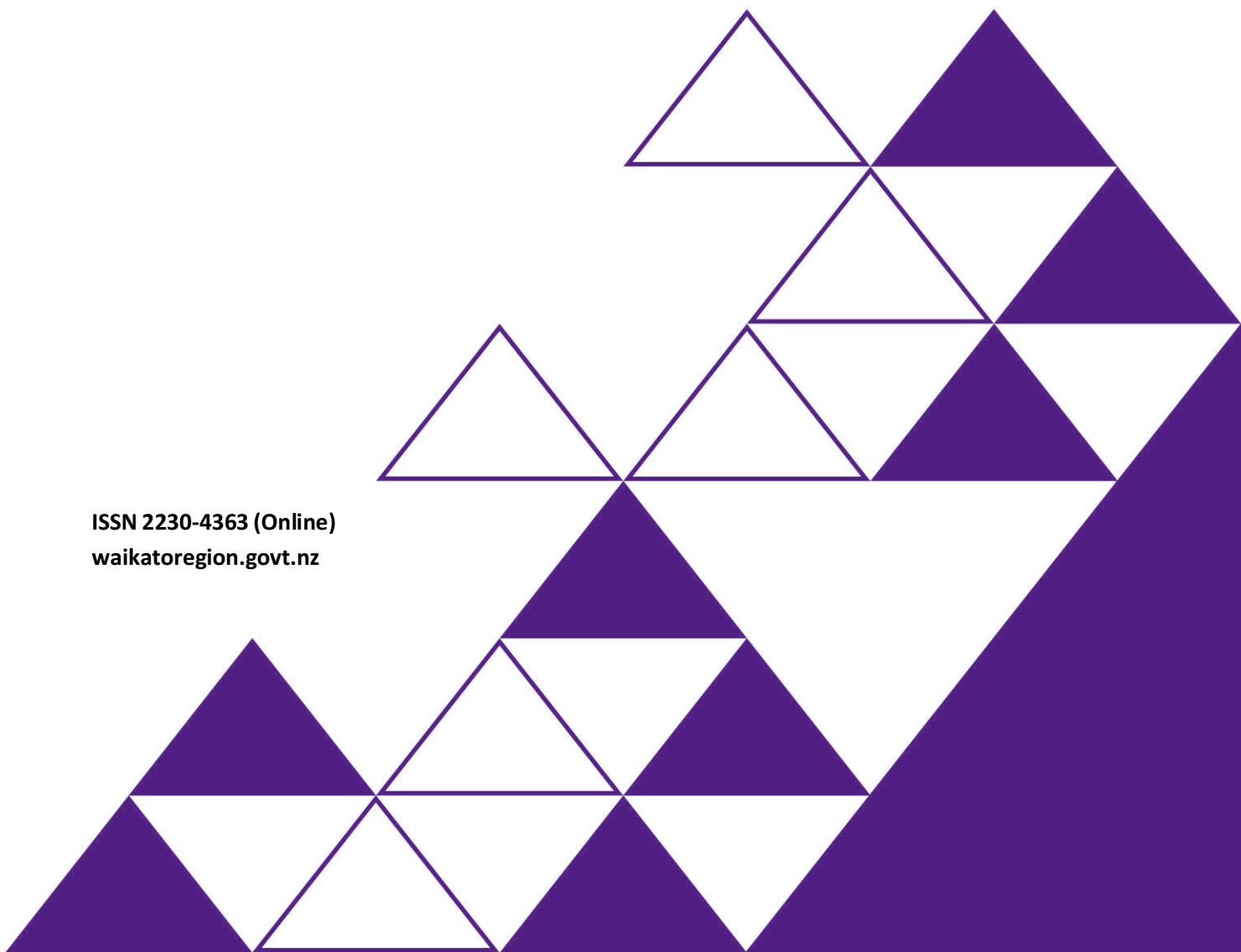# Return to reuse: The potential role for Waikato's territorial authorities and resource recovery sector in supporting reverse logistics for reusable packaging.

	Name	Date
Peer Reviewer	Karen Driver	June 2024
Approving Manager	Dean King	August 2024

Disclaimer

This technical report has been prepared for the use of Waikato Regional Council as a reference document and as such does not constitute Council's policy.

Council requests that if excerpts or inferences are drawn from this document for further use by individuals or organisations, due care should be taken to ensure that the appropriate context has been preserved, and is accurately reflected and referenced in any subsequent spoken or written communication.

While Waikato Regional Council has exercised all reasonable skill and care in controlling the contents of this report, Council accepts no liability in contract, tort or otherwise, for any loss, damage, injury or expense (whether direct, indirect or consequential) arising out of the provision of this information or its use by you or any other party.

reuse
aotearoa

Return to Reuse:
The potential role for Waikato's territorial authorities and resource recovery sector in supporting reverse logistics for reusable packaging

JULY 2024

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 (Abstract)

In 2022, Waikato Regional Council commissioned Reuse Aotearoa to undertake a three-part research project into reusable packaging in the Waikato region. This report presents part three of the research project: an exploration of the current and future role of territorial authorities (TAs) and the resource recovery sector in supporting reusable packaging systems through service provision. Through a desktop study of local and international commentary and case studies; and workshops and interviews with TA waste officers and resource recovery operators (both community and private) from the Waikato Region, this report considers the appropriateness, willingness, capacity and needs of the region's resource recovery system to engage in reverse logistics activities to help recirculate reusable packaging.

The study found reasonably high levels of willingness to participate, along with existing infrastructural and operational capacity that could be leveraged and built upon to expand services to reusable packaging, so long as key needs relating to certainty, resourcing and collaboration are met. Four opportunities are highlighted, which Waikato TAs could harness in partnership with waste and resource recovery operators to advance the sector's provision of reusable packaging reverse logistics services in the region: 1) collective, multi–stakeholder forums to advance work focused on reusable packaging reverse logistics 2) reusable packaging action plans and programmes for the resource recovery system 3) procuring, funding or providing in–kind support for reverse logistics 4) an action–based reusable packaging reverse logistics project (or projects).

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Reusable packaging systems and reverse logistics in the Waikato

Reusable packaging systems are increasingly recognised as important for reducing waste, plastic pollution, greenhouse gas emissions and natural resource usage (Ellen Macarthur Foundation, 2023). Both the Waikato region and central government have a vision of transitioning to a low-waste circular economy, and have identified reuse systems for packaging and other products as having an important role to play (Bianchi & Yates, 2021; Ministry for the Environment, 2023).

Reusable packaging systems already exist in both the Waikato and New Zealand. For example, at least 95 discrete systems operate in Waikato for fast-moving consumer goods alone (Blumhardt, 2024). However, continuing to build the prevalence and scalability of systems requires action to fill current gaps in reusable packaging reverse logistics.

Reverse logistics are the services and infrastructure that keep reusable packaging circulating between uses, e.g.:

- collection services or the provision of return points for used packaging;

- transportation, sorting, and consolidation activities for retrieved containers;

- systems and equipment to prepare/recondition containers for reuse, e.g. inspecting, washing, sanitisation and/or repairs; and

- redistribution of reconditioned reusable packaging back onto the market.

How this report came to be

In 2022, as part of a broader study into reusable packaging in the region, Waikato Regional Council (WRC) commissioned Reuse Aotearoa to explore the current and future role of territorial authorities (TAs) and the resource recovery sector in supporting reusable packaging systems by filling reverse logistics gaps. For the purposes of this research, the waste and resource recovery sector includes both Community Resource

Recovery operators (CRRs)[i] and private providers. To complete this project, our research process involved:

- **A desktop study** of local and international commentary on the appropriateness of resource recovery sector involvement in reusable packaging reverse logistics, along with a compilation of case studies that demonstrate this involvement in action.

- **Primary research** with key actors in Waikato's resource recovery system to understand their willingness, capacity and key needs to leverage and build upon existing infrastructure, services, and workforce capabilities in order to help recirculate reusable packaging. This primary research involved two group workshops and eight one-on-one interviews with:

  - 13 waste officers from nine of the region's territorial authorities, and

  - 10 representatives from eight different community and private operators in the region's waste and resource recovery sector.

Desktop study: What we found in the commentary and case studies

Local and international case studies and reports show the positive potential for global resource recovery systems (made up of local government and waste and resource recovery operators) to evolve current services to help fill the reverse logistics gap and support reusable packaging systems to grow their scale and impact. **Table i** outlines the four phases of the reusable packaging reverse logistics process and the types of activities the resource recovery sector could take on for each phase. The right-hand column provides examples of each activity, linked to local and international case studies included as appendices to this report.

Many of the waste and resource recovery system's existing functions overlap with the activities outlined

---

i   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.

Table i: Specific activities within each phase of the reusable packaging reverse logistics system that the resource recovery sector could support

Phase of the reverse logistics process	Potential resource recovery activity	Examples of resource recovery sector taking on this role
Collection / Returns	Incorporating reusable packaging into existing kerbside or commercial recycling collection services	The ReCirculation Project (North Carolina, USA) Xtreme Zero Waste–Workshop Brewing Co reusable can holder return (Whāingaroa/ Raglan, NZ) Will&Able container upcycling initiative (NZ)
	Incorporating reusable packaging drop-off/ return points at waste and resource recovery facilities	Xtreme Zero Waste–Workshop Brewing Co reusable can holder return (Whāingaroa/ Raglan, NZ) Will&Able container upcycling initiative (NZ) Green Bottle 'Drink Different' reusable beverage container research trial (Auckland, NZ)
	Incorporating reusable packaging drop-off/ returns into deposit return systems	Deposit returns systems that support reusable packaging reverse logistics (international examples)
	Establishing and operating new reusable packaging return points within existing public bin networks/cities	Bring it Back Bruns (Byron Bay, NSW, Australia) Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark) Anamata Resource Recovery Centre reusable cup system (Aotea Great Barrier Island, NZ)
Sorting / Storing / Consolidating	Adapting MRFs to enable the sorting of reusables	The ReCirculation Project (North Carolina, USA)
	Instituting a system to sort, store and/or catalogue reusable packaging	Will&Able container upcycling initiative (NZ) Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark) Green Bottle 'Drink Different' reusable beverage container research trial (Auckland, NZ)
Preparation for reuse	Establishing washing/sanitisation and/or repair infrastructure at resource recovery sites or within resource recovery operations	Will&Able container upcycling initiative (NZ) Anamata Resource Recovery Centre reusable cup system (Aotea Great Barrier Island, NZ)
	Council/resource recovery operators procuring washing/sanitisation services	Bring it Back Bruns (Byron Bay, NSW, Australia) Deposit returns systems that support reusable packaging reverse logistics (international examples) Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark)
Redistribution / Reintroduction to forward supply chain	Developing/procuring systems that return packaging to producers	Bring it Back Bruns (Byron Bay, NSW, Australia) Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark) Anamata Resource Recovery Centre reusable cup system (Aotea Great Barrier Island, NZ)
	Developing inventories of sorted and catalogued reusable packaging to on-sell/pass-on to third parties for reuse.	The Tips Shop (Wellington Southern Landfill), Trash Palace (Porirua Spicer Landfill, Xtreme Zero Waste, Anamata Resource Recovery Centre redistributing salvaged crockery to local reuse schemes and/or mug libraries The ReCirculation Project (North Carolina, USA)

in Table i. For this reason, the sector can be seen as comparatively well-positioned to leverage its infrastructure, services and financial mechanisms to support reusable packaging reverse logistics. In addition, local governments have powers, responsibilities and assets to deliver waste minimisation and management, which could be used to encourage the resource recovery sector to get involved in managing or operating reusable packaging systems

Primary research: What we learned from talking with Waikato's TA waste officers, and waste and resource recovery operators

Waikato's TA waste officers and resource recovery operators (both community and private) are reasonably open to the resource recovery system's potential to explore reusable packaging reverse logistics activities. In workshops and interviews, participants generally demonstrated:

- theoretical willingness to engage in reusable packaging reverse logistics;
- a perception that support for reusable packaging systems aligned with organisational and societal goals of upholding the waste hierarchy and transitioning to a circular economy;
- a recognition that supporting reuse fits within the sector's overall role and purpose and overlaps with existing capacity and activities, all of which could be leveraged to support reusable packaging reverse logistics (albeit with some adaptations); and
- an ability to envision potential roles for the resource recovery system at all phases of the reverse logistics process, especially collections and returns.

However, a stark **value-action gap** exists between participants' stated willingness and alignment with reuse, and the actual implementation of reusable packaging reverse logistics support. Several key needs (grouped into three themes) would have to be addressed to close this gap and secure the sector's successful participation:

- **Certainty** about: what a reusable packaging reverse logistics service would look like in practice; the

expected roles of different parts of the resource recovery system in the service; and the level of priority that local (and central) government intend to give reusable packaging in waste minimisation policy.

- **Resourcing** for both the capital and operational costs to provide reusable packaging reverse logistics services, to ensure commercial viability and reduce the risk of investment.
- **Securing collaboration/willing partners** across councils, businesses, and the private and community resource recovery sector to design, implement and sustain cost-effective and efficient reusable packaging systems supported by reverse logistics.

Key opportunities for Waikato's resource recovery system to advance reusable packaging reverse logistics activity

Based on all the research conducted for this report, we identify four key opportunities that Waikato TAs could harness, in partnership with the region's community and private resource recovery operators, to advance reusable packaging reverse logistics in Waikato:

1. Use or establish collective, multi-stakeholder forum(s) to advance collaborative learning, planning and accountability around reusable packaging systems and the supporting reverse logistics.

2. Create regional, sectoral and organisational reusable packaging action plans and programmes for the resource recovery system.

3. Find ways to procure, fund or provide in-kind support for the delivery of reusable packaging reverse logistics.

4. Design and implement an action-based reusable packaging reverse logistics project (or projects) in order to gain certainty about system requirements, while actively progressing reuse on the ground.

With active leadership to secure reliable resourcing, set stronger strategic and policy direction, and foster a collective approach, the Waikato region's resource recovery system has the potential to develop a returns, washing and redistribution service for at least some reusable packaging types. This can be seen as a

justifiable expansion of the resource recovery system's waste minimisation role, based on the sector's existing activities and the vision of a circular economy held by TAs and operators alike. By supporting reusable packaging systems, the sector can accelerate Waikato's ongoing transition to a low-waste, circular economy, while helping to pave the way for other regions across New Zealand.

Reusable serviceware return point in Aarhus City, Denmark. Image supplied: Tomra

1 INTRODUCTION

1.1 Background

Reusable packaging systems can help society achieve critical plastic reduction and waste minimisation goals, but systemic gaps currently impede their successful delivery (Global Plastics Policy Centre, 2023; Blumhardt, 2023; Blumhardt, 2022; Wilson & Lewis, 2023).[1] Many of these gaps relate to real-world difficulties in recirculating used reusable packaging so it can be reused in practice, not just in theory. These recirculating activities (i.e. collecting used packaging, preparing/reconditioning it for reuse, and then redistributing it once reconditioned) can be grouped under the umbrella term "**reverse logistics**".

Effective and efficient provision of reverse logistics relies on particular infrastructure and services that ideally have some degree of cross-brand standardisation and coordination (Mission Reuse, 2023; Ellen Macarthur Foundation, 2023). New Zealand currently lacks such arrangements given that reusable packaging holds only a marginal place in most local (and global) markets compared to mid-20th century levels (Blumhardt, 2022a, ch 1.2). While publicly-funded packaging waste minimisation systems could support, most emphasise lower-tier waste management methods for addressing single-use packaging, e.g. recycling (ibid, pp.8–9). The reverse logistics for reusable packaging systems that do exist are mostly organised and run by the producers of the products contained in the packaging, i.e. vertically-integrated systems,[2] which are difficult to scale or run efficiently (Blumhardt, 2022a; Wilson & Lewis, 2023). Rebuilding a coherent, shared reverse logistics system to support reusable packaging is necessary for reuse to regain a larger market share.

In 2022, Waikato Regional Council (WRC) commissioned Reuse Aotearoa to explore the current and future role of territorial authorities (TAs) and the resource recovery sector in supporting reusable packaging systems through the provision of reverse logistics services.[3] For the purposes of this research, the waste and resource recovery sector includes both Community Resource Recovery operators (CRRs)[4] and private providers of waste, recycling and reuse services for discarded products and materials.

The study was motivated by the hypothesis that the waste and resource recovery sector could be well placed to help fill the reusable packaging reverse logistics gap. This sector is already organised as a collective system to manage packaging, products and materials across brands and businesses, and its work is critical to helping councils fulfill statutory requirements around waste management and minimisation. Furthermore, many reverse logistics activities for reusable packaging appear to overlap with the activities the sector already performs in the post-consumption logistics of single-use packaging (Blumhardt et al, 2023, p.30).

In New Zealand, involving the waste and resource recovery sector in reusable packaging reverse logistics would also align with local and central government's increased appreciation of the sector's potential role in supporting the transition to a circular economy (Ministry for the Environment, 2023; Bianchi & Yates, 2021). This transition includes enabling the adoption of circular business models, like reuse systems for packaging. The WRC has specifically noted the resource recovery sector's important role in supporting the region's journey to circularity, including greater uptake of reusable packaging systems (Bianchi & Yates, 2021). However, at present, the sector's participation in the latter is scant. For example, in our *Stocktake of Reusable Packaging for Fast-Moving Consumer Goods in the Waikato*

---

1   To read more about the benefits that can be created by effective reusable packaging systems, see chapter 1.1 of Blumhardt, 2022a.

2   A vertically-integrated reuse system is one where the producer of the packaged product is also operating the reusable packaging system.

3   This study is part of a wider research project into reusable packaging in the region, which also includes separate studies into: stocktaking existing reusable packaging systems in Waikato, with a focus on the packaging of fast-moving consumer goods (FMCGs) across the supply chain; and the state of play and future opportunities for reusable packaging in the region's animal-based agricultural sector.

4   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.

Region, we found at least 95 discrete reusable packaging systems available and/or in use in Waikato, but only one of these received reverse logistics support from only one resource recovery operator.

Overall, uncertainty exists about what participation in reusable packaging reverse logistics would look like for the sector (in practical, rather than merely conceptual terms), as well as the sector's willingness, capacity and specific needs to engage in these activities. Also understudied is local government's role (if any) in directly enabling the sector's increased capital and operational capacity (e.g. infrastructure and business models), to provide reusable packaging reverse logistics activities on behalf of the public and businesses within their territorial borders. Arguably, the expectations on local government should be similar to those placed on it to coordinate logistics for recycling or disposing of single-use packaging. However, this hypothesis has not been deeply explored, especially in New Zealand.

1.2 Report structure and approach

This report seeks to fill these gaps in understanding through:

1. A literature review and desktop study on:

- reusable packaging reverse logistics; and
- specific commentary about, and examples of, local government and the waste and resource recovery sector participating in reverse logistics activities.

2. Analysis of two workshops and eight one-on-one interviews undertaken for this report with TA waste officers and waste and resource recovery sector operators across the Waikato Region to discern:

- willingness and capacity to engage in reusable packaging reverse logistics;
- potential roles and responsibilities for the sector in delivering these types of services; and
- specific needs and opportunities to make the resource recovery sector's participation in reusable packaging reverse logistics a reality.

The report is structured as follows:

- **Section 2** defines the various types of reusable packaging, outlines the nature and necessity of organised reverse logistics processes for functional reusable packaging systems of the returnable packaging model, and notes the current service gaps in New Zealand.

- **Section 3** focuses on the potential appropriateness of the waste and resource recovery sector taking on some reverse logistics processes for returnable packaging, and what this might look like in practice. The section summarises international perspectives on the topic; outlines the types of activities the sector could undertake in each phase of the reverse logistics process (with reference to case study examples provided in appendices to this report); and lists local government leverage points for supporting the sector to undertake these activities.

- **Section 4** reviews existing understanding about the current appetite of councils and the waste and resource recovery sector in New Zealand to support circular business models like reusable packaging. This includes: an overview of New Zealand's particular resource recovery landscape; a summary of local commentary about the resource recovery system's potential future role in activity up the waste hierarchy; and insights into the sector's capacity and willingness to participate in reusable packaging reverse logistics.

- **Section 5** shares findings from this study's research in the Waikato Region, relaying what councils and the waste and resource recovery sector told us about their willingness, capacity and needs for delivering services that support reusable packaging reverse logistics. The findings derive from the following engagements with the sector in November and December 2023:

  - A workshop with Waikato's Community Resource Recovery operators.
  - A workshop with waste officers from the region's TAs.
  - Eight one-on-one interviews with two private waste and resource recovery operators, and waste officers from six of the region's TAs.

- **Section 6** presents four key opportunities that Waikato TAs could harness, in partnership with the region's waste and resource recovery sector, to boost the provision of reusable packaging reverse logistics services in Waikato, for the benefit of local businesses and the wider public.

Preparation for Reuse: Image by Globelet Reusable on Unsplash

2 REUSABLE PACKAGING SYSTEMS AND REVERSE LOGISTICS

2.1 Defining reusable packaging systems and those in scope for this study

Reusable packaging is durable, sturdy packaging that is refilled multiple times (in its existing form) with the same type of purchased product for which it was originally designed, or for the same purpose, in a **system of reuse**. A system of reuse is the **established organisational, technical and/or financial arrangements** that ensure the packaging achieves a minimum number of trips or reuse cycles in practice, not just in theory (WasteMINZ, 2023a, p.1). In contrast, packaging is considered single-use if, after its first use, it is repurposed (used again in its existing form for a different purpose), recycled or disposed of (ibid, pp.1-2).

Despite sharing a common definition, reusable packaging systems are heterogenous and their set-up and operation can vary. Broadly speaking, reusable packaging systems can be arranged into three main categories (Coelho et al, 2020; Blumhardt, 2022a):

- **Returnable packaging systems:** where empty packaging is returned by the customer/final user of the product, to be sanitised and refilled with the same product or product type (e.g. glass bottle swap systems or kegs for beverages). Returnable packaging can be business-to-business (B2B) or business-to-consumer (B2C).
- **Refill by bulk dispenser systems:** where product is presented "loose" in a retail setting, enabling customers to fill their own reusable container, e.g. bulk food bins at grocery stores.
- **Reusable transport packaging systems:** where the outer layers of packaging ('secondary' and 'tertiary' packaging) used to contain or protect a product when it moves through the supply chain (e.g. from producer to warehouse to retail store) are reusable, e.g. reusable plastic produce crates or pallets.

In Waikato, Reuse Aotearoa's stocktake work found at least 95 discrete reusable packaging systems available and/or in use in the region (for fast-moving consumer goods only). Of these, 26 were returnable packaging systems, there were at least 60 locations hosting one or more refill by bulk dispenser system, and at least nine operators of reusable transport packaging systems (Blumhardt, 2024).

This study focuses on the 'returnable packaging system' category for reusable packaging. In this model, packaging units are owned by the producer or system operator and must be retrieved from the product end-user when empty in order to be cleaned, refilled and returned to market. This requires managed logistical and infrastructural arrangements that are not necessarily required in refill by bulk dispenser models where the consumer owns the containers they reuse, and takes responsibility for washing them between uses and bringing them to refill locations. The infrastructural and logistical workflow for retrieving, returning and preparing empty returnable packaging for reuse has overlaps with the post-consumer logistics for single-use packaging in which the resource recovery system is already engaged, and therefore lends itself to the focus of this study.

2.2 Returnable packaging systems and reverse logistics

"The point at which reusable packaging stops being used is crucial to the design of a reuse system." (Global Plastics Policy Centre, 2023, p.27).

•

Returnable packaging systems rely on effective reverse logistics to function; without them, empty containers cannot be successfully retrieved for reuse after each use cycle. **Reverse logistics encompass the systems, services and infrastructure responsible for returning used products from consumers back to producers**, i.e. the opposite of the "forward supply chain" that delivers products to consumers. The Global Plastics Policy Centre (2023) describes the reverse logistics process

as starting at the "End-of-Use point"[5] of a reusable packaging cycle and notes that this point is so critical to the overall functioning of the reuse system that it should be "[t]he focus for the design of any reuse return system" (p.28).

The types of activities performed by reverse logistics systems, services and infrastructure for reusable packaging include (Mission Reuse, 2023, p.4; Prindiville, 2022, p.16; Brown et al, 2022, pp.16-18; Ellen Macarthur Foundation, 2023; Global Plastics Policy Centre, 2023, p.27):

- pick-up/collections of used packaging from consumers;
- provision of serviced return/drop-off points, e.g. reverse vending machines, kiosks or reuse 'bins';
- transportation, sorting, and consolidation activities for retrieved containers;
- preparing containers for reuse, e.g. inspecting, washing and sanitisation and/or repairs, and restocking of any damaged or missing items;
- redistributing reusable packages into the forward supply chain; and
- tracking packaging as it moves through each cycle.

