

# The journey to a circular economy in the Waikato region

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# Abstract

We are currently in a linear, extractive economy which has led to environmental and wellbeing degradation. Transition to a circular economy has become the vehicle that many government strategies employ to address an unsustainable paradigm. Joint cross sector work needs to be carried out that will help form an Aotearoa specific set of principles and expression of what a circular economy looks like. Local government should engage in projects that will allow understanding to develop in how to contribute to a transition meaningfully and effectively to a circular economy.

# Executive summary

Waikato Regional Council (the Council) has had long standing involvement in a responsible approach to waste. The Council has had a waste strategy in place since 2012. While previous strategies focused on responsible waste management and waste minimisation, the focus now is to prevent waste all together through better product and systems design. In 2020, The Council established the *Waikato Regional Waste Prevention Action Plan 2020-2025*, which outlines focus and action areas to pursue a circular economy approach.

As part of the Council's waste prevention/circular economy work programme, an investigation was initiated into the opportunities for local government in the Waikato region to build knowledge and capacity in circular economy concepts. This research included a desktop study of national and international case studies, connecting with other organisations and people working in this space, and discussing pilot ideas with territorial authority (TA) waste officers.

Of the available projects proposed, the most support from TA waste officers were an 'Organic Waste Processing' study and a 'Resource recovery network scoping study'. The project with the least support was a look into how circular economy might interact with resource consents, bylaws and plans. Discussions with the community sector have indicated there is need to get the policy/regulatory environment right to enable and incentivise circular infrastructure. Although not ranked the highest among TA waste officers, further study in this area could occur in partnership with other organisations.

The prevalent circular economy model, including the three principles to design out waste, keep materials in use and restore natural systems, is a launching off point. Aotearoa New Zealand is in a unique position to develop our own culturally relevant principles and concepts of "circular economy". Further exploration and collaboration should be undertaken to develop a common understanding of what this means. This will enable stronger and more meaningful actions and allow local government to fulfil their Te Tiriti o Waitangi obligations.

Meaningful and effective action should be enabled that will support the transition to a circular economy. To figure out how local government can participate in this, joint projects should be engaged in with various stakeholders. The learnings, successes and failures of these projects should be documented and built on to allow growth in this area.



# 1 Introduction

Circular economy, or *ōhanga āmiomio*, is a concept that has been gaining recognition and popularity in countries around the world, including Aotearoa New Zealand. It refers to an economic system that eliminates waste and ensures materials and products are kept in use. While a circular economy is often seen as a waste management instrument, there are broader benefits across the environmental and social spheres.

In 2020, Waikato Regional Council initiated an investigation into the opportunities for local government in the Waikato region to transition to a circular economy. This research included a desktop study of national and international case studies, connecting with other organisations and people working in this space, and discussing pilot ideas with territorial authority (TA) waste officers.

Implementing a circular economy will require change throughout our society and, as a result, will be a journey all sectors need to engage in together (Varshneya et al. 2020). It would be an interactive process that would require ongoing engagement and reflection with community, business, iwi and government agencies.

This report is a first step towards exploring how local government can encourage circular economic activity in the Waikato region. It examines key circular economy initiatives that could be adopted by territorial and regional councils in the Waikato. The report provides:

- an overview of circular economy concepts and how these are being adopted in Aotearoa New Zealand
- the opportunity this presents for local government and the Waikato region
- recommendations for possible circular economy pilot projects that could be led by Waikato Regional Council or TAs
- feedback from engagement with TAs regarding proposed pilot projects.

## 2 Background

We currently operate in a linear and extractive system – we take resources, make products, use them (often only once), and throw them away. The 20<sup>th</sup> century saw the exponential growth of this economic model, and it has resulted in catastrophic environmental outcomes. Climate change, biodiversity loss, depletion of natural resources, ocean acidification, and pollution can all be linked to this linear, extractive system and society's ensuing overconsumption of natural resources (Ellen McArthur Foundation 2015).

While much work has been undertaken over the past 20 years to reduce waste to landfill, waste to levied landfills in Aotearoa New Zealand has increased by 48 per cent between 2009 and 2019 (Ministry for the Environment 2019d). According to World Bank data, Aotearoa New Zealand is one of the highest waste per capita countries in the OECD and the 10th most wasteful country in the world (Kaza et al. 2018).

