table 1 is not an exhaustive list of all Auckland-based B2B reusable packaging system operators or reconditioners. Furthermore, a much larger number of businesses and organisations in Auckland participate in B2B reusable packaging systems as asset end-users or logistics providers. Participants in these roles can include producers/suppliers, transportation/logistics companies, distributors/warehousing, retailers, HoReCa, community groups and marae.

TABLE 1 – Non-exhaustive list of Auckland-based B2B reusable packaging system operators or reconditioners (NB not all were interviewed for this project and not all interviewed organisations are listed)

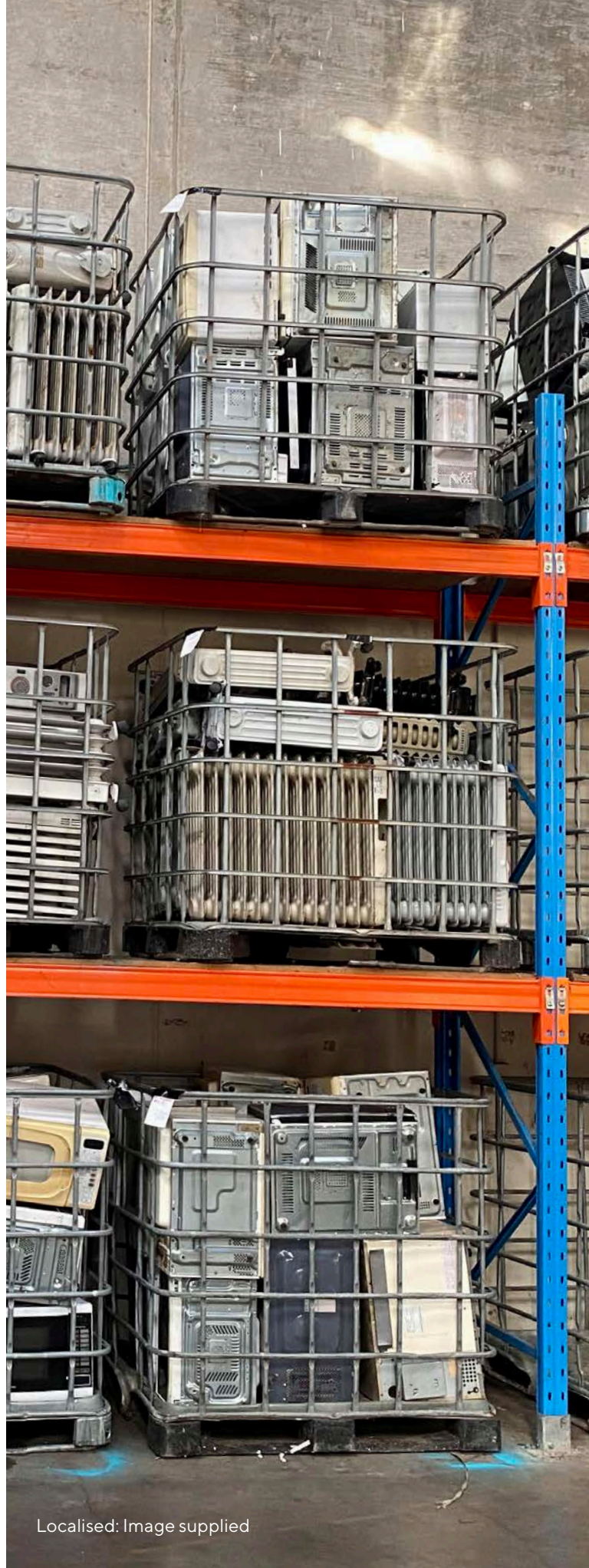
B2B Packaging type	Description	Common uses/sectors	Single-use equivalent	Examples of some reuse system operators and/or reconditioners
Pallets	Wood or plastic	Used to deliver goods in multiple sectors. Especially common in the groceries sector. Also used for Fast Moving Consumer Goods sold in the ‘big box retail sector’.	Single-use timber pallets	CHEP, Loscam, Viscount FCC
Crates, cartons, coreflute boxes, bins (small)	Plastic	Crates are prolific in the groceries sector for transporting/holding fresh produce. Bins also used for transporting food, often to processors (e.g. fish or meat) or for waste collection and disposal. Also used in manufacturing for transporting and/or storing parts or materials.	Cardboard boxes (with or without internal plastic lining and often coupled with bubble wrap or polystyrene for protection) Disposable plastic containers Polystyrene bins (e.g. poly bins for fish)	CHEP, Loscam, Medsalv, The Kai Ika Project, Papatūānuku Kōkiri Marae, LegaSea, Fisher & Paykel Healthcare Services, Viscount FCC, Anzor, Würth, Moana New Zealand
Kegs (stainless steel)	Stainless Steel, most commonly 20L, 30L, 50L and 1/6 barrel	Beverage sector, predominantly beer, but also other drinks, including cider, kombucha, wine, milk and juice.	Single-use bulk alternatives can include plastic bladders. In other instances, single-use packaging alternative is multiple smaller packaging types, such as glass or plastic bottles, aluminum cans, and liquid paperboard cartons.	Konvoy Kegs, Kegstar, Wine Diamonds Independent beverage producers, e.g. breweries.
Kegs (plastic)	Plastic (HDPE), 10L, 30L and 50L	Milk	Single-use bulk alternatives can include plastic bladders. In other instances, single-use packaging alternative is multiple smaller mediums, such as glass or plastic bottles, aluminum cans, and liquid paperboard cartons.	Green Valley Dairies, Happy Cow Milk
Intermediate Bulk Container (IBC)	Plastic, 1000L	Various liquids for different sectors, including food processing ingredients, as well as industrial uses such as oils and other chemicals. E-waste transportation (modified IBCs).	Plastic bladders in cardboard. In other instances, single-use packaging alternative is multiple smaller packaging types (Plastic Jerry Cans or similar). E-waste would otherwise be palletised and wrapped with single-use plastic wrap.	Copack industrial packaging, Recycled Plastic Containers, Stowers Containment solutions, Astron Sustainability – Auckland Drum Various food and cleaning product manufacturers. Localised Ltd for transporting e-waste
Drums (Plastic)	Plastic, 60L, 100L, 200L	Various liquids for different sectors, including food processing ingredients, as well as industrial uses such as oils and other chemicals.	In some instances, single-use packaging alternative is packaging products into smaller portion sizes (Plastic Jerry Cans or similar)	Recycled Plastic Containers, Astron Sustainability – Auckland Drum Various food and cleaning product manufacturers.

B2B Packaging type	Description	Common uses/sectors	Single-use equivalent	Examples of some reuse system operators and/or reconditioners
Jerry cans	Plastic, most commonly 5L, 20L	Cleaning products, various liquids including food products	Single-use Jerry Cans or smaller portion packaging	Will & Able, Recycled Plastic Containers
Pails, buckets, small drums	Plastic or metal, 10-20L	Food products, including milk and coffee beans	Sacks, plastic bags, plastic lined cardboard cartons In other instances, single-use packaging alternative is multiple smaller packaging types, such as in plastic bottles or paper or foil/plastic bags (coffee beans)	Kaipaki Dairies, Recycled Plastic Containers, Mt Atkinson Coffee Roasters, Toasted Coffee Roasters, eight thirty coffee roasters
Wraps	Plastic, textile or wool	Any palletised product	Plastic wrap/LDPE film/shrink wrap	APL Window Solutions (Profile Group)
Fadges, Sacks	Plastic woven fabric (HDPE, polyester or nylon), most commonly ½ m3 or custom sized	For bulky light weight products such as wool and for storage and transportation of waste products such as paper, cardboard, plastic film and general recyclables.	Plastic bags, plastic containers or cardboard boxes	Resource recovery organisations
Hook bins	Steel, commonly 12m3, 20m3, 30m3	For transporting waste and recyclables	Large plastic waste bags	Waste and resource recovery organisations, construction industry, manufacturers
Canisters	Steel, commonly 45kg, 90kg or 210kg	Gas (CO2, N, LPG, air medical, He, Argon and so forth) used in manufacturing, cooking, heating, medical needs and carbonating beverages	Disposable metal canisters for small quantities of gas	BOC Gases, Elgas New Zealand
Shipping containers	Steel, 20ft, 40ft and refrigerated.	For storage and freight of products and materials	Potential additional packaging to protect product during transit (for example, bulk material packed into smaller disposable containers)	Ports of Auckland and associated container logistics providers

Potential Waste Reduction Impact of B2B Reusable Packaging Systems – Case studies

To support understanding of the important role reusable packaging can play in waste minimisation efforts, this section of the report presents three case studies of its single-use packaging avoidance impact. The first summarises research from the Australian Packaging Covenant Organisation (APCO) that analyses the flow of reusable packaging in Australia for the 2019-2020 and 2020-2021 financial years, with a focus on B2B reusable packaging systems. To the knowledge of this research team, a similar exercise has not been undertaken in a public document in New Zealand. However, we would expect reusable packaging in the New Zealand market to behave similarly in terms of single-use packaging avoidance (adjusting tonnages to New Zealand's population). The Australian data demonstrates that reusable packaging systems clearly punch above their weight in terms of single-use packaging avoidance, and that even small growth in the systems can translate to significant waste reduction outcomes.

The second two case studies get down to the detail, to look at the impact of two reusable packaging systems in Tāmaki Makaurau. The first offers a community perspective (The Kai Ika Project) and shows how B2B reusable packaging systems can further amplify other waste prevention initiatives, reinforce collaborative community network opportunities and bring efficiency to non-profit projects. The second offers a perspective from the manufacturing sector (Fisher & Paykel Healthcare) and demonstrates what the single-use packaging waste avoidance impact of B2B reusable packaging can look like, from the perspective of one large business.



Localised: Image supplied

Case study 1: Quantifying the impact of single-use packaging avoidance by B2B reusable packaging in Australia

The Australian Packaging Covenant Organisation (APCO) has estimated the flow of reusable packaging in Australia for the 2019-2020²⁴ and 2020-2021²⁵ financial years, with a focus on B2B reusable packaging systems. In 2020-2021, reusable packaging accounted for 2% of total packaging put to market in Australia (down from 3% in 2019-2020), but avoided the use of 2.6 million tonnes of single-use packaging (down from 2.8 million in 2019-2020), or the equivalent of 39% of total packaging put to market in Australia (down from 47% in 2019-2020).²⁶ On average, each kg of reusable packaging put to market avoided 16kg of single-use packaging (down from 18kg in 2019-2021). The reduction in reusable packaging impact between the two financial years is related to COVID-19, which led to a dramatic reduction in beer keg usage. For this reason, this case study summarises the findings from both reports, in order to give a more complete picture of relative levels of impact of different B2B reusable packaging systems.

The studies mostly focused on several B2B reusable packaging types (as well as B2C reusable cups/mugs and reusable shopping bags, which have been excluded from this summary):

- Beer kegs
- Drums (200-205L)
- Rigid IBCs
- Reusable plastic pallets
- Reusable timber pallets
- Dairy crates
- Reusable Plastic Crates

Using the resulting analysis, the estimated total single-use packaging avoided in the two financial years (based on weight, rather than units) follows below.

2020-2021 Financial year²⁷

Packaging Type	Single-use packaging avoided (tonnes)	Breakdown of material types avoided
Beer kegs	43,300	7,300 tonnes of paper & paperboard 32,300 tonnes of glass 3,700 tonnes of metal
Drums (200-205L)	18,900	5,500 tonnes of plastic 13,400 tonnes of metal
Rigid IBCs	24,700	All metal
Reusable plastic pallets	236,300	All wood
Reusable timber pallets	2,012,700	All wood
Dairy crates	60,200	All paper & paperboard
Reusable plastic crates	51,300	50,300 tonnes of paper & paperboard 1,000 tonnes of plastic

Collectively, **these systems avoided a significant 2,447,400 tonnes of single-use packaging in the 2020-2021 financial year.** The overwhelming majority of this diversion (92%) was achieved by reusable wooden and plastic pallets, followed by plastic crates at 4.5%. Kegs were found to be the most efficient reusable packaging system with an overall reduction ratio of 212.6 (meaning, on average, every kg of keg avoids the use of 213 kg of single-use packaging). While this is impressive, this is a dramatic reduction on the year prior, largely due to the impact of COVID-19 restrictions (fewer kegs were used as hospitality outlets were not open). The average reduction ratio across reusable packaging systems was 16kg of single-use packaging avoided per kg of reusable packaging.

2019-2020 Financial year²⁸

Packaging Type	Single-use packaging avoided (tonnes)	Breakdown of material types avoided
Beer kegs	286,400	48,200 tonnes of paper & paperboard
214,000 tonnes of glass	18,900	5,500 tonnes of plastic 13,400 tonnes of metal
24,200 tonnes of metal	24,700	All metal
Drums (200-205L)	23,500	2,500 tonnes of plastic
21,000 tonnes of metal	2,012,700	All wood
Rigid IBCs	19,600	8,900 tonnes of plastic
10,700 of metal	51,300	50,300 tonnes of paper & paperboard 1,000 tonnes of plastic
Reusable plastic pallets	249,800	All wood
Reusable timber pallets	2,127,600	All wood
Dairy crates	61,400	All paper & paperboard

Collectively, these systems avoided 2.8 million tonnes of single-use packaging in the 2019-2020 financial year. The overwhelming majority of this diversion (84%) was achieved by pallets, followed by kegs (10%). Though, it should be noted that the packaging diverted for kegs is mostly smaller consumer-sized B2C packaging (bottles and cans, and the boxes that contain them for shipping), whereas packaging diverted by pallets is mostly equivalent B2B reusable packaging (single-use pallets). Per use, IBCs avoided the most single-use packaging (where the competing product was a single-use IBC), which APCO noted reflected “the importance of reusing IBCs wherever possible.”²⁹ Kegs were found to be the most efficient reusable packaging system with an overall reduction ratio of 688 (meaning, on average, every kg of keg avoided the use of 688 kg of single-use packaging). The average reduction ratio across reusable packaging systems was 18kg of single-use packaging avoided per kg of reusable packaging.