Figure 1 provides one example of how the reverse logistics process can be represented, and how it fits into the overall cycle of reusable packaging.

While vertically-integrated companies can operate all these activities for their own product packaging, research suggests that **collective/shared reverse logistics will best support individual reusable packaging projects to scale**, become economically competitive, optimise their environmental performance, and foster a system change for packaging (Mission Reuse, 2023, p.15; Ellen Macarthur Foundation, 2023). An Ellen Macarthur Foundation analysis, *Scaling Returnable Packaging*, found that shared reuse infrastructure provides economies of scale for all parts of

5   The End-of-Use point is the point at which reusable packaging stops being used by the final consumer of the product contained in the packaging; it is the point at which the reverse logistics process begins. The end-of-use point is usually at one of three settings: the site where the product was purchased, the consumer's home, or the street (Global Plastics Policy Centre, 2023, p.27).

How reuse services work

Refilling and/or restocking.
Containers that don't contain product (like to-go containers and cups) are shipped out for restocking. Packaging that needs refilling can either be refilled on-site or shipped out for refilling and restocking.

Purchase and use. Customers purchase consumable products (food, beverages, personal care, cleaning products, etc.) in reusable packaging.

Collection & reverse logistics. Trucks pick up reusable packaging from bins or kiosks at home, at stores or on-the go. Recycling operations can also be retooled to accept reusable packaging.

Washing and sanitizing.
The wash hub receives reusable packaging to be cleaned, sanitized and dried.

Figure 1: Image by Upstream in Prindiville (2022), p.16. Reproduced with permission.

the reverse logistics process, and that "[i]t is particularly crucial to collaborate on collection infrastructure, not only to share costs, but also to offer customers a consistent and smooth experience" (2023, p.12). Within a shared system different actors may own and operate parts of the logistics chain (e.g. firms specialising in cleaning or transport), while adhering to consistent rules and processes, such as "a single network of collection points" or a "unified system" of sorting and cleaning centre operations (ibid, p.51).

2.2.1 Returnable packaging reverse logistics in New Zealand and Waikato

In New Zealand, reverse logistics for products generally, and reusable packaging specifically, are underdeveloped. Most producers see little benefit or utility in reclaiming their post-consumer products within the predominant linear economy. As noted by Eunomia, in New Zealand (Wilson & Lewis, 2023, p.149):

> ... the 'reverse logistics' aspect of the economy that is responsible for collecting widely dispersed and mixed materials has been a poor relation to the 'logistics' part of the economy that is responsible for the dispersion.

In this context, third-party providers of reusable packaging logistics services and associated infrastructure are rare because the business model is generally not economically viable (with a few notable exceptions where commercial demand remains, such as reusable transport packaging or B2B returnable beverage packaging like kegs).

Business interviewees in previous Reuse Aotearoa studies have reported many challenges to operating or adopting reusable packaging systems (for their products, or on behalf of others), or to reducing the costs of doing so over time. While these interviewees may not have used the language of "reverse logistics", many of the barriers cited relate to gaps and obstacles in this area, and from the challenges that arise from having to operate vertically-integrated reusable packaging systems (due to the absence of third-party providers). These gaps and obstacles include (Blumhardt, 2022a, ch 1.2; Blumhardt, 2022b; Blumhardt et al, 2023):

- a lack of effective and consistent collection and returns systems for empty reusable packaging, leading to low return-rates;

- the high costs to freight returned packaging to manufacturers in vertically-integrated systems;

- the lack of washing and sanitisation infrastructure to tap into; and/or

- the absence of fully-serviced and standardised third-party "off-the-shelf" reusable packaging options for brands to choose from, alongside single-use packaging options.

Similar findings were identified in a national stocktake and gap analysis of waste and resource recovery infrastructure commissioned by the Ministry for the Environment, which included a chapter on reusable packaging systems (Wilson & Lewis, 2023, pp. 83-99). The report highlights **gaps related to collection, sorting, and processing (i.e. preparation for reuse)**

of reusable packaging, and the lack of third-party reusable packaging suppliers that operate reusables fleets for producers (Ibid, pp.90-91). The report notes that reusable packaging systems in New Zealand are characterised by (ibid, pp.88-89):

> … dominance of smaller operators who currently lack economies of scale and the capital needed to finance the types of infrastructure and systems logistics that would enable the sector's growth… [and a] lack of standardised containers, collection, washing and redistribution infrastructure that would reduce the overall cost to brands of using reusable packaging.

The report concludes that both digital and physical "[i]nfrastructure options are particularly needed for the reverse logistics of collection, sanitizing and redistribution" (Ibid, p.91), along with third-party operators to run them.

In the Waikato regional context, a 2021 technical report on the region's journey to a circular economy highlighted that a major gap for achieving circularity in the economy across product types relates to the "lack of services/business models at the reduce/reuse layers of the waste hierarchy" (Bianchi & Yates, 2021, p.15). The report recognised that increasing reusable packaging systems in the region would require new supporting infrastructure of logistics, collection and preparation for reuse (Bianchi & Yates, 2021, p.4), and that "the lack of washing and return infrastructure for reusables has been identified as a key barrier for getting reusable packaging launched at scale" (ibid, p.14). This appears to be supported by Reuse Aotearoa's *Stocktake of Reusable Packaging for Fast-Moving Consumer Goods in the Waikato Region,* which found that **73%** of the identified returnable packaging systems operating from, or available in, Waikato are vertically-integrated.

The following section of the report considers the potential role of the waste and resource recovery system in filling the gaps in reverse logistics infrastructure and services, and the types of activities and responsibilities this would involve.

3 THE POTENTIAL ROLE OF THE RESOURCE RECOVERY SYSTEM IN RETURNABLE PACKAGING REVERSE LOGISTICS

"… the waste management sector could have an important role to play in reverse logistics. Reusable packaging needs to be transported to washing facilities, and could feasibly be collected in similar ways to recycling (kerbside collection or DRS) [deposit return schemes]." (Brown et al, 2022, p.17)

3.1 Leveraging existing waste and resource recovery systems for reuse reverse logistics

Over the last few decades, as global public expectations about the need to recycle single-use packaging have grown, extensive resource recovery systems have emerged to collect single-use packaging back from consumers, sort and consolidate it, and either dispose of it or on-sell it to reprocessors for recycling. Across the world, this system can be observed to include:

- **Physical infrastructure and assets**, e.g. bins, collection vehicles, reverse vending machines, sorting equipment, warehouses, transfer stations, resource recovery centres and material recovery facilities.

- **Logistics services and providers**, e.g. waste collection and kerbside recycling; sorting, storing, stockpiling and brokering of materials; and the companies and organisations that provide these services.

- **Financial mechanisms and/or return incentives**, e.g. public funding for, and procurement of, waste and recycling contracts; deposit-return laws; and regulated product stewardship schemes.

Some local and international commentators have highlighted that these waste and recycling services, infrastructure and financing mechanisms could potentially be leveraged to fill the acknowledged gap in reverse logistics for returnable packaging systems, and thereby accelerate the growth of these systems (Brown et al, 2022; Prindiville, 2022; Schwartz, 2022; Dreisbach, 2022; Global Plastics Policy Centre, 2023; Blumhardt et al, 2023; Canada Plastics Pact, 2023).

For example, the Global Plastics Policy Centre (2023) imagines that current household kerbside collections could integrate reusable containers from returnable packaging systems where end-of-use occurs in the home. The report authors perceive this scenario as "similar to current waste generation placed in general waste bins or recycling bins" and that (pp.28-29):

> "Return from home" may be imparted by a third bin for reusable packaging separation and collection by local authorities, third party providers or by e-commerce... The integration of reusable packaging end-of-use collection into domestic waste collection, where this exists, could provide a simple and familiar approach for consumers.

For returns outside the home, the same report suggests standardised drop-off and collection points for used reusables in high-traffic public areas and retail settings, adding that (p.29):

> [L]ocal authority services could support these collection points in some regions, potentially using the revenue saved from lower waste disposal requirements. The development of community based operations could be a major enabler for this end-of-use collection in many contexts.

Working with existing resource recovery logistics systems, rather than attempting to build parallel services from scratch, could make the transition to reusable packaging and the circular economy more efficient (Mission Reuse, 2023, p.33; Prindivile, 2022, pp.14, 16; Schwartz, 2022; Canada Plastics Pact, 2023, Appendix D, p.2). The Ellen Macarthur Foundation (2023), notes that in many jurisdictions "deposit return infrastructure currently designed for recycling... could be leveraged for reuse to reduce the investment needed to set up collection systems for returnable packaging" (p.13).

In Auckland, one producer explained their efforts to partner with resource recovery operators to retrieve the reusable packaging used for their products by noting 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" (Blumhardt et al, 2023, p.30).

As previously noted, shared infrastructure and services for reusable packaging reverse logistics are generally more efficient than vertically-integrated systems. The wider resource recovery systems that local governments operate and/or procure in the context of their statutory responsibilities are **existing collective assets** that can provide standardised support for businesses' transition to reuse models, e.g. by facilitating convenient, consistent and efficient collection of reusable packaging (Mission Reuse, 2023, p.9; Canada Plastics Pact, 2023, Appendix D, p.2). Leveraging this existing public system creates an enabling third-party infrastructure for reuse activity that serves many brands, while softening the competitive edge single-use systems currently enjoy because they are serviced by shared, publicly-funded waste and recycling systems that reusables have no access to (Prindiville, 2022, p.x; Wilson & Lewis, 2023, p.90).

While ongoing investment in recycling services competes with reuse opportunities, shifting the balance requires intentional reprioritisation, but not necessarily additional expenditure. With the support of SystemIQ and Eunomia, the Ellen MacArthur Foundation (2023) modelled the cost of transitioning to greater returnable packaging in a test country (France). They found that the infrastructural investment to transition to collection, sorting and cleaning infrastructure for reuse was significant, but comparable to that country's annual investments in the recycling industry, and less than the projected investment plans for novel recycling technologies to meet more ambitious plastics recycling targets. Given that scaling reusable packaging would reduce material use, waste generation, and consequently the need for as much recycling, the report concluded that investing in reuse returns infrastructure "would not necessarily be in addition to existing investments" and that "[c]omparing this estimated cost of transition

with other investments in the [waste management and recycling industry] sector indicates that it is manageable and within industry norms" (p.49).

Supporting existing waste and resource recovery operators to adapt to offer services for reusable packaging also makes sense when viewed through a just transition lens (in terms of decarbonising the economy as fairly and inclusively as possible). Service providers and infrastructure that currently support the recycling system for packaging (and who ensure reuse for durable consumables), have skills, networks, assets, space and equipment that are transferable to reusable packaging systems. Ensuring this transfer happens will reduce the carbon cost of transition by making use of existing infrastructure and assets, rather than building new from scratch. It also protects the job security of employees in the traditional resource recovery sector by supporting growth of their skills and capability to service a growing reuse economy as New Zealand shifts to a more circular future (Brown et al, 2022; Blumhardt et al, 2023, p.30).

The resource recovery sector's existing network structure to recirculate products and materials within local and global supply chains can also be leveraged rather than duplicated. Some commentators have considered how specific reverse logistics activities fit into remodelled national and global logistics systems in a circular economy. In a 2022 webinar presentation on the future of reverse logistics, Anita Schwartz from the consultancy WSP discussed the need for more localised 'circular economy hubs', alongside regional circular economy distribution centres. These hubs and centres would operate reverse logistics for a wide range of products (e.g. electronics, textiles, packaging etc.), within a connected, coherent and seamless network that harnesses the efficiencies of a hub and spoke model.

In many countries, including New Zealand, resource recovery sites are already handling products fit to reuse, or engaging in take-back activities for product stewardship schemes, and are seeking to increase this capacity through a network approach. It makes sense to work with these sites to leverage and build upon existing resource recovery infrastructure, logistics and networks to further evolve product reverse logistics systems,

rather than producers and retailers developing new networks independently and in parallel.

"Waste management companies can come in and retool to also provide reuse services. Because these companies are going to households, restaurants, office buildings, stadiums, and they have these contracts in place... where you've got a city where everybody's doing their takeout food and their takeout cups, that's a great place for a waste management company to come in and say "we can pick that up, we can run logistics for that, we can get that to the warewashing warehouse, and then we can also get it back to the customers that might want it." So they can either pick up one part of that chain or multiple parts, or even say, "we're going to build a warewashing facility here, and we're going to get into the business of reuse services."... These companies know how to run logistics. They know how to run routes. It's just a different product and a different destination. And what's great, too, is there's more control, because these are regional systems. So what's exciting is that when waste management companies and reuse service providers and food service and beverage and CPGs can partner on building these resilient systems, the stability over that market is much greater than "what's the global price for aluminum today, or PET, or oil?"" (Prindiville, 2021)

•

3.2 Potential reusable packaging reverse logistics activities for the resource recovery sector

Despite overlaps with current activities and the potential ability to leverage existing systems, today's resource recovery systems would require some adapting to support reusable packaging reverse logistics, as the

sector is not currently focused on returning retrieved packaging to original producers in a state where it can be reused. Additional reuse-specific infrastructure would also be needed, e.g. sanitisation facilities (Prindiville, 2022, p.14; Brown et al, 2022, pp.17-18; Wilson & Lewis, 2023, p.91; Bianchi & Yates, 2021, p.14).

Some specific adaptations posited in the literature include (Prindiville, 2022, pp.14, 16, 17; Driesbach, 2022; Ellen Macarthur Foundation, 2023; Global Plastics Policy Centre, 2023; Canada Plastics Pact, 2023):

- Incorporating reusables into kerbside recycling collection systems.
- Establishing or expanding deposit return systems to accommodate reusables.
- Installing public returns infrastructure, such as kiosks, for reusable packaging in locations that match the convenience of public rubbish bins.
- Retooling material recovery facilities (MRFs) to sort and consolidate reusable packaging.
- Building wash and refill hubs, potentially within or next to MRFs.

Table 1 provides a list of specific activities that the resource recovery sector could undertake to support reusable packaging reverse logistics. The activities are grouped together under the phase of the reverse logistics process to which they apply. Some of these activities are already being trialled by local and international resource recovery operators; the right-hand column of the table shares specific examples, linked to **case studies included as appendices to this report**.

3.3 Local government's role in supporting resource recovery operators to move services up the waste hierarchy

As it currently stands, the activities outlined in Table 1 are mostly novel for the waste and resource recovery sector, both locally and internationally. They can be understood as "value-add" propositions because local authorities neither require nor expect providers to deliver them. Local government can encourage or support resource recovery operators to participate in these roles, by lifting

expectations and building capacity. In this vein, the City Playbook Working Group's playbook for building a reuse city has previously called on municipal governments to (2021, p.7):

> ... 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.

Local government's statutory responsibility to manage waste gives it particular powers, assets and connections that can be utilised to drive innovation in service provision. This includes the ownership, contracting or funding of waste and resource recovery infrastructure services; and working relationships (contractual or otherwise) with waste and resource recovery operators. These powers, infrastructure and connections occur in the context of local government's position as an "anchor institution": an organisation, rooted in local place, that holds significant wealth as an employer; a purchaser of goods and services; and a holder of land, property and investment assets (Centre for Local Economic Strategies, 2019, p.9). This wealth can be harnessed to accelerate particular social and environmental activities that might otherwise struggle to occur, including service delivery for reuse reverse logistics (Blumhardt et al, 2023, p.31; Canada Plastics Pact, 2023, p.26). Applying these ideas to reusable packaging, Dreisbach notes (2023):

> What's needed at the city level? We need infrastructure; help reuse systems to help us all. I want to challenge local governments and state governments and federal governments - if you have sustainability goals, reuse can help you meet them and get you measurable impact. Local governments in our city can support reuse infrastructure financially on its way to evolving departments to making reuse a municipal utility - adopt reuse yourselves, put reuse in your budgets and programming.

Table 2 outlines some potential points of leverage that local (and central) government can pull to support the resource recovery sector's participation in the roles outlined in Table 1. Table 2 draws on the ideas outlined above, and the anchor or facilitative roles local governments have played in the case studies in the

Table 1: Specific activities within each phase of the reusable packaging reverse logistics system that the resource recovery sector could support

Phase of the reverse logistics process	Potential resource recovery activity	Examples of resource revovery sector taking on this role
Collection / Returns	Incorporating reusable packaging into existing kerbside or commercial recycling collection services	The ReCirculation Project (North Carolina, USA) Xtreme Zero Waste-Workshop Brewing Co reusable can holder return (Whāingaroa/ Raglan, NZ) Will&Able container upcycling initiative (NZ)
	Incorporating reusable packaging drop-off/ return points at waste and resource recovery facilities	Xtreme Zero Waste-Workshop Brewing Co reusable can holder return (Whāingaroa/ Raglan, NZ) Will&Able container upcycling initiative (NZ) Green Bottle 'Drink Different' reusable beverage container research trial (Auckland, NZ)
	Incorporating reusable packaging drop-off/ returns into deposit return systems	Deposit returns systems that support reusable packaging reverse logistics (international examples)
	Establishing and operating new reusable packaging return points within existing public bin networks/cities	Bring it Back Bruns (Byron Bay, NSW, Australia) Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark) Anamata Resource Recovery Centre reusable cup system (Aotea Great Barrier Island, NZ)
Sorting / Storing / Consolidating	Adapting MRFs to enable the sorting of reusables	The ReCirculation Project (North Carolina, USA)
	Instituting a system to sort, store and catalogue reusable packaging	Will&Able container upcycling initiative (NZ) Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark) Green Bottle 'Drink Different' reusable beverage container research trial (Auckland, NZ)
Preparation for reuse	Establishing washing/sanitisation and/or repair infrastructure at resource recovery sites or within resource recovery operations	Will&Able container upcycling initiative (NZ) Anamata Resource Recovery Centre reusable cup system (Aotea Great Barrier Island, NZ)
	Council/resource recovery operators procuring washing/sanitisation services	Bring it Back Bruns (Byron Bay, NSW, Australia) Deposit returns systems that support reusable packaging reverse logistics (overseas examples) Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark)
Redistribution / Reintroduction to forward supply chain	Developing/procuring systems that return packaging to producers	Bring it Back Bruns (Byron Bay, NSW, Australia) Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark) Anamata Resource Recovery Centre reusable cup system (Aotea Great Barrier Island, NZ)
	Developing inventories of sorted and catalogued reusable packaging to on-sell/pass-on to third parties for reuse.	The Tips Shop (Wellington Southern Landfill), Trash Palace (Porirua Spicer Landfill, Xtreme Zero Waste, Anamata Resource Recovery Centre redistributing salvaged crockery to local reuse schemes and/or mug libraries The ReCirculation Project (North Carolina, USA)

Table 2: Local government leverage points to support the resource recovery sector to participate in reusable packaging reverse logistics roles

Leverage points for local government to support resource recovery sector participation in reusable packaging reverse logistics	Examples of local governments utilising these levers
Tendering for, procuring, or operating reusable packaging reverse logistics services.	Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark) Bring it Back Bruns (Byron Bay, NSW, Australia)
Supporting community-led organisations with strong zero waste vision who deliver reuse activities to operate in the resource recovery space, through social procurement of waste contracts, access to Council land or assets, or other direct support.	Xtreme Zero Waste-Workshop Brewing Co reusable can holder return (Whāingaroa/ Raglan, NZ) Anamata Resource Recovery Centre reusable cup system (Aotea Great Barrier Island, NZ) Green Bottle 'Drink Different' reusable beverage container research trial (Auckland, NZ)
Grant/funding allocations to waste and resource recovery organisations to support participation in, or delivery of, reuse reverse logistics activities.	Anamata Resource Recovery Centre reusable cup system (Aotea Great Barrier Island, NZ) Green Bottle 'Drink Different' reusable beverage container research trial (Auckland, NZ)
Partnering with, or brokering collaboration between, contractors and others in reusable packaging reverse logistics pilots and/or action research.	The ReCirculation Project (North Carolina, USA) Green Bottle 'Drink Different' reusable beverage container research trial (Auckland, NZ) Bring it Back Bruns (Byron Bay, NSW, Australia)
Policy/regulatory settings that drive and accommodate reverse logistics systems for reusable packaging.	Deposit returns systems that support reusable packaging reverse logistics (overseas examples) Rotake Reuseable: TOMRA and Aarhus Municipality reusable takeaway packaging system (Aarhus, Denmark))

appendices. The left hand column lists specific actions, and the right hand column lists examples of these actions being taken, with links to the case studies where more details can be found.

Container on-site at Waiōrea Community Recycling Centre, Auckland, used to store bottles collected as part of Green Bottle reusable packaging research. Image supplied: Green Bottle

The following section of the report considers the readiness and appetite of the local resource recovery sector to support reusable packaging system reverse logistics in the New Zealand context. While overseas examples are instructive, New Zealand's particular resource recovery system and surrounding policy context must also be considered as these may affect the pace and nature of any sectoral uptake of reusable packaging reverse logistics service provision, and the approach to investment in reuse infrastructure. The section also summarises what we know so far from local sources (e.g. research reports and government policy documents) about the appetite of government, councils and the resource recovery sector to participate in circular activity higher up the waste hierarchy, including the operation of reuse systems for packaging.

4 NEW ZEALAND'S RESOURCE RECOVERY CONTEXT AND THE CURRENT APPETITE OF COUNCILS AND THE RESOURCE RECOVERY SECTOR TO PARTICIPATE IN REUSABLE PACKAGING REVERSE LOGISTICS

New Zealand's resource recovery system brings together local government TAs, private operators, and community enterprises and non-profits (Wilson & Lewis, 2023, p.87). Local government is a critical part of the resource recovery system. The Waste Minimisation Act 2008 (WMA) obliges all councils to promote effective and efficient waste management and minimisation within their districts. The majority of TAs arrange for the management of household waste, including packaging. This function is largely outsourced to third-party operators from the private or community sectors (Wilson & Lewis, 2023, p.137).

These non-Council operators exist on a somewhat polarised spectrum ranging from very large private operators on one end, and a small but strong contingent of community-led providers on the other. Despite a number of active private operators in the country, just two dominate the waste and resource recovery market. As such, they can influence the direction of New Zealand's resource recovery system as their participation can make or break new initiatives or transitions (Wilson & Lewis, 2023, p.90). However, New Zealand is also a recognised global leader in community-led resource recovery. Community recycling was instigated in the early 2000s by proactive individuals and local groups across the country,[6] supported by national networks, including the Zero Waste New Zealand Trust, Envision and the Community Recycling Network (now the Zero Waste Network) (Seldman, 2016; Snow, 2020). The role of the community in New Zealand's resource recovery

sector has been historically formational in terms of pushing more ambitious zero waste agendas (Wilson & Lewis, 2023, p.89), and its on-the-ground resource recovery activities continue today. For example, in 2023, Zero Waste Network members diverted at least 29,000 tonnes from landfill (see Fig. 2).

In terms of physical infrastructural footprint, New Zealand's existing (and growing) nationwide network of resource recovery centres and transfer stations includes over 277 such facilities across the country (Wilson & Lewis, 2023, p.121). These facilities may be operated by council staff, private companies, and/or community providers. This baseline starting point of New Zealand's pre-existing resource recovery network has the potential to act as an accelerant for reusable packaging reverse logistics. In fact, many sites are already undertaking reuse/repair activities, especially community-led providers (see Fig 2). Therefore, in comparison to overseas examples, New Zealand's resource recovery sites may be even better placed to incorporate reusable packaging reverse logistics capacity, rather than leaving producers and retailers to develop new, parallel reusable packaging networks independently.

Another distinguishing feature is that, unlike many other comparable jurisdictions in the OECD, New Zealand's resource recovery sector manages used packaging in the absence of supportive laws and policy to drive higher return rates and finance packaging recovery activities. For example, legislated deposit return systems for beverage containers, legislated packaging product stewardship/extended producer responsibility schemes, or other related regulatory measures for packaging. Even if only focused on single-use packaging, these policies explicitly shape the operational and infrastructural landscape for packaging reverse logistics, and therefore affect how reusable packaging and associated supporting services might be introduced in any jurisdiction. New Zealand not only lacks these laws, but uncertainty exists regarding whether or how they may be implemented in future,[7] which would further impact on

---

6   For example, CBEC in Kaitāia, Xtreme Waste in Raglan, and Wastebusters in Ashburton and Wānaka.

7   For example, New Zealand's co-designed beverage container return scheme has been deferred and although no regulated product stewardship scheme for packaging exists yet, plastic packaging has been declared a priority product under the WMA and a scheme is in development.

Figure 2: Many New Zealand sites are undertaking reuse/repair activities (Source: Zero Waste Network n.d.)

the operations of transfer stations and resource recovery facilities, and on their capacity to undertake more new activities (Wilson & Lewis, 2023, p.121). This uncertainty is likely to play a role in the willingness of both TAs and the sector to drive and/or invest in new initiatives that might later be impacted or overlaid by policy changes.