A circular economy provides a different approach to the way we use resources. This model aims to drive the redesign of systems, services and goods to keep resources in use, design waste and pollution out, and regenerate natural systems. A suite of accompanying legislation needs to make low waste and low carbon choices more viable (Simon et al. 2020). Systems need to be put in place to take advantage of natural cycles, such as to compost and degrade organic materials. An economic system is needed that promotes the long term social and cultural wellbeing of the people and supports the intrinsic value and wellbeing of the planet.

The interpretation and application of the circular economy concept has been diverse (Rizos et al. 2017). The term “circular economy” has been in use since the late 1970’s and has no one unifying definition. It is a concept that has been adopted, and adapted, by many scholars and economists. It sits at the heart of concepts such as cascades, cradle-to-cradle design, doughnut economics, biomimicry, industrial ecology, natural capitalism, permaculture, and zero waste (see glossary for more information).

The zero waste movement, which has been widely endorsed in Aotearoa New Zealand since the early 2000’s, is closely aligned with the principles of circular economy. Zero waste also aims to design out waste and keep products and materials in use. It is seen as a tool to empower communities, to create jobs, and to build local resilience through the management of waste materials. The zero waste movement has provided the groundwork for circular economy concepts to be adopted.

Circular economy promises resilience and economic opportunity, which has attracted high profile government groups to include this in key strategies. The circular economy has been widely adopted as a strategy by the European Commission (European Commission 2020). The Netherlands has a programme in place to achieve a circular Dutch economy by 2050 (Government of Netherlands, no date). In 2021, China released a multi-year plan to develop the country’s circular economy (Dezan Shira & Associates 2021). It is also referenced in the G7 Summit Declarations and is popular within the United States Chambers of Commerce (US Chamber of Commerce Foundation, no date). According to KPMG, an international accounting network, transitioning to a circular economy has a possible economic benefit of \$23 billion dollars for Australia in present value GDP by 2025 (KPMG Economics 2020). By 2047-48, they estimate this to be \$210 billion and an additional 17,000 full time equivalent jobs. In New Zealand, a study led by Sustainable Business Network (2018) showed Auckland could be \$8.8 billion better off in 2030 if it shifted to a circular economy.

## 2.1 Circular economy in Aotearoa New Zealand

This report acknowledges that a circular economy is a Eurocentric term which is being used as a framework that will allow further development to occur.

As previously stated, circular economy is not a new concept, but it is a relatively new term. Aotearoa New Zealand is in a unique position because its underlying principles are already a significant part of te ao Māori. The principles of circular economy align with a Māori view of waste, as outlined by Para Kore in a report by WasteMINZ (2020 p. 9):

He tirohanga Māori i te para me te mahi hangarua (Māori views on waste and recycling) emphasise whakapapa (genealogical) connections between humans and the natural world. The respect for natural resources and the materials made from them is demonstrated by maintaining their value for as long as possible before they reach the end of their life, at which point they are disposed of in a way that causes the least harm to Papatūānuku. In this way, he tirohanga Māori i te para precedes the concept of a circular economy (ōhanga āmiomio) but similarly acknowledges the mauri (life force) of natural resources.

Local government sponsored or supported circular economy initiatives should enshrine partnership and participation as part of their operating models in accordance with the principles of Te Tiriti o Waitangi. True partnership can enable Māori to shape the foundation, principles and transition to a circular economy. This will benefit many initiatives and enable Iwi and hapū to express their aspirations and/or harness the opportunities presented. Further exploration of how circular economy could be expressed in a uniquely Aotearoa context should be explored.

## 2.2 Framing circular economy for this project

Governments, businesses, researchers, and communities around the world are currently engaging in the research and development of circular economy initiatives. Through these processes, new knowledge of how to best implement a circular economy are continually being developed.

In this evolving context, offering one specific definition of circular economy could quickly become restrictively narrow. This is why it is often described through a set of principles.

Most commonly the circular economy is framed by three key principles:

- design out waste and pollution
- keep products and materials in use; and
- regenerate natural systems

Circular economy is mostly seen as a tool to address economic and environmental issues. However, there has been international criticism that circular economy does not align with the social elements of the United Nation’s Sustainable Development Goals (Padilla-Rivera et al. 2020). Including social and cultural framing is particularly relevant in an Aotearoa New Zealand context and develops on the criticism raised above. This report views the circular economy through the four principles shown below. A discussion of each element is provided in the following sections.



Figure 1: Principals of a circular economy

The principles outlined here are an initial framework to begin a discussion of circular economy. Case studies of other successful movements (such as Québec Circulaire 2021) have shown that developing common principles, meaning, language and examples of circular economy with a community are at the core of its success. Framing principles is a launching point to developing a community of practice around circular economy that will allow shared learning and debate to be a part of the journey towards a circular economy. purposes.