Extrapolation to New Zealand and potential implications

If the Australian impact figures were extrapolated to an Auckland context (using population as the conversion factor), then the quantity of single-use packaging currently avoided by reusable packaging systems in Auckland would be approximately 180,000 tonnes (assuming that total packaging put to market, per capita, is similar in Australia and Auckland/New Zealand, and that reusable packaging systems constitute an equivalent proportion of that total). This represents a significant quantity of materials that do not need to be recovered, recycled or disposed of. To put this figure in context, it is comparable to the total annual capacity of the Materials Recovery Facility in Auckland, where all of Auckland’s household kerbside recyclable materials are sorted³⁰). As noted, the order of impact achieved in Australia as outlined in this case study relates to reusable packaging systems that represent just 2-3% of packaging put to market. This suggests that even a small boost in B2B reusable packaging could deliver big results. This conclusion would seem to justify Council prioritising actions to support B2B reusable packaging as part of its work programme to reduce waste in Auckland.





The Kai Ika Project. Image supplied

Case study 2: Reusable fish bins amplifying waste avoidance in The Kai Ika Project distribution channels

The Kai Ika Project³¹ is a non-profit initiative run in partnership between LegaSea, Papatūānuku Kōkiri Marae, Westhaven Marina and New Zealand Sport Fishing Council, in Auckland. Kai Ika collects fish heads and frames that would otherwise be discarded by Auckland-based commercial operators and recreational fishers and redistributes them to marae across Auckland and to individuals via a fish filleting station at Westhaven Marina and the Outboard Boating Club (OBC). Three days a week, using refrigerated trucks, the Kai Ika crew collects fish from four commercial processing sites, using refrigerated trucks, and from recreational fishers at Westhaven Marina and OBC. Each week, 1.5 tonnes of fish heads and frames are collected and redistributed across Auckland.

The Kai Ika Project prevents 120,000kgs of fish going to waste a year in Auckland (350,000kgs in total since its launch) and does so without the use of any single-use plastic packaging. Instead, Kai Ika's distribution channel is built around a reusable fish bin system. All fish heads and frames are packed straight into reusable 40L plastic fish bins at the commercial processing factories, or from recreational fishers at the mariner. Ice is collected from a local ice producer and put directly into the bins,

without packaging. Bins of fish are taken to marae who unload the contents directly into stockpots for cooking. Individuals who come to get fish from marae or the filleting station bring their own containers (or purchase a reusable container to use and return with in future).

The assets, systems, people power and relationships that The Kai Ika Project relies on are: a fleet of 200 reusable bins, two refrigerated vehicles, one chilling station, a network of marae who share their cool stores and washing facilities, and five FTEs that deliver the full project, including the reusable packaging system.

"We have had a really tumultuous three years. Every time something happens, like covid lockdowns or rising cost of living, the demand for fish goes up. However, we're never tempted by single-use when demand shoots up because our reuse system is so efficient. I don't know of a single-use packaging solution that would improve our operations."

Case study 3: Packaging avoidance in an industrial supply chain

Fisher & Paykel Healthcare (F&P)³² develops and manufactures healthcare products for hospitals, labs, pharmacies and other organisations in the health sector. Auckland is the centre of their research and development operations, and where they conduct the majority of their manufacturing. F&P uses reusable packaging within their supply chain to reduce large amounts of waste at their assembly line. The organisation has around 3,500 people at their Auckland campus, so they have also adopted reusable packaging systems with their cafeteria suppliers to avoid single-use packaging associated with food delivery.

For their production line, F&P worked with their Auckland and Christchurch-based suppliers to provide components in reusable PET trays, mesh bags and corflute boxes, with others protected by reusable foam blocks. The F&P operations teams have designed reusable packaging in collaboration with suppliers. Components arrive from suppliers in the reusable packaging and, once emptied, this packaging is stacked, stored and returned to the supplier for reuse. Most of the packaging used has a long lifespan. For example, some of the corflute boxes have been in circulation for ten years, and each year they circulate about 20-30 times. Reusable foam blocks circulate over 100 times per year.

Based on the circulation of their reusable packaging, F&P estimates that, each year, their production line avoids the use of:

- 2,000 single-use trays
- 60,000 single-use foam blocks
- 5,600 single-use boxes
- 2,080 single-use bags
- 4,300 single-use pallets

In addition, the reusable packaging systems for food delivery to the cafeteria avoid, each year:

- 4,100 single-use cardboard boxes for vegetables
- 900 single-use pallets
- 5,650 single-use containers for prepared food (baked goods, sushi or similar)



Fisher & Paykel Healthcare: Image supplied

03. FROM A TO B AND BACK AGAIN: INFRASTRUCTURE AND REVERSE LOGISTICS FOR B2B REUSABLE PACKAGING

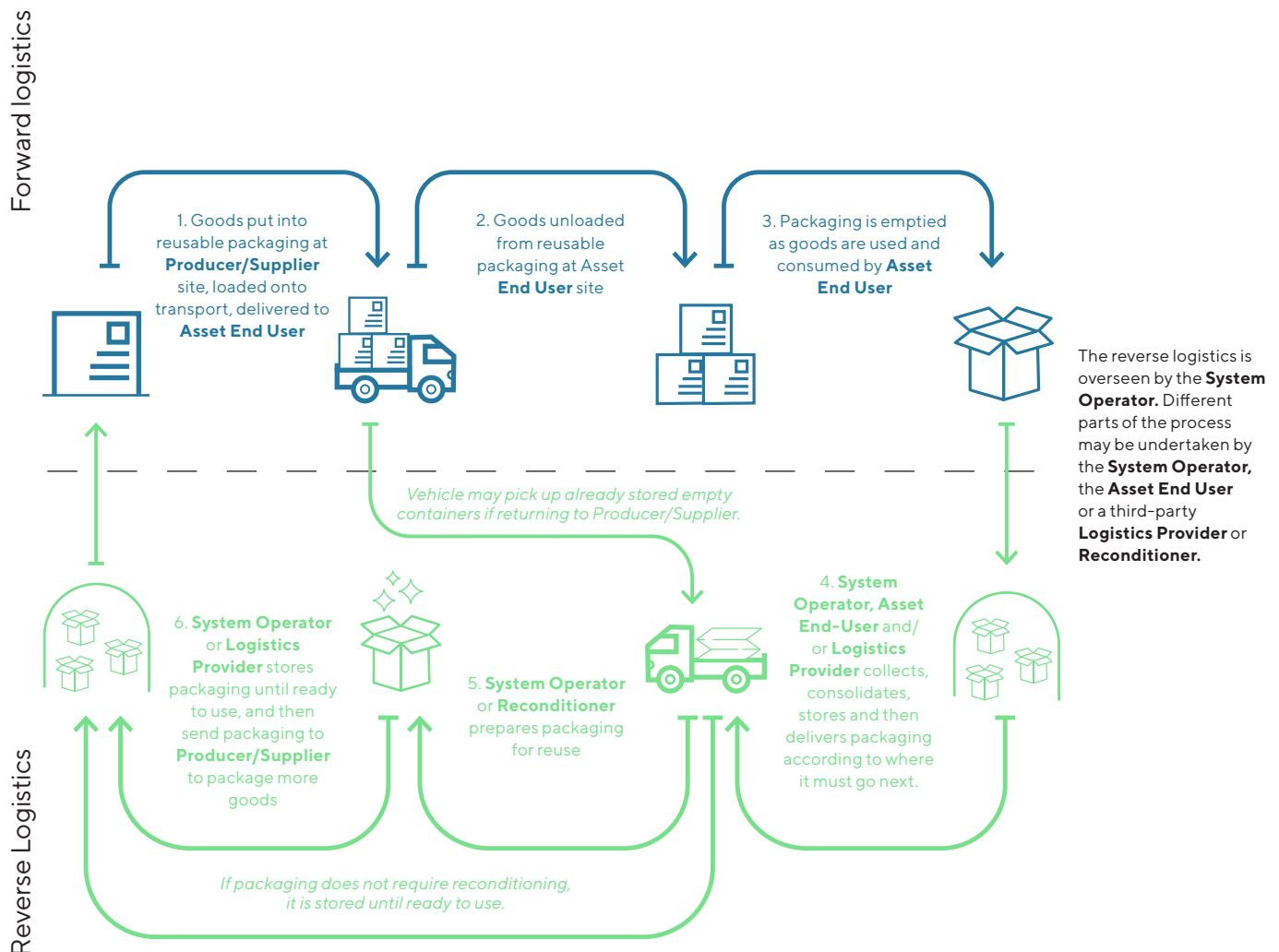
Reusable packaging systems are a classic circular business model that enable fleets or pools of packaging assets to flow around a system multiple times, as represented in **Figure 1**. The cycle combines the forward supply chain that is already known and understood for single-use packaging, with a **reverse logistics** process that brings the packaging back to the start again and turns the system into a closed loop.³³ The reverse logistics half of the cycle (sitting below the median line in figure 1) in the B2B context, is the focus of this report.

Reverse logistics are the systems, services and infrastructure that get used products (including packaging) from end-users back to producers/suppliers (i.e. the opposite of the forward supply chain). For reusable packaging, these systems, services and infrastructure can perform functions such as:³⁴

- Collecting/receiving used packaging.
- Sorting, consolidating, storing and/or transporting retrieved containers.
- Preparing containers for reuse, e.g. quality-checking and reconditioning (including washing and sanitising and/or repairs).
- Redistributing reusable packages back into the forward supply chain.
- Tracking packaging as it moves through each cycle.

As discussed in this section, the reverse logistics required for B2B reusable packaging relies on a combination of **infrastructure, relationships and people power**.

FIGURE 1: B2B REUSABLE PACKAGING SYSTEMS



Glossary

System operator: responsible for circulating and maintaining the fleet of reusable packaging assets (often the asset owner, sometimes also the producer/supplier of the goods contained)

Asset end-user: the organisation where the product is finally removed from the reusable packaging asset; usually the last organisation in the forward supply chain to handle the reusable packaging, might be another producer/supplier, a retailer, or hospitality.

Producer/supplier: makes and/or supplies the products to be contained in the reusable packaging or uses products that are supplied in reusable packaging.

Reconditioner: prepares the packaging assets for reuse, e.g. cleaning, sanitising, repairing.

Logistics provider: gets the reusable packaging assets from A to B as they travel around the supply chain, collects or receives used packaging and/or stores packaging in-between movements.

Infrastructural needs for reverse logistics

Each step of the reverse logistics process raises specific infrastructural needs, including:

- Suitably sized vehicles or other method of transportation for collecting, moving and redistributing reusable packaging fleets at various stages.
- Appropriate sites to act as reusable packaging drop-off points and/or locations to store reusables between uses. For example, warehouses, distribution centres, or resource recovery centres.
- Appropriate facilities to recondition packaging units between uses. This may involve equipment to repair damaged packaging or to undertake washing/sanitisation.
- Devices and/or software systems to track reusable packaging units in order to minimise attrition and to facilitate logistics, such as inflow and outflow of reusable packaging, distribution and retrieval.
- Associated infrastructure and equipment to support different members of the product value chain to participate in the reusable packaging system (particularly relevant if the reusable packaging system is new).

People power and relationships

Reverse logistics are underpinned by **people and relationships**. Functional and **collaborative relationships** between different members of the supply chain help to steward reusable packaging through each phase of the reverse logistics process.³⁵ For example, in many B2B reusable packaging systems, critical parts of the reverse logistics are performed by the asset end-user, such as retailers.³⁶ Therefore, successful systems require participant buy-in, which may be secured in different ways, but usually occurs because the system brings some benefit to all parties. In parts of the market where B2B reusable packaging systems do not yet exist, relationships must be built from scratch and the anticipated benefits of participation should be well articulated.

People power to perform critical tasks is also essential for reverse logistics to run smoothly. For example, labour is needed to manage the flow of packaging through the system, organise and undertake collections and deliveries, service drop-off points and warehouses, operate the facilities and equipment for sanitisation, or perform repairs on packages.³⁷ Remunerating this mahi alongside investing in the necessary capital infrastructure discussed below requires a sustainable financial model. Financial models differ between different types of reusable packaging systems (e.g. pooling vs vertically-integrated models). They also vary depending on whether the system operator is a company dedicated to system operation or also a producer of the products contained in the packaging.³⁸

Comparing single-use and reuse post-consumption logistics

It is important to note that single-use packaging also relies on a post-consumption logistics process, including activities such as collection/drop-off of used packaging, sorting/consolidation/baling, storage/stockpiling, reprocessing for recycle or disposal, and transportation at various points of this process. As for reusable packaging systems, these post-consumption logistical functions also rely on infrastructure, relationships and people power. However, unlike reusable packaging systems, these logistical functions and costs are often not organised or delivered by those who put the packaging (and/or the packaged product) onto the market. In the absence of regulated product stewardship schemes, they might be organised and paid for by whoever used the product in the packaging, or they might be partly covered by government/industry subsidies. The functions are generally carried out by waste and recycling operators.