Evidently, the nature of New Zealand's resource recovery network and the country's policy context would shape any sectoral shift towards reusable packaging reverse logistics provision. For example, the types of collection/return methodologies and infrastructure perceived as most favourable (drop-off, kerbside, return-to-retail etc.), or the approach to investment and financing of new infrastructure and services. Overseas, different factors might receive different emphasis, and therefore while international examples and case studies are helpful, their applicability is sometimes only partial. For example, while the 2023 Ellen Macarthur Foundation report *Scaling Returnable Packaging* brings valuable insights on best-practice reuse reverse logistics, it focuses on European models of return within the European legislative context (e.g. return-to-retail models in the context of established

deposit return infrastructure, and producer-led reverse logistics systems), with reduced emphasis on the potential role of the waste and resource recovery sector and existing resource recovery networks.

4.1 Local commentary about moving resource recovery services up the waste hierarchy

The need to shift towards a low-waste, circular economy is increasingly recognised as imperative (Ministry for the Environment, 2023), but the responsibilities of various sectors to support this transition, including the resource recovery sector, are not always well articulated. In New Zealand, perceptions of the waste and resource recovery sector's role have traditionally been tied to the bottom layers of the waste hierarchy. Despite the fact that councils must consider the waste hierarchy when preparing, amending or revoking their waste management and minimisation plan (s 44 of the WMA), local government has generally interpreted its waste minimisation obligations through the lens of waste diversion from landfill, e.g. activities like recycling,

rather than waste avoidance through source reduction strategies, e.g. reuse (Wilson & Lewis, 2023, p.117).[8] Territorial authorities have also struggled to incentivise or invest in waste reduction services and infrastructure (Wilson & Lewis, 2023, p.122).

The resource recovery sector that has emerged to meet council's waste minimisation needs has therefore focused on developing waste management and diversion services. This, in turn, has often led the term "resource recovery" to be used interchangeably with "recycling", and affected how the sector is seen by itself and others within the public, business, or local and central government. The sector has not often had much room to consider or explore potential delivery of services to support circular business models like reusable packaging. Indeed, most of the innovation in waste minimisation in New Zealand, including reusable packaging systems, is being driven by businesses *outside* the waste and resource recovery sector (Wilson & Lewis, 2023, p.91).

However, as "circular economy and zero waste continue to grow in prominence", equating resource recovery with recycling is increasingly "a narrow view" (Wilson & Lewis, 2023, p.138). This appears to be driving recognition at both local and central government level, and within the resource recovery sector itself, that the sector potentially has a broader role to play in facilitating the transition to a more sustainable future.

4.1.1 Local and central government perspectives

In recent years, local and central government documents have adopted more holistic understandings of resource recovery and the associated sector, alongside a more expansive view of the role of public authorities, infrastructure and services charged with reducing waste in society. This has included greater discussion about the responsibilities of government and the resource recovery sector to support increased source reduction activities, such as reuse.

---

8   The attachment of the waste and resource recovery system to activities lower down the waste hierarchy is also the dominant trend internationally (Kunamaneni et al, 2019).

In 2023, the Government released the latest New Zealand Waste Strategy, which envisions the country transitioning to a circular economy by 2050 and highlights the importance of a coordinated resource recovery system for realising this vision (Ministry for the Environment, 2023). Goal 2 signals that New Zealand should ensure its resource recovery systems "support activity as high up the waste hierarchy as possible, so that, for example, they can incorporate reuse, repair and repurposing services as well as recycling" (Ibid, p.33). Goal 4 (priority 4.3) outlines the need for future reuse systems to be factored into the sector's ongoing development (Ibid, p.40):

> Central and local government, and the waste management sector, must think about how to cater for future reuse systems when developing the infrastructure to support collection and processing of products and materials…

The Strategy also defines resource recovery infrastructure as including: "transfer stations and vehicles, drop-off facilities, ***sorting facilities and washing plants for reuse schemes***." [emphasis added] (Ibid, p.20).

Similarly, the WRC's 2021 Technical Report into the region's journey to a circular economy (Bianchi & Yates, 2021), considered how local government can help foster the infrastructure and capability to secure this transition. To start with, the report operates with the premise that "[l]ocal government has the opportunity to leverage their substantial influence to encourage society to adopt a more circular economy" (Ibid, p.7), and should cooperate with other organisations, iwi and hapū, the community and businesses to undertake circular economy work and engage in circular economy projects (ibid, pp.18-19). The report also underscores the opportunity to transform delivery of public services, including municipal waste management, if Council provides for circular economy principles in these services (Ibid, p.10). In relation to waste levy funding, local government can also "align investment signals with the waste hierarchy to ensure actions and funding is allocated at the top" (Ibid, p.8).

Of relevance to this study, the report acknowledges the resource recovery sector as a key touchpoint for achieving regional circularity, supporting circular business models and filling infrastructural gaps needed for reusable packaging systems. It outlines nine potential pilot projects, including a scoping study into a regional resource recovery network, describing the latter as "a public good transition asset" and "a piece of critical public good infrastructure", akin to libraries, swimming pools and roads, because it could provide a wide range of key services, including support for "reuse systems" (Ibid, p.14).[9] It goes on to note (Ibid, p.14):

> Given the need to move up the waste hierarchy, it would also be good to understand what community resource recovery centres could require to be able to support their community's local businesses. For example, the lack of washing and return infrastructure for reusables has been identified as a key barrier for getting reusable packaging launched at scale.

The focus on building out the resource recovery network and reusable packaging systems in Waikato is underpinned by the overarching direction of the WRC *Waste Prevention Action Plan* (2020), as well as the Waikato Wellbeing Project (2023), which has an interest in advancing both the resource recovery network and reusable and refillable packaging in the region, in order to move towards achieving UN Sustainable Development Goal 12 on Responsible Production and Consumption.

The role of the resource recovery sector in effecting the transition to a circular economy, including the support for reusable packaging, was mirrored in Eunomia's national stocktake of waste and resource recovery infrastructure (commissioned by the Ministry for the Environment). The report's key recommendation was to develop a "circular resource network" that leverages and builds upon the existing resource recovery system to "optimise the capture of waste materials and maximise their value to enable re-integration into the circular

economy" (Wilson & Lewis, 2023, p.1). The report suggested "the resource recovery system should be consciously designed to facilitate the circular flow of materials through the economy, by 'completing the circle'" (p.149). In relation to reusable packaging, this could look like local and regional resource recovery centres hosting drop-off/consolidation sites for reusable packaging (pp.158-159), with the development of co-located facilities like "wash plants and fleet management facilities for reusable containers" (p.157), which could even become "cornerstone operations" (pp.177-178).

4.1.2 The waste and resource recovery sector perspectives

The waste and resource recovery sector is also articulating the potential to evolve the sector's day-to-day activities in order to take on leadership in driving the circular economy and work higher up the waste hierarchy. In interviews for its national waste and resource recovery infrastructure stocktake and gap analysis, Eunomia found that operators of transfer stations and resource recovery facilities perceived an ongoing shift towards more circular activity for their industry and that they were "poised to adapt" (Wilson & Lewis, 2023, p.121), with "larger waste companies investing in reuse shops and more recycling services" (Ibid, p.120), and community-led resource recovery enterprises voicing a desire to "drill further down into waste minimisation and behaviour change... to ensure true waste reduction, rather than more waste management" (Ibid, pp.120-121).

These sentiments are reflected in commentary emerging from the sector. For example, the most recent sustainability reports from both Waste Management and EnviroNZ recognise their critical role in accelerating New Zealand's transition to a circular economy, and their potential to lead through innovation, emissions reductions and investment in infrastructure to facilitate an onshore circular economy (Waste Management, 2023; Enviro NZ, 2023). The Zero Waste Network is even more specific. In response to the 2023 Waste Strategy's goal to shift Aotearoa towards a circular economy, the Network reiterated previous calls for a nationwide resource recovery network of zero waste hubs (n.d.).

---

9   NB The WRC surveyed TAs within the Waikato Region on the nine potential pilot projects, with the resource recovery network proposal emerging as one of the two most popular projects.

These hubs would involve "the transformation of the functions of a Transfer Station" to "combine reuse, repair, recycling, composting, product stewardship takeback, behaviour change and community engagement" (n.d., n.p.). To achieve this, the Zero Waste Network welcomes the expansion and development of the existing resource recovery network to accommodate "infrastructure for refill, reuse, repair, and sharing models for products" (ibid).

In relation to reusable packaging systems, Reuse Aotearoa has begun to canvas the views of some parts of the sector to understand the appetite to participate in reusable packaging reverse logistics. In 2023, we interviewed and surveyed private and community waste and resource recovery operators in Auckland, as part of a study commissioned by Auckland Council for their Waste Assessment (Blumhardt et al, 2023). The study was focused on B2B reusable packaging systems in the city, particularly infrastructural capacity and reverse logistics services supporting these systems, and specific needs for increasing such activity.

One aspect of the study focused on the current and potential future involvement of Auckland's waste and resource recovery sector. This part of the report found that despite limited involvement in supporting reusable packaging systems used outside of the sector (Ibid, p.2), most operators interviewed thought that providing some level of support for reusable packaging systems did fit within their role, and there was "a general willingness across the sector to play a larger role" (Ibid, p.31). However, all participants said that playing a larger role would require additional infrastructure and staff, so a business model to cover these costs was necessary (Ibid, p.33).

The organisations most interested in taking part were CRRs. These operators perceived strong alignment between reusable packaging and their organisations' current reuse activities, their wider zero waste vision, their strategic priorities to move activity up the waste hierarchy, and their work to inspire the communities within which they operate (Ibid, p.34). These organisations also saw the potential to take a network approach with like-minded organisations to overcome capacity gaps and build efficiencies in reuse reverse logistics (Ibid, p.34).

Private operators also saw a potential role in reusable packaging reverse logistics, and thought they could build upon their existing infrastructure, breadth of operations, capability and size of staff and networks to expand work in this area. However, these operators did not see reusable packaging reverse logistics as a strategic priority for their organisations without evidence of a business opportunity, such as clear customer demand and a viable business model to justify such a shift in resources and focus (Ibid, p.35).

The findings in the Reuse Aotearoa study regarding the sector's differential capacity and willingness to explore reusable packaging activities broadly align with the differences Eunomia found in their stocktake and gap analysis in relation to circularising activities generally. They concluded that community-led resource recovery facilities "generally focus higher up the waste hierarchy than privately run facilities" (Ibid, p.122), but are quite resource constrained to realise their visionary goals (Ibid, p.138). Meanwhile, private operators have access to capital and the potential to drive significant change in the industry, but require a commercial imperative to move into new types of service provision or invest in additional infrastructure to provide such services (Ibid, pp.137-139).

The present study aims to build on the existing research and knowledge summarised in this section, by looking at the potential role of the Waikato region's resource recovery system in reusable packaging reverse logistics. The following two sections of this report present our findings from a series of focused workshops and interviews undertaken with TAs and various waste and resource recovery operators in Waikato. Our aim was to understand the capacity and willingness of the sector to contribute to WRC's journey to a circular economy by supporting reusable packaging systems, the roles they might envisage for themselves in this regard, as well as the needs and opportunities they could identify for making this a reality.

5 CAPACITY, WILLINGNESS AND NEEDS OF THE WAIKATO REGION'S WASTE AND RESOURCE RECOVERY SYSTEM TO PARTICIPATE IN REUSABLE PACKAGING REVERSE LOGISTICS

This study's direct engagement with Waikato TA waste officers and waste and resource recovery operators significantly extends previous studies into the willingness, capacity and needs for moving the resource recovery system's service provision up the waste hierarchy to support reusable packaging systems. This section of the report collates and summarises the key themes and findings from workshops and interviews conducted with Waikato-based TA waste officers and waste and resource recovery operators. All interviewees and workshop participants remain anonymous. Where possible, we have sought to share the insights and reflections of the interviewees in their own words.

5.1 Methodology

At the end of 2023, in partnership with Envision, Reuse Aotearoa engaged with waste and resource recovery operators (both private and community-based) and TA waste officers, from across the Waikato region, through a combination of in-person group workshops and one-on-one online interviews. The research aim was to understand:

- the level of theoretical interest in participating in reusable packaging reverse logistics (willingness).
- existing infrastructure, relationships, programmes and other soft and hard assets that the sector could leverage to support reusable packaging reverse logistics (capacity and tailwinds);
- the types of roles and responsibilities that interviewees imagined the sector performing to help recirculate reusable packaging;
- organisations' needs (e.g. infrastructural, relational, funding, policy, research etc.) to achieve real-life

practical involvement in reusable packaging systems; and

- any opportunities participants could identify to get the sector involved in reusable packaging reverse logistics (see Section 6).

5.1.1 Waste and resource recovery operators

On 6 November 2023 Reuse Aotearoa facilitated a two hour, in-person workshop in Hamilton with eight participants from six different Community Resource Recovery (CRR)[10] operators from across Waikato. The workshop was co-created and co-facilitated with Envision and featured a combination of Q&A, group discussion, traditional PowerPoint presentation of pre-prepared material, and opportunity for participants to share and record ideas on paper.

During December, we ran two one-on-one online interviews with two waste and resource recovery operators from the private sector. One-on-one interviews were the chosen approach to enable private operators to share ideas more freely than in a workshop setting alongside competitors. As a result, these interviewees did not receive the same level of background information that CRRs and TAs received during the two-hour workshops Additionally, we only secured interviews with two private operators, despite a greater number of private operators in the Waikato Region.

5.1.2 Territorial authorities

We engaged with 13 council officers representing nine TAs across the Waikato Region via an in-person workshop and/or an online interview.

The workshop ran for two hours on 1 December 2023 in Hamilton with seven participants from five TAs across Waikato. The workshop was co-created and co-facilitated with Envision and featured a combination

---

10   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.

of Q&A, group discussion, traditional PowerPoint presentation of pre-prepared material, and opportunity to share and record ideas on paper.

Between 1 December and 15 December, we also ran six one-on-one online interviews with waste officers from six different TAs. Some of these interviewees were waste officers who were unable to attend the in-person workshop, and some were conducted as follow-up interviews with workshop participants.

5.2 Key findings – summary

Overall, Waikato's TAs and waste and resource recovery operators are theoretically willing to engage in reusable packaging reverse logistics. They recognise that supporting reuse fits within the sector's overall role and purpose and also overlaps with existing activities, infrastructure and capabilities. Participants identified alignment between the notion of supporting reusable packaging, and organisational and societal visions of upholding the waste hierarchy and transitioning to a circular economy (as outlined in organisational strategies, Waste Management and Minimisation Plans (WMMPs), or the general direction of public sentiment and that of elected officials).

Participants also believed that the region's resource recovery sector's existing capacity (infrastructure, logistics, sites, equipment, skills/workforce, and wider programmes like behaviour change or reuse activities) could be leveraged to support reusable packaging reverse logistics. They identified additional tailwinds supporting such a shift in direction. For example, most TAs cited aspects of their local policy environment that could enable more targeted local government reusable packaging programmes. In particular, many were updating or had recently updated their WMMPs, and reported increased focus on activity higher up the waste hierarchy; many also said this was backed by a mandate from elected officials to get serious about reducing waste.

Participants felt that transitioning the resource recovery sector towards offering greater reusable packaging reverse logistics support needs to be intentionally driven by appropriate capital and operational resourcing, and

renewed policy settings. While waste and resource recovery operators felt their existing infrastructure, equipment and workforce capability gave them a headstart, workflow adaptations would be required across all phases of the reverse logistics process to accommodate the higher levels of care needed for handling reusable packaging. New equipment, assets and training would also be needed for more unfamiliar roles, especially in the preparation for reuse phase. A business model to adopt and sustain these new services is critical and would likely require:

- council procuring the sector to provide these new services, especially during the transitional phase when reusable packaging uptake amongst businesses is still low; and/or

- central government policy that requires or incentivises use of reusable packaging, such that businesses are willing to pay for their packaging to be recirculated.

The clearest theme that surfaced throughout our engagement with participants was a stark **value-action gap** between all participants' stated willingness and alignment with supporting reusable packaging, and the actual implementation of reusable packaging reverse logistics support (or any exploratory activity to develop such a workstream). Based on participant comments, this gap stems from a combination of the following obstacles:

- The constant stream of waste and recyclate that all participants are responsible for managing, which diverts attention, resources and investment away from action further up the waste hierarchy. Most TAs are under-resourced to deliver basic waste services, let alone embark on new contracts for a wider scope of work up the waste hierarchy. Meanwhile, resource recovery operators noted that, at least in the medium term, reusable packaging would be an additional system to run alongside ongoing waste and recycling streams, adding operational cost and complexity.

- A national policy environment that does not enable strong business models for third-parties to support reusable packaging systems, and lacks strong disincentives for companies to choose single-use packaging. In this context, waste and resource

recovery operators have no guarantee of a return on any investment in new capital assets to deliver reverse logistics for reusable packaging.

• Uncertainty regarding exactly what new reuse reverse logistics roles would look like, where to start in terms of offering new services, and what existing or potential reusable packaging systems could be initial candidates for support. This uncertainty is compounded by weak relationships between TAs and the waste and resource recovery sector, on the one hand, and potential partner companies who use or wish to explore reusable packaging, on the other.

• TAs are increasingly allocating resources to support reuse, but the level of resource does not match the needs/gaps in service provision. Existing programmes are very focused on personal reusables, or on the front-end of returnable packaging systems (mostly for coffee cups), with behaviour campaigns centred on consumers and hospitality outlets. Minimal attention or resource is allocated to potential council interventions in the reverse logistics side of reusable packaging systems or service procurement in this area, so waste and resource recovery operators are not receiving signals from council to provide local businesses with this type of support.

The remainder of this section of the report provides the detail of what we heard from waste and resource recovery operators and TA waste operators.

5.3 Detailed findings – waste and resource recovery operators

5.3.1 Willingness and capacity to participate in reusable packaging systems

CRR operators

CRRs' willingness to offer services to support reusable packaging systems was inferred from the desire all workshop participants expressed to see reusable packaging systems succeed. Support for reusable packaging was reflected in participants' pre-existing awareness of the range and availability of reusable packaging systems in their local area, the wider region and New Zealand. Participants were also sensitive to

the barriers companies face in establishing, sustaining and scaling reusable packaging systems, with some participants noting certain reusable packaging systems that previously existed in their local area that had shut down. Some of the challenges participants identified related to the lack of reverse logistics to get reusable packaging back from consumers.

"Reusable products are only so if you put in the effort to return them, otherwise it's a waste of time."

All CRR operators indicated that supporting reusable packaging systems by participating in reverse logistics aligns with their organisation's strategy and vision. When asked to rank this alignment on a scale of 1 to 10 (where 10 = 100% aligned), all participants ranked themselves between 7 and 10, with one organisation saying they were "in boots and all". Furthermore, three organisations reported that they already operate or support reusable packaging systems:

• One organisation acts as a collector and drop-off point for a local business' reusable packaging;

• One organisation operates a reusable bag system (with $15 deposit to incentivise returns) for firewood they sell;

• One organisation has a reusable fabric bag system for collections of bread from suppliers for their food rescue operations.

Participants explained that their packaging-related resource recovery activities are predominantly focusing on recycling. However, reusable packaging better matched their organisational commitments to zero waste, an onshore circular economy, and new economic models based on the waste hierarchy, whakapapa, reduced consumption, and localisation. Participants also felt that reusable packaging systems work well in smaller geographic areas, so promoting them aligns with CRRs' commitment to explore and develop localised, community enterprise opportunities. In practical terms, participants noted that supporting reusable packaging systems is logically connected with the reuse/repair activities they already undertake at their sites for other products.

"Right now, we're only in a moment in time – we are recycling centres because that's all that was available to us. But if we want to go towards zero waste, we don't want to be doing recycling at all, we want to be involved in reuse/refilling."

•

However, some participants placed caveats on their willingness to support 'any' reusable packaging system. These participants distinguished between reusable packaging systems that support system change and those that work to maintain the status quo. An example of the latter is reusable packaging for products that could be perceived as unsustainable or unnecessary, where the reusable packaging system might just be a greenwashing exercise that "perpetuate[s] the same issues of consumption". These participants expressed a desire to avoid participating in reusable packaging systems that are not holistic and transformational. Additionally, one participant suggested the need to set a whakakitenga/vision of reuse across society and proactively connect reuse activity to the concept of Oranga Taiao, Oranga Marae, Oranga Whānau.

In terms of capacity to support reusable packaging reverse logistics, CRRs pointed to their existing hard and soft infrastructure. This infrastructure varies between organisations, but includes trucks and collection activities, physical sites and buildings for consolidation activities, and/or a material recovery facility. As CRRs are well-connected across a (regional and national) network of like-minded organisations, participants felt that each organisation's resources, capacity and workforce could be pooled for worthwhile projects. CRRs also have existing programmes focused up the waste hierarchy, including zero waste behaviour change, education services and advice. Participants perceived that these programmes, alongside CRRs' longstanding service in their local areas, afford CRRs the trust and respect of their communities, which strengthens their capacity to bring their community along to engage in new services and initiatives like returning reusable packaging.

"Reusable packaging is quite complex, but at the same time, it's simple if you have a shared goal of a taiao that's healthy for all mokopuna and everyone's expertise is just building towards that."

•

CRR participants also drew links to wider regional initiatives that could act as tailwinds for their involvement in reusable packaging reverse logistics. One participant highlighted the Waikato Wellbeing project, which includes a commitment to achieving UNSDG 12 on Responsible Production and Consumption. The Waikato Wellbeing Project's commentary about this commitment specifically recognises the role of both reusable and refillable packaging, and a strong resource recovery network of CRRs (Waikato Wellbeing Project, 2023).

Private waste and resource recovery operators

Private operators in Waikato were also aware of reusable packaging systems and how they differ from single-use and recycling-based systems. They were especially alive to the importance of robust, scaled and efficient reverse logistics processes for reusable packaging systems to work. Operators also saw alignment between the goals of reusable packaging systems and broader movements within the waste and resource recovery sector, i.e. shifts towards a circular economy and movement up the waste hierarchy.

"[reusable packaging systems] are all part of the circular economy for those products – the less of anything we can send to any type of disposal or landfill is always advantageous."

•

On a practical level, operators articulated the relevance of their organisations engaging with and participating in activities further up the waste hierarchy, including the need to prioritise reuse above recycling to keep serviceable products in circulation. One operator described their organisation's efforts to create "integrated resource recovery site[s]" with "a

complete set of infrastructure to be able to maximise the separation of material as it comes in", which could be leveraged for reuse. Both operators highlighted examples of their current involvement in reuse activities that support the public to give their serviceable/usable unwanted items "another life", such as running reuse shops and repair facilities at their sites. They also noted their collaborations and partnerships with a range of community organisations who also undertake reuse and repair activities.

However, private operators were circumspect about discussing potential involvement in reusable packaging reverse logistics in the abstract, rather than in relation to specific reusable packaging systems to be used by identified willing companies. Certainty around these details was deemed important because the type of work and requirements around handling, sites and equipment would all vary based on factors such as the size and materials of the packaging units, the products contained, and the likely packaging volumes to be processed. Certainty about the participation of businesses and consumers was also deemed necessary for private operators to consider any investment in infrastructure or services.

> I think the requirements really are just around the nature of the actual items being recovered. So, do they need space? What's the volume to hold on site to make it economic to transport back to where they are going? Do they need special handling if they are a glass bottle? Do they need to go into specific crates or holders to protect them? Do they need washing? Is that infrastructure going to be added? If there are other types of packaging, what form do they need to be presented in and what's the mechanism for dealing with contaminated/damaged items?

One operator also questioned whether involving the resource recovery network in reusable packaging systems would be efficient in cases where the reverse logistics can be effected within the "direct producer-consumer interaction network". They used the home delivery glass bottle swap system for milk as an example, explaining that attempting to introduce independent and separate collection processes into such systems would be "costly and complex".

In terms of capacity, private operators believed they were well-positioned to provide support for reusable packaging reverse logistics because of their existing infrastructure, workforce and relationships/partnerships. Operators run networks of transfer stations, resource recovery sites and MRFs throughout the region, some of which are operator-owned and some council-owned. Operators also have contractual relationships with councils and reported positive working relationships with community-led resource recovery operators and other community-based organisations. Operators were also already participating in product stewardship schemes that involve a degree of partnership with producers to recirculate their products (or the materials in their products), which is similar to what would be required for reusable packaging reverse logistics.