### 2.2.1 Design out waste and pollution

Product design is core to circular economy strategies. Instead of a focus on ‘improving’ waste management, waste and pollution will be designed out in a circular economy. In addition to designing products for reuse, durability, repairability, et cetera, this also includes reducing toxicity through a “safe” circular economy. For example, microplastics and the chemical compounds in plastics present a threat to human and environmental health and should be regulated and designed out under the same waste elimination regime (Alaranta & Turunen 2021).

Legislation has a supportive role to play in designing out waste and pollution through regulation and restriction of products and substances of concern, as well as requiring generators of waste to be responsible for disposal. Brand owners and manufacturers have the opportunity to be responsible for the life cycle of their products (through producer responsibility or product stewardship). Here, products are carefully created to ensure little to no waste is generated during their manufacture or use, and that they can be reused, repurposed, or recycled at end of life.

## 2.2.2 Keep products and materials in use

A key element in the implementation of a circular economy is a shift in our relationships to goods and materials. In a circular economy, goods and materials are created and used in ways that ensure their longevity, fixability and reuse. It is an economy that values services over sales and sharing over ownership. This may be translated in practices such as buying for reuse and durability, repairing, sharing, leasing and re-using, as well as having the physical and knowledge infrastructure to support these.

The waste hierarchy, as presented by Para Kore Marae, Inc. below, has been adapted to show the difference between 'traditional' waste minimisation and management and what is required to achieve a circular economy.