Furthermore, traditional methods for achieving efficiencies in post-consumption single-use packaging logistics (e.g. compaction, multi-material collection and commingling) are not generally suitable for reusable packaging. Reusable packaging cannot be compacted to reduce freight volume (although some reusable packaging is designed to be foldable/collapsible) and usually requires more careful handling to protect the package from damage. In B2B reusable packaging systems, collection efficiencies are more likely to be achieved by combining the reverse logistics and forward logistics. For example, collecting used packaging at the same time as delivering new full packages.³⁹ Collaboration and relationships across the supply chain and in the packaging design phase are also critical for reuse because reverse logistics efficiencies often come from accommodations that enable packaging and/or infrastructure to be shared across businesses, i.e. standardisation and managed pooling.⁴⁰

In essence, reusable packaging tends to involve higher post-consumption handling costs and the responsibility for reusable packaging reverse logistics tends to be internalised into the packaging business model. In contrast, the costs to producers of single-use packaging are associated with its manufacture rather than its handling (i.e. a resource-intensive business model, which is favoured over labour-intensive models within current linear economic and financial settings⁴¹), while the post-consumption logistics are mostly externalised. This is not to say that the waste collection methodology for single-use packaging in the B2B context does not present its own challenges – some anecdotal examples include plastic pallet wrap becoming tangled in front load trucks or blowing away, and small loads of wooden pallets being tricky to hand load – or that B2B reusable packaging systems do not create beneficial handling efficiencies.⁴² Nevertheless, the economic imbalance between single-use and reuse systems has been highlighted as an uneven playing field that can undermine the economic viability of reusable packaging systems (and circular business models, more generally).⁴³



Given Councils play a role in procuring and/or operating parts of the post-consumption logistics for single-use packaging (albeit mostly for B2C rather than B2B packaging), there could be a case for Council playing a role in redressing this imbalance. Furthermore, as will be discussed in this section, the waste and resource recovery sector has transferrable skills, assets and infrastructure for single-use packaging management that could potentially be applied to support reusable packaging systems.





Will&Able: Image supplied

Examples of each step of the B2B reusable packaging reverse logistics process in the real-world

The interviews we conducted for this research demonstrated that while different steps of the B2B reusable packaging reverse logistics process can be entirely undertaken by one party, more commonly they are split between different parts of the product value chain or distribution channel. Just because a party owns a packaging pool/fleet does not imply that they own and operate all parts of the system. For example, reusable packaging system operators may outsource parts of the process, such as freight, reconditioning or warehousing. When parts of the reverse logistics are outsourced, then the necessary system infrastructure will be spread across different organisations. The following section highlights some examples of how different parts of the reverse logistics process are managed within different B2B reusable packaging systems in Auckland.

Systems to collect or receive used packaging

Reusable packaging cannot be reused if it is not returned. The retrieval process for used B2B reusable packaging can involve:

- Organised pick-up services from the asset end-user.
- A serviced network of returns/drop-off points.
- The asset end-user organising or completing packaging return.

Some systems remove the pick-up/collections/returns process entirely by establishing a process whereby the supplier replenishes product into reusable infrastructure owned by the product customer and located at their site.

Organised pick-up services/collections from the asset end-user

A common example of B2B reusable packaging that is collected, when empty, from the end-user are kegs for beverages. Bars or retailers with an off-licence refillery will leave empty kegs in a designated space outside their

premises. Pick-up will be organised by the keg owner or pooling operator, who either owns their own fleet of collection vehicles, or outsources this activity to a third-party logistics provider. Often, pick-up systems will be made more efficient to reduce transport movements by combining used keg pick-up with the delivery of new, filled kegs.⁴⁵ This is also the model adopted by several Auckland-based coffee roasters who deliver coffee beans to cafes in reusable buckets/drums. Empty buckets are collected to return to the roastery for washing and refilling when a new full bucket is delivered to the cafe.

Producer-initiated collection systems for vertically-integrated reusable packaging can be quite bespoke. **Will&Able**⁴⁴ is an Auckland-based social enterprise that makes and sells cleaning products, creating work for disabled people. The products are sold nationwide in a range of prefilled consumer-sized HDPE plastic containers, as well as in bulk 5L and 20L HDPE plastic containers for commercial customers or for retail sale 'on tap'. The company is seeking to supply bulk sales of cleaning products to workplaces, council offices, and central government departments (in either consumer-sized or bulk-sized containers).

Will&Able seeks to reuse all packaging it puts on the market.⁴⁶ At the same time, all Will&Able consumer-sized bottles are manufactured from 100% post-consumer plastic milk bottles. For business consumers of retail-sized products, Will&Able is developing a system to leverage milk bottle recycling collections from those businesses, by inviting its business customers to combine empty used Will&Able bottles with their empty milk bottle recycling collections. Will&Able either collects the milk bottles and cleaning product containers when delivering new, full containers of cleaning products, or contracts a third-party recycling collector who already services the business to do this. This system works for Will&Able because the empty Will&Able containers can be diverted to wash and refill, while the milk bottles can be manufactured into more Will and Able reusable packaging or recycled into other items such as plastic pipes, plastic building sheets and rubbish bags.

"The used milk bottles go on a different journey - they aren't reused - but the fact they're being collected from businesses can be used as a leverage point for businesses to get involved in returning the reusable packaging too."

Establishing network of returns/drop-off points

Establishing a collection service for used reusable packaging is not always practically feasible for some B2B reusable packaging systems. For example, if production is based in Auckland but sales are nationwide, or if collections cannot be easily integrated with another logistics movement that is happening already. In these cases, companies may seek to establish networks of convenient return points where asset end-users can drop-off used packaging for reuse. Usually, organisations that host the return point will consolidate the returned packaging and bulk ship it to the next step in the reverse logistics process. Return points might be located at end-user sites (e.g. retailers dispensing products from bulk packaging) or other locations, such as resource recovery centres, environment hubs or other commercial or community locations. This type of system is similar to the existing returns network for recyclable packaging.

Through their **Plastic Return Programme**, Auckland-based manufacturer, **ecostore**, has established a bespoke nationwide returns network for both their B2B (bulk) and B2C packaging of cleaning and personal care products.⁴⁷ This programme supports the establishment of return points at participating stores and other locations (e.g. schools) who are supplied with appropriate receptacles as well as freight tickets for collecting and returning empty containers to ecostore's manufacturing plant in Auckland. The containers ecostore receives through this system includes bulk B2B packaging, such as 5kg, 5L and 20L HDPE containers.⁴⁸ In 2022, more than 12 tonnes of packaging (including over 7000 20L containers) were returned to ecostore through the programme – to be either sent onwards for recycling after return, and to be prepared for reuse. Ecostore's 5kg HDPE laundry powder containers are

wide-mouthed and therefore can be washed by hand and refilled on site. The 20L containers are currently being recycled and a reuse option has been explored. However, this would require investment in suitable on-site washing facilities. Nevertheless, the system demonstrates one method for a system operator producer to retrieve their packaging from their business customers and customers, which then creates the option to explore reuse.

Selecting appropriate drop-off sites for a reusable packaging returns network (particularly for bulk packaging) may require consideration of the necessary space and appropriate equipment required to move and consolidate the packaging (e.g. forklifts or palletising). Sites that already undertake similar activities can be good candidates. Some reusable packaging operators seek to collaborate with organisations that already run depot, drop-off or resource recovery sites. As noted above, **Will&Able** seeks to reuse all the containers they put on the market. Alongside their business collections to retrieve used containers (outlined above), they are working to develop a network of drop-off locations across the country to enable the return of their B2B bulk-sized containers (which are washed and refilled by their franchisee, Kilmarnock, in Christchurch).⁴⁹

In Auckland, Will&Able has so far secured the support of two sites (Abilities Incorporated and Altus Enterprises) to act as return points for their bulk containers.⁵⁰ A decision is then made by Will&Able to recycle or reuse the containers at their Auckland premises.

Asset end-user organising or completing the return of the packaging themselves.

In some reusable packaging systems, the returns process is triggered by the final user of the product contained in the packaging. For example, supermarket retailers may deliver reusable pallets or produce crates back to the packaging asset owner for reconditioning, or the retailer may transfer them straight on to another user in the groceries supply chain if reconditioning at the asset owner's service centre/depot is not required.⁵¹

Fair Food,⁵² a food rescue organisation in Auckland, receives groceries donations from supermarkets across the city on reusable pallets and crates (for produce, milk and bread). Fair Food works to a 24 hour cycle - their drivers pick up rescued groceries from donor stores, bring them to the Fair Food warehouse where volunteers empty the contents of the reusable containers into repurposed banana boxes and stack the empty reusable crates in a dedicated part of their warehouse to be picked up by the drivers and returned to the relevant stores on their next pick-up round.

Infrastructure, people power and relationships are critical to Fair Food's participation in the reusable packaging system. As Fair Food is responsible for returning reusable packaging, this part of the reverse logistics system relies on their ownership of vehicles (four trucks and a van) and paid drivers. The Fair Food drivers are also essential to the smooth operation of the reverse logistics, as they know where the containers have come from and therefore where to return them (Fair Food does not use a software or admin system). The returns process for Fair Food is also reliant on strong relationships with the stores that own (or are responsible for) the reusable packaging assets because, unlike commercial users, Fair Food pays no deposits nor fees to participate in the reusable packaging system; instead, the flow of reusable containers in and out of their control is based on trust.



Fair Food: Image supplied

Supplier replenishing product into reusable infrastructure located at product customer's site

The model of suppliers replenishing empty containers directly at a business customer's site usually occurs in industrial/production/manufacturing settings where the business customer owns an appropriate reusable package/receptacle to enable on-site refilling. The producer or supplier can visit the customer's site and refill product from reusable packaging that always remains in their control. For example, some suppliers of industrial oils or lubricants will come to customer sites to refill their drums or IBC containers.

Preparing containers for reuse, e.g. quality-checking, washing and sanitising and/or repairs.

Many types of reusable packaging must be reconditioned before they can be repacked, reloaded or refilled. Depending on the types of packaging and the products contained, this may require sanitisation processes or repairs. However, not all reusable packaging requires reconditioning before recirculation. For example, reusable packaging systems in manufacturing contexts may be reused many times before beginning to show wear and tear. Once damages occur, they may simply be replaced rather than repaired if they are relatively small or lower cost containers.

For the reusable packaging types that do require reconditioning, the necessary processes and equipment can be quite product-specific. For example, washing items might be relatively simple, requiring only water blasting, or it may involve various stages, each requiring different equipment, such as pre-rinse, sanitisation with water and heat/sanitising solution, and appropriate equipment to enable containers to fully dry (e.g. racks to enable air circulation and potentially also heating systems).

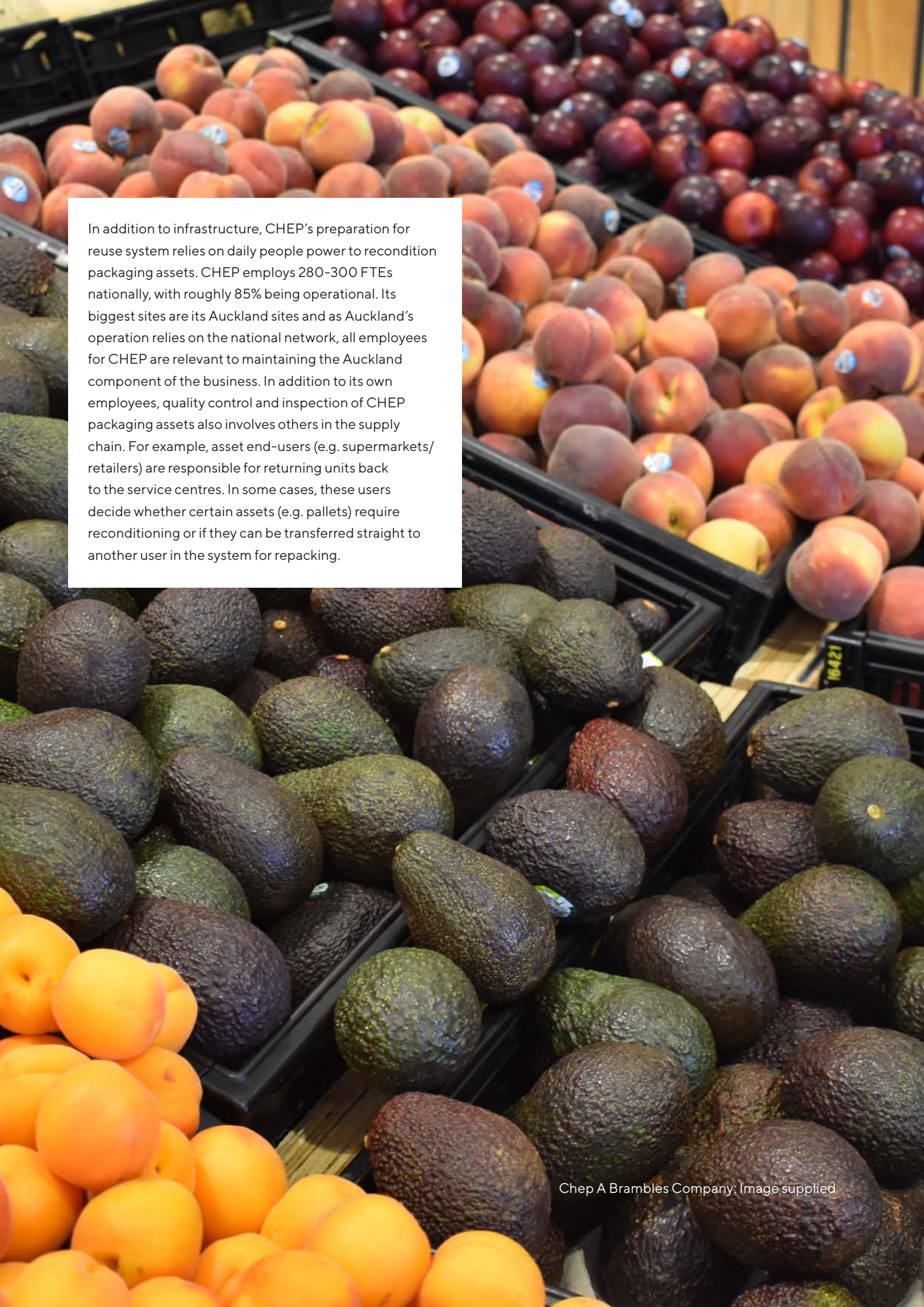
In Auckland, some independent companies wash B2B reusable packaging like IBCs, jerry cans and drums on behalf of other businesses and/or source empty used B2B reusable packaging to sanitise and resell as new.⁵³ Some operators of pooling systems recondition the assets in their pool or outsource this to specialist

reconditioners. In some industries, producers own and operate reconditioning/preparation for reuse infrastructure, whether or not they own the packaging assets that they fill with their product. For example, food and beverage producers often have on-site facilities to sanitise used B2B reusable packaging, such as IBCs, crates and kegs, to food grade standards prior to filling.