One operator noted their capacity to expand, explaining that their resource recovery site has a significant amount of space for future development, and that this could be used for activities associated with supporting reusable packaging systems. The other operator highlighted the accelerating nationwide trend towards sites accepting a greater range of products/materials and therefore needing to offer greater granularity of source separation, which could be interpreted as a tailwind:

> ...the range of different products and materials that are being separated at source prior to collection or on site at resource recovery parks is increasing. So, they are becoming much more integrated as sorting and processing sites rather than just consolidation.

Despite an openness to reusable packaging reverse logistics and existing capacity that could be leveraged, neither of the two private operators currently offer reverse logistics services for reusable packaging. For these organisations, the willingness to take this next step would depend on commercial viability and a business model.

5.3.2 Roles that could be played in the reverse logistics process

All waste and resource recovery participants saw a potential role for the sector and their own organisations in supporting reusable packaging systems to function. Participants saw a connection between the post-

consumer logistics they currently undertake for single-use packaging (i.e. collection/returns, sorting/storing, transportation), and the reverse logistics required to recirculate reusable packaging. One private operator identified definite "synergies" between the logistics of managing reusable packaging systems and managing waste and recycling, and that recirculating reusable packaging already "fits within the developed structure and infrastructure".

Participants also identified the benefits of utilising and adapting existing resource recovery systems, including infrastructure and workforce capabilities, rather than duplicating product flows by establishing new reusable packaging reverse logistics systems to operate in parallel. Both private operators also highlighted the benefit to the public of 'one-stop-shops' for drop-offs that spanned reuse through to waste. This would allow people to return their reusable packaging to sites they are visiting anyway, rather than having to visit multiple locations:

> ... it's about maximising the benefit of existing infrastructure, which I guess is consistent with the whole approach of the circular economy generally, but where those facilities exist and where people already have a drop-off relationship with a site, it makes sense to work with that for a reusable packaging service.

CRR participants agreed that it makes sense to leverage the existing resource recovery system and, if done well, this could benefit the sector and reusable packaging systems. However, they also noted that operators in this system have existing workloads managing recycling and single-use packaging, which are likely to continue for some time, even if reusable packaging becomes more normal. This existing workload is a constraint on capacity, as any new reusable packaging reverse logistics roles will be additional to existing services, rather than displacing the single-use workstream. Therefore, the approach to leveraging the sector's capacity should be appropriately planned and resourced.

Participants could see a role for themselves in nearly all phases of reusable packaging system reverse logistics: collections/returns, sorting/storing, and preparation for reuse. CRR operators also saw a potential role for themselves in redistributing reconditioned packaging into the supply chain, although this would be product-dependent. However, all operators noted that while existing infrastructure and capability could be leveraged, the sector's full participation would still require accommodations to current workflows, and the implementation of new practices, infrastructure, capabilities and relationships. In particular, all participants raised:

- The novelty of the preparation for reuse phase, which would require new skills and equipment (e.g. wash plants, food safety regimes etc)

- The higher value of reusable packaging compared to recyclate, which demands greater care to protect it from damage. This will affect workflows, processes, assets, equipment and staff time across all phases of the reverse logistics chain.

All operators thought new adaptations could be accelerated and optimised for consistency, efficiency and economies of scale if approached as a network via existing relationships within the resource recovery sector, between the sector and councils, and amongst councils. CRR operators highlighted that while big producers might want to establish one centralised reusable packaging reverse logistics centre for their packaging, a shared and distributed network of centres could make more sense, with CRRs operating as collectors around those centres. To make this model palatable to industry and governments, it would help to have one organisation that represents all the centres in a network, that can help new centres to set-up (e.g. through joint ventures), and with whom industry and government can deal and hold contracts. In this respect, CRRs highlighted their membership of the Zero Waste and Localised networks that offer a blueprint for this type of supporting umbrella organisation.

Private operators also saw the value of a network approach because not all operators or sites would take on all roles. Instead, responsibilities could be spread across the network to ensure full delivery:

> Activities depends on the scale a little bit. For a smaller site, I think that drop-offs would be probably the extent that you

could go, but in a larger centre it would make sense to go a step further with that processing, whether that's a washing facility or some other form of initial processing to get the item back to its reusable form or a form that's deliverable back to the manufacturer.

Collection/returns

Both CRR and private operators identified **collections/ returns as the most obvious starting point** for the resource recovery sector to support reusable packaging reverse logistics. The already well-established collection/returns infrastructure, systems and workflows for single-use packaging could be expanded upon to offer more quickly scaleable collection and returns processes for reusable packaging. The fact households and businesses are already accustomed to these collection channels for single-use packaging would also aid with a smooth transition.

CRRs thought a network approach to developing the collection/returns of reusable packaging might also bring in other community partners and businesses (e.g. community centres and free stores) as collection points. The private operators discussed the potential to include a reusable packaging stream to their existing kerbside recycling collections and/or transfer station return points. One operator noted that the existing collections network is an effective "routing" system for new material or item lines, while adding a product stream to a drop-off centre "is just effectively adding another receptacle" to the site.

"Obviously we have a lot of different streams that are able to be dropped off at those transfer stations – batteries, whiteware, chemicals... reusable packaging could be bolted on as an additional stream accepted at those locations."

In terms of potential adaptations, operators predicted that reusable packaging would require greater care in handling than single-use packaging, and may be heavier to transport too, which would affect workflow, necessary assets, and operational costs. New, more robust receptacles for collection/returns might be needed

to better protect reusable packaging, while current collection trucks that compact waste and recyclate would be inappropriate.

> ... from a contractor and collection point of view... to make sure that product can be collected and dropped off would probably be a bit of a challenge because you've got to be careful with the product not to damage it if you want to reuse it again. I'd imagine a lot can't be broken down so it would be a bulky thing to transport.

Participants generally felt that drop-off processes for reusables might be easier and cheaper to manage than incorporating reusables into kerbside collections, even though the latter is what the public is used to for single-use packaging. However, one CRR participant noted that if the proposed beverage container return scheme is implemented, drop-offs would become more normalised for all packaging and returns infrastructure would be more widespread and convenient:

> If there is a deposit on packaging then it'll drastically alter the systems as most of that will be drop-off, either reverse vending machines or drop-off centres – but customers will need to return. It'll have major impact on kerbside frequency. Also, what systems you would use, and whether it's glass-in or glass-out, would make a huge difference for logistics.

Sorting/storing/consolidation

Participants also felt comfortable with the idea of the resource recovery sector playing a role in the sorting/ storing/consolidation phase of reusable packaging reverse logistics. They noted that most operators (both private and community-based) already have systems and sites for sorting and storing large amounts of single-use packaging, which theoretically could be used for reusables.

In terms of adaptations, **all participants noted that reusable packaging is likely to take up more site space** because it cannot be compacted. Pick-up from sites of collected and consolidated reusable packaging would therefore need to occur more frequently and/or operators would need to invest in bigger warehouses. One private operator noted that storing reusable packaging might also require more robust site security systems because the packaging has a

higher intrinsic value. Another noted that site upgrades might also be needed to increase covered areas so that reusable packaging was not exposed to the elements. Participants noted that the complexity of the sorting and consolidation phase for reusable packaging would also depend on the extent of packaging unit standardisation across brands.

"You'd need more staff, bigger buildings, separation – the more things you want to collect at a drop off point, the more space you would need for those kinds of things."

-

Preparation for reuse - reconditioning/washing

All operators noted that preparing returned reusable packaging for reuse, i.e. washing and reconditioning, is not a phase of the post-consumer logistics for single-use packaging. Therefore, this phase of reusable packaging reverse logistics would require the most new infrastructure, equipment and workforce upskilling for the sector to take part, including compliance with unfamiliar legal regimes, e.g. food safety. All of this would involve set-up and transition costs.

Nevertheless, all operators were generally open to the idea that the sector could set up and operate washing plants for reusable packaging, or that such a facility could be brought into a wider resource recovery network (provided that key needs were met, such as support with capital costs and/or a clear business model to run the facility - see "Key Needs" section below). Operators did note that not all sites would need washing capacity (nor would this always be feasible or appropriate). Some thought wash plants made most sense as a regional facility, whereas others thought they could work locally as well.

"[A regional washing plant for reusable packaging] probably needs a whole lot of background infrastructure that we're not scared about thinking about owning and running."

-

Redistribution into the forward supply chain

Private operators did not discuss their potential role in redistributing reusable packaging into the forward supply chain. CRRs saw a role for themselves in this phase of the reverse logistics flow, but also considered that this would depend on the product (e.g. whether it needed to go through a preparation for reuse phase and if so, whether the CRR was involved in that phase or not).

5.3.3 Key needs

Both community and private operators demonstrated reasonably positive willingness to undertake activities to support reusable packaging reverse logistics, and pointed to relevant levels of capacity for this work. Despite this, in practice, waste and resource recovery operators are not currently participating at any meaningful scale in reusable packaging reverse logistics supply chains. We therefore observed a **value-action gap** among operators, between their stated intentions and actual work. Some of the CRRs explicitly named the gap when they chose to rank (out of ten) their intentions/willingness to participate, separately and higher than their current work or capacity. For example, one organisation placed, around 2, their ability "to participate in the current environment", but around 8 their willingness to "Support and promote" reusable packaging systems. Another said "6-7 in actual reality... 8 in our education... 10 in intention".

The value-action gap can be explained by various needs operators have before they could step into any new role supporting reusable packaging systems. These needs could also be understood as barriers/obstacles and would likely have to be directly addressed for operators (whether private or community) to close the gap between their values and their actions when it comes to reusable packaging.

Funding support and a business model

"Cap-ex could be a grant, but in the long-term you need sustainable finances/revenue to cover the ongoing costs of people to do the work."

-

All operators said that being able to cover the upfront and ongoing capital and operational costs of offering a reusable packaging reverse logistics service was a core need. These costs include salaries for an expanded workforce, and resourcing for additional physical space, new or upgraded facilities for returns, washing and storing; collection vehicles; drop-off points; and other assets. In the short to medium term at least, these costs would be additional to the ongoing work of managing recycling and single-use packaging.

Ultimately, to have confidence to invest in the short-term, operators need to see evidence of a future sustainable business model to secure the commercial viability of the service, including a return on capital investments. CRR participants noted that, eventually, businesses using reusable packaging would need to work towards pricing the cost of the resource recovery sector's service provision into their own business model, as the sector cannot provide long-term support for free or with inadequate resourcing.

Private operators said that a business model would be easier to achieve the simpler the system and the larger the scale. One operator noted the need to have "critical mass for an organisation to commit capex", and that "every company in business needs to make that return on investment." However, in the early stages of service provision, volumes of reusable packaging would likely be low until uptake/demand increases, creating a high service cost per packaging unit. Both private operators also noted that the larger the scale, the larger the set-up costs, creating a "chicken and egg" situation: "if I don't invest, it won't get big enough to scale, but if it doesn't grow, I've invested and I'm holding responsibility for the cost." Essentially, if private operators self-fud a new service, they must balance the necessary financial outlay against the realistic costs that can be passed on to the manufacturer (and therefore consumer) and/or absorbed by the operator.

"… once you introduce a commercial operator into any business matrix for a reusable process, you've got to have economies of scale to allow for covering the costs for having that process set up as a third party."

This commentary indicates that in the immediate term, external funding sources are needed to support the sector's transition to a sustainable business model for reusable packaging reverse logistics. This funding would give the service a chance to grow and optimise in the early stages when reusable packaging uptake is still low and current levels of service for other waste and resource streams must be maintained. Furthermore, the resourcing is not only to build the capacity of individual operators, but to build a strong network, which cannot come from individual organisations alone. For example, one CRR operator emphasised the continued need for investment to establish and strengthen regional resource recovery infrastructure based on a community-managed hub and spoke model that would have the capacity to increase reuse activities over time.

Service delivery focused on supporting systems with standardised packaging

Resource recovery operators, especially private operators, felt that **standardised reusable packaging** is needed for their effective participation as this would support an economically efficient, scalable service. One operator noted that the larger the range of packaging types, styles, shapes and brands "the more complex the sorting process… to get them back to a refilling/reusable station". This operator felt that companies wanting to use bespoke containers would be better off managing their reverse logistics themselves in a vertically-integrated system where they had "a tight relationship with the consumer to get those containers back".

"… the simpler the process is, the better the opportunity to manage both the logistics and consolidation, but also the commercial, financial part of that… the more complex or diverse the collection requirements, the higher the cost. So, simple is definitely good."

Needs from the wider policy and commercial environment

Operators pointed to wider contextual factors that would need to change for a commercial environment conducive to greater business uptake of reusable packaging. One CRR participant highlighted the need for stronger values within the economy and amongst large businesses to embed a general reuse culture and expectations of reusable packaging. Their view was that if more businesses were values-based, this would drive use of reusable packaging and increase both demand for reverse logistics and the packaging volumes moving through the system.

All operators identified the need for **stronger central government legislation, incentives and other direct support** for reusable packaging. One private operator said that in the current environment, it is cheaper for businesses to use single-use packaging; unless central government implemented "some form of incentive" or "the stick approach" to push businesses to shift to reusables, it would be "a difficult task" for the sector to start operating reverse logistics at a regional level because the volumes would be too low and the service cost too high. CRRs thought policy actions were needed to disincentivise linear, single-use business models, including removing waste incineration as an option in New Zealand, and continuing to increase waste levies. Most operators generally thought that changes in local and central government policy and regulatory settings could focus on incentivising businesses to make different packaging choices, which would increase the likelihood of council and industry support for the sector to facilitate reusable packaging reverse logistics.

CRR operators also stressed the importance of regional and district actions. One operator cited the need to develop a Waikato Regional Plan to implement the Waikato Wellbeing Project's actions around the United Nations Sustainable Development Goal 12. In particular, continuing to establish a network of CRRs throughout Waikato; starting to work with companies who are keen as early adopters of reusable packaging; and influencing TAs in the region to move up the waste hierarchy in their waste plans. Other operators also wanted to see greater

use of regional policy and bylaws to support reusable packaging systems.

Certainty/defined opportunity

"For us, it's a lot about where the next step is, where these systems are and how to get involved. I think we'd quite happily jump on board a lot more stuff, but it's finding those solutions… Even when you go back to a recycling point of view, we can collect whatever you want us to collect, but we have to have the means for it to go somewhere."

Both private and community operators highlighted the current ambiguity around what reusable packaging systems exist for the sector to consider supporting, the actual level of interest amongst the business community, and the corresponding roles for the sector. As such, they underscored the need for a clearly defined opportunity to move into offering a reusable packaging reverse logistics service, including identified business partners with discrete product(s) and an established reusable packaging system or a desire to use reusable packaging, evidence of (or a plan to grow) consumer appeal, and ideally also a product stewardship structure that sets out clear responsibilities and financial flows. One private operator emphasised the need for a "very, very clear plan" about the proposed reverse logistics process: "you almost have to have your cycle completely designed and structured to start the process and I think that definitely involves a multi-stakeholder approach."

Operators also reiterated the importance of local and central government policy for providing greater certainty and clarity to the sector and councils regarding expanding current resource recovery activities to reusable packaging. Businesses and the resource recovery sector need this type of government direction and leadership to reduce ambiguity and justify investing time, effort, and resources into developing new reusable packaging services.

Behaviour change, peer support, and community and industry preparation

CRRs felt that arranging the reverse logistics workflow into discrete phases overlooks important cross-sectional activities that would need to happen over all phases. In particular, CRRs highlighted behaviour change work, which is where most CRR participants felt they "fit in" and had an especially important role to play. One participant noted that education and promotion is needed for reusable packaging systems to work well, and that CRRs are trusted in the community and can deliver effective messaging that is well-received by the public. Private operators also noted the overarching importance of involving industry to get economies of scale for any logistical systems, which would likely require multi-stakeholder co-design.

CRR operators, in particular, were also self-reflective about the sector's need to upskill and organise internally to increase accountability and capability to participate in reuse systems. These operators thought collaborative peer support mechanisms to lift sector comprehension of reusable packaging and to share information and ideas would help to drive progress and professional development. One idea was to create a Reuse Support Network to have accountability amongst peers, develop shared position statements on zero waste values and the waste hierarchy, and organise periodic catch-ups every 2-3 months for updates on developments in the reuse space locally and overseas. CRRs also thought each organisation in the sector needs to reprioritise internal systems and comms/policies to support organisational progress on reusable packaging; incorporate reuse activities into organisational strategic planning and environmental strategies; and resource a reuse workstream with dedicated staff.

"I feel like we need a support group. This is a critical shift, so it would be great to be working in a collective... the kaupapa of reuse could be the thing that brings us all together and we have that inter-entity, inter-community, inter-whānau accountability and support for each other... something that brings us together and

supports us to be the local champions and drivers and leaders and bring other people on board."

•

5.4 Detailed findings – territorial authorities

5.4.1 Willingness and alignment to support the waste and resource recovery sector to participate in reusable packaging system reverse logistics

Territorial authority waste officers generally demonstrated willingness to support reuse activity across product types, and virtually all showed a desire to spend more time working on reuse themselves. In relation to packaging specifically, all officers described reusable packaging systems as having distinct benefits over single-use packaging and therefore as being worthy of council support. Officers were less clear on their commitment to explore service provision for reusable packaging reverse logistics, due to uncertainty around what this would involve in practice. Most officers did not have prior in-depth understanding about reusable packaging systems (more detailed information was provided by the research team over the course of the workshop and interviews), which may have shaped some officers' initial tentativeness around the support they could provide.

"We'd need to go down a learning path – what would we need in place to support reusable packaging? I think there's some willingness – I'm willing if we can divert more waste from landfill!"

•

For example, while officers certainly had general understanding of reusable packaging, some conflated the concepts of 'reuse', 'repurpose' and 'recycle', and several required the characteristics of reuse (as distinct from recycling) to be explained. Several officers also conflated personal reusable *items* (e.g. BYO coffee cups,

cloth bags and water bottles), with reusable packaging as a *system*. An established system of reuse is a defining element of reusable packaging in legal documents and standards produced by organisations like ISO and PR3. This knowledge gap is relevant to this study, as the system aspects of reusable packaging largely equate to the missing reverse logistics piece of the reuse cycle.

When asked to consider the barriers that businesses might face to using reusable packaging for their products, officers cited increased cost, time and effort. Most linked these barriers to the entrenched nature of single-use packaging and, as one participant stated, "it's not a fair playing field because it's cheaper to use virgin plastic and do single-use." One officer linked this unequal playing field to government policy. However, several focused on demand issues, in particular, consumer apathy and preference for the convenience of single-use. Officers were less likely to mention how council activities such as procurement might advantage single-use over reuse, and to link that back to the potential for councils to adapt policies, processes and service provision to remove this barrier. However, one officer eluded to gaps in supporting systems, when they noted that for businesses to actually choose to use reusable packaging "there needs to be someone helping out these businesses in the background".

In terms of strategic alignment, we asked officers whether the content of their WMMPs and strategic waste documents aligned with the concept of supporting reusable packaging (1 = no alignment, 10 = completely aligned). Just over half of the officers (seven of 13) representing just over half the councils (five out of nine) considered their most updated WMMPs (or draft WMMPs) to be aligned with supporting reusable packaging (selecting a ranking of 6 or more). These officers acknowledged that their WMMPs did not actually mention reusable packaging directly, but upheld the waste hierarchy and commitments to move towards visions like the circular economy. In their view, these factors inherently support reusable packaging and therefore justified the high alignment score. The remaining six officers from the four remaining councils cited low levels of alignment, from 1 to 3.

"... we have new initiatives coming out of our WMMP... We want to work in the reduce, reuse and repair space and hold some repair workshops; support district food rescue programmes; get in amongst the single-use items and specifically target coffee cups, as we find they contribute a lot of the contamination in our street recycling bins... Those new initiatives all support the reduction and diversion target of 60%."

•

In addition to perceived strategic alignments, officers mentioned other tailwinds for increased TA support for reusable packaging. Virtually all officers stated that they personally wanted to spend more time on reusable packaging work. They also described changing mindsets and global attitudes amongst the public towards system changes like implementing reusable packaging. Several officers mentioned their elected officials' strong interest in reducing waste. One officer pointed to high diversion targets in their latest WMMP that would drive more ambitious waste minimisation activities. Other officers highlighted their active support of grassroots resource recovery, which had strengthened working relationships with organisations like CRRs who are motivated to move their activities and communities up the waste hierarchy.

"All of our councillors at the moment are fully behind the circular economy idea, so they are all looking and will all support any initiatives that we put forward that are in that concept and are not going to cost our ratepayers too much."

•

5.4.2 Capacity to support reusable packaging system reverse logistics

In terms of capacity, some officers highlighted their existing programmes to support reusable packaging. These activities involve specific support for reusable coffee cup schemes and behaviour change campaigns for consumers to bring reusables to hospitality outlets and retailers like butchers and breweries. Generally,

officers also recognised the types of tools their councils currently use to support resource recovery activities, which could be leverage points to support reusable packaging reverse logistics:

- Powers of procurement and other working relationships with companies and organisations to bring waste and recycling services to their territory.
- Access to spaces, facilities, land and transfer stations that can be used to host resource recovery activities or leased cheaply or for free to other organisations to offer these activities.
- Resourcing/funding channels to support costs of new resource recovery facilities, assets, services and equipment.
- Communication channels and education and awareness programmes to promote community waste minimisation initiatives.
- Policy-setting and bylaw making powers to drive new services, expectations or standards in the local resource recovery sector.

We also asked officers to quantify how much time they currently spend each week on work related to the reuse tier of the waste hierarchy (including, but not limited to, reusable packaging). Despite many officers considering reusable packaging to be important and support for these systems to be aligned with their WMMPs, most councils do not have dedicated time for reusable packaging. Most officers reported spending *'no time at all'* or *'hardly any time'* per week on work associated with reuse tier. Very few officers reported spending more than a few hours a week.

Only two officers reported spending a fair amount of time on reuse mahi. One of these officers (who said they spent 70% of their time on reuse actions per week), was the only officer whose reported level of time appeared to match with the rank they gave to their WMMP's alignment with support for reusable packaging (seven out of ten). The other of the two officers had ranked their WMMP/strategic document alignment with this work at a low two. These council officers spent most of their time on reusable coffee cup schemes, and most of this work was focused on the front end of the supply chain

(arranging reusable cup supply, uptake by cafes, and messaging to cafes and consumers). No council reported spending time on the reverse logistics for these systems, although many officers were interested in supporting the uptake of system solutions for managing loaning and returns of cups (such as Again Again).

Officers' lack of time for reusable packaging work is a clear constraint on TAs' capacity to support reusable packaging reverse logistics. Virtually all officers said that they wanted to spend more time on reusable packaging, but that their council faced resourcing challenges exacerbated by a broad waste workload. One officer described being "lightly resourced within the solid waste function". Another officer said: "It comes down to how many people there are in a council – we're a single person. You can't do everything." Another officer highlighted needing to focus on "ensuring the community receives the core services" before they could contemplate expanding into new services like reuse. Similarly, another officer noted that in their council, recycling takes up most waste minimisation activity, making it difficult to allocate funds higher up the hierarchy.

"The time I spend on reuse work is very limited, probably only 1 or 2% at this stage, as my role isn't just waste… Waste is probably 25-30% of my role… Time for reuse might increase with the new WMMP. I'd like to increase the team, as waste is coming more and more to the forefront of everything, especially with us councils."

Table 3 presents, side-by-side, the responses of council officers to the two questions regarding strategic alignment and time spent on reuse work, demonstrating a **clear value-action gap**. As one officer said, "there's a lot of ambition, but not a lot of deliverables that I can speak to." Overall, despite most officers considering reusable packaging systems important, and the provision of support to be aligned with their WMMPs, limited action is being taken in this space. The action that is being taken is not necessarily targeted at the

Table 3: TA officers' reported levels of strategic alignment with providing support for reusable packaging versus actual time spent on reuse-related work

Council	Alignment between WMMP/strategic waste documents and support for reusable packaging 1 = no alignment, 10 = completely aligned	Time spent per week on mahi associated with the reuse layer of the waste hierarchy (including reusable packaging) Express as a %, # of hours, or on a scale of "No time at all", "Hardly any time", "A fair amount of time", "Loads of time"
Council 1	2	"Fair amount of time"
Council 1	6	"Very low I would think at this stage. Probably 5% of my time, if that."
Council 2	9 or 10	2 hours a week
Council 3	3	"Fair amount of time"
Council 4	1	"Hardly any time"
Council 5	3	"No time"
Council 5	3	"Fair amount of time"
Council 6	?	~5%
Council 7	7 or 8	"Very limited, probably only 1 or 2% at this stage"
Council 8	7 or 8	"Not a lot, to be honest"
Council 8	7 or 8	"Not a lot, to be honest"
Council 9	7	"Hardly any time"
Council 9	7	"Fair amount of time" – 70%

parts of reuse systems that need the most assistance or that most reflect council's current involvement in post-consumption logistics for single-use packaging. This gap stems from councils' resourcing and capacity constraints within the solid waste/waste minimisation portfolios, and some knowledge gaps around the nature of reusable packaging systems and their reverse logistics needs.