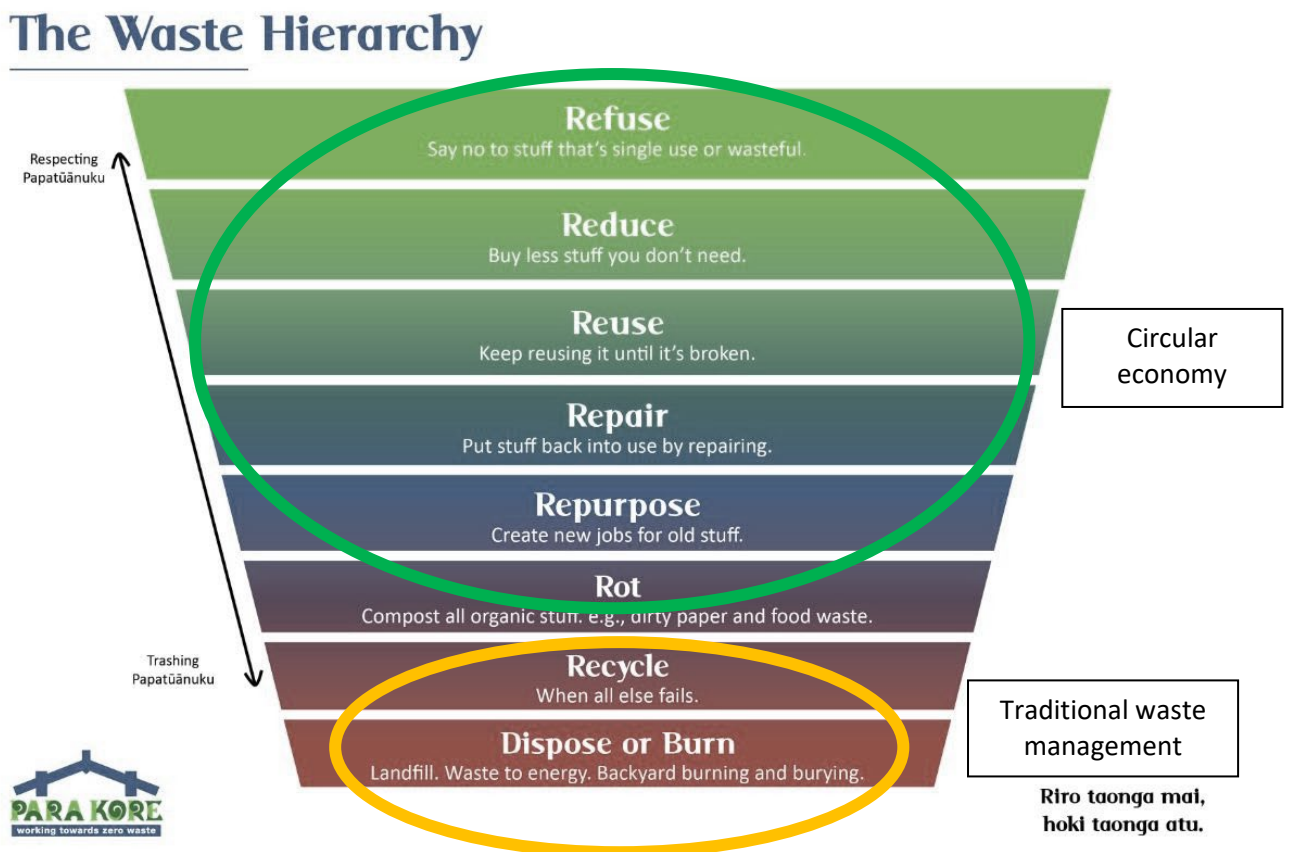


Figure 2: The waste hierarchy, as presented by Para Kore Marae, inc.

The management of goods and materials in a circular economy would happen at the top of the waste hierarchy. This would involve:

- regulation of products and chemicals that do not align with circular economy practices;
- reduction in virgin material use through ongoing reuse, repair and repurposing of goods;
- 'systems innovation' over 'material innovation' – for example, shifting from single-use to reusable items which will require a new set of infrastructure (logistics, collection, preparation for reuse e.g. sterilisation);
- new business models for getting goods to consumers, such as increase in service/sharing economy approaches – for example, through car sharing or reusable packaging systems.

This would lead to a far more complex system of material management than the current waste management systems offer and, as a result, would provide new and diverse employment opportunities.

Recycling would become a last option, and composting will be retained for organic materials that could not be avoided and for which there is no greater use. Disposal to landfill (or incineration) would be gradually phased out.

### **2.2.3 Increase social and cultural equity**

It seems obvious that any system needs to incorporate social and cultural wellbeing and equity. The Sustainable Development Goals (United Nations Department of Economic and Social Affairs 2015) are interlinked global goals that are designed to achieve a more sustainable world for everyone. In a circular economy context, there is a connection between the SDGs and creating small, closed loop systems at the local and regional level that aim to create more local employment, knowledge and community resilience resulting in increased wellbeing.

Incorporating a social lens better aligns to the Aotearoa New Zealand context as te ao Māori also encourages us to see things holistically and explore the interconnectedness of the land, environment, communities, and people. Indigenous scholars have raised the point that indigenous knowledge systems, such as matauranga Māori, could inform the systems and ways that circular economy could provide a closer union with our environment (Beamer et al. 2021). However, a key part of increasing social and cultural equity must include caution around appropriating indigenous concepts without developing an understanding of them. Just as we have depleted our environmental resources as part of a linear, extractive model, these concepts should not be mined.

### **2.2.4 Regenerate natural systems**

Waste and pollution are not the only signs of environmental damage inflicted on the planet. Climate change, biodiversity loss, ocean acidification, depletion of freshwater resources, and deforestation are among other serious environmental impacts we are currently facing. These impacts all result from the way humans have been using and abusing natural systems, and particularly the increased stress placed on the planet since the industrial revolution and the associated population growth.

Regenerating natural systems means changing our wasteful model into one that feeds resources back into the natural system. It involves learning from nature to enhance natural systems rather than destroy them. Examples include adopting regenerative farming practices, using renewable energy instead of fossil fuels, and composting as close to source as possible rather than sending organics to landfill (Prince 2021).

### 3 Central Government and the Circular Economy

Legislation and policy plays an important role in supporting and incentivising transition to a circular economy (Ellen McArthur Foundation 2015). There are growing signals from central government agencies in Aotearoa New Zealand that transitioning to a circular economy should be considered. The Ministry for the Environment (MfE) has been referring to circular economy as a model for waste management since 2018. In 2020, a range of new initiatives were announced by central government to encourage a shift in our wasteful ways, including a programme for waste aimed at accelerating Aotearoa New Zealand's transition towards circular economy.

As part of this work programme, the Government announced that the waste levy would be raised to \$60 per tonne by 2024 on Class 1 landfills, and a levy would be phased in for Class 2, 3 and 4 landfills by July 2023. These new and increased levies will significantly increase the amount of money available to territorial authorities (TAs) through the Waste Minimisation Act. Whether the mechanism used to distribute this funding between TAs remains as it currently is (pro rata based on population) or is revised, remains to be seen.

In 2021, MfE began the process of developing a new Waste Strategy and updating the Waste Minimisation Act 2008 (WMA) and the Litter Act 1979. The new Waste Strategy is expected to be a circular economy strategy.

Other national MfE initiatives that are underway include:

- the design of a container return scheme
- work on dealing with plastic waste
- standardisation of domestic kerbside collection systems and materials
- standardisation of consumer packaging labelling
- a national resource recovery infrastructure and services stocktake and gap analysis.