CHEP⁵⁴ is an international company that operates national pooling systems in New Zealand for reusable pallets, produce crates and IBCs, with fleet sizes in the millions. The main user of the pooled assets is the groceries sector, including growers and manufacturers of raw materials, food processors and supermarkets. Other sectors serviced include big box retailers of durable consumer goods and the hardware supply chain. Most of the units in CHEP's fleets pass through Auckland regularly as Auckland is New Zealand's main import and processing hub and population centre.

CHEP owns its own preparation for reuse infrastructure for its packaging assets, which it runs out of eight service centres nationwide, two of which are in Auckland. The Auckland service centres (~20,000sqm each) are dedicated to the quality checking, reconditioning and washing of reusable packaging units, and the storage of units between uses. Each week, hundreds of thousands of units move through these two centres (numbers fluctuate depending on the season).

Both of the Auckland service centres recondition pallets, e.g. fixing cracked boards and repainting, and one of the service centres also washes produce crates, bins and containers. The pallet repair lines are semi-automated, but labour is also required to repair cracked boards. The washing facilities for the crates, bins and containers use a highly automated process, featuring a conveyor line that units go through for washing, drying and then restacking. Large containers such as IBCs may also require water blasting. As the units are shared across many different food producers and therefore carry different types of food with each cycle, they must be properly washed between uses. CHEP has a framework of controls in place to ensure adequate hygiene standards and expertise to design wash systems and ensure capabilities.



In addition to infrastructure, CHEP's preparation for reuse system relies on daily people power to recondition packaging assets. CHEP employs 280-300 FTEs nationally, with roughly 85% being operational. Its biggest sites are its Auckland sites and as Auckland's operation relies on the national network, all employees for CHEP are relevant to maintaining the Auckland component of the business. In addition to its own employees, quality control and inspection of CHEP packaging assets also involves others in the supply chain. For example, asset end-users (e.g. supermarkets/retailers) are responsible for returning units back to the service centres. In some cases, these users decide whether certain assets (e.g. pallets) require reconditioning or if they can be transferred straight to another user in the system for repacking.

Sorting, consolidating and storing retrieved containers.

Throughout the various cycles of a reusable package, sites and people will be involved in receiving, sorting and consolidating containers according to where they go next in the reverse logistics process, and/or storing them until their next movement.⁵⁵ Important infrastructural considerations include the size of the location available (significant space may be needed to accommodate large volumes of bulk containers, even if they are foldable/collapsible), and the possible need to segregate containers based on whether they are dirty or clean, or based on their purpose (e.g. packaging intended for food and beverages or healthcare items, would need to be kept in separate areas to other stored or collected materials).

Some B2B reusable packaging system operators have warehouses for storing containers between uses. For example, roughly two thirds of the floor space of CHEP's two Auckland service centres (each ~20,000sqm) are dedicated to asset storage. Others contract third party logistics companies with warehouses. Storage can become an issue if packaging is not flowing steadily and rapidly. In some sectors, cycle rates fluctuate significantly with the seasons, so operators must be able to manage the cost of storing packaging fleets when demand is low. As one interviewee noted:

"It's a seasonal business. So you need to expand and contract with the seasons and that causes some logistical barriers because you end up with lots of units in the wrong place at the wrong time."

Transporting reusable packaging

The movement of empty packaging through the various locations on the reverse logistics journey is often outsourced to a third party freight or logistics company. Unless empty container pick-up can be combined with full container delivery, it can be inefficient for most system operators to own and operate a vehicle fleet and employ drivers to perform this part of the reverse logistics process. Regardless, freight is one of the most expensive parts of reusable packaging systems (and is also sensitive to rising oil prices). In Auckland, this cost is further elevated for freight to and from the islands

in the Hauraki Gulf. Therefore, for many B2B reusable packaging systems, successful freight movements often rely on relationships and collaboration with third parties. For example, two companies we spoke to specifically mentioned bespoke arrangements they had negotiated with freight companies and other suppliers in order to secure financially and logistically manageable transport solutions for their reusable packages.

Aotea Brewing⁵⁶ is a craft brewery on Aotea Great Barrier that packages into reusables exclusively.⁵⁷ Their single-use-free policy means they rely on kegs, some of which they own, and some of which they use as part of a keg pooling system. Moving kegs on and off the island, whether full or empty, is expensive. Drawing on human relationships and mutually beneficial arrangements, the company has devised ways of reducing or offsetting freight costs.

For example, the brewery has come to an agreement with a keg pooling provider that the brewery will pick-up, clean and fill any used kegs belonging to that provider that have come to the island to supply any of the local bars. The provider would otherwise have to pay to bring the empty kegs back to the mainland, so it is in their interests for Aotea Brewing to collect them, clean them, fill them with their stock, and cover the freight costs to send full kegs back to the mainland. In return for Aotea Brewing covering the freight costs, the keg provider does not charge Aotea Brewing for the use of the keg or any dwell time on the island.

"I take all of those kegs that would otherwise go back to town empty. I hold and clean them and refill them with my stock, send them to town with my product, to my clients. I don't pay anything for those kegs while I hold them. The keg provider is patient with me because they do have to wait before the kegs will return to the mainland, but they save freight costs. Those sorts of relationships are really important to survive in our environment on the barrier."



In addition, to get full kegs to town, Aotea Brewing also collaborates with a local transport provider to receive a much lower set rate for carrying the full kegs than they would otherwise pay. This is in the interests of the transport provider because Aotea Brewing is a regular customer that provides consistent business, and because the kegs utilise space that is often free on the provider's city-bound trips (because overall there is a greater demand for flow of supplies onto the island than off the island).

Tracking packaging as it moves through each cycle

Tracking reusable packaging units once they leave the control of the asset owner can be important to optimise system efficiencies, generate good data and impact reporting on reuse systems, and ensure reuse in practice.⁵⁸ If packaging goes missing, this creates a negative environmental effect because the full potential of the packaging may not have been reached, and because a new unit is required to fulfill the missing unit's purpose.⁵⁹ Reusable packaging for B2B contexts is usually valuable, so systems to avoid attrition are also important for asset protection.

Being able to locate packaging units and keep them circulating in the system usually involves a combination of financial mechanisms (fees and deposits), along

with barcodes, individually numbered units or tracking devices. These systems generally require a back-end software solution to support them. Some reusable packaging systems rely on trust, employee's administrative skills, or other relationship-based mechanisms of ensuring that units continue to cycle. Tracking systems can be less critical if the packaging only moves back and forth between two organisations.

Konvoy Kegs⁶⁰ is a global keg operator (however, Australia-New Zealand owned and operated) who provides end to end keg management and tech services from keg pooling, location detection to keg procurement and servicing. Konvoy Kegs New Zealand manages a fleet of roughly 30,000 stainless steel kegs, with each keg cycling 3-4 times a year. Kegs have a 30 year lifespan and are valuable assets that are used by numerous beverage producers in the beer, cider, wine, mead, RTD and non-alcoholic beverage industries. To protect the keg assets and keep them circulating, each keg is affixed with Konvoy Kegs' patented tracking drive, Katch, that is digitally connected to its Konvoy Cloud software systems that enable kegs to be located and temperature to be monitored at all times. Konvoy's unique tracking technology allows for customers to enable faster and more efficient supply chains, minimising carbon footprint, more effective demand planning and generation of data and insights to drive effective decision making.



Localised Wairau Zero Waste Hub: Image supplied

The potential role of the waste and resource recovery sector in the reverse logistics for B2B reusable packaging

Many of the roles, skills and infrastructure for the reverse logistics and preparation for reuse phases of the reusable packaging process outlined above overlap with that of the waste and recycling sector, which already provides post-consumption logistics for single-use packaging (i.e. collecting, sorting, transporting recyclable packaging to various end-markets or to disposal locations for non-recyclable materials). Overseas, some commentators have pointed to this overlap to highlight the potential for the waste and resource recovery sector to play a more active role in reusable packaging systems. By leveraging the existing infrastructure, transferable activities and skillset of the resource recovery sector in reverse logistics, these commentators see the potential to accelerate the growth of reusable packaging systems.⁶¹

Furthermore, if reusable packaging systems are considered an important part of the transition to a circular economy, then supporting the waste and resource recovery sector to participate in reusable packaging logistics is important for ensuring a just transition for this sector.⁶² If rising demand for reusable packaging leads to a decrease in single-use recycling services, then waste and resource recovery operators should be supported to access any public investment, service procurement or job creation opportunities in the reusable packaging market.

Some resource recovery operators and some local governments have started to explore how to implement the vision of bringing together the systems of resource recovery and reusable packaging. For example, **Aarhus City in Denmark** has contracted resource recovery operator **TOMRA** to pilot the delivery of the reverse logistics (including collection, sanitisation and redistribution) for a citywide reusable serviceware system for takeaway food and drink.⁶³ One business we spoke to that had been proactive in seeking the support of resource recovery operators (and other businesses) to act as collectors and drop-off locations for their reusable packaging explained that piggy-backing on resource recovery reverse logistics made sense for reasons of cost, efficiency and because resource recovery operators are experts in this area.

“... we want to leverage someone else’s system to get our packaging back and then we will clean and reuse it.”

– Interviewee

From the perspective of Council waste teams, partnering with the waste and resource recovery sector to support B2B reusable packaging systems may be a more natural relationship. Due to its statutory responsibility to manage waste, local government often owns, contracts or provides funding for waste and resource recovery infrastructure services, or has working relationships (contractual or otherwise) with waste and resource recovery operators. This infrastructure and these relationships may be easier and quicker for local government to leverage in the service of reuse.

Current involvement of Auckland’s waste and resource recovery sector in B2B reusable packaging reverse logistics

For this research, interviews and survey responses were collected from 12 waste and resource recovery operators in Auckland, including six Community Resource Recovery (CRR) operators, four large private organisations and two small to medium private organisations. Consistent with overseas thinking, these interviews and surveys demonstrated that most operators thought that providing some level of support for reusable

packaging systems did fit within their role. Furthermore, almost all operators were already participating in at least some B2B reusable packaging systems (whereby containers or packaging leave their sites full in order to transport recyclate or waste, and these containers/ packaging then return to their sites for refill).

For example:

- 30 Foot Stainless Steel Hook Bins
- 9 Cubic Metre Skip Bins (also called Gantry Bins)
- 1.5 Cubic Metre Wooden Bins
- ICB (Intermediate Bulk Containers) Cages
- Fadge Bags (also called Bull Bags or One Tonne Bags)
- Wooden Pallets
- Plastic Pallets
- Metal Bins in various sizes (used specifically for e-waste)

Several had not considered these activities to be reusable packaging, highlighting how the concept and language is new to many. For example, some participants were surprised that the systems for circulating hook bins and gantry bins might be considered a B2B reusable packaging system. A number did not think their current work in this area was innovative and they wanted to do more.

This section outlines two case studies of B2B reusable packaging systems operated by organisations in the waste and resource recovery sector.

Localised: Image supplied



Case Study 1: Waste Management's Sharpsmart Reusable Sharps Containment System for the Healthcare Industry

Waste Management⁶⁴ is a large materials recovery, recycling and waste management provider, with over 1600 team members across 70 locations. Waste Management delivers a reusable packaging system (the Sharpsmart Reusable Sharps Containment System) to the healthcare industry in Aotearoa, and is the only waste service provider in the country to do so.

The Sharpsmart Reusable Container System is used to collect used sharps from the healthcare industry for disposal. Health professionals place used sharps in a custom designed reusable sharps collection container. These containers come in various sizes (depending on the volume of sharps) and are made of a hard polycarbonate plastic that lasts for 30 years or 500 washes. Waste Management offers this service nationally to a large number of customers in the healthcare industry. In Auckland, the system is widely used, with customers including the Southern Cross Hospitals, as well as large public hospitals, aged care facilities and various small quantity generators.