5.4.3 Potential roles and responsibilities in reusable packaging reverse logistics

Blue-sky thinking

Council officers were invited to imagine a scenario where reusable packaging was normal in their territorial borders and to describe how the system(s) would work, including 'behind-the-scenes' supporting infrastructure and services. During discussions, officers collectively outlined the basics of reusable packaging reverse logistics systems, from container return points or collection services, centres to sort and store collected items before redistribution, to washing plants to sanitise packaging between cycles. They noted the need for

warehousing and the potential use of these facilities for various product stewardship products. They also described important features of system design, including the need for standardisation (not only of packaging units, but also the reverse logistics "so that everything can use the same system"), and financial mechanisms that ensure everyone using the facilities contributes to the service's running costs. One officer hypothesised a social procurement approach to these services:

> … if dreams were free and we have the money, we could be supporting communities to set these things up as a business to make them money. I don't mean making millions, but it pays for their operational costs… it would be nice to be able to support people to work out all these business models of operation … for CRS and reusable packaging and washing systems. People want to know that they are going to be able to make a living off it.

Officers also considered how they might adapt the waste and recycling services that they run or procure to accommodate reusable packaging:

... if the majority of the products people were using were reusable, we might push recycling out to two weeks and have a reuse collection every other week. So, they'd put out things that can be reused that are then sorted in a council facility like a MRF, but softer so they wouldn't get damaged. They could be putting out crates that have compartments for their refillables.

Some officers also reflected that in a world where reusable packaging was the status quo, the needs for functional and effective reuse systems would be factored into all decisions and actions. For example, new resource recovery infrastructure (including future Resource Recovery Centres) would be designed to accommodate reuse and reusable packaging from the outset, and new businesses or council events would be required to use reusable packaging. Additionally, development of the region's resource recovery network would be conceived so as to suit the localised recirculation of reusable packaging, such as a "hub and spoke model".

"... if someone wants to come into your district and set up a takeaway, you can have strategic conversations in a blue sky world where your council has said there will be no more single-use takeaway packaging offered here, so any new business operator has got to get with that new programme."

•

TA views on the role of the resource recovery sector in reusable packaging reverse logistics

Having imagined a different world where reusable packaging was the norm and reverse logistics services for reusable packaging were in play, council officers saw the resource recovery sector as well-placed to utilise existing assets and infrastructure to offer such service provision. Officers could see clear overlap between the sector's current activities and facilities, and those that would be required to support reusable packaging:

If it's that mainstream that we can take [packaging] back to be washed... and then sent back to businesses, and so mainstream that all the single-use was not there, clearly you

could use the existing infrastructure we have already for something like that.

Like CRRs and private operators, TAs also felt that the resource recovery sector's existing ability to service multiple businesses and effectively act as shared infrastructure made them more appropriate for reusable packaging reverse logistics than individual businesses using reusable packaging each trying to manage their own reverse logistics. As one officer said, "... that's the only way for that to be done as it will cost way too much for each business to do that on their own."

Officers pointed to existing collections, returns and logistics networks and operators that "could be leveraged to support reuse". One officer mentioned that the resource recovery sector is already "in the business of moving materials from A to B", and that "there is possibly an opportunity to move materials differently in that space". Another referred to all the resource recovery operators already working to lift recycling rates by collecting or accepting back a wide range of products across a range of sites. This officer felt that not only could their activities accommodate reuse, but impact could be further elevated by connecting this network with other organisations working in the reuse economy, e.g. op-shops, Menzshed and other community centres. Many officers also thought the idea of one-stop drop-off locations for products made sense for the public, and noted that resource recovery and transfer stations already perform this function in the community, so expanding their acceptance criteria to reusable packaging could work well.

However, some officers felt that while the resource recovery sector's participation in reusable packaging reverse logistics was theoretically logical, in practical reality reuse sits outside the "wheelhouse" of private operators and effort would be required to support the sector into this activity. Like the resource recovery operators, TA officers noted that despite overlaps with post-consumption logistics for single-use packaging, "current practices would need to be altered" to accommodate reusable packaging reverse logistics. One officer underscored the "serious lack" of preparation for reuse infrastructure, equipment and capacity.

Another pointed to particular types of workflow and handling processes that are incompatible with reusable packaging, such as "collecting a bunch of commingled materials, squashing it into bales and then sending them off". Two council officers were unconvinced that private operators are prepared for a shift to reuse given the lack of a clear business case to motivate even an investigation of reusable packaging reverse logistics for their operations.

"The resource recovery sector operates a business. So they are trying to make a profit out of whatever resources they are recovering."

TA views on Councils' role in supporting the resource recovery sector

Officers' response to the idea of councils supporting the resource recovery sector to deliver reusable packaging reverse logistics was mixed. Most participants thought that Councils did have a responsibility either to support the sector to extend their services or to play a more direct role in supporting reusable packaging themselves. Several officers considered this a logical extension of Council's current role in resource recovery. For example, one officer thought "council involvement is required... as council is part of the resource recovery sector, so council would and should be involved". Another officer reflected that because councils are involved in managing single-use packaging, i.e. accepting it at the transfer station as waste or recycling or picking it up as illegal dumping, it therefore followed that:

> ... we've got a responsibility to do as much as we can to support the reusable packaging concept or, reuse locally and just try to keep it out of the waste streams as much as we can...

Another officer echoed these sentiments, saying Councils should be "actively helping in that space" because "when anyone thinks about rubbish or recycling, the first name that pops into their head is council... we are their first port of call".

When asked directly to describe potential TA support for the resource recovery sector to deliver reuse reverse logistics, officers shared a range of ideas that built upon their understanding of the specific role and powers Councils have to bring positive change and services to their communities.

First, officers thought councils could utilise or **unlock funding streams** to support the resource recovery sector to participate in reverse logistics services. For example:

- Weighting local waste minimisation fund applications according to the waste hierarchy or making some funds available for reusable packaging only, for example establishing a "Reuse Fund".
- Using ring-fenced funding opportunities to incentivise businesses to uptake reusable packaging.
- Directly funding the resource recovery sector to participate in reverse logistics.
- Providing more direct support to reusable packaging reverse logistics initiatives to successfully apply for grants, including scouting these initiatives in the community.

One officer also suggested that councils could apply to the central government Waste Minimisation Fund/Plastics Innovation Fund themselves for resourcing to support the growth of reverse logistics in their local areas, e.g. through a well-defined reuse initiative that could be jointly applied for by a group of geographically connected TAs.

Second, officers suggested councils could **leverage their status**, mana or influence as a government body to bring organisations, businesses, the resource recovery sector and other councils across the region together in order to broker collaboration for functional reuse systems. Some suggestions included:

- Establishing a shared, multi-stakeholder reusable packaging body for the region that is focused on building effective reuse systems, including collaboration to standardise reusable packaging and reusable collection receptacles and methodologies.
- Fostering partnerships with external institutions that could promote reusable packaging with their

members (e.g. Chambers of Commerce, business associations).

- Bringing larger companies into the conversation about reusable packaging systems alongside the resource recovery sector, such as supermarkets.

- Using joint council forums (e.g. the TAO Forum) as an opportunity to share and increase knowledge about reusable packaging systems and how councils can support.

"I heard people talking about power and the trusted voice that a council is and the mana that you can take into conversation spaces about these sorts of things."

•

Third, most officers also thought that councils could proactively **use their policy-making powers** to create a more conducive environment for reusable packaging uptake and successful provision of reverse logistics. These officers suggested:

- Placing greater emphasis on reusable packaging when updating WMMPs, and following the waste hierarchy when prioritising strategic goals in WMMPs.

- Utilising bylaws, council procurement, and other tools to enforce the use of reusable packaging in contexts like catering, takeaways or events, and introducing fines for non-compliance.

- Considering competing areas of council policy that might currently obstruct reusable packaging reverse logistics activities and working to resolve them, e.g. consenting processes for new facilities, licensing, and trade waste permitting.

- Developing a reusable packaging action plan for TAs or the region.

Fourth, officers considered that councils could utilise **procurement and benefits-in-kind** to drive reusable packaging service provision outcomes. This could include:

- Making council land and sites available for use by the resource recovery sector for reuse activities.

- Building reusable packaging reverse logistics capacity into any new site developments.

In terms of contracting, one officer said reusable packaging should be at the forefront of council considerations when existing contracts come up for renewal, and that councils and their contract managers should work towards "having conversations with contractors about reusable packaging to come up with blue sky ideas around what infrastructure etc. would look like". For example:

- Explore incorporating returnable reusable packaging into kerbside collection contracts.

- Develop SWAP for packaging purchasing to support targeted, alternative procurement.

- Use council-owned transfer stations as the initial testing ground for building in some of these new services and facilities.

"Do we need to transition a kerbside service to collect reusables to support a reusable product process? In fact, that's really where we're trying to get to. Actually pick up materials that will be reused appropriately."

•

Some officers were unsure about the value of council moving the resource recovery sector into reverse logistics, and instead framed councils' role in supporting reusable packaging as predominantly in education and awareness-raising. They described this as supporting consumers to make different purchasing decisions and businesses to use better packaging, rather than in providing systems support. In this sense, these officers generally saw their role as more centred around driving the front-end of reusable packaging systems, e.g. procurement of more goods and services in reusable packaging, educating businesses and consumers to choose reusable packaging, providing reusables for businesses (e.g. cafes) to use, rather than in supporting the back-end logistics for recirculating reusable packaging. As one officer noted:

> It's great to have systems in place to support the use of reusable packaging, that's fantastic... [but] I think there needs to be a behavioural shift at the same time... there needs to be personal responsibility as well. Our

responsibility as an industry is to educate people on how they might be able to reduce their waste.

These comments demonstrate some hesitation from some officers about council stepping in to fill gaps in services where the market does not. However, this stands in contrast to Councils' current role in providing waste and recycling services.

5.4.4 Needs for councils to successfully support the resource recovery sector to provide reverse logistics for reusable packaging

Officers were willing to discuss the potential roles and activities of local councils in the blue-sky context, but were more hesitant about committing to support the resource recovery sector to undertake more reverse logistics activities in the current environment. As with the resource recovery sector, this hesitance derives from a range of needs that would need to be met before meaningful commitments or investments could be made.

Certainty and details

Rather than committing to support the resource recovery sector in the abstract, officers cited the need for more certainty about what reusable packaging systems currently exist that need support, and the types of reusable packaging that would be recirculated. One officer said "[w]ithout a specific, I can't envisage any way that council could get involved". Another said that in order to support the resource recovery sector:

> ... we would need to sit down with the industry and find out what are their actual needs – some is logistics and some is cleaning and handling – and see where we can add value and whether it's appropriate to do so.

Another explained that they would happily support a reusable packaging reverse logistics system if a group of local businesses and the resource recovery operator "came to me and said [they] are keen to do a rewash station [because] that's really enabling them to do the right thing as they've already done the hard work". However, the officer questioned whether demand for this service currently exists amongst the business community.

Without such demand, another officer felt Councils lacked resourcing or budget to support the resource recovery sector to move into this area of service provision:

> Have the [resource recovery] businesses done all the scoping of the business model for that and where is the money coming from to support this? Is that to come from Councils? Because I don't have that budget...

Action from central government and business

"... we still need to be having conversations with the businesses who are making all the stuff: how can they minimise the waste from their products and how can it be in a reuse system...? We need government to help with policy; until that happens it will cost people money and then it's the 'too hard basket'. Council only generates so much income."

-

Several officers thought that others in the system needed to step up to create the conditions for reusable packaging systems to thrive. Without this action, they felt it was unrealistic to expect councils and the resource recovery sector to drive change. In particular, most officers thought that central government and manufacturers hold primary responsibility to lift uptake of reusable packaging through policy and legislation and commercial decisions. This would, in turn, make reverse logistics services financially viable, while giving councils a mandate to deliver and/or tender for these services. As one officer put it "relying on councils to support [reusable packaging reverse logistics] is too low-level to me."

"I can't see where council would have a role. Central government, yeah, definitely. Councils... No, if we're talking reuse then we are talking about commercial operations, in the main."

-

Relationships and collaboration

Across the board, officers mentioned the need for far greater relationship-building, connection, collaboration and knowledge sharing within and between councils, and between councils and other actors in the community, in order to develop a coherent and unified approach to new systems like reusable packaging. Some officers admitted to the difficulty of working with other teams within their own council (e.g. events, licensing, consenting, food safety, procurement), who might make decisions at cross-purposes with waste minimisation or reusable packaging goals, and therefore cited the need to strengthen communication and relationships in those areas.

Council officers also talked about needing to collaborate regionally with other TAs to build reuse systems. One officer felt knowledge-sharing would "save one another the time and the work of figuring this stuff out". Another officer noted that collaboration would increase efficiency and therefore reduce costs during the implementation phase:

> To take those first steps, collaboration is important. Not only with different sectors, but with our neighbours as well... if you work together you can make it much cheaper and easier, like if the [collection contractors] do a couple of councils in a day.

In addition, councils with similar economies and demographics could learn from each other about how best to implement reusable packaging systems in their particular contexts:

> ... councils that do have similar challenges should connect with one another to learn from that. In the resource recovery industry, when you think of the Coromandel peninsula, what are the same holiday regions with the same geographical challenges - Queenstown, Wānaka, Tasman, Northland etc. - those areas could be learning a lot from each other because they have similar issues or similar challenges.

Several officers also highlighted the need for "much closer links" between resource recovery operators, TAs, and the businesses that are or could be using reusable packaging. Strengthening these relationships would help to uncover potential opportunities, and the best ways to target services in the early days of adoption: "We don't know businesses and the ins and outs of their businesses, so we need them around the table. A partnership will help iron out those things." While these relationships would require building, one officer noted the difficulty of council working with some businesses and not others because councils must be seen to be neutral and not favour some businesses in the community over others.

Need for sustainable means of developing missing reuse infrastructure

Many TA officers discussed the "serious lack" of infrastructure in place for reusable packaging reverse logistics, in particular, preparation for reuse infrastructure, equipment, and capacity. For example, one officer considered that being involved in reverse logistics would be "the ideal solution, but we don't have the infrastructure in place to behave in that way". However, officers were unclear how this infrastructural gap would be filled, and by whom, as councils felt under-resourced to support. One officer stated that they would consider funding this infrastructure if it was not "uber expensive". Other officers considered that it would make sense for the resource recovery sector to develop and operate this infrastructure, but acknowledged this was unlikely without a business model. One officer suggested a need for business coaching to help the resource recovery sector to work towards a sustainable business model that could enable the sector to develop and invest in profitable and self-sustaining reverse logistics services and infrastructure.

The need to tailor system ideas to the local context of a town, district or region

A number of officers discussed the need for reusable packaging system ideas that were suitable and relevant to their district's context. This was generally seen as necessary in order for their council, and the wider community, to get behind encouraging the resource recovery sector to service these new systems. We heard from officers that a range of local parameters should be taken into account, such as:

- demographics, particularly population;
- the local economy, e.g. tourism, agriculture,

hospitality etc., and the prevalent packaging types that flow from that;

- roads and transportation networks/distances; and

- rural or urban classification, including the prevalence of farming communities.

For example, one officer stated: "in our district it's really hard, we have a lot of little towns and they are a long way from each other", with waste collection companies already "driving a large distance on really challenging roads". For this reason, a reusable packaging system that might be successfully serviced by the resource recovery sector in a city like Hamilton (with a dense population and many businesses using reusables in close proximity to each other), might not be so easily serviced in the same way in small districts. Officers also mentioned that any new, local reuse system should prioritise the types of packaging waste streams prevalent in their particular area. Some officers emphasised farm plastics, such as silage wrap or other agricultural product containers, as relevant opportunities for reuse systems for their districts.

"When we talk about reusable, I think we need to think right across all of the waste stream. We need to think about the demographics and the waste being produced in that area. We're a farming area and the systems at the moment don't work for farmers. For example, for silage wrap, they can't wait; they need somewhere it can go and be used."

-

The implication of these comments is that for Councils to incorporate new types of services, like reusable packaging reverse logistics, into their local resource recovery system, and to justify the reallocation of finite resources to this endeavour, the reusable packaging types proposed need to have relevance for their locality.

6 OPPORTUNITIES FOR THE RESOURCE RECOVERY SECTOR AND TERRITORIAL AUTHORITIES TO ADVANCE REUSABLE PACKAGING REVERSE LOGISTICS ACTIVITY IN WAIKATO

Overall, Waikato's TA waste officers and representatives from the waste and resource recovery sector expressed in principle support for reusable packaging systems. Comments from these participants, alongside observations from the case studies in the appendices, also suggest openness and momentum for the resource recovery system to explore reusable packaging reverse logistics activities. Although some participants were more enthusiastic than others, all participants demonstrated a value–action gap between theoretical support for reuse systems, and active work in this area.

The key needs TA and sector participants shared with us in order to turn their strategic and philosophical support for reusable packaging systems into practical, action-based support can be grouped into three themes:

- **Certainty** regarding what a reusable packaging reverse logistics service would look like in practice (e.g. packaging fleet, equipment, workflows, and identification of businesses that would use the packaging); the expected roles of different participants in the service (e.g. TAs, resource recovery sector, and wider industry); and whether reusable packaging is a waste minimisation priority within local and central government to justify attention and investment.

- **Resourcing** for both the capital and operational costs to provide reusable packaging reverse logistics services, to ensure commercial viability and reduce the risk of investment.

- **Securing collaboration/willing partners** across councils, businesses, and the private and community resource recovery sector to design, implement and sustain cost-effective and efficient reusable

packaging systems that are supported by reverse logistics.

With reference to these needs and examples from the case studies, this section of the report highlights four key opportunities for both TAs and the resource recovery sector to advance reusable packaging reverse logistics activity in Waikato:

1. Use or establish collective, multi-stakeholder forum(s) to advance collaborative learning, planning and accountability around reusable packaging systems and the supporting reverse logistics.

2. Create regional, sectoral and organisational reusable packaging action plans and programmes for the resource recovery system.

3. Find ways to procure, fund or provide in-kind support for the delivery of reusable packaging reverse logistics.

4. Design and implement an action-based reusable packaging reverse logistics project (or projects) in order to gain certainty about system requirements, while actively progressing reuse on the ground.

Although there are roles for all parties, **councils have a leadership role in driving the realisation of these opportunities**. This role derives from councils' unique status, responsibilities and powers as anchor institutions in the region, and their concomitant position to bring diverse parties together in a way that individual resource recovery operators or businesses would struggle to do on their own.

6.1 Use or establish collective, multi-stakeholder forum(s) to advance collaborative learning, planning and accountability around reusable packaging systems and the supporting reverse logistics

Existing collective forums within the region's resource recovery system could be used (or a new forum established) to enable collaboration, peer-to-peer knowledge sharing, and action around reuse. The forum(s) could work to lift the sector's comprehension, awareness and activity around reuse, develop and share reusable packaging programme ideas, and ultimately strengthen accountability for action. The forum(s) could also bring in businesses interested in using reusable packaging (or who already operate reusable packaging systems) to foster the relationship of TAs and the waste and resource recovery sector with these businesses.

Collaboration, multi-stakeholder design processes, and adopting a network approach were repeatedly cited by all participants as important for advancing with well-conceived reuse reverse logistics services. Working together across councils, the wider sector, and community is also consistent with Focus Area 1 "Collaboration and partnerships" of the WRC *Waste Prevention Action Plan* (2020, p.15), as well as the parts of the priority work programme that encourage "joint work, communication, education and networking through the TA Waste Liaison group" (p.14), and "cross boundary work" to develop a network of resource recovery centres and share resource recovery infrastructure (p.14).

Many of the issues to be resolved to operationalise reverse logistics support for reusable packaging systems would most efficiently be addressed collectively, rather than individually. These issues include:

- food safety requirements (e.g. for washing and sanitising reusable packaging)

- trade waste and consenting compliance for new infrastructure and activities

- appropriate wording for WMMPs and contracts to drive reuse outcomes

- selected packaging types to explore for reuse projects/systems

- potential businesses and/or existing reusable packaging systems that could be supported with reverse logistics

- approaches to co-investing in reuse equipment, and deciding locations for shared infrastructure

- available policy levers at local government, including enforcing the use of reusable packaging in some settings (e.g. catering, takeaway, events etc)

- appropriate central government policy levers to advocate for to drive reusable packaging uptake.

In relation to the latter, all participants cited the need for central government regulatory intervention to create the certainty and conditions for viable, effective and scalable reusable packaging systems and the supporting reverse logistics services. A collective forum may be the most impactful way to develop and communicate policy proposals to central government politicians and policymakers.

Collective forums could be a newly established group, such as the **Reuse Support Network** that CRR operators suggested as a source of peer support, accountability, and ongoing professional development within the resource recovery sector. A dedicated reuse focus could also be built into existing collective forums. For example, the **TA Waste Liaison group** and the **TAO Forum** could create a standing meeting agenda item on reuse developments. Actors across the resource recovery system could also come together with existing business and industry groups, such as Chambers of Commerce or industry associations, to build a multi-stakeholder group for reusable packaging.

One example of a forum that already exists to advance sector conversations about reuse is the **WasteMINZ Reuse Working Group**, established in 2023. The Reuse Working Group is an initiative of the Product Stewardship Sector Group, but is supported by other WasteMINZ sector groups. Its main purpose is to raise the profile of reuse and make it more talked about than recycling (see WasteMINZ, 2023b).

6.2 Create regional, sectoral and organisational reusable packaging action plans and programmes for the resource recovery system

All entities in the resource recovery system (private and community operators, TAs and the regional council) have an opportunity – collectively and individually – to convert broad and high-level commitments to zero waste, waste prevention, the waste hierarchy, and the circular economy, into **specific programmes, actions and targets** that expressly relate to reuse, and that

directly mention reusable packaging systems. This action will foster greater certainty that reusable packaging is a waste minimisation priority for councils and organisations. Certainty will help drive resource towards reuse and reverse logistics activities across the public, community and private sectors.

Amongst TAs, the strong aspirational statements about zero waste and circularity in strategic documents could be reinforced by **specific wording in WMMPs** about support for reusable packaging systems through on-the-ground practical actions. As for recycling, reuse requires specific programmes, actions and targets in order for council waste teams to prioritise it within service provision, contract management, and budget lines. Specific wording could relate to:

- specific and separate reuse, source reduction and/or waste avoidance targets (in addition to diversion targets);
- policies to ring-fence waste minimisation funding for reusable packaging activity; and
- dedicated work programmes for activating reuse in the local economy (rather than generic "waste minimisation" programmes that do not target specific tiers of the waste hierarchy) so some council FTE is carved out for reuse.

For example, the proposed Action Plan in Auckland Council's Draft WMMP includes a specific, dedicated action point for reusable packaging. The Council proposes to "[S]upport actions to reduce packaging, and move towards reusable packaging systems and away from single-use packaging", such that Aucklanders see "[g]reater development of business-to-business and business-to-customer packaging systems that reduce material use (source reduction)" (Auckland Council, 2024, p.66).

A **regional reusable packaging action plan or programme** that focuses on providing reverse logistics in the Waikato could provide overarching direction towards closing the value-action gap on reusable packaging in the region's resource recovery system. This could be developed using the collective forum(s) outlined in 6.1. Developing a regional action plan for reusable packaging would be consistent with WRC's ongoing work to

support circular economy projects (set out in the *Waste Prevention Action Plan* (2020)), and other regional projects, such as the Waikato Wellbeing project, where advancing reusable packaging would help to realise Goal 12: Responsible Consumption and Production (Waikato Wellbeing Project, 2023).

Waste and resource recovery sector operators could build reusable packaging programmes and activities into operational planning and reporting cycles. As with local government's planning documents, strategic documents like sustainability reports could directly specify reuse programmes, actions and targets. Support for reusable packaging systems could also be built into current and future site and service development and expansion plans. One example would be to consider where existing services and facilities can be leveraged to provide reusable packaging reverse logistics, as demonstrated by four case studies (in the appendices) of different resource recovery operators in New Zealand who have done this already:

- **Anamata Resource Recovery** on Aotea Great Barrier Island has fully implemented a reuse system for reusable cups on the island, including investing in preparation for reuse infrastructure at their site to wash cups.
- **Waiōrea Community Recycling Centre** made site space available to simulate the storage of reusable containers in a reusable packaging research trial in Auckland.
- **Xtreme Zero Waste** has adapted its kerbside recycling collections to accommodate the retrieval of a reusable package for a local business.
- Five organisations that undertake recycling activities at their sites (Abilities Incorporated, Altus Enterprises, Kilmarnock Enterprises, Cargill Enterprises and Recycle South) have made site and workflow adaptations to collect **Will&Able** reusable packaging and, in the case of two sites, wash the packaging.