In Auckland, Waste Management operates all parts of the reverse logistics for this packaging system. The company collects the containers from customers and decants by means of automated wash line. The containers are emptied, disinfected, quality checked prior to being sent out again for reuse. The sharps content is then sterilised at one of three treatment processing sites in Auckland, Wellington and Christchurch.

The success of the Sharpsmart reusable sharps packaging system can be attributed to the quality of the durable reusable container when compared with the single-use version.

Case Study 2: Localised's ICB (Intermediate Bulk Container) system for transporting e-waste

Localised Limited⁶⁵ is a social enterprise that exists to increase the number of community-led resource recovery enterprises and projects in New Zealand, and address the key challenges community enterprises face in establishing new operations. Localised operates two Zero Waste Hubs that receive items from Auckland Council's inorganic waste collection. These two sites are located in Wairau Valley and Point England. Currently, the two hubs redistribute reusable and repairable consumer goods to local community groups and small businesses who then provide them to the community. The hubs also collect a range of products and materials for recycling, including e-waste.

Localised operates a reusable packaging system to transport e-waste from its two locations to certain e-waste recyclers. E-waste is commonly transported on pallets contained with single-use plastic shrink wrap. To avoid using plastic wrap, Localised purchased ICBs to use as a reusable container to transport e-waste. The e-waste recyclers pick up the full ICBs from the Localised Zero Waste Hubs, take them to their processing facilities, empty the containers and then store them until they can return them to Localised for reuse when they come to collect the next load. This reusable transport packaging system costs more to implement and is more challenging for reprocessing partners who have limited storage capacity to store containers between pick-ups. The delay in retrieving empty containers also requires Localised to own a larger fleet of ICBs than would otherwise be required so that they can continue filling containers with e-waste in between deliveries. To date, good working relationships and shared waste prevention values have helped all parties to adopt, persevere and streamline the system.

However, in the mid-term, Localised is considering options for improving the reverse logistics process. For example, converting one of their box trucks so that one side is a curtain sider, which would enable them to do their own deliveries. This would mean ICBs could be emptied at the reprocessor sites upon delivery, and taken back to the Zero Waste Hubs for reuse straight away. Localised is also currently exploring how they can work with Onehunga Zero Waste (part of the Auckland Council CRC network) to enable them to use this reusable packaging system for transporting e-waste too. The approach would involve coordinating deliveries with the two Zero Waste Hubs, in order to maximise efficiencies. In terms of the reverse logistics, the Zero Waste Hubs would then coordinate the return of ICBs and store them for reuse. If the system works well across the three sites, it could potentially be offered as a model to the wider Auckland Council CRC network.

“We’re struggling against a linear system but anything we can do in reuse is a win and is important. Scaling the use of B2B reusable packaging systems will get easier if we approach this as a network.”

Capacity and willingness of the sector to engage further with reusable packaging systems

Based on interviews and survey responses, there is a general willingness across the sector to play a larger role in B2B reusable packaging reverse logistics. Community Resource Recovery organisations expressed the most enthusiasm about the opportunity to participate in the B2B reusable packaging reverse logistics, as enabling reusable packaging aligns to their purpose and is a strategic priority. The large private waste and resource recovery organisations also see a role in this work, although this was not communicated as a strategic priority for these organisations.

As one interviewee said:

“This is not something that has been discussed at the executive level or we have a strategy for. That being said, the company does want to move away from a linear economy to a circular one so is open to moving into this work if the business model works.”

However, all participants currently have limited capacity to do more work in this area and advised they would need to invest in additional infrastructure and bring on additional staff to enable this, and that a business model to, at least, cover costs, was needed.



Localised: Image supplied

Community Resource Recovery (CRR) Operators

Community resource recovery (CRR) operators are organisations operated by and for the community that provide a wide range of reuse, repair and recycling services, as well as delivering behaviour change programmes and creating meaningful employment opportunities. They include organisations that the Council might refer to as Community Recycling Centres, as well as Environment Hubs.

Most CRR operators interviewed felt that playing a role in B2B reusable packaging reverse logistics is similar to their current work. For example, all participants already have onsite reuse retail stores for consumable goods that are a core part of their operations. Participants saw a logical connection between their reuse retail activities and the possibility to support reusable packaging systems. A number of participants also described the waste and recycling services they deliver as a vehicle to connect with communities to educate and inspire them to prevent and reduce waste. This connection could be enhanced through increased reuse activity.

Several CRR organisations are also participating in voluntary product stewardship programmes with local businesses. For example, acting as collection points for certain products and materials to enable those local businesses to recycle them. While many of these initiatives are not reusable packaging initiatives, they overlap with the types of collaboration that could also support B2B reusable packaging (e.g. acting as a collection point). Interviewees did highlight that

the business model for these voluntary product stewardship programmes often does not cover the cost of participation for the CRR operators, but aligns to their purpose. Ideally, all such collaborations (whether for recycling or reuse) would cover all costs, enabling them to be effective and prioritised.

From a values perspective, CRRs strive for outcomes that fit well with the outcomes of reusable packaging systems. For example, CRRs seek to operate at the top of the waste hierarchy to prevent waste and enable reuse, to provide meaningful employment opportunities, and to take on wider activities that support their communities to work towards zero waste. This values alignment seems to play a role in reinforcing the CRR organisations' interest in reusable packaging.

CRR organisations advised they would require additional capacity to participate. However, they felt that taking a network approach to delivering the reverse logistics would bring efficiencies into the system. These organisations shared that they do not have any spare space currently on their sites and that covered space particularly is in short supply. In addition, washing facilities are very basic so this would be an area that needs to be addressed.

“Our goal is and has always been to keep moving up the waste hierarchy and keep expanding the types of goods that are kept in circulation and out of landfill.”

—Interviewee

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Localised Wairau Zero Waste Hub: Image supplied

Large Private Waste and Resource Recovery Organisations

Interviewees in this category felt they were well-positioned to play a role or increase their role in B2B reusable packaging reverse logistics. In particular, these organisations felt they have existing infrastructure, breadth of operations, capability and size of staff, and networks that could be built upon to expand work in this area if there was a business opportunity. All operators were using B2B reusable packaging as part of their business (e.g. skip bins), with one operating an established and successful B2B reusable packaging system for the healthcare industry. However, in general, expanding to support more reusable packaging systems for these operators would primarily be driven by customer demand and a financially viable business model.

“The key reason we’re not doing more in this area is the cost of doing so, more specifically, it costs more to deliver these types of services and activities. The infrastructure is mostly there, just not the financial model.”

—Interviewee

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If a business opportunity did arise, infrastructure needs would include warehousing to store packaging, additional vehicles for transportation and specialist washing/sanitisation facilities. These participants also felt that additional staff would be needed, but without specifics on the type of packaging, volume etc. it would be hard to provide more details on this.

One operator saw an opportunity to develop a model that partners with community enterprises and small businesses on the delivery of a B2B reusable packaging system. In their view, the best Container Return Schemes are delivered through the community, as these groups can play a dual role in delivering container return schemes and being a focal point for the return of reusable packaging. They cited examples of container return points and depots being a gateway for further reuse and recycling activity, e.g. mobile phone recycling.

Small to Medium Private Waste and Resource Recovery Organisations

These organisations were less sure about playing a role in this work due to it competing with their current business model, or being unclear on what this work might involve and if there was a financially viable business model for it.

04. ANALYSIS OF GAPS AND CRITICAL NEEDS TO INCREASE REUSABLE PACKAGING IN AUCKLAND

Our research has demonstrated that established functional, well-designed, and impactful B2B reusable packaging systems do operate in Auckland (and further afield, both nationally and abroad). These systems provide useful learnings about the essential elements for setting up and running a successful system, what works well and pitfalls to avoid. However, interviews also highlighted that **many gaps exist to extend this impact further, through new or expanded systems. Furthermore, the viability of some existing systems,** as well as most future systems, depends on some critical needs being addressed. These needs are **infrastructural, operational and relational**, and were raised by interviewees across the spectrum of reusable packaging system operators, producers/suppliers, retailers and other asset end-users, or waste and resource recovery sector operators. This section of the report considers the key gaps in B2B reusable packaging provision, and the critical needs for further growth in B2B reusable packaging. Where relevant and helpful, these are discussed in relation to examples of 'what works' in existing systems.

Gaps in reuse system provision in many B2B packaging contexts

Despite the existence of some widely adopted and impactful B2B reusable packaging systems (refer Table 1), the use of single-use packaging is still commonplace in supply chains across most sectors, nationally and globally.⁶⁶ The ongoing absence of reusable packaging in these B2B contexts is a key gap. Interviewees highlighted some single-use packaging types in the B2B sector that they thought were good candidates for a reusable alternative. Some also highlighted specific contexts in which expanding B2B reusable packaging use and promotion could be beneficial.

Virtually every interviewee highlighted **plastic pallet wrap/shrink wrap** as an area of single-use packaging waste that should be prioritised for replacement with reusables (e.g designing out the need for pallet wrap by using a different containment approach, as highlighted by the Localised Case Study above, or by designing a system that uses and recovers reusable pallet wraps). This packaging waste stream has also been raised in other New Zealand studies.⁶⁷ A number of interviewees thought more could be done to replace cardboard packaging with reusables, and one also highlighted the plastic packaging tape that could be avoided if cardboard was replaced with reusables. Studies of plastic usage in the New Zealand aquaculture supply chain have also highlighted polybins – made from expanded polystyrene – as a key concern in seafood processing and distribution (nationally and exported), among other single-use packaging.⁶⁸

The dominance of single-use packaging in these areas relate partly to a lack of appropriate and affordable reusable alternatives, but often the bigger problem is the absence of a supporting system of reuse/reverse logistics to circulate the packaging through multiple separate businesses in a supply chain. For example, while there are several companies that offer reusable pallet wrap in New Zealand,⁶⁹ as yet, the usage of reusable wraps is mostly confined to individual organisations' warehouses or vertically-integrated supply chains (it is also recognised that different wrap specifications are required for different products/sectors). Similarly, extending the current use of reusable fish bins in supply chains instead of disposable polybins also requires improvements in reverse logistics and returns systems.⁷⁰

In addition to specific packaging types, three interviewees felt that B2B reusable packaging systems could be used more creatively in B2C contexts to further reduce packaging waste. For example, two interviewees talked about the potential for **public and corporate events** to build upon B2B reusable packaging systems to procure and dispense beverages from kegs and eliminate the need for cans and bottles at their events. These interviewees felt that innovations in this area, with rentable mini-kegs or keg fridges, could support

this type of approach. This could make particular sense for events and occasions on the islands in the Hauraki Gulf where local products could be packaged into bulk returnables locally and served locally, reducing the need to ship product onto the island, or ship empty packaging off the island for recycling or landfilling. One interviewee felt that options like this are not on the radar of many businesses, corporates and events providers and that more work could be done to update Auckland Council's zero waste events guidelines to spark and encourage more innovation around reduction and reuse at events.

Two interviewees thought that **B2B reusable packaging could be better integrated into B2C retail formats**, to reduce both upstream and downstream waste. One of the interviewees stressed the importance of supporting refillery retailers whose existence maintains demand for bulk deliveries of product in B2B reusable packaging and thereby continues to provide a niche for producers who want to service this market. The other interviewee used the example of fish to express a similar point:

"... when you look at fish in the supermarket, loads of it is vacuum packed in single-use plastics. I think we need to review the way we sell fish. We have butchers, why not fishmongers? ... We know that people will come in and consume fish unpackaged if they are given that opportunity. We sell reusable plastic containers, why don't supermarkets offer a similar service? Through supermarkets we don't have that luxury. Imagine if commercial fishers could bring reusable fish bins to the back end of the retailer. You could even build them into the display units. And then customers would bring their own container and the fish is filleted for them straight away. Those opportunities would create more value and a better consumption experience as the end product would be better quality, and there'd be no packaging waste."

Most of the waste and resource recovery sector interviewees felt that not enough businesses were operating reuse systems or willing to invest in exploring them and making them work, which hampers the sector's ability to involve themselves further down the chain. Most organisations felt that producers and suppliers should drive the shift towards B2B reusable packaging, which would create a business model for the resource recovery sector to participate. Without this, resource recovery operators have to push into a headwind. Several organisations related the difficulties they have experienced in pushing for business adoption of better waste sorting and recycling practices, to the difficulty now faced in advocating for greater reuse. In their view, regulation would help push businesses towards reusable packaging models and thereby generate uptake, while reinforcing a viable business model.

"Regulation is key as we have established a partnership with a local building company to recover their building materials designated for landfill. We take these materials and sell what we can back into the community. This started off well, but then lost momentum as it was perceived to be easier to put the waste into a skip. We've been pushing this by advising that a waste bylaw will be coming that will require a waste management plan so let's get ready for that. It is not easy to keep this work going without regulation pushing companies in the right direction."

—Interviewee

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Viability business models to operate or support B2B reusable packaging systems

Expanding existing B2B reusable packaging into new areas or establishing new systems requires a viable business model for that system to operate. Many interviewees highlighted this as a critical need when asked why there are not more examples of B2B reusable packaging systems in their sectors. The absence of a viable business model is not necessarily indicative of the unsuitability of reusable packaging for a particular supply chain, but may relate to systemic blockers that individual organisations have limited influence over.

“...capacity is code for money. We need to be financially viable. So our capacity depends on our money. We aren’t trying to make money but to recover costs... The reuse system itself works – we just need more, there are not enough hours in the day... Our struggle is we don’t have income streams to keep growing.”

—Interviewee

A business model does not always mean the reusable packaging system must make a profit, but it should at least deliver some benefit over single-use to its users while paying its way and covering costs.⁷¹ The latter is also a key determinant for the participation of the resource recovery sector, most of whom made clear that their involvement would be dictated by whether they are paid to participate. These operators were particularly mindful of committing to support reusable packaging systems without evidence of a business model, due to their experience participating in voluntary product stewardship recycling schemes where their participation has not been properly remunerated.

Reusable packaging reverse logistics are people-intensive and the roles are ongoing because the packaging is repeatedly cycling.⁷² Based on both our desktop study and interviews, it is clear that viable and successful B2B reusable packaging systems cover their operational costs and pay their staff rather than relying on volunteers. Where parts of the reverse logistics systems are outsourced (e.g. warehousing, deliveries, washing etc.), they are outsourced to commercial operators who charge for the service. Even the non-profit initiatives we interviewed hired paid staff to deliver key components of the reuse systems that they operated or participated in.

“As we scaled up, we needed to be reliable, so that translates to paid contractors and employees. We do still have an active volunteer base, but all the logistics etc. are run by paid staff.”

—Interviewee

To achieve viability, reusable packaging systems should work towards generating cost savings and improved handling efficiencies, which allow funds to be redirected towards reverse logistics.⁷³ As a general rule, a reusable packaging system will not be financially sustainable if the use of single-use packaging significantly undercuts the operational cost of the reusable packaging reverse logistics system. Exceptions do exist in the case of: premium products; where a reusable packaging system is a “value-add” that delivers unique and superior results to single-use packaging (especially product protection); or where system operators, producers/suppliers and asset end-users are strongly motivated by sustainability values. However, without the addition of cost savings and efficiency gains, these benefits may only secure a system’s viability within a niche segment of the market.

“Sustainability is important, but it’s the financials and economics of it that drives most people to get on board...”

—Interviewee

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Overall, the longstanding and/or mainstream B2B reusable packaging systems found in this research tend to save money or time in some way (e.g pallets/crates/ kegs etc.). For example, it may be cheaper for producers/ suppliers to pack into one bulk container rather than smaller packages, saving filling, branding, labelling and shipping costs. In some cases, servicing the reuse system costs less than the ongoing purchase of single-use alternatives. For example, one interviewee noted that a third of their business’ costs came from their product packaging, which was a key motivating factor to explore reuse. Some producer/supplier interviewees explained that they had purchased B2B packaging intending it to be single-use, but quickly realised that the packaging could be reused and that this would save money.

The increased costs of reusable packaging systems associated with reverse logistics can be influenced by choices relating to the design of the system and packaging (e.g. container size and handling time, storage location, asset weight, the numbers of units carried in each transportation), and can further increase if the system is poorly managed.⁷⁴ These are factors that individual system operators have some degree of influence over. However, an external barrier to more B2B reusable packaging systems achieving viability is that reusable packaging systems compete against single-use systems where costs are still often externalised. In this sense, wastage (or material inefficiency) is not always adequately incorporated into how most businesses

calculate economic efficiency. Other times, the fear that reuse will cost more is enough to lead businesses to discount reuse as an option and to underinvest in exploring it further, as Mikayla Plaw from Profile Group (a Waikato-based group of businesses that are working towards increased B2B reusable packaging) notes:⁷⁵

“Just by removing single-use packaging out of our system... to allow packaging to go around, around, around in circles is a massive cost saving. That’s huge off our bottom line. So, when you start to talk about the volume that we have to bring in for single-use versus that same amount of volume around, around, around in circles – it’s just unbelievable. It’s just a really important point because I always hear ‘oh well, it’s just going to cost us so much’, which is, in the long run, not correct.”

Areas where there is a desire to reduce waste, but not an immediately obvious opportunity to save costs or increase efficiencies could be an indicator of market failure that needs correcting. These scenarios can be considered appropriate areas for Council to lean in and provide support to redress the imbalance in favour of reuse.



Collection, warehousing and washing infrastructure

The key infrastructural needs for reuse cited by interviewees related to collection infrastructure, warehousing space (particularly for collected containers, but also for storing containers between uses) and facilities for washing reusable packaging that requires sanitisation between uses. Some operators also highlighted the likely need for more vehicles. These gaps are influenced by the capital cost of infrastructure and by difficulties associated with finding appropriate sites to install equipment or undertake the specified activities. These infrastructural gaps can be further compounded if there is significant uncertainty about the existence of a viable business model that would otherwise justify the upfront capital investment in the infrastructure.

Collection and storage

A network of collection points for used reusable packaging to be consolidated and transferred to reconditioners/system operators for preparation for reuse was cited by several interviewees as a key gap. Some interviewees thought that addressing this gap could have the added benefit of opening the door to a collection network for B2C reusable packaging, where the need is potentially even greater.⁷⁶ A coordinated approach would increase the likelihood of an interoperable returns network rather than a splintered network of independent and disconnected collection points for different brands and packaging systems.⁷⁷

“Support to establish collection points for used packaging is huge.”

—Interviewee

Addressing the collection network gap connects to the wider issue of space constraints for storing reusable packaging across its reuse cycle. Finding appropriate and sufficiently large locations to store bulky B2B reusable packaging fleets can be difficult and expensive. Even in the case of established systems, storage space

can place a limitation on growth as increasing capacity to operate often relies on expanding fleet size, which requires additional storage space. These challenges can be partially addressed by designing reusable packaging fleet units that are collapsible or nestable⁷⁸ but this is not possible for all packaging types. Other opportunities include lean manufacturing practices whereby a continuous flow is achieved so that packaging materials are continually moving through the system and the need for empty container storage is minimised. However, these may also require innovation and collaborative efforts to establish.

Washing infrastructure

Local studies commonly cite the lack of washing infrastructure as a key gap for some reusable packaging systems.⁷⁹ The desktop study and interviews for this research demonstrated a base level of washing activity occurring in the B2B reusable packaging space across Auckland, and that many reuse systems are able to fulfill their washing needs. For example, some system operators had their own washing infrastructure to support their reusable packaging system. Some contracted washing out to third parties that specialise in washing containers. In other cases, the washing is carried out by the producers that use the packaging rather than the system operator.

However, one producer described the lack of washing infrastructure as the main barrier to packaging reuse for them, and this was specifically related to space constraints to install the necessary equipment in their manufacturing facility (as well as procedural implications for ensuring the safe discharge of wastewater). Another producer that was actively exploring how to scale their reuse system indicated that they would appreciate financial support and specialist advice to establish washing infrastructure given the considerable capital investment associated.

Furthermore, most interviewees considered that more washing infrastructure, particularly fit-for-purpose facilities for specific packaging types, was needed. It seems current capacity would not be sufficient if B2B reusable packaging systems were to become more

widespread or if the types of products intended to be carried by the packaging became much more varied than is currently the case. Aside from capital investment, some interviewees foresaw additional barriers to growing more washing infrastructure, including resource consent processes, and securing appropriate facilities and processes to meet food safety standards (especially for third party washers undertaking this activity on behalf of food and beverage producers).

The waste and resource recovery sector

Participants from the waste and resource recovery sector identified capital for infrastructure and finance for staffing as their key needs. Vehicles for transportation was mentioned as an area that would likely require investment. For example, two interviewees highlighted that curtain sider trucks (including curtain sider tipping trucks) could be particularly useful for optimising reusable packaging reverse logistics and integrating them into existing waste and resource recovery logistics. Most organisations cited warehousing (space) and washing/sanitising/preparation for reuse as the key infrastructure gaps. The latter was deemed particularly important as the potential of handling bulk containers used for food products would require specialised equipment and space and, therefore, significant investment.

A number of participants felt that their current washing infrastructure was unlikely to be fit-for-purpose for reconditioning packaging for certain sectors. Several also lacked washing facilities generally, so this would require resource consent as well as capital. More specific detail regarding infrastructure and staffing needs was difficult for participants without more detail on the types of packaging, volumes and what role others would potentially play in the reverse logistics process.

Extra infrastructure to onboard supply chain actors to novel B2B reusable packaging systems

Where B2B reusable packaging systems are mature in market (such as shipping containers, reusable pallets in the groceries supply chain, or kegs in the brewery industry), they tend to be fully integrated into existing supply chains and may have even influenced how those supply chains were established and how they operate. In these systems, supply chain actors, such as producers, suppliers, distributors, retailers, logistics companies, all understand their role in the system and are prepared to purchase or lease any equipment or infrastructure needed to participate.

However, in the case of emerging, nascent or more recent B2B reusable packaging systems, additional equipment may be required to support different actors in the supply chain to adopt new systems. This could involve the need for new equipment to enable producers to fill their product into the reusable packaging instead of single-use packaging, or to enable asset end-users such as HoReCa to receive and use products in reusable packaging. A good example is the use of kegs for beverages where this is less common practice, such as milk, juice or wine. Producers, suppliers or pooling operators may need to take responsibility for sourcing and installing tap equipment at end-users like retail outlets or hospitality venues. They might also need to own the equipment that producers rely on to fill into the kegs.

“Initially it was really difficult to persuade people to front up all the money that it costs to put the taps in. So, doing it this way we have taken on the financial burden.”

—Interviewee

In some cases, supplying products in B2B reusable packaging systems does not entail simply swapping out single-use packaging with the reusables. Rather, it may be a different way of supplying the product altogether. In these cases, the use of B2B reusable packaging systems may require infrastructural and logistical adaptations in the supply chain to ensure the product is adequately protected. For example, the need to use refrigerated vehicles and chillers to preserve fresh and unpackaged product, or to invest in additional layers of reusable packaging to ensure ongoing product protection or even to protect the reusable packaging itself.

Cost of reusable packaging fleet and software/tracking system to protect the asset

“Growing our reuse system is probably restrained by capital more than anything. Reusable packaging systems are very capital intensive. It’s a lot of money put into one system... it’s the investment you need just to do the business.”

—Interviewee

Along with built infrastructure and facilities, reusable packaging fleets are an upfront cost that can be prohibitive to many businesses and non-profit organisations. The system operator organisations that we spoke to had fleet sizes in the hundreds through to the millions. The price for each unit varied greatly, from about \$30, through to several hundred dollars each. However, even a small fleet of 200 units at a low unit price, represents a significant investment. The price of a fleet is often presented as an upfront establishment cost. However, it can have ongoing implications as many of the interviewees noted that expanding capacity is usually dependent on increasing fleet size. So, the ability to invest in growing a fleet can also be a constraint on capacity.

“Capacity really depends on the size of the customer – so if we had someone that had requirements that we couldn’t fulfill, we’d be at the mercy of how big our fleet is.”

—Interviewee

On top of the purchase price of the fleet might also be added R&D costs for designing the units if the B2B reusable packaging is a market innovation. This process might be necessarily iterative and require development of multiple prototypes. This adds both time and cost that is not possible for many organisations.

“Design of the packaging was important. The units we initially developed were expensive to freight back to Auckland, so we redesigned them so that they were able to nest/stack.”

—Interviewee

The investment an organisation places in a fleet can only be recouped if the assets are protected and if they cycle effectively. However, low cost systems to protect assets, such as deposit or bond systems, can become a barrier for potential end-users. Technology solutions can enable tracking without the use of a deposit (while enabling co-benefits such as connection to real-time digital platforms that can facilitate asset sharing and optimise collection, storage and redistribution activities) but implementing them can be financially out of reach for some organisations.⁸⁰

“I was really worried about creating barriers to our customers coming on board and so to make life as easy as possible, we don’t charge a deposit.”

—Interviewee

The initial outlay for a durable reusable fleet, combined with the risk of owning and loaning such a valuable asset can be especially prohibitive in community/non-profit settings. For example, **Fair Food** noted that they use repurposed banana boxes to redistribute food to partner organisations. They have established an informal reuse system with those boxes and it is a low-risk model because if boxes do not return, the organisation is not left out of pocket. However, if they wanted to use more robust reusable packaging, it would be difficult to do this while protecting the asset:

“If we had more of the crates and we could afford not to use the cardboard it would be a better system for us because then we could reduce cardboard recycling at the end of the week. If we could guarantee our customers and clients would bring the crates back it would be better than bringing banana boxes every time. But they have to give out food to people that they won’t see again so banana boxes is important as it doesn’t matter so much if they don’t return.”



Fair Food: Image supplied

Managing freight costs and logistics

Cost of freight, along with rising fuel prices, is an ongoing challenge for B2B reusable packaging systems. This is the case whether system operators outsource packaging movement to third party companies or manage it in-house. Some companies reduce the cost of freight (and storage) through redesigning packaging to be nestable or foldable/collapsible,⁸¹ but this is not possible with all packaging types. It should be noted however that in some instances where the reusable packaging system replaces something that is much larger in volume or mass, it may be possible to have a reduction in freight costs despite the additional trips. For example, where individual bottles are replaced by kegs, jerry cans or other bulk liquid containers.

The cost of freight to and from the islands in the Hauraki Gulf are particularly significant, and there can be additional logistical complications (e.g. disrupted ferry sailings or limited space on ferries at certain times of year). Reusable packaging system operators and waste and resource recovery operators on Aotea and Waiheke Island noted increased challenges in expanding or participating in reusable packaging systems that required packaging to be returned to and from the mainland, given transportation costs to Auckland. The local CRRs, communities and businesses already go to impressive efforts to repurpose recyclable packaging on the islands to make the most of the materials being on the island, and to avoid the need for further freight movements.