6.3 Find ways to procure, fund or provide in-kind support for the delivery of reusable packaging reverse logistics

Waste and resource recovery sector operators said they needed a business model and/or resourcing support to engage in reusable packaging reverse logistics. Similarly, TA officers referred to resourcing constraints to support the sector to take on these activities. Identifying funding streams to resource the sector directly and/or to enable council procurement is a key opportunity. Potential mechanisms are outlined below, though their availability will likely rely on progress made under 6.2 to make reusable packaging a strategic priority backed by an action plan.

Procurement: When council tenders for waste and recycling contracts come up for renewal, conditions around providing reusable packaging system support could be added. Councils could also create new, dedicated tenders for reusable packaging system development that includes a reverse logistics element. The **Rotake Reuseable** case study from Aarhus, Denmark, demonstrates that the resource recovery sector can provide reuse solutions built around reverse logistics when local governments develop a clear and adequately resourced procurement opportunity. Given resourcing constraints, councils may need to pool resources to tender jointly (though, this may be the best approach to support a scaled, unified and consistent approach to reverse logistics). Given the highest levels of enthusiasm for participating in reusable packaging reverse logistics came from CRRs, an indirect form of procuring reusable packaging reverse logistics could be to adopt a social procurement approach to waste and recycling contracts, as this could provide the security and flexibility for community-based operators to go on to experiment with providing reusable packaging reverse logistics support (as occurred with the **Xtreme Zero Waste–Workshop Brewing Co** case study).

Apply for grants: Councils could apply jointly (i.e. a group of councils and/or a mixed group of councils, resource recovery operators or other businesses) to external funds to explore, develop or procure reusable packaging systems with reverse logistics services and

infrastructure. The **Bring it Back Bruns** case study in New South Wales, Australia is an example of a council applying for funding from the state's Environmental Protection Authority to trial a wraparound reusable takeaway packaging system. The grant resourced the council to purchase a fleet of reusables, onboard hospitality participants, and develop a consumer-facing communications campaign. Critically, the grant also supported reverse logistics costs, including installing public return bins, hiring a community centre with a washing facility, and procuring the services of a local reusable packaging company to empty the return bins, wash the containers, and redistribute them to local hospitality outlets. Waikato councils could team together to apply to funds such as the Waste Minimisation Fund to enable them to resource such programmes independently, or alongside resource recovery operators and businesses.

Support the sector to test reusable packaging reverse logistics business model(s): Councils and the resource recovery sector could engage more closely with local businesses interested in (or already utilising) reusable packaging in order to determine and test willingness to pay for reverse logistics services. In Raglan, the **Xtreme Zero Waste-Workshop Brewing Co case study** demonstrates that Workshop Brewing Co was willing to pay Xtreme Zero Waste 10 cents per reusable can-holder retrieved. In Durham, USA, **The ReCirculation Project** action research found that local businesses were willing to pay a certain amount to an operator to retrieve their reusable packaging, and that if returns occurred at sufficient volumes, this could generate a viable business model. In order to identify and harness similar opportunities in the Waikato region, relationships and collaboration between TAs, the resource recovery sector and local businesses is crucial.

Direct grants or in-kind support to resource recovery operators for reverse logistics: Councils that have their own contestable waste minimisation funds could allocate funds to systems-focused reusable packaging initiatives. This outcome could be strengthened through policies to ring-fence some funds for reusable packaging and/or to increase the weighting for applications up the waste hierarchy. Support may be required to help groups

devise and apply for funds for this purpose. Additionally (or alternatively), councils can also provide resource recovery operators with in-kind support for reusable packaging reverse logistics initiatives, such as land or site space, assets, communications support for their initiative or brokering connections between potential collaborators. For example, Auckland Council's provision of funding support to **Anamata Resource Recovery Centre** to install solar panels at their site, which was critical for enabling them to wash reusable cups; and the same Council's support for the **Drink Different trial** by supporting with costs for the collection vehicle, brokering a connection between Green Bottle and the Waiōrea Community Recycling Centre, and developing communications materials about the trial.

6.4 Design and implement an action-based reusable packaging reverse logistics project (or projects) in order to gain certainty about system requirements, while actively progressing reuse on the ground

Almost all participants highlighted the need for increased certainty about what participating in reusable packaging system reverse logistics would involve in practice. They also thought a multi-stakeholder approach that worked collaboratively across borders and organisations and with local businesses, would be the best way to explore and develop this new potential service for the sector.

As such, most participants were enthusiastic about the idea of an action project to **implement a real-world reusable packaging system with reverse logistics and/or provide existing reusable packaging systems with real-world reverse logistics support**. The idea of conducting "research and action-based projects that accelerate the circular economy" is also supported by the WRC *Waste Prevention Action Plan* priority work programme (2020, p.14).

An action project is a critical opportunity to create necessary understanding about how to structure and deliver reusable packaging reverse logistics services (e.g. costs, logistics, business models, roles and responsibilities), in a way that moves beyond theorising

and towards progressing real-world activity. This approach is reflected in some of the case studies in the appendices:

- The **Bring it Back Bruns** project enabled the council to purchase a reusable serviceware fleet, design and install reuse "bins", procure a washing service, and thereby test some system costs, as well as business and community uptake and participation in a full reusable takeaway serviceware system.

- The Aarhus Municipality tender for the **Rotake Reuseable** project was framed as a three year trial of a reusable takeaway packaging system in the city. The contract covers three years of funding to allow the successful tenderer (Tomra) to establish the system and determine the business model as they go. The hope is that the trial will bring the system to a point that it can sustain itself in the long-term.

- **The ReCirculation Project** in Durham, USA, ran real-world simulations of reusable packaging collections, to test hypotheses about the potential role of municipal waste and recycling systems in supporting reusable packaging reverse logistics. Amongst other things, the project found it was possible to achieve a 94% recovery rate of reusable takeaway packaging using the standard co-mingled kerbside recycling collection.

Action projects would ideally be collaborative, bringing together different participants – councils, resource recovery operators and local businesses – to design and implement a system and/or service. Through collaboration, resources could be pooled and infrastructure shared. Involvement of business users of the packaging would help to identify the appropriate packaging to use and/or potential local reusable packaging systems to service. **The ReCirculation Project** was enabled by strong collaboration between the community provider, the local waste and recycling company (who provided access to their collection route and MRF), and the local council, who then went on to express interest in adapting their services to accommodate reusables following the trial.

Ultimately, the design of an action project for reusable packaging reverse logistics in Waikato would depend on available funding (see 6.3), the collaborators, the locality,

and the co-design process. Rather than prescribing a project framing, we have created a reusable packaging reverse logistics criteria checklist (**fig. 3**), and outlined some key questions to consider, with supporting commentary:

- What is the project purpose and timeframe?
- What products and/or businesses will the project focus on?
- What packaging units will be used?
- Will the project involve a complete reusable packaging system, or simply parts of the reverse logistics process?

What is the project purpose and timeframe?

At the outset of a project, it is important to consider its scope and purpose, as this will impact design elements. Some examples are:

- A time-bound trial or pilot with primarily research goals.
- A trial that starts small, but has the potential to grow and become permanent, if successful.
- Developing a full reusable packaging system (i.e. with reverse logistics elements) that does not yet exist, to resolve an identified single-use issue.
- Creating standardised reverse logistics services to support existing reusable packaging systems.

If a project is primarily research-based and likely to be temporary, a strong monitoring and evaluation process should be in place to make the most of the study. This could involve partnership with university researchers (such as in **The ReCirculation Project**). Consideration should also be given to the impact that ending the trial may have on the community, businesses and participants. Public expectations should be managed to avoid negative reactions when the trial comes to an end. Furthermore, a trial that will test and troubleshoot different approaches should also manage the risk of unsuccessful elements reducing the receptivity of businesses and the public to future efforts to implement reuse systems. It could be most appropriate to employ a pre-identified select group of participant households, consumers, and/or businesses who are fully informed of

the project boundaries and scope, rather than trialling a generalised service. For example, **The ReCirculation Project** in Durham, (USA), and **Green Bottle's Drink Different trial** in Auckland.

If the project will start small, but is intended to gradually escalate over time to reach greater scale and impact, it could be useful to consider potential growth plans. For example, increasing drop-off locations, onboarding more packaging types or business users, or expanding the service to a wider geographic area or to encompass a wider scope of reverse logistics activities across the phases of the reverse logistics cycle.

A project that is intended to be permanent and to install a reuse system primarily to address a problematic packaging waste stream requires robust design and buy-in of businesses and the community from the outset. Greater levels of pre-planning may be required to iron out as many kinks as possible before the project launch date, to avoid a poor service generating backlash or disengagement. The **Anamata Resource Recovery Centre** reuse system for reusable coffee cups is an example of an action project that was designed to service the island's long-term shift away from single-use cups. The system was co-designed with the local cafes and community, with decent lead-in time, to ensure the system met the needs of the businesses and community and generated widespread buy-in from the get-go.

What products and/or businesses will the project focus on?

There are a myriad of potential products and sectors whose packaging could be the focus of an action project for reusable packaging reverse logistics. Selecting the target product(s) for which a reusable packaging system is trialled is likely to depend on questions of availability, practicality and the willingness of businesses. Factors to consider could include existing relationships amongst project participants, the demographics and commonly used products in the target areas, or existing reusable packaging systems that may be interested in receiving reverse logistics support (see, Reuse Aotearoa's *Stocktake of Reusable Packaging in the Waikato Region*).

Businesses that will use the reusable packaging are

critical to the reuse system, so identifying willing businesses and manufacturers will be important. Interested businesses might be those that already have vertically-integrated reusable packaging systems in place and an interest to outsource the reverse logistics. Or, they might be businesses who do not use reusable packaging, but would like to. Several participants thought that having a large enough business on board could enable a project to scale and reach efficiency very quickly, while others considered that the business' level of motivation around reuse and/or their connection to the community were more important factors. A focus on involving local producers could also give the project greater meaning and buy-in for the community.

Insights from the case studies show that factors like local context, relationships, willing businesses and/or pre-existing systems can be important. For example, **Rotake Reuseable** and **Bring it Back Bruns** targeted takeaway packaging because bin and litter audits showed over-representation of single-use takeaway packaging waste in the relevant areas. The **Xtreme Zero Waste-Workshop Brewing Co** reusable canholder collection service was developed based on an existing reusable packaging system in the community and a relationship between the resource recovery centre and the local brewery that led to a collection/returns need being identified and an ability to work together to address it.

What packaging units will be used?

Packaging units need to be durable and physically capable of reuse. Most participants raised the importance of standardised packaging for effective reverse logistics services. The participation and level of engagement of business users of the reusable packaging, as well as the available funds, will determine whether it is realistic for the project to include a scoping phase where participant companies come together to select or co-design a standard package that all agree to use for the project's duration. If local producers are included at the project design stage, there could be an opportunity to co-design reusable packaging units to be durable, suitable for reuse, in line with any relevant standards, and sensitive to the needs of the local resource recovery sector.

Where developing a standardised package is not realistic, an alternative approach could be for the resource recovery system to identify commonly used packaging units that are not placed on the market as part of a reusable packaging system, but which are physically capable of reuse and could be intercepted by the resource recovery system, prepared for reuse, and then resold/redistributed for use in reuse systems. For example, **Appendix 9** case studies the resource recovery centres across New Zealand that divert ceramic mugs to local mug libraries to replace single-use cups. A similar approach could potentially be applied to glass jars, which could be washed and resold instead of sent for recycling. The **German MMP case study** shows that glass jars are an effective reusable packaging unit and that with effective reverse logistics systems in place and an organised means of purchasing reconditioned jars, businesses are willing to choose these over single-use jars.

Will the project involve a complete reusable packaging system, or simply parts of the reverse logistics process?

The potential project scope exists on a spectrum, from the resource recovery sector participating in just one part of the reverse logistics process, through to establishing and operating a reusable packaging system from scratch. The latter would require designing and establishing the whole reverse logistics cycle, and introducing unfamiliar activities and equipment, like the preparation for reuse phase (e.g. **Rotake Reuseable**, **Bring it Back Bruns**, **Anamata Resource Recovery Centre** reusable cups system). Most participants identified collections/returns as the most obvious way that the resource recovery sector could begin participating in reusable packaging reverse logistics. In this case, identifying a pre-existing system to support could be an easier starting point for an action project, as pre-existing systems may only require assistance with certain phases of the reverse logistics process (e.g. the **Xtreme Zero Waste-Workshop Brewing Co** and **Will&Able** case studies). The Reuse Aotearoa *Stocktake* could help to identify possible systems.

Image depicting the Bring it Back Bruns complete reusable serviceware system workflow operated by Byron Shire Council, including reverse logistics element and contracted service provider

Figure 3: Action-based project for reusable packaging reverse logistics sample checklist

☐ Identify potential collaborating parties, including relevant territorial authorities, producer(s) and retailer(s) of the packaged product, reusable packaging system operator(s), resource recovery operator, researchers etc.

☐ Relationship formed between potential parties and a willingness to collaborate established.

☐ Collaborating parties determine if they will support an existing reusable packaging system with reverse logistics service provision, or if they will build a new reusable packaging system with reverse logistics elements.

☐ *If supporting a pre-existing system*, collaborating parties identify reusable packaging system(s) to support and work with current system operator(s) to identify which parts of the reverse logistics process could be provided, and what a mutually beneficial service would look like.

☐ *If building a new system*, collaborating parties co-design the system elements across the whole reuse cycle, including packaging type, users of the packaging, and the process for retrieving used packages (including use of return incentives), preparing them for reuse, storing them when needed across the lifecycle, and redistributing them to market.

☐ A plan for resourcing the project is created, such as agreement on shared funding commitments for critical cap-ex and op-ex, a procurement model and/or identified alternative funding sources (e.g. grants, and agreed approach to apply for these funds).

☐ Where relevant, the reusable packaging fleet is designed or identified. Collaborating producers agree to use the packaging and decide who will own the packaging fleet before the fleet is acquired.

☐ The key infrastructure and assets for packaging recirculation are identified, e.g. collection vehicles, return points, warehouses, washing facilities. Agreement is reached as to who will operate the infrastructure/assets, where they will be located, and who owns them before infrastructure/assets are acquired.

☐ A system to track or otherwise ensure return and redistribution of packaging is created, e.g. apps, deposit/bond system, trust-based system backed by comms campaign, online shop for clean packaging resale etc.

☐ Monitoring and evaluation is in place to track progress of the project, to enable reporting on the performance of the reusable packaging system and the reverse logistics process, e.g. return rates, use cycles, cost per use, single-use packaging avoided etc., and guide ongoing system iteration/optimisation.

7 CONCLUSION

Single-use packaging contributes to multiple environmental threats, including waste, plastic pollution, climate change, resource depletion and biodiversity loss. Momentum to replace single-use packaging with reuse systems is building. Across the Waikato region, there are already at least 95 discrete reusable packaging systems operating in the fast moving consumer goods sector alone.

However, reusable packaging systems cannot scale into cost-effective, environmentally efficient systems that compete with single-use packaging, without reverse logistics support to recirculate reusable packaging between uses. Across the world (the Waikato region included), gaps in reverse logistics services and infrastructure are hampering the ability of reusable packaging systems to establish, sustain themselves and grow.

The Waikato Regional Council commissioned this report to consider the potential for the Waikato's resource recovery system to move service provision up the waste hierarchy to support reusable packaging reverse logistics. The idea that the waste and resource recovery system could be well-placed to fill some of the gaps in reusable packaging reverse logistics is gaining some currency in New Zealand and overseas. Furthermore, local and international examples exist of local governments and the resource recovery sector actively implementing real-world reverse logistics services or trials.

Our engagement with Waikato's TA waste officers and representatives from the waste and resource recovery sector found reasonably high-levels of willingness to participate in reusable packaging reverse logistics. Participants also reported existing infrastructural and operational capacity that could be leveraged and built upon to expand services to reusable packaging. The proviso is that key needs relating to certainty, resourcing and collaboration are met. Taking these needs into account, this report identifies four opportunities that Waikato TAs could harness, in partnership with the region's waste and resource recovery sector, to advance reusable packaging reverse logistics activity in Waikato:

1. Use or establish collective, multi-stakeholder forum(s) to advance collaborative learning, planning and accountability around reusable packaging systems and the supporting reverse logistics.

2. Create regional, sectoral and organisational reusable packaging action plans and programmes for the resource recovery system.

3. Find ways to procure, fund or provide in-kind support for the delivery of reusable packaging reverse logistics.

4. Design and implement an action-based reusable packaging reverse logistics project (or projects) in order to gain certainty about system requirements, while actively progressing reuse on the ground.

Ultimately, with the active leadership of regional and local councils, reliable resourcing/funding, strategic and policy direction, and a collaborative approach, Waikato's local resource recovery system has the potential to play a role in developing a collection/returns, washing and redistribution service for some reusable packaging types in Waikato. This role is not dissimilar to the sector's current provision of single-use post-consumption logistics services. Successfully expanding the sector's role to encompass reusable packaging system support would not only pave the way for other regions in New Zealand to follow suit, but would also align with growing community sentiment to reduce waste and plastic pollution, the emphasis on waste prevention, source reduction and reuse in the WRC's *Waste Prevention Action Plan*, and the vision of a low-waste circular economy in the *New Zealand Waste Strategy*.

A serviced reusable cup return and distribution point on Aotea Great Barrier Island. Image by Kim Renshaw

THE RECIRCULATION HUB

APPENDIX 1: THE RECIRCULATION PROJECT

LOCATION	**Overseas example**
REVERSE LOGISTICS PHASES	**Collection / Returns**
	Sorting / Storing / Consolidating
LOCAL GOVT. LEVERAGE POINTS	Partnering with, or brokering collaboration between, contractors and others in reusable packaging reverse logistics pilots and/or action research.

"We believe in a future where recycling companies, partnering with municipal governments and civic organizations, would collect, sort, and ship that durable, reusable packaging BACK to retailers and manufacturers to be **used again and again**." (Don't Waste Durham, n.d.)

•

The ReCirculation Project is a multi-phase action research project run by NGO/non-profit organisation, Don't Waste Durham, based in North Carolina, USA. The project was designed to test a series of hypotheses about whether municipal recycling systems can support the recovery, processing and redistribution of reusables, such that reuse becomes a municipal utility (Don't Waste Durham, n.d.; Dreisbach, 2023). The multi-phase action research has involved:

• Running pilots of reusables collection and separation;

• Testing the business case for the resource recovery sector to move towards reuse activities;

• Considering how the resource recovery sector, its

Don't Waste Durham imagined "Recirculation Hub in Dresibach (2022)"

workflows and infrastructure could be adapted to accommodate reusables.

Across the different stages of the research, Don't Waste Durham has partnered with the local council, as well as local recycling companies, and students from local universities (Don't Waste Durham, n.d.; Dreisbach, 2022; Dreisbach, 2023), which has elevated the real-world impact and insights of the research.

Phase 1 of the research project (2019) **tested whether reusables could be effectively collected and sorted from commingled kerbside recycling**. This research phase was completed in partnership with the City of Durham Solid Waste Management Department, Sonoco (the local recycling company and owner of the local materials recovery facility (MRF)), and tech companies. Various reusable takeaway packaging items were affixed with an RFID and bluetooth, commingled into the single-stream kerbside recycling bins for one standard collection route, and collected by the recycling trucks along with the regular kerbside recyclate. When the material arrived at the MRF and went through the conveyor sorting line, the RFIDs effectively alerted the human sorters that reusables were coming through, enabling a 94% recovery rate. The pilot's success led to discussions with the local council about potential modifications to the recycling system to better suit reusables. This included ideas like retrofitting existing MRFs with washing and sanitisation infrastructure (Dreisbach, 2022; Don't Waste Durham, n.d.).

Having tested the practical feasibility of separating reusables in a standard resource recovery context,

Phase 2 (2020) of the research **explored the financial feasibility of recirculating reusables** via a full value chain analysis. Don't Waste Durham worked with a waste economist and university students to estimate how much producers who had invested in a reusable packaging fleet would be willing to pay another organisation to retrieve and return reusable packaging. The research demonstrated producer willingness to pay, and a profitable value chain for recycling companies to recover and redistribute reusable packaging, so long as recovery occurs at sufficient scale to achieve a minimum threshold volume of materials (Dreisbach, 2023; Dreisbach, 2022; Don't Waste Durham, n.d.).

Phase 3 (2022) focused on **assessing the potential volume of reusable packaging that could be achieved from city-wide residential pickups** (as well as cost savings for businesses and carbon emissions reduction if reusable packaging were adopted). The project was undertaken in collaboration with university and high school students. Partnerships were formed with local businesses that wanted their packaging back, and willing householder trial participants were recruited. The project involved simulating residential pick-up of reusable packaging from 25 households over 8 weeks, local sorting and sanitisation of the packaging, and redistribution of clean packaging. The study demonstrated high return volumes, and considerable carbon emission reductions from a reusable packaging system (Trikha, 2022; Dreisbach, 2023; Don't Waste Durham, n.d.).

Phase 4 (2022) is an **end-market analysis and design of city-scale implementation**. This research is still underway and led by a multi-disciplinary group of university students, mentored by a university faculty innovation and entrepreneurship centre. The objective is to identify business models for pickup of reusable glass packaging and resale to producers and manufacturers. This involves in-depth analysis of end-markets and best practices in bottle washing and label removal (Trikha, 2022; Don't Waste Durham, n.d.; Dreisbach, 2022).

"One thing we see in every city in the US is the definition of solid waste management – it's generally collecting trash and recycling and making it disappear – but management includes the prevention of waste and recirculation of reusables. Prevention is more important. I'd like to support them to evolve out of these unhealthy status quo structures, to expand their definition and their role." (Dreisbach, 2022)

APPENDIX 2: XTREME ZERO WASTE-WORKSHOP BREWING CO REUSABLE CAN HOLDER RETURN

The Workshop Brewery Company's Paktech reusable can holders on cans and in a kerbside recycling bin. Images supplied: Workshop Brewing Co

LOCATION	Overseas example
REVERSE LOGISTICS PHASES	**Collection / Returns**
LOCAL GOVT. LEVERAGE POINTS	Supporting community-led organisations with strong zero waste vision who deliver reuse activities to operate in the resource recovery space, through social procurement of waste contracts, access to council land or assets, or other direct support

Workshop Brewing Company (Workshop) is a Whāingaroa/Raglan brewery that previously used reusable HDPE 6-pack can holders, called Paktech, for the canned beer that they used to sell in the Raglan market up until the end of 2023. Xtreme Zero Waste, the community enterprise that operates Raglan's kerbside rubbish and recycling collection and resource recovery centre, utilised its collection and drop-off infrastructure and services to support Workshop to retrieve the reusable Paktech holders from consumers.

Raglan residents had three return options for Paktech; Xtreme Zero Waste was essential for two of them (Lancaster, 2023; Workshop Brewing Co, n.d.):

1. **Return to the Workshop brewery:** Return Paktech holders themselves to the Workshop brewery.

2. **Return to Xtreme Zero Waste's resource recovery site**: Return the Paktech holders to a dedicated drum in the recycling drop-off bay at Xtreme Zero Waste's resource recovery site. Workshop staff periodically visited the site to pick-up any can holders from the drum.

3. **Return via kerbside recycling**: Put the Paktech holders in their kerbside recycling bin. Xtreme Zero Waste picked these up during the recycling collection round and installed a dedicated hook in their collection vehicle for the can holders. Collected holders were taken back to the Xtreme Zero Waste site where they were sorted and placed in the designated Paktech drum for Workshop staff to pick up.

Workshop Brewing Company donated 10 cents to Xtreme Zero Waste for every returned Paktech holder, which recognised Xtreme Zero Waste's mahi to separately collect and handle the holders on behalf of Workshop (Workshop Brewing Company, n.d.). The system ended because Workshop Brewing Company stopped using cans and now exclusively packages into glass bottles and kegs.

"… we'd like to think involvement in such initiatives are useful for reinforcing Raglan's community spirit, and also reminding us to be aware of our consumption and the fate of materials related to a purchase." (Workshop Brewing Company, n.d.)

APPENDIX 3: WILL&ABLE CONTAINER UPCYCLING INITIATIVE

LOCATION	New Zealand example
REVERSE LOGISTICS PHASES	**Collection / Returns**
	Sorting / Storing / Consolidating
	Preparation for reuse

Will&Able bulk reusable containers being washed for reuse. Image supplied: Will&Able

Will&Able is an Auckland-based social enterprise (with supporting operations in Christchurch for bulk packaged product) that produces cleaning products and provides meaningful work for people with disabilities. The products are sold nationwide, in stores and online, in a range of prefilled consumer-sized HDPE plastic containers, and in bulk 5L and 20L containers for commercial customers or retail sale 'on tap' (Blumhardt et al, 2023, p.24).

Will&Able seeks to reuse all containers they put on the market and have worked to develop a network of drop-off locations for consumers for both their bulk and consumer-sized containers (to which customers can physically return or courier containers). Alongside organisations that are not part of the resource recovery sector (e.g. AON offices and Z Energy petrol stations), these locations include disability organisations that specialise in recycling and resource recovery activities (Will&Able, n.d., Collection Depots):

•   Abilities Incorporated (Auckland)

•   Altus Enterprises (Auckland)

•   Kilmarnock Enterprises (Christchurch)

•   Cargill Enterprises (Dunedin)

•   Recycle South (Invercargill)

For consumer-sized containers, staff at the receiving sites strip the labels, clean and sterilise them, and then prepare them for bulk shipping back to Will&Able in Auckland or Christchurch for refilling (Will&Able, n.d., Our Eco Story). Returned bulk containers are collected, consolidated, and bulk shipped back to Will&Able's Christchurch Bulk HQ (Kilmarnock Enterprises), who prepare them for reuse prior to refilling (Will&Able, n.d., Collection Depots).

In addition to developing a nation-wide network of public return locations, Will&Able is also developing returns processes for business customers that piggy-back off the existing milk bottle recycling collections for those businesses. Will&Able's consumer-sized HDPE bottles are manufactured from 100% post-consumer plastic milk bottles. Therefore, Will&Able invites its business customers to combine empty, used Will&Able bottles with their empty milk bottle recycling collections. Will&Able either:

•   picks up these empty 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.

Returned Will&Able containers are diverted to be washed and refilled, while the milk bottles are remanufactured into more Will&Able reusable containers (Blumhardt et al, 2023, p.24)

APPENDIX 4: DEPOSIT RETURNS SYSTEMS THAT SUPPORT REUSABLE PACKAGING REVERSE LOGISTICS

Reverse Vending Machines in Germany with space underneath for the return of crates of reusable bottles. Image supplied: TOMRA

LOCATION	Overseas example
REVERSE LOGISTICS PHASES	**Collection / Returns**
	Sorting / Storing / Consolidating
	Preparation for reuse
	Redistribution / Reintroduction to forward supply chain
LOCAL GOVT. LEVERAGE POINTS	Policy/regulatory settings that drive and accommodate reverse logistics systems for reusable packaging.

Deposit returns systems (DRS) for packaging involve consumers paying an additional amount of money (a deposit) when buying a product, which is redeemed when the packaging is returned to a designated collection point. The deposit acts as an economic incentive to return the packaging, which lifts empty container return rates and thus enables their reuse or recycling at scale (Zero Waste Europe et al, 2019, p.2).

Globally, to date, DRS are most commonly applied to beverage containers, typically to increase the recycling rates of single-use beverage containers (Millette, 2022). Large-scale DRS, particularly when legislated/ mandated, require a resource recovery response to manage the billions of beverage containers that flow through such systems per year, including an organised network of return points, collection services and reverse logistics. When this network is servicing legislated/ mandated DRS, it can be considered part of the jurisdiction's resource recovery sector.

Several overseas examples show that the DRS resource recovery network is a significant, interconnected asset that can be leveraged to support the reverse logistics for reusable packaging. This case study showcases some jurisdictions where this is occurring, focusing on examples where:

- the establishing DRS legislation applies to both single-use and reusable containers; and/or

- reusable containers are accepted via the official DRS returns network (e.g. reverse vending machines (RVMs)) even if the DRS legislation applies only to single-use containers and even if the reusable containers are for products beyond the scope of the scheme (e.g. beverages).[1]

Deposit Return Systems that accommodate reusable packaging in these ways support reuse reverse logistics and help to level the playing field between single-use and reusable packaging (Zero Waste Network and the New Zealand Product Stewardship Council, 2022; Blumhardt, 2020). They "establish a common infrastructure for containers to be returned for either recycling or refilling without any additional effort from consumers or cost from producers" (Reloop, 2022b, p.56).

---

1   Privately-run reusable container systems in jurisdictions with a legislated DRS that only applies to single-use beverage containers, and that have no access to the DRS returns infrastructure or reverse logistics processes are not considered to receive logistical support from the resource recovery sector and therefore are not included in this case study.
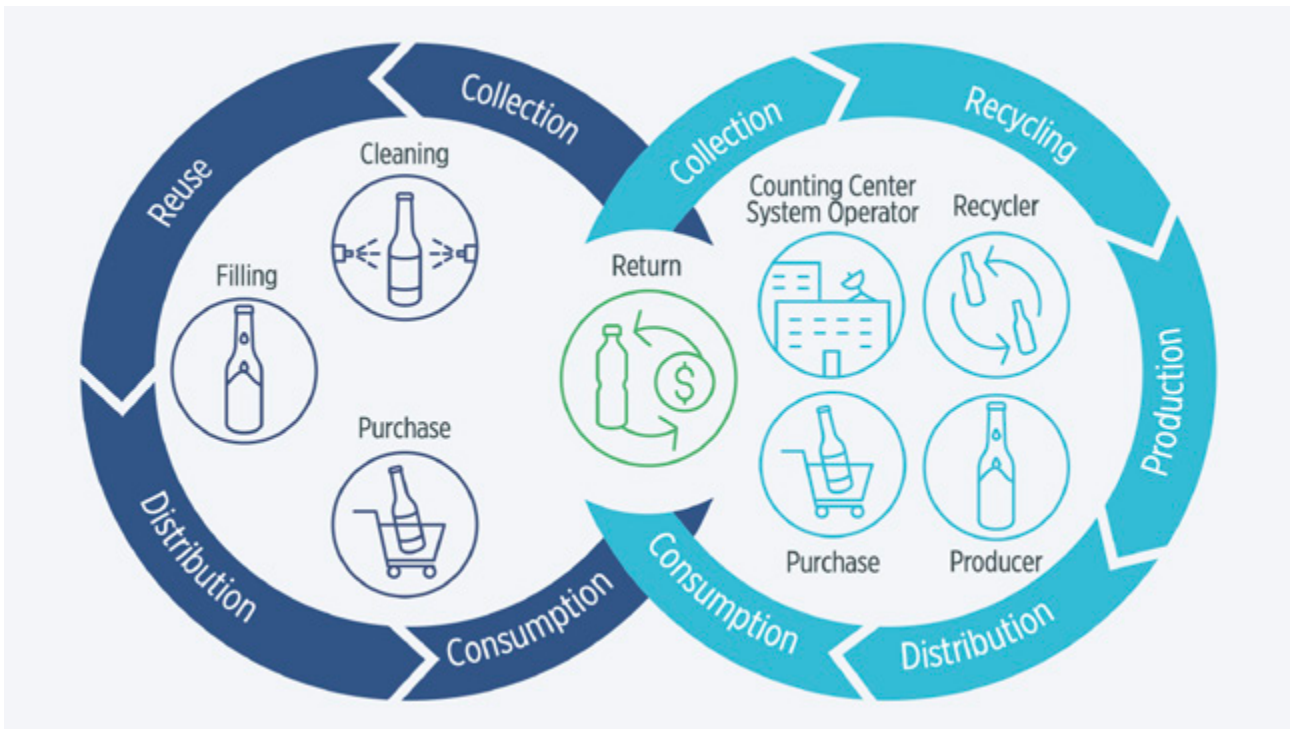
Image by Reloop (2022a) displaying how an integrated/interoperable DRS for both single-use and refillable beverage containers works

Over 50 DRS are in operation globally, and about 34% of these include refillable beverage containers alongside single-use containers. While the back-end of reuse systems differ from single-use (e.g, preparation for reuse and refilling, rather than recycling), the front-end consumer experience can be the same: consumers return their empty refillable containers to a return point or RVM and receive their deposit back (image below). Ideally, systems that combine single-use and reuse integrate the reverse logistics for the two material/product flows while working towards "a seamless experience from the consumer perspective to achieve the highest possible rate of return" (Reloop, 2022a, n.p.). This can be achieved via modern DRS where "the consumer does not have to distinguish between returning a container for recycling or refill; that distinction is made instead by the back-end handling systems." (Reloop, 2022b, p.56).

Examples of jurisdictions where resource recovery systems for DRS support reusable packaging reverse logistics

Oregon

The Oregon Beverage Recycling Cooperative (OBRC) operates the USA's only statewide refillable bottle programme, launched in 2018 within the context of the wider DRS the OBRC have operated for single-use beverage containers since 1971. The OBRC reports that the DRS for single-use containers "makes reusables possible" due to the existing standardised returns infrastructure and process overseen by one system operator (Bailey, 2019). The OBRC takes responsibility for all phases of the reverse logistics process for its statewide refillable bottle programme: collecting and returning reusable glass bottles; arranging for them to be washed; and redistributing them to producers.

The single-use and reuse reverse logistics systems are harmonised. Consumers pay the same refundable deposit on both reusable and single-use bottles (10

cents), and get the same refund upon return. Reusable bottles can be dropped off in the same way as single-use bottles at any BottleDrop locations or methods of return (the green bag system, RVMs and handcount/over-the-counter systems). OBRC contract an existing bottle washer to wash the bottles (though OBRC may establish its own facility in the future), and OBRC redistribute the washed/sanitised bottles themselves (Bottle Bill Resource Guide, n.d. 'Oregon'; Bailey, 2022).

Lithuania

Lithuania has two legislated beverage DRS that operate in parallel:

• reusable glass bottles (legislated in 2004, implemented in 2006, with system operator DESA); and

• all single-use beverage containers made from PET, metal and glass (legislated in 2014, implemented in 2016, with system operator USAD (Galadauskas, 2019; Millette, pp.34–35).

Lithuania's DRS for reusable glass bottles predates the single-use DRS by a decade. During this time, reusable bottles carried a deposit, but single-use containers did not, and the returns system for reusable bottles was limited to 100% manual collection. This effectively resulted in "discrimination of [reusable glass bottles] on convenience" (Galadauskas, 2019). Between 2007 and 2019, sales of drinks in refillable glass bottles in Lithuania decreased from 240 million to 62 million.

Implementation of the single-use DRS in 2016 facilitated more consistent treatment of single-use and reusable beverage packaging systems, alongside investment in a convenient network of RVMs by the single-use DRS system operator, USAD. The deposit value for single-use and reuse containers is the same (10 euro cents), and reusable beverage containers can be returned to the same network of collection points and RVMs (producers pay USAD a fee for any reusables collected via an RVM). Some producers using reusables (e.g. Coke) also outsource reusables collection to USAD (Galadauskas, 2019). The preparation for reuse phase continues to be managed outside the system as reusable glass bottles are returned to producers, who wash and refill them.

The implementation of Lithuania's single-use DRS removed the comparative inconvenience for returning refillable containers (all beverage packaging now carries a deposit and is returnable in the same way for a deposit redemption). The trend of shrinking refillables sales has since flattened. The Lithuania case study underscores the importance of:

• ensuring a level playing field between single-use and refillable containers within a DRS scenario; and

• sharing access to single-use deposit returns infrastructure with refillable beverage containers to maximise consumer convenience returns.

An RVM in Lithuania - the two icons stacked on top of each other in the top right hand side of the machine's instructions show that both single-use (top icon) and reusable bottles (bottom icon) are accepted. Image by sensoneo.com

Canadian jurisdictions

Several Canadian provinces and jurisdictions with beverage container DRS either incorporate reusables, or the single-use and reusable container systems operate in parallel with some interoperability in terms of deposits

and returns infrastructure. Some of Canada's systems grant equal access to return points for both single-use and reusable containers. For example, the DRS of Prince Edward Island applies to both reusable and single-use bottles with one system operator. Both single-use and reusable containers can be returned to any of the ~10 independently owned return depots (Government of Prince Edward Island, n.d.; Millette, 2022, pp.88-89). Similarly, in Saskatchewan, deposits are placed on both reusable and single-use containers. Any container can be returned to any of the 73 return depots in the province (Sarcan Recycling, n.d.).[2]

Some systems in Canada accommodate both reusables and single-use containers, but do not have total interoperability (from the consumer perspective). Even so, where access to the single-use returns network is permitted, this can still provide a critical means for enabling reusable container return and recirculation. For example, in British Columbia, reusables and single-use bottles pay the same deposit (10c). The reusables returns network is separate to the single-use network and is extensive (more than 1000 return locations). However, the public is still also able to return reusable bottles back to parts of the single-use collection network. This access increases the convenience for reusables, although access is only partial. Furthermore, consumers may have to forfeit part of their deposit to cover the costs for the single-use system operator to get the reusable container to an official collection point in the reusables returns network (Millette, 2022, pp. 76-78; BRCCC, 2019).

Germany

Germany provides an example of a jurisdiction with a legislated single-use beverage DRS and a well-established, widespread retailer-based returns network that reusable beverage containers can access.

Germany's legislated DRS only applies to single-use (Einweg) beverage containers, all of which carry a 25 euro cents deposit. The country has comparatively high prevalence of reusable beverage containers (Mehrweg), at roughly 42.8% of the market. These containers also carry deposits, though they are voluntary and vary from 8-25 euro cents (Bottle Bill Resource Guide, n.d. 'Germany').

Despite not being part of the legislated DRS, Mehrweg reusable bottles do have ***partial access*** to the single-use DRS returns network. The German returns network is decentralised and reliant on retailers who are obliged to take back the containers they sell. So, retailers who sell drinks in reusable bottles must accept them back. Those retailers often have special RVMs with space to accommodate reusable crates (usually reusables are returned in crates that also carry a deposit). Despite the lack of complete seamlessness and interoperability in the returns systems, reusable beverage containers still achieve high return rates on par with single-use equivalents, roughly 98% (Tomra, 2023).

The German case study also shows how an organised DRS resource recovery system can evolve to provide reverse logistics support that would not otherwise exist to a growing range of producers and packaging companies committed to reusable packaging. Germany's well-established DRS returns infrastructure is increasingly also accessible to reusable packaging for products beyond the beverage products the DRS applies to. The growth Germany is currently experiencing in reusable packaging solutions for pre-packaged food, personal care products and cleaning products has been partly attributed to the fact empty containers can be returned via the established network of beverage DRS RVMs in supermarkets (Netherlands Institute for Sustainable Packaging, 2022). Reusable packaging companies recognise that access to this network is critical to scalability, so systems are specifically designed to work with the returns infrastructure from the get-go. For example, reusable containers will be designed to be compatible with existing reusable transport crates and RVMs (Netherlands Institute for Sustainable Packaging, 2022).

---

2   Interestingly, in both these jurisdictions, the treatment of the deposit, deposit redemption and/or other financial mechanisms is more favourable to reusables than single-use. In Prince Edward Island, single-use bottle returns only receive a "half-back" deposit redemption, whereas reusables returns get 100% deposit redemption. In Saskatchewan, single-use containers carry a deposit between 10-40c, and a non-refundable environmental handling charge, whereas refillable beer bottles carry just a 5c deposit and no environmental handling charge (Bottle Bill Resource Guide, n.d., 'Saskatchewan').

The growing use of the pre-existing **Milch-Mehrweg-Pool (MMP)** of reusable glass jars demonstrates the value of making DRS returns infrastructure accessible to reusable packaging systems. Traditionally, this reusable jar was used for dairy products, and use had shrunk dramatically since the early 2000s. Now, a range of German small and medium enterprises keen to adopt reusable packaging are opting to enter the MMP pool system. The fee to do so (which covers the reverse logistics and preparation for reuse) is cheaper than the cost of a single-use jar (Ellen Macarthur Foundation, 2023, p.61). One of the Directors of GDB (the company that manages the MMP) described the uptick in producer interest in MMP as "[a]n amazing and very interesting development". They explained that the fact MMP containers can be returned to the existing, convenient DRS beverage returns infrastructure (i.e. retailer RVMs), means the MMP can readily accept new customers and retailers into the pool, scale and grow quickly and efficiently, and rapidly achieve high return rates (Bielenstein, 2022).

Several new reusable packaging solutions in Germany are following a similar path to MMP, not only for food, but also personal care and cleaning products. Like the MMP system, these new pools provide and return reusable containers to the companies that use them. However, many go further in offering washing and cleaning too.

APPENDIX 5: BRING IT BACK BRUNS

LOCATION	Overseas example
REVERSE LOGISTICS PHASES	**Collection / Returns**
	Preparation for reuse
	Redistribution / Reintroduction to forward supply chain
LOCAL GOVT. LEVERAGE POINTS	Tendering for, procuring, or operating reusable packaging reverse logistics services.
	Partnering with, or brokering collaboration between contractors and others in reusable packaging reverse logistics pilots and/or action research.

Bring it Back Bruns in Brunswick Heads, New South Wales was a Byron Shire Council-led and conceived reusable serviceware pilot for takeaway food and drink that ran for six months in 2023 (funded by the New South Wales Environmental Protection Authority On Ground litter prevention grant). The pilot covered all stages of the reusable packaging cycle and involved:

- the purchase of a reusable container fleet;
- establishment of serviced public return bin drop-off points; and
- procurement of a third-party to collect, wash/sanitise and redistribute the containers to participating businesses.

The Council purchased and owned the reusable container fleet, which included sushi trays, bowls and milkshake cups. Five participating businesses were identified and onboarded throughout the project (Child, 2023, p.14). These businesses served takeaway food and drinks into the provided reusable containers.

Serviced return points for used reusable containers at Byron Bay. Image supplied

In terms of the reverse logistics, customers could return empty containers after use to one of the participating businesses or to one of five collection bins located in the surrounding area, within 2 metres of a public place recycling bin (Child, 2023, p.15). The Council contracted Green My Plate, a third-party events-based reusable serviceware provider, to empty the collection bins, wash and commercially sanitise the containers (at a nearby kitchen hall), and redistribute the cleaned containers to the participating businesses, three days a week (Child, 2023, p.33).

The contracted service operated on Sundays, Mondays and Wednesdays over the duration of the six-month pilot, and participating businesses received the service for free. Roughly 2,907 reusable items were collected from the public collection bins, washed and redistributed (Child, 2023, p.14). As a result, an equivalent number of single-use items were avoided, plus an additional 2,880 items that were returned directly to participating businesses (Child, 2023, p.14). Avoided items included single-use straws, containers and smoothie cups. Furthermore, takeaway litter volume dropped by 30%, and a 50% reduction in overflowing bins was observed (Byron Shire Council, 2023).

APPENDIX 6: ROTAKE REUSEABLE: TOMRA AND AARHUS CITY MUNICIPALITY REUSABLE TAKEAWAY PACKAGING SYSTEM

LOCATION	Overseas example
REVERSE LOGISTICS PHASES	**Collection / Returns**
	Sorting / Storing / Consolidating
	Preparation for reuse
	Redistribution / Reintroduction to forward supply chain
LOCAL GOVT. LEVERAGE POINTS	Tendering for, procuring, or operating reusable packaging reverse logistics services.
	Policy/regulatory settings that drive and accommodate reverse logistics systems for reusable packaging.

The reverse vending machine developed for the Aarhus reusable takeaway packaging reuse system trial. Image supplied: TOMRA

In January 2024, the municipality of Aarhus, Denmark, in collaboration with resource recovery business, TOMRA,[1] launched **Rotake Reuseable**, a three-year trial of a reusable takeaway packaging system, including wraparound reverse logistics infrastructure and services. The trial operates in the Aarhus city centre (an area of 4.5KM^2, with a population of 55,000 - similar to Auckland's city centre area of 4.4km^2 and population of 38,000 people). The trial focuses on reusable takeaway cups for the first 12 months and will expand to other types of takeaway food packaging from 2025. At the time of writing, the trial involves about 30 return points and 50 cafes.

The project was initiated by the Aarhus City municipality,

who released a competitive tender to develop, implement and deliver the trial, which TOMRA won (Tomra, 2023b). The drivers motivating Aarhus Municipality to initiate this trial were (Tomra, 2023b):

- A vision for Aarhus to be the most sustainable city in the world, including reducing the need for rubbish bins in the city.

- Waste audits revealing that single-use takeaway packaging constitutes roughly half the content of Aarhus public bins.

- A survey of citizens that found high levels of public support for a reuse system to assist the transition away from single-use.

- Clear signalling of upcoming pro-reuse legislation from both the EU and Denmark's central government.

As of 2024, the key features of the Rotake Reuseable system managed by TOMRA are (Tomra, n.d.):

- A deposit-based system to ensure high return rates: the reusable cups carry a refundable deposit of 5 Danish Krone (NZD $1.20) that customers pay when purchasing the drink, which is redeemed when they return the cups for reuse.

- A reusable packaging pool of polypropylene hot and cold drink cups in three sizes (300ml, 400ml and 500ml).

- A network of tech-enabled return points (RVMs)

---

1   TOMRA is a Norwegian company that operates in over 60 countries, specialising in technology and logistics for resource recovery, especially collection and sorting systems, such as reverse vending machines, sensor-based sorting technology, and transportation services.

across the city for used packaging. The RVMs have screens that customers tap with their debit/credit card, Apple/Google Watch, or phone in order to redeem deposits directly to their bank account (partnerships with Visa, Mastercard and Shift4)..

- An industrial sanitisation, storing and quality assurance hub in the city boundary where cups are inspected and washed to prepare them for reuse.
- An online webshop to manage the redistribution of clean cups; outlets order new supplies via the webshop when they need them.
- Electric vans to collect, transport and redistribute cups.

For the purposes of the trial, TOMRA runs all aspects of the system because as a novel business model, few existing businesses operate in this space. However, if the pilot is successful, then different parts of this cycle could be outsourced, as appropriate, such as transportation and sanitisation (Tomra, 2023b).

Rotake Reuseable is described by its creators as an "**open managed system**" (Tomra, 2023b; Tomra, n.d.):

- "open" because the collection points can accept all qualified packaging from different packaging providers (replacing the current situation where consumers must return the right cup back to the right vendor).
- "managed" because packages will need to qualify for the system, e.g. the packaging must be serialised and meet minimum design requirements that suit the automated return points (but there is no expectation of strict standardisation).

The Rotake Reuseable case study demonstrates how **local governments and the resource recovery sector can combine public procurement and resource recovery expertise, to develop and implement standardised reverse logistics processes for reuse systems**, which can be applied across reusable takeaway packaging types and brands. By procuring specialised services to cover these back-end processes, municipalities can relieve hospitality outlets of the burden of managing take-back and/or sanitisation systems, which is not their core work or business purpose. These activities are a more natural fit for
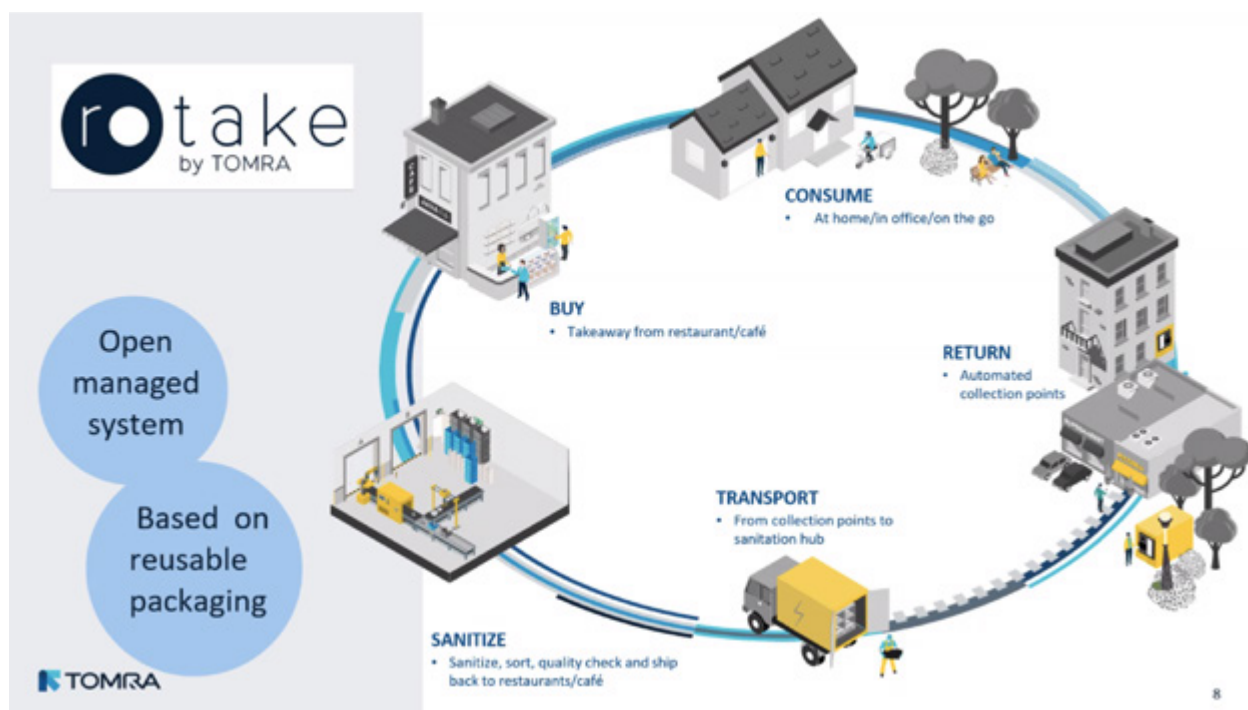
Rotake Reuseable Open Managed System Visualisation (Tomra, n.d.)