The distance to Auckland reinforces the need for a viable business model that can cover the potentially higher costs of island communities participating in the system. However, the high freight costs also indicate the potential appeal of localised reuse systems. The two CRRs identified reusable packaging systems that could recirculate reusable packaging in a closed loop as a potential opportunity. Such systems could decrease packaging arriving or leaving the islands, saving costs for local producers (who would need to bring over less new packaging to fill) and for the CRRs (who would send less packaging waste and recycle to the mainland for processing and disposal), while creating circular systems within their communities.

“We were involved in investigating how Aotea Island could participate in a B2B reusable packaging system. The proposal was centered on using reusable crates to transport groceries from a large supermarket in Auckland to residents on the island. The study revealed that the cost of transport and the lack of a tracking system (to manage the reusable crates) was prohibitive to moving forward. There is a lot of will in the community for such a system and it may be embraced if we could make it work financially and logistically. We have some small-scale but successful B2C reusable packaging systems working well on the island and will soon be mostly single-use coffee cup free. We will be a collection point for reusable cups and also plan to play a role in washing the cups and getting them back into the community.”

Better processes for establishing and developing new B2B reuse systems

Establishing circular systems such as reuse is a systemic shift that is difficult to tackle through uncoordinated or isolated efforts. There is a need to develop better processes for establishing and developing new B2B reuse systems that build and draw upon strong, collaborative relationships and that leave space for trial and error through well-designed and well-funded pilots.

Collaboration and relationship-building

A number of interviewees thought that unlocking collaboration was a key opportunity to grow reusable packaging. Several interviewees highlighted how relationships had been critical for building their own reuse systems or overcoming barriers in B2B reverse logistics, especially the cost and complexity of transport and freight movements. Positive relationships and arrangements were not always built on commercial foundations and sometimes were based on goodwill or commitment to achieve another, non-financial, purpose, such as reducing food waste, uplifting community, or job creation. A number of CRRs felt that working with other operators as a network would enable efficiencies in reverse logistics, and one large private waste and recycling operator thought a collaborative model where they partnered with community enterprises and small businesses could be an opportunity.

“We couldn’t do anything we do without some amazing relationships.”

—Interviewee

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In terms of getting new systems off the ground, pre-existing relationships across the supply chain are almost always a precursor for success. For example, collaboration with parts suppliers to establish reusable packaging systems was key for the interviewees we spoke with in the manufacturing and industrial sectors. There are also examples of B2B reusable packaging trials or funding applications in the Auckland region that featured more than one supply chain actor partnering, such as the **Naylor Love, Unitec and Mitre10 reusable Timber Pack Cover project**.⁸²

Despite these positive experiences and the development of robust systems in some cases, the overall approach to developing new B2B reuse systems is ad hoc and uncoordinated, which creates a missed opportunity to develop systemic approaches. Some interviewees reported challenges stemming from difficult relationships, or trying to work out solutions in isolation. One interviewee that has worked extensively with suppliers to establish B2B reusable packaging systems felt that their organisation could still do more reusable packaging and that their suppliers would likely be willing to as well, but as one person they were limited by the time involved in recognising the opportunities, exploring the options, and implementing alternatives.

One system operator noted that uptake of reusable packaging systems tend to be driven by asset end-users, particularly retailers. However, it is not always easy to get retailers on board. Meanwhile, an asset end-user interviewee noted that having to talk with suppliers to make changes to their packaging was a barrier, requiring time and effort outside of the day-to-day purpose of the business. Some successful strategies, such as renegotiating supplier contracts or establishing supplier Codes of Conduct that require collaboration in ecodesign processes that include reuse, may only be viable for end-users of sufficient size and buying power. For organisations attempting to introduce an unfamiliar B2B reusable packaging system, attaining buy-in from any participants (whether producers, suppliers and retailers) is difficult, with one interviewee noting that in the early days of their packaging solution they “had to persuade people”.



Collaboration is important to build efficient reuse systems that share common infrastructure, packaging and/or logistics. The risks of an uncoordinated approach to developing B2B reusable packaging systems include that: systems develop more slowly because each organisation works alone or in small groupings; final processes, assets or systems are duplicated and unconnected, decreasing efficiency; or proposed systems lack the buy-in needed to function at all because key supply chain actors were not included from the outset.⁸³

Limited opportunity to implement well-designed pilots

Mature B2B reuse systems are not implemented overnight, but are built upon time, effort and investment, usually with contributions from actors across a supply chain. Often, successful B2B reusable packaging systems have existed for decades and have enjoyed the time to optimise and maintain competitiveness against single-use. New systems that successfully breakthrough in supply chains otherwise dominated by single-use packaging generally exist because the time and expenditure to develop, implement and run them has been prioritised.

In this respect, there is a need to support more fledgling B2B reusable packaging systems to experience trial and error in the real-world and the chance to iterate and improve over time through well-devised and properly-funded pilots. However, pilots should be collaborative, and built upon a solid commitment and investment from those who lead the organisations, in order to ensure the perseverance to land at a great solution.⁸⁴ As one system operator interviewee noted that with B2B reusable packaging: "... it's a long-term investment so if you want to trial new things, you really need certainty that the customer is not going to back out and you get left with all these stranded assets. You may need a commitment of 3-5 years to justify the trials, product development, investment and contract establishment." However, there is currently a gap in relation to parties that can initiate or facilitate these types of trials, and then see them through the process.

05. ACTIONS COUNCIL CAN TAKE TO SUPPORT B2B REUSABLE PACKAGING SYSTEMS

“Municipal governments can support the structural transition to a reuse model, for example by creating enabling environments for reuse-focused businesses to thrive, driving policy change, leveraging public procurement, and building out the necessary physical infrastructure.”

—City Playbook Working Group (2021)⁸⁵

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Reuse Aotearoa has previously researched key actions Councils can take to support both B2C and B2B reusable packaging systems. As all actions are applicable here, we have provided a summary; more detail can be found in the relevant reports:⁸⁶

1. Prioritise reuse in WMMPs through specific actions separate to waste diversion strategies, such as a Reusable Packaging Programme of initiatives.
2. Walk the talk in Council procurement by incorporating reusable packaging systems into council operations and service contracts.
3. Prioritise waste minimisation funding for projects that target reuse systems or offer benefits in kind (e.g. space/rates rebate).
4. Increase awareness about existing reusable packaging systems and the role of reuse as a waste minimisation strategy by including specific content about reuse in council waste minimisation communications to individuals, businesses and communities.
5. Develop methodologies for capturing data about waste avoidance through reuse strategies.
6. Broker collaboration or partner with businesses to deliver reuse systems. This could include actively supporting trials of reusable packaging, and fostering industry peer support.
7. Support industry and community to address infrastructure and logistics gaps.
8. Work with other councils regionally and nationally to take a consistent approach to reusable packaging.
9. Advocate for central government policy action to level the playing field between reusable and single-use packaging.
10. Offer advice and/or clarity around navigating wider council policies that can impact reusable packaging, such as food safety, infection control, covid and resource consenting.

In addition to the above potential actions, a few specific actions that could be signaled in Auckland Council’s WMMP in relation to B2B reusable packaging and the gaps and critical needs highlighted through this research project are outlined below.

Affirm reuse in strategic policy direction to help guide industry investment

Gaps in infrastructure and operational delivery often reflect economic settings derived from the broader policy environment. Setting a clear strategic direction in the WMMP to reduce waste via reuse strategies will help to encourage industry investment and activity in this area. This can be further strengthened through actions in the WMMP that relate to reuse specifically (e.g. committing to a specific reusable packaging programme of initiatives), and having explicit WMIF funding signals to prioritise projects that target waste prevention, source reduction and reuse activities. In Australia, **Sustainability Victoria** created different grants and funding pools for waste prevention applications, which were separate from initiatives focused on recycling and other forms of diversion.⁸⁷ Introducing expectations around reuse service provision or reporting on reuse activity in council tenders, contracts and funding agreements for waste and resource recovery services would also accelerate activity in this space.

Some interviewees, particularly in the waste and resource recovery sector, highlighted the need for stronger regulations to drive businesses to adopt more reusable packaging, such as waste bylaws, which could also be explored in the WMMP. However, some regulatory activity or economic instruments to drive reuse would have to be applied by central government.⁸⁸ Auckland Council can play a role in raising awareness of the utility of these changes to relevant government agencies, such as MBIE and MfE, or to relevant Ministers. The need for these changes could be connected to the goals set out in the national Waste Strategy. This could help to highlight that councils alone cannot fully achieve these strategic goals in relation to packaging without central government policy action. Auckland Council's advocacy on issues such as the Container Return Scheme and regulated product stewardship are precedents for council making such efforts to influence wider system changes.



The Udder Way: Image supplied

“What tends to have the greatest benefit is certainty over the policy-setting environment so that companies can make long-term investments.”

—Interviewee

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Co-invest or use WMIF seed funding for necessary infrastructure and capital expenditure

“Council could consider co-investment in infrastructure to help companies who can’t set up on their own.”

– Interviewee

Reusable packaging systems are capital intensive to set up and also to grow, both in terms of the upfront purchase of reusable packaging fleets, and necessary infrastructure (including washing equipment, bigger facilities to enable reuse activities like reconditioning and storage, and fit-for-purpose vehicles, such as curtain sider trucks). These are areas where grants could support set-up or capacity increases for existing systems.⁸⁹ Auckland Council has allocated WMIF grants to capital expenditure for reusable packaging in the past. For example, subsidising: the purchase of reusable timber wraps for a Naylor Love, Mitre10 and Unitec trial;⁹⁰ a collaborative project to establish a beer refillery and fleet of flagons on Great Barrier Island (to provide an alternative to single-use glass bottles);⁹¹ and reusable containers for the collection of used medical devices from hospitals across Auckland (to enable the devices to be picked up and transported to Christchurch where the devices are reprocessed for safe clinical re-use by **Medsalv**).⁹² To ensure adequate and predictable funding flows to reuse, it would be helpful to prioritise WMIF funding for projects that address the top two tiers of the waste hierarchy.

In addition to fleet purchase, funding could also support robust design processes for reusable packaging units, particularly in B2B contexts where reusable packaging does not yet exist, to help companies develop fit-for-purpose fleets. This funding could cover expert consultancy as well as packaging technologists, and could support efforts to design packaging that helps with identified gaps around storage needs and transport costs (e.g. collapsible or light assets).

Some interviewees, particularly those in the waste and resource recovery sector, specifically stated that support to establish washing infrastructure would enable their involvement in this area.

Council co-investment in B2B reusable packaging fleets and infrastructure can make a real difference. However, because successful B2B reusable packaging systems depend on supply chain collaboration, capital investment should be approached with a due diligence process to ascertain whether there is evidence of supply chain willingness to participate in the proposed system. Where this willingness is not clearly established, a programme to involve relevant supply chain collaborators in a pilot may be appropriate, prior to investing in developing and purchasing capital assets. This will mitigate the risk of the latter becoming a white elephant/stranded asset. Applying the checklist set out in **Figure 2** below could be helpful.



Offer practical support to develop collections, drop-off points, freight and warehousing

The Council has the opportunity to consider leveraging assets and service providers to fill some of the reverse logistics gaps for B2B reusable packaging. This could work especially well when these activities overlap with existing waste and resource recovery activities. For example, drop-off sites for used reusable packaging or warehousing. One interviewee was particularly keen to explore collection site developments with Council. Council oversight makes sense as it could facilitate development of an interoperable returns network that many packaging systems can use, to avoid a fractured and disconnected returns system.

Offering this type of service would likely require trialing to ascertain the appropriate packaging type, gauge demand, and ensure an appropriate funding model for the participant organisations. Preliminary workshops with logistics providers and the waste and resource recovery sector could also be useful to understand which organisations might be best-placed to deliver the necessary support. However, the right provider could also be determined via a tender process. For example, in Denmark, the Aarhus City local government tendered for a provider to deliver a three-year reusable serviceware collection and reverse logistics pilot (won by TOMRA). Such a procurement process also demonstrates how councils can begin to instigate more reusable packaging activity in a way that ensures the operational costs for the reverse logistics are covered (NB this trial is in the B2C reusable packaging space, but the procurement/tendering process is transferable).⁹⁴



Use subsidies, grants and procurement to support with key operational costs

Companies and sectors who are reducing waste and increasing efficiency through B2B reusable packaging systems could be better rewarded for their efforts. The difficulty of funding reverse logistics models for reusable packaging could be addressed through targeted grants and subsidies for op-ex and staff costs, especially for fledgling reuse systems.⁹⁵ The ecostore Plastic Return Programme, for example, received central government funding to pilot through the Waste Minimisation Fund.⁹⁶ The grant supported the development and promotion of the programme launch, while ecostore covers the cost of maintaining the programme, most of which is freight expenses for returned packaging. Subsidy programmes that council might implement to achieve similar outcomes for organisations seeking to establish reusable packaging returns could be further improved to cover the labour costs at collection points, in addition to the freight of shipping products.

Targeted procurement of services and products in B2B reusable packaging is another way to create market demand that supports a viable business model for businesses using or operating B2B reusable packaging. One interviewee that we spoke with specifically noted

their efforts to have their product procured by Auckland Council, who would then participate in the back-of-house return of reusable packaging. However, the initiative struggled to maintain momentum. In general, more satisfying outcomes could be possible in this space with focused procurement policy favourable to reusable packaging (whether B2B or B2C).