Collection point with card reader for deposit redemption (Tomra, 2024)

resource recovery operators, who are also better positioned to operate across brands and enable the system to scale (TOMRA, 2024):

> … businesses don't need to take back and sanitize packaging themselves, which has been a struggle for most alternative reuse-based takeaway packaging systems. The combination of automated collection and industrialized sanitization means that the system can be scaled to a future where reusable packaging is the norm, and not the exception like today.

Preparation for reuse: cups at Aarhus industrial sanitisation facility (Tomra, 2024)

APPENDIX 7: ANAMATA RESOURCE RECOVERY CENTRE REUSABLE CUP SYSTEM

Chunky Loan Cup option at an Aotea cafe (WasteMINZ, 2023b).

LOCATION	New Zealand example
REVERSE LOGISTICS PHASES	**Collection / Returns**
	Sorting / Storing / Consolidating
	Preparation for reuse
	Redistribution / Reintroduction to forward supply chain
LOCAL GOVT. LEVERAGE POINTS	Supporting community-led organisations with strong zero waste vision who deliver reuse activities to operate in the resource recovery space, through social procurement of waste contracts, access to Council land or assets, or other direct support.
	Grant/funding allocations to waste and resource recovery organisations to support participation in, or delivery of, reuse reverse logistics activities.

In October 2023, all but one of the cafes of Aotea Great Barrier Island in the Hauraki Gulf phased out their use of disposable cups for takeaway drinks. Instead, they now encourage customers to BYO reusable cups, sit in the cafe, or borrow a cup from one of the newly established reusable cup systems (Auckland Council, 2023a). The initiative was spearheaded by Anamata Resource Recovery, the local community-led resource recovery centre, who is responsible for all recycling on the island, and also provides additional reuse services, such as an on-site shop that resells reusable household and building materials (Anamata Resource Recovery, n.d.).

Anamata brought the island's local cafes together in mid-2023 to broach the idea of phasing out disposable coffee cups and to brainstorm and develop alternative reusable

solutions. In return for the cafes agreeing to phase-out their use of disposable cups, Anamata agreed to oversee the campaign and the development and delivery of viable reusable alternatives (WasteMINZ, 2023b).

Two reusable cup systems were developed (WasteMINZ, 2023b):

- Mug libraries: Customers borrow a mug for free from mug libraries installed at each cafe.
- Deposit-return system: Customers pay a $10 deposit to borrow a double-walled stainless steel lidded loan cup from the company Chunky; they receive their $10 back if they return cups to an eligible collection point.

After use, mugs and Chunky cups can be returned to any of the participating cafes, to Anamata Resource Recovery, or to a collection bin at the airport. All return points (except for the airport return point) redeem deposits for Chunky cups (O'Reilly, 2023).

In addition to brokering consensus amongst the island's cafes to go 'reusables only', Anamata Resource Recovery has been pivotal both in establishing the reuse systems and in the ongoing logistics and recirculation of used cups on the island, for which they have provided both infrastructure and services that leverage the resource recovery centre's assets and worker skillsets. These include:

- Coordinating the collection of a fleet of used mugs to supply the mug library facilities. This has included sourcing mugs from the Anamata reuse shop and

other Auckland Community Recycling Centres, and putting out a call to the community to donate spare mugs (WasteMINZ, 2023b).

• Sourcing and managing the fleet of Chunky loan cups, by bulk ordering the cups and covering the costs of freight to the island, distributing the cups to cafes as they require, while using its site as a storage point to hold excess stock (WasteMINZ, 2023b).

• Supporting collection and returns of used cups by acting as a mug and Chunky cup return/deposit redemption point at the resource recovery site, and taking responsibility for establishing and monitoring the public collection bin at the island's airport (O'Reilly, 2023).

• Installing two commercial dishwashers at its site to wash any cups that are returned to Anamata or the airport collection bin. Anamata also washes cups on behalf of the island cafes, as and when needed, and especially for the cafes that lack washing facilities. Anamata invested in one of the dishwashers, and was gifted the second by Localised. Two dishwashers creates back-up washing capacity for Aotea's peak tourist season. (WasteMINZ, 2023b; O'Reilly, 2023).

• Redistributing clean cups to cafes. Anamata staff pick up dirty cups from cafes that can't wash their own, and return clean cups on their way to and from the site in the mornings or afternoons or during lunch breaks (O'Reilly, 2023).

• Running the promotional campaign to inform the island's residents and visitors about the fact the island is single-use cup free and the alternative takeaway options, including developing positive messaging and creating posters, signage and social media content.

Along with The Packaging Forum, Auckland Council and the Aotea Local Board provided funding support for some of the operational and capital costs for Anamata to set up the reusable cup system, including a solar power system that enables Anamata to wash cups at their site and therefore fulfill the preparation for reuse phase of the reverse logistics cycle.

Posters promoting the community mug drive and single-use cup-free initiative (created by Bree Biederman).

"This has been a really positive, feel good project for most on Aotea and brought our café operators together, along with others interested to reduce waste, creating a nice little community supporting each other. We recognise the extra effort required by the café's to eliminate single use and our intent [in providing the logistics services and support to make the system work] is to reduce the burden to ensure it's viable for all… it's something we and our staff are happy and willing and able to do as a contribution (O'Reilly, 2023)."

Drinking coffee from reusable loan cups on Aotea Great Barrier. Image supplied

APPENDIX 8: GREEN BOTTLE 'DRINK DIFFERENT' REUSABLE BEVERAGE CONTAINER RESEARCH TRIAL

LOCATION	New Zealand example
REVERSE LOGISTICS PHASES	Collection / Returns
	Sorting / Storing / Consolidating
LOCAL GOVT. LEVERAGE POINTS	Supporting community-led organisations with strong zero waste vision who deliver reuse activities to operate in the resource recovery space, through social procurement of waste contracts, access to Council land or assets, or other direct support.
	Grant/funding allocations to waste and resource recovery organisations to support participation in, or delivery of, reuse reverse logistics activities.
	Partnering with, or brokering collaboration between, contractors and others in reusable packaging reverse logistics pilots and/or action research.

In 2023, Auckland Council and Waiōrea Community Recycling Centre partnered with reusable beverage packaging start-up, Green Bottle, to undertake a month-long action research project into consumer desire for reusable beverage packaging. The action side of the research involved the simulation of a collection, drop-off and storage service for reusable beverage packaging, with Auckland Council providing funding support and Waiōrea Community Recycling Centre making site space and staff time available to support these activities.

Over the month of November, Auckland households could register online to receive a Green Bottle reusable plastic crate with space for 12 beverage containers. Participants were invited to fill the spaces in the crate with the containers of 12 beverage products that they wished came in reusable packaging. The crates were either collected back or returned to drop-off locations by participants. Green Bottle categorised the beverage containers and beverage type in order to understand and communicate to the relevant sectors about consumer interest in reusable packaging (Auckland Council, 2023b).

Auckland Council provided funding for the research project via its Waste Minimisation & Innovation Fund, while Waiōrea Community Recycling Centre offered logistical support and storage space by acting as a central location for the pick-up/drop-off of empty/returned crates for participating households (Auckland Council 2023b). The Centre allocated a staff member to engage with the public when they were collecting and dropping off crates. The Centre also made space on their site for a shipping container for the storage of empty and full crates prior to distribution to households and after being dropped off by the participating households, respectively.

"The shipping container is in our recycling yard and it just tacks on to what we're already doing there. Handing out the crates and accepting them as they are returned fits really well into what we are already doing, so it doesn't feel like extra work, it's just an extension of our job. As a new recycling centre we want to try out different things and we work according to the waste hierarchy, so we want to work more in the reduce/reuse sector. The Green Bottle pilot fits in our philosophy, so we were quite keen to be involved." (Wang, 2023).

APPENDIX 9: THE TIP SHOP (WELLINGTON SOUTHERN LANDFILL), TRASH PALACE (PORIRUA SPICER LANDFILL) AND XTREME ZERO WASTE (RAGLAN) REDISTRIBUTING SALVAGED CROCKERY TO LOCAL REUSE SCHEMES AND/OR MUG LIBRARIES

LOCATION	**New Zealand example**
REVERSE LOGISTICS PHASES	**Redistribution / Reintroduction to forward supply chain**

Many resource recovery centres have reuse shops where secondhand consumables are dropped off by the public for resale. Often, these shops receive a lot of crockery, including mugs, plates, bowls, and cutlery. Some resource recovery centres put aside the crockery and cutlery to either donate or on-sell to groups in the community who operate reusable serviceware schemes for hospitality outlets or events. This saves these groups from having to purchase new fleets of reusables. For example:

• The cafes and campuses of Te Herenga Waka – Victoria University of Wellington are largely single-use cup free. Cafes loan out Auraki Returnable Cups, which are donated mugs from Trash Palace and The Tip Shop, which are cleaned and affixed with an identifying Auraki sticker by University Sustainability Office staff, before being introduced to the campus fleet. The Auraki system was launched in 2020,

and has received more than 2,000 mugs from the resource recovery operators in this time.

• The Tip Shop provides plates, bowls, mugs and cutlery to local event waste management company Nonstop Solutions so that they can operate reusable serviceware systems at events around Wellington. The fleet size is in the hundreds, and when utilised at events, prevents thousands of single-use serviceware items from being used. The Tip Shop also donates salvaged mugs to Mug.Cycle, who provides a reusable cup loan and wash service to smaller events in the city, and mug libraries for cafes around Wellington.

• Xtreme Zero Waste furnished the secondhand cups for the Ugli Mug Libraries in cafes across Raglan, and Auckland Community Recycling Centres provided secondhand mugs to Anamata Resource Recovery for the Aotea Great Barrier Island mug libraries in Appendix 7.

9 REFERENCES

Anamata Resource Recovery n.d. Home. https://anamata.nz/ [accessed 18 April 2024].

Auckland Council 2023a 14 September 2023. Sipping sustainability: Aotea / Great Barrier pioneers single-use cup revolution. Auckland Council News. https://ourauckland. aucklandcouncil.govt.nz/news/2023/09/sipping-sustainability-aotea-great-barrier-pioneers-single-use-cup-revolution/ [accessed 18 April 2024].

Auckland Council 2023b 19 October 2023. Choose to reuse trial. Auckland Council News. https://ourauckland. aucklandcouncil.govt.nz/news/2023/10/choose-to-reuse-trial/ [accessed 18 April 2024].

Auckland Council 2024. Te Mahere Hukihuki mō te Whakahaeretanga me te Whakaitinga o te Para 2024 / DRAFT Waste Management and Minimisation Plan 2024. Auckland, New Zealand, Auckland Council. https://akhaveyoursay. aucklandcouncil.govt.nz/waste-management-and-minimisation-plan-2024-2030.

Bailey J 2019. DRS and Reusable Bottles in Oregon, USA. Powerpoint Presentation. https://www.reloopplatform.org/wp-content/uploads/2019/10/190924_Reuse_Oregon_Beverage_Recycling_Initiative_Jules_Bailey.pdf.

Bailey J 2022. Zoom call, 15 April 2022.

Bianchi V, Yates S 2021. The journey to a circular economy in the Waikato Region. Waikato Regional Council Technical Report, TR2021/34. Hamilton, Waikato Regional Council https://www. waikatoregion.govt.nz/services/publications/tr202134/.

Bielenstein, T 2022. Refillable-pool systems: MMP & GDB: 7 June 2022, Reusable Packaging: German Lessons for the Dutch Market, Webinar by Netherlands Institute for Sustainable Packaging. https://kidv.nl/reusable-packaging-german-lessons-for-the-dutch-market [accessed 22 March 2024].

Blumhardt H 2020. Reusable Beverage Packaging and Refillable Beverage Delivery Systems in New Zealand: Discussion Document. Commissioned by Greenpeace New Zealand. https://www.greenpeace.org/static/planet4-aotearoa-stateless/2020/05/c68f45e8-reusable-and-refillable-plastics-nz.pdf [accessed 28 March 2024].

Blumhardt H 2022a. Reusable packaging in Aotearoa - getting back to the future: the state of play today, barriers to growth, opportunities for innovation and recommendations for action. Tauranga, Reuse Aotearoa. https://reuseaotearoa.org.nz/ reusable_packaging_aotearoa_report_june22/.

Blumhardt H 2022b. Reusable packaging systems in Nelson-Tasman: what's happening today, what's possible tomorrow? Prepared for Nelson City Council and Tasman District Council. Tauranga, Reuse Aotearoa. https://reuseaotearoa.org.nz/ reusable_packaging_systems_nelson_tasman_august22/.

Blumhardt H 2023. Current and future approaches to shifting businesses towards plastic-free packaging systems based on reduction and reuse. Cambridge Prisms: Plastics 1, e18. https:// doi.org/10.1017/plc.2023.18.

Blumhardt H, Glasier R, van Petegem F 2023. B2B reusable packaging infrastructure and reverse logistics in Auckland: scope of current activity, and gap analysis. Prepared for Auckland Council. Tauranga, Reuse Aotearoa. https:// reuseaotearoa.org.nz/b2b_reusable_packaging_in_auckland_ report_august2023/.

Blumhardt H 2024. Stocktake of reusable packaging for fast-moving consumer goods in the Waikato region. Prepared for Waikato Regional Council. Tauranga, Reuse Aotearoa.

Bottle Bill Resource Guide (n.d.) Germany. https://www. bottlebill.org/index.php/current-and-proposed-laws/ worldwide/germany [accessed 27 March 2024].

Bottle Bill Resource Guide (n.d.) Oregon. https://www. bottlebill.org/index.php/current-and-proposed-laws/canada/ saskatchewan [accessed 27 March 2024].

Bottle Bill Resource Guide (n.d.) Saskatchewan. https://www. bottlebill.org/index.php/current-and-proposed-laws/usa/ oregon [accessed 27 March 2024].

BRCCC 2019. BRCCC Presents: Bottle Returns. https://www. youtube.com/watch?v=XCjYKKSCMUM&list=TLGGX9n3VD-4pUysyODA0MjAyMw. [accessed 27 March 2024].

Brown C, Conway C, Robshaw H 2022. A Just Transition to Reusable Packaging: Necessary Conditions, Benefits and Best Practice. Unpackaged, with the support of RREUSE, commissioned by the Rethink Plastic Alliance. https:// rethinkplasticalliance.eu/wp-content/uploads/2022/10/A-Just-Transition-to-Reusable-Packaging.pdf.

Byron Shire Council 2023. Thanks to everyone for making Bring it Back Bruns a huge success. Media Release, 3 October 2023. https://www.byron.nsw.gov.au/Council/News/Media-releases/ Thanks-to-everyone-for-making-Bring-it-Back-Bruns-a-huge-success (accessed 16 April 2024].

Centre for Local Economic Strategies 2019. Community Business and Anchor Institutions. London: Power to Change. https://cles.org.uk/publications/community-business-and-anchor-institutions/.

Child S. 2023. Final Evaluation Report to New South Wales Environmental Protection Authority on the Litter Prevention Council grant for Bring it Back Bruns.

City Playbook Working Group 2021 City Playbook: Building a Reuse City. Consumers Beyond Waste – An initiative of the Future of Consumption Platform, World Economic Forum. https://weforum.ent.box.com/s/ fx48az4ij1c8gr31g8jm5bppns79fpom.

Coelho PM, Corona B, ten Klooster R, Worrell E 2020. Sustainability of reusable packaging - current situation and trends. Resources, Conservation and Recycling: X 6. https://doi. org/10.1016/j.rcrx.2020.100037/.

Don't Waste Durham n.d. The ReCirculation Project. https://www.dontwastedurham.org/the-recirculation-project [accessed 20 April 2022].

Dreisbach C 2022. Designing Waste Out: Infrastructure for a recirculative economy: 17 November 2022, Envisioning The New Reuse Economy Panel Discussion on Upstream Indisposable Live Podcast. https://upstreamsolutions.org/indisposable-live/v/envisioning-the-new-reuse-economy.

Dreisbach C 2023. Practical Opportunities to Optimize the new R: RECIRCULATION: 27 April 2023, Maryland Recycling Network/SWANA Mid-Atlantic Annual Conference. https://www.marylandrecyclingnetwork.org/content.aspx?page_id=22&club_id=685083&module_id=568703 [accessed 22 March 2024].

Ellen Macarthur Foundation 2023. Unlocking a reuse revolution: scaling returnable packaging. Ellen Macarthur Foundation report with modelling and analysis by Eunomia & SystemIQ. https://www.ellenmacarthurfoundation.org/scaling-returnable-packaging/overview.

Enviro NZ 2023. Sustainability Report 2022. https://cms.environz.co.nz/media/Sustainability%20Report%20-%20 2022_final.pdf.

Galadauskas S 2019. Integration of Collection Infrastructure for Refillable & One Way Packaging in Lithuania. 22 November 2019, Reloop Platform and the European Federation of Bottled Waters Conference on best in class deposit return systems for single-use beverage packaging, Brussels https://www.reloopplatform.org/wp-content/uploads/2019/11/Saulius_Galadauskas_Lithuanian-Brewers-Association.pdf [accessed 27 March 2024].

Global Plastics Policy Centre 2023. Making reuse a reality: A systems approach to tackling single-use plastic pollution. Revolution Plastics, University of Portsmouth, UK. https://plasticspolicy.port.ac.uk/research/making-reuse-reality/.

Government of Prince Edward Island n.d. Beverage Container Program. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/beverage-container-program [accessed 28 March 2024].

Kunamaneni S, Jassi S, Hoang D 2019. Promoting reuse behaviour: Challenges and strategies for repeat purchase, low-involvement products. Sustainable Production and Consumption 20. https://doi.org/10.1016/j.spc.2019.07.001.

Lancaster S 2023. Zoom conversation, 28 April 2023.

Millette S 2022. Global Deposit Book: An overview of deposit return systems for single-use beverage containers. Reloop. https://www.reloopplatform.org/wp-content/uploads/2022/11/RELOOP_Global_Deposit_Book_11I2022_P1.pdf [accessed 27 March 2024].

Ministry for the Environment 2023. Te rautaki para | Waste strategy. Wellington, Ministry for the Environment.

Mission Reuse 2023. Reverse Logistics for Reusable Packaging: An exploration of what is needed to set up reverse logistics and encourage scaling up the usage of reusable packaging in the Netherlands. Commissioned by Ministry of Infrastructure and Water Management, Netherlands. https://www.government.nl/documents/reports/2023/01/31/reverse-logistics-for-reusable-packaging.

Netherlands Institute for Sustainable Packaging 2022. Reusable Packaging: German Lessons for the Dutch Market, 7 June 2022, webinar. https://kidv.nl/reusable-packaging-german-lessons-for-the-dutch-market [accessed 22 March 2024].

O'Reilly J 2023. Email exchange, 5 & 6 November 2023.

Prindiville 2021 cited in Rosengren C 2021 23 September 2021. Upstream CEO sees huge potential in burgeoning reuse-refill sector, including for haulers. WasteDive. https://www.wastedive.com/news/upstream-prindiville-reuse-refill-circular-economy/606528/.

Prindiville M 2022. The New Reuse Economy: How reuse systems and services will revolutionize how we consume. USA, Upstream. https://upstreamsolutions.org/research

Reloop 2022a. Factsheet: Enabling Refillables: Deposit Return Systems. North America: Reloop. https://bottlebillreimagined.org/wp-content/uploads/2022/03/Factsheet-Enabling-Refillables.pdf [accessed 2 April 2023].

Reloop 2022b. Reimagining the Bottle Bill. North America: Reloop. https://bottlebillreimagined.org/wp-content/uploads/2022/06/Reimagining-the-Bottle-Bill-FINAL-JUNE-2022.pdf [accessed 2 April 2023].

Sarcan Recycling n.d. What to recycle - beverage containers. https://sarcan.ca/how-to-sarcan/what-to-recycle/#beverage-containers [accessed 28 March 2024].

Schwartz A 2022. The Future of Reverse Logistics: A Blueprint for the Circular Economy: 17 November 2022, Envisioning The New Reuse Economy Panel Discussion on Upstream Indisposable Live Podcast. https://upstreamsolutions.org/indisposable-live/v/envisioning-the-new-reuse-economy.

Seldman N 2016. Zero Waste: A Short History and Program Description. Institute for Local Self-Reliance. https://ilsr.org/articles/zero-waste-a-short-history-and-program-description/.

Snow W 2020. Recycling Archives Interview, 15 December 2020. https://zerowaste.co.nz/assets/Warren-Snow-Narrative-Edit-for-Print-Final-080122-2.pdf.

Tomra n.d. Open managed system for reusable take-away packaging. Powerpoint presentation shared in email, 18 April 2024.

Tomra 2023a. Deposit return scheme in Germany: the world's highest-performing drink container recycling system. https://www.tomra.com/en/reverse-vending/media-center/feature-articles/germany-deposit-return-scheme [16 April 2024].

Tomra 2023b. Reuse it or Lose it: 15 June 2023. Tomra's Webcast. https://www.youtube.com/watch?v=hq9nULZnjG0.

Tomra 2024. TOMRA launches world's first open managed

system for reusable takeaway packaging. https://www.tomra.com/en/news-and-media/news/2024/tomra-launches-system-for-reusable-takeaway-packaging [16 April 2024].

Trikha M 2022. A Reusable's Lifetime in Carbon Savings: 16 November 2022, Webinar by The Re:Circulation Project. https://www.facebook.com/dontwastedurham/videos/693367718654878/.

USAD n.d. FAQ: Do reverse vending machines accept reusable drink packaging (glass kvass and beer bottles)? https://grazintiverta.lt/en/faq/73 [accessed 27 March 2024].

Wang C 2023. Phone call. 3 November 2023.

Waikato Regional Council 2020. Waikato Regional Waste Prevention Action Plan 2020-2025: The journey towards a circular economy. Hamilton, Waikato Regional Council. https://www.waikatoregion.govt.nz/assets/WRC/Waikato-Waste-Prevention-Action-Plan-2020-2025.pdf.

Waikato Wellbeing Project 2023. Wellbeing Progress Update February 2023. https://www.waikatowellbeingproject.co.nz/site_files/36997/upload_files/WWBAnnualReportFINALNEWLR.pdf?dl=1.

Waste Management 2023. 2022 Sustainability Report. https://www.wm.nz/siteassets/pdfs/sustainability/sustainability-gri-report/sustainability-report-2022.pdf.

WasteMINZ 2023a. *Guidelines On Claims About Recyclability, Recycled Content, Reusability And Repairability.* https://www.wasteminz.org.nz/guidelines.

WasteMINZ 2023b. Aotea - Great Barrier Island goes single-use cup free. We Choose Reuse Blog. https://www.wasteminz.org.nz/blogs/post/the-reuse-revolution [accessed 18 April 2024].

Will&Able n.d. Our Eco Story. https://willandable.co.nz/pages/upcycle [accessed 25 March 2024].

Will&Able n.d. Collection Depots. https://willandable-bulk.co.nz/pages/collection-depots [accessed 25 March 2024].

Wilson D, Lewis A 2023. Waste and Resource Recovery Infrastructure and Services Stocktake and Gap Analysis: Full Project Summary Report. Prepared for the Ministry for the Environment. Auckland, Eunomia Research & Consulting Ltd (NZ). https://environment.govt.nz/publications/waste-and-resource-recovery-infrastructure-and-services-stocktake-project-summary-report/.

Workshop Brewing Company n.d. Recycling Initiative. https://workshopbrewing.co.nz/pages/recycling-initiative [accessed 24 April 2023].

Zero Waste Europe et al 2019. Deposit Return Scheme Manifesto. https://zerowasteeurope.eu/library/deposit-return-systems-drs-manifesto/ [accessed 26 March 2023].

Zero Waste Network n.d. Zero Waste Hubs: Develop a nationwide Resource Recovery Network. https://zerowaste.co.nz/zerowastehubs/ [accessed 3 June 2024].

Zero Waste Network and the New Zealand Product Stewardship Council 2022. Container Return: CRS and refillable beverages complementary systems to reduce waste and emissions. https://zerowaste.co.nz/resource_library/container-return-scheme-crs-and-refillable-beverages-fact-sheet/ [28 March 2024].