Operational costs can also be relieved through benefits in kind, e.g. access to low rent spaces from which to operate various steps of the reverse logistics process, to reduce leasing overheads. As research suggests that operational costs can be reduced through specific choices relating to the design of the system and packaging assets, as well as measures to increase handling efficiency and the quality of system operation,⁹⁷ Council could also consider reusable packaging incubator programmes, peer support or other means of upskilling potential and fledgling B2B reusable packaging system operators to optimise their activities and set-up. Alternatively, Council could investigate whether central government funding avenues (e.g. Callaghan Innovation or Regional Development Partners) are available to support businesses in their journey to develop lean management activities or access coaching.

Facilitate collaborative, co-designed pilots of B2B reusable packaging or peer support

“The ‘well-oiled’ machine of distribution systems may struggle to adapt to novel ideas that require a change of workflow (even if it seems more efficient)... Getting these ideas from conception to crossing the finish line may require regulatory support from Government, or efforts by industry sectors to facilitate trials.”

—Reuse Aotearoa (2022)⁹⁸

Well-designed, collaborative and properly-funded pilots can support more B2B reusable packaging systems. Ideally, pilots can help to build strong relationships between supply chain actors. They can also enable co-design of the proposed system to generate wide stakeholder buy-in from the get-go, and ensure that the system functions well for all players. Pilots may need to be focused on particular products or supply chains because the reusable packaging unit design must be appropriate for the relevant product, and the system logistics adapted to the product’s distribution channel(s). These features may not always be widely transferrable across sectors, industries and products, suggesting a case-by-case design process, and reinforcing the need for wide stakeholder engagement.

Pilots that bridge industry-academic gaps by including university researchers and students can be particularly successful and may also enable in-depth monitoring and evaluation processes (such as the collaborative project trial of timber wrap undertaken between council, Naylor Love, Mitre10 and Unitec). The pilots should allow time for trial, error and iterative system development to ensure a robust and effective final system that delivers the best social, environmental and economic outcomes.

“You need scale to do what we’re doing – if you’re only dealing with a few businesses, it doesn’t go far. Critical mass at production or consumption end helps to move things quicker... collectively you can get scale going.”

—Interviewee

B2B reusable packaging systems work best with scale and wide stakeholder participation. Councils can play a role in getting the word out about potential systems, and bring stakeholders to the table to collaborate. This support is particularly useful for smaller start-up organisations that may lack the necessary networks to pitch their ideas to established players. Councils may also be able to play a role as a “neutral facilitator” to encourage stakeholders to work towards standardised systems and/or packaging assets to ensure the best outcomes.⁹⁹ Many organisations also struggle to fund adequate system design, piloting and ongoing trial and error, or the ability to bring in experts in facilitation, circularity, packaging technology, resource recovery, system design and logistics. These types of costs could all be supported by Council.

“It’s like Uber – if there are more people using the system it’s more efficient as then the driver has to drive less. The more the merrier.”

—Interviewee

In developing pilots, council can prioritise working with the willing. There are producers and logistics companies who are already actively investigating establishment or expansion of reuse services. Some of these organisations have a good idea of their needs, detailed information about the infrastructure or systems that would work for them, some have already invested in necessary assets or equipment, or are proactively developing key relationships to support the growth of their reuse systems. It makes sense for Council to connect with these organisations to understand where support can be provided and the most useful role for Council to play. Operators of successful B2B reusable packaging systems could also be identified and financed to provide peer support to new pilots or operators in different industries, to share insights about what works, how to increase efficiencies, and common pitfalls to avoid.

Islands in the Hauraki Gulf present an opportunity to innovate

When it comes to locations for trials and pilots, Council could consider the islands of the Hauraki Gulf as a potential opportunity. Reusable packaging presents both a unique challenge, but also uniquely large benefits for the islands in the Hauraki Gulf because the costs of freight are so considerable. Supporting local businesses, event organisers, and local resource recovery centres to establish viable reusable packaging systems and the associated infrastructure on-island, could prove fruitful, as long as the right packaging and product types were selected to reduce on-island/off-island flow of materials.

“... normally when it comes to Auckland Council, Aotea is such a weird outlier that nothing is seen as translatable to the main centre. It would be wonderful if that wasn’t the case. We are off grid and further ahead and we have a boundaried system, so we could be an experimentation ground. Island contexts offer a perfect opportunity.”

—Interviewee

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Single-use plastic wrap in supply chains a pilot opportunity

Another pilot opportunity could be to target single-use plastic wrap, which most interviewees identified as a key B2B packaging waste stream they thought should be addressed. The will to address plastic wrap has led to several small-scale and/or individual company efforts and innovations that could be further leveraged in Auckland for wider impact, with a focus on brokering wider stakeholder involvement to enable efficient systems of reuse. Some organisations have found alternatives to single-use plastic wrap via a change in packaging format. For example, Localised has succeeded in replacing single-use wrap with reusable ICBs to transport e-waste. Another interviewee told us they reduced some single-use pallet wrap by working with some suppliers to secure loads to pallets with strapping instead (albeit still single-use). Naylor Love, Mitre10 and Unitec have collaborated to trial reusable covers for timber that replaces plastic wrap, which was supported with funding by Auckland Council.¹⁰⁰ Palletite has developed and manufactured a prototype reusable pallet wrap for the groceries supply chain that now requires supply chain actors to come on board to trial.¹⁰¹

In Waikato, manufacturer **APL Window Solutions** (part of the Profile Group family of businesses) has switched to reusable pallet covers for their vertically-integrated supply chain, eliminating 203,520m (or 1.5 tons) of plastic wrap a year, and has been trialing a reusable wrap made of wool to avoid the single-use plastics otherwise used to protect the aluminum frames they manufacture.¹⁰² Profile Group have numerous learnings in relation to their process, which they undertook in collaboration with Auckland-based consultancy, Circularity.¹⁰³

Promote, advise and highlight reuse in council waste minimisation communications

Council produces communications on waste minimisation on its website, through promotional materials and advice, workshops and other formats. Some interviewees noted that while details about recycling are fairly comprehensive and instructive, the same cannot be said about reusable packaging options. One interviewee noted that Council could provide more information about the options that are available for businesses who want to purchase or source products in reusable packaging. More detailed advice could also be created to support businesses who want to adopt reusable packaging for their products. This could include an outline of the types of supporting infrastructure in the city that producers and suppliers can tap into, reusable packaging system operators, or consultants and other experts that can support groups of businesses to establish new systems.

Bring commercial, community, marae, non-profits and social enterprises into discussions and solutions

Many of the large, established and profitable B2B reusable packaging systems are operated by commercial entities and offer the opportunity to learn about what works and what can be more challenging to establish in for-profit settings. Nevertheless, packaging impacts organisations across Auckland society. For example, many charitable NGOs or other community groups are on the receiving end of large volumes of packaging waste and/or benefit from established reusable packaging systems without which their waste and recycling costs would increase. When bringing organisations to the table to develop reusable packaging systems, businesses and councils should be mindful of including representatives of the wider community to understand how systems could be developed to meet their needs too. The importance of including community organisations in reuse system design and implementation is emphasised by the Global Plastics Policy Centre in their recent report on making reuse a reality.¹⁰⁴



Helensville Zero Waste: image from Localised



Apart from being asset end-users that benefit from reduced waste, community organisations can also be good partners for getting reuse systems off the ground. Our research demonstrated several examples of non-commercial or social enterprises, including marae, that have initiated, operated or participate in reusable packaging systems in Auckland. These organisations hold relevant knowledge about how to establish and run reuse systems, including systems that work well for the local contexts in which they are based. Furthermore, some of the community/social enterprise interviewees for this research identified the potential for them to run or play a key functional role in reusable packaging systems as a new business activity through which they could meet triple bottom lines for people, planet and profit.

Accordingly, it may be that in some cases, purpose-driven business models may offer greater flexibility to deliver systems that have been more difficult to establish in profit-driven commercial settings. For example, organisations with a core purpose of pursuing job creating activities may find the labour-intensive nature of reusable packaging systems particularly appealing, which contrasts with commercial settings where linear, automated systems may be preferred. We also identified that small businesses, marae or community organisations with a strong sustainability ethic may be more likely to establish bottom lines around packaging avoidance that drives a perseverance to make reuse systems work and opens the door to innovative thinking. Despite this, these businesses are often the most under-resourced and under-capitalised to develop their ideas. Therefore, Council should ensure that all relevant parties are approached, considered, included and adequately supported to help achieve any reusable packaging actions in the WMMP.

“As far as I was concerned, [running a reuse system] was the only ethical and responsible way to behave. I haven’t thought about doing it differently – it was never going to happen because it’s morally not appropriate. Our project is about changing perceptions and behaviours – how could we do that if we’re not practising what we preach? I have no energy or inclination to think about doing what we’re doing another way with single-use.”

—Interviewee

Ensure B2B reusable packaging system design follows best-practice

Not all reusable packaging systems are created equal. While no new system can be expected to perform optimally from the day of establishment (and, indeed, reusable packaging systems should be given a chance to embed, optimise and prove themselves over time), there are key criteria for well-performing systems, as well as robust system design processes.¹⁰⁵ As a neutral player, Council can support organisations to design B2B reusable packaging systems according to best-practice, to increase their chances of success. **Figure 2** sets out a high-level checklist of criteria that any organisation looking to develop a new B2B reusable packaging system can consider. This could also be used by Council if approached to support particular B2B reusable packaging proposals, or if Council is considering how best to support a pilot or trial of a system for a particular packaging type.

Collectively, the criteria in Figure 2 cover the basic **relational, infrastructural and operational considerations** for a B2B reusable packaging reverse logistics system. They help to ascertain where in the process of development a proposal or pilot idea currently sits, which essential elements of a functioning B2B reusable packaging reverse logistics system have been considered already, and what plans are in place

to develop the remainder. A robust plan for Council-initiated reusable packaging programmes, pilots or businesses seeking assistance should at least outline how these criteria will be addressed in the proposed system (or worked towards), as this will help to mitigate common areas of system weakness. In addition, reusable packaging systems (including the reverse logistics process and associated facilities) should seek to align with the detailed and instructive **PR3 - RESOLVE standards/Reuse Rose certification**.¹⁰⁶

Figure 2: Reverse logistics criteria checklist for consideration when seeking to establish new B2B reusable packaging systems



ESTABLISHING OR TRIALLING A NEW B2B REUSABLE PACKAGING SYSTEM - REVERSE LOGISTICS CRITERIA CHECKLIST

☐

Relationship established between key supply chain actors, including Producer/Manufacturer and Asset End-User. There is evidence of shared desire for a B2B reusable packaging system.

☐

Producer/Manufacturer, Asset End-Users (commercial and non-commercial) and relevant third-parties (including waste and resource recovery sector) have collaborated to design/specify a mutually beneficial reuse system, including packaging type, reverse logistics and key infrastructure.

☐

Collaborating parties have identified appropriate System Operator and have reached agreement on shared funding commitments for critical cap-ex and a viable business model.

☐

Fleet of reusable packaging assets has been designed, and/or acquired (hired/purchased/subcontracted) by one, both or all of the collaborating parties.

☐

Appropriate infrastructure has been identified and/or acquired (hired/purchased/subcontracted), such as collection points, warehousing, reconditioning facilities and transport.

☐

A system to track or otherwise ensure the return of packaging assets has been created, acquired (hired/purchased/ subcontracted) or implemented by one, both or all of the collaborating partners or provided by a third-party, including software/app as appropriate, asset tagging, financial mechanism (deposit or bond).

☐

Monitoring and evaluation in place to track progress of the pilot and to enable reporting on the performance of the reusable packaging system (e.g. return rates, use cycles, cost per use, single-use packaging avoided etc.)

06. POTENTIAL AVENUES FOR FURTHER RESEARCH

The value and potential impact of B2B reusable packaging systems is well-established in the grey and academic literature, and the potential environmental gains, including waste reduction, justifies increased activity in this area (provided new systems are well-designed based on best-practice). However, as a complement to increased Council support for reusable packaging (rather than a necessary precursor), this research has identified three areas of investigation that fell beyond the scope of this study, where focused analysis could be useful:

1. Quantifying single-use and reusable packaging flows in New Zealand in order to: understand the current scale and impact of reusable packaging; support the development of standard methodologies for reporting on reusable packaging in waste assessments (as well as reuse activity generally); and enable monitoring and reporting on reuse system performance over time.
2. A feasibility study of the potential role of the waste and resource recovery sector in reusable packaging system logistics and how this fits with supporting activities already undertaken by third party logistics providers. Such a study could be undertaken as action research in the context of a specific pilot.
3. A cost-benefit analysis or similar that compares the overall costs of single-use packaging systems with reusable packaging systems (current and future). The analysis should identify where the costs and benefits currently fall across both the public and private sectors, and factor in economic, social, and environmental costs and benefits.



07. ENDNOTES

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23. WasteMINZ, above n 5, pp.1-2.
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26. The APCO methodology calculated single-use packaging avoided based on the number of uses fulfilled by the reusable packaging fleets in the relevant year. Data used to make this assessment included the size of the reusable packaging fleets; the estimated lifespan, cycle time and number of cycles per unit; and the numbers of reusable packaging entering and exiting service in the year. A weakness of the APCO report was that it communicated single-use packaging avoided by tonnage only, and not also numbers of units. This has the effect of overstating the impact of reuse systems that displace heavier single-use packaging (e.g. pallets and glass bottles) over those that displace lighter single-use packaging (e.g. cardboard boxes).
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