Taken together, these influences on the waste sector are expected to change the landscape of resource recovery and waste disposal in Aotearoa New Zealand.

In addition, the Climate Change Commission's (2021) recommendations to Central Government include the need for a clear plan to transition Aotearoa towards a circular economy. This is described by the Commission as a way to be more resource efficient and to lower emissions across supply chains. It was also recommended that a new agency or governance structure be established specifically for circularity. If this recommendation is taken forward, it would change how both waste and circularity is managed in Aotearoa New Zealand and would help to avoid siloes forming around circular economy ideas.

The New Zealand Infrastructure Commission (Te Waihanga) specifically refers to the role of infrastructure in embedding the circular economy into general practice in their 2021 "*Sector State of Play: Resource Recovery and Waste Discussion Document*". The report identifies a circular economy as a way to reduce the need for waste infrastructure and generate better environmental, cultural and social outcomes.

AgResearch, a Crown Research Institute that partners with the pastoral sector to deliver innovation, is currently researching circular economy opportunities within the agricultural sector. This includes opportunities within dairy and meat processing for circular economy initiatives.

## 4 The Opportunity for Local Government

In 2020, Taituarā — Local Government Professionals Aotearoa, published a report to support local government chief executives and managers in their statutory responsibility to promote and maximise the well-being of their communities for the present and future (Pride 2020). The report reflects that “what is needed is a process to support local government officials in their statutory responsibility to lead their communities through 'era-scale' change in ways that protect and augment social, economic, environmental and cultural well-being and increase equity” (Pride 2020 p.3).

The report also describes five critical transitions required within society:

- To low emissions living
- To living in a disrupted climate
- To a low waste society
- To community interconnectedness
- To learning-empowered communities

The outcomes of this work are expected to provide local government chief executives and managers with many tools that will also assist in supporting a circular economy.

Local government has the opportunity to leverage their substantial influence to encourage society to adopt a more circular economy. By facilitating the transition to a circular economy, they could create many positive outcomes. Some of these opportunities are outlined in the following sections.

### 4.1 Statutory obligations

Territorial and unitary authorities have a statutory role in managing waste. TAs are required under the Waste Minimisation Act 2008 (WMA) to promote effective and efficient waste management and minimisation within their district. They must also adopt a Waste Management and Minimisation Plan (WMMP) that outlines objectives, policies and methods for “achieving effective and efficient waste management and minimisation within the territorial authority’s district” (WMA 2008). WMMPs must be prepared with consideration for the waste hierarchy (see section 2.3.2 for information on the waste hierarchy) and must be updated at least every 6 years. WMMPs also guide TAs spending of their portion of the waste disposal levy to maximise waste minimisation.

As outlined in Section 3, MfE is in the process of revising the New Zealand Waste Strategy and updating the WMA. As the waste levy increases over the next few years, the amount of waste levy funding available to TAs is likely to increase substantially. Legislative changes and an increase in the funding available could enable TAs to participate in and support a more circular economic model.

A circular economy is not currently mentioned in most WMMPs in the Waikato region, with the exception of Matamata-Piako District Council’s new draft WMMP (Matamata-Piako District Council, 2021). This document has a vision of ‘ZERO WASTE 2038; working towards a low-waste future and a circular economy’. However, there are themes in the current action plans of most of the Waikato TAs’ WMMPs that could be used to encourage a move towards a circular economy. These include (among others) collaboration (regionally, and with community, iwi and industry); communication and education; promoting product stewardship; and food waste diversion. There are also opportunities for TAs to collaborate to develop future actions specifically focussed on the circular economy.

Currently, most TA's pay for the management of domestic waste but have little control over the stream of material entering the waste stream. The private sector handles the majority of waste materials and, in many cases, own the refuse-focused infrastructure giving it more control over the waste stream. If councils have greater control over the waste stream, they would have the ability to shape more circular systems.

By ensuring that circular economy initiatives are front and centre in WMMPs, new waste levy funding can be used to implement aligning initiatives. There is an opportunity to align investment signals with the waste hierarchy to ensure action and funding is allocated at the top. This will not only maximise waste minimisation but also create long term changes in the way materials move through our communities.

Regional councils do not control or pay for waste management infrastructure or operations, but they do set policy on a range of environmental issues through their regional policy statements. Waikato Regional Council also plays a key role in facilitating education and joint work between waste officers from the eleven TAs in the region. The WRC's *Long Term Plan 2021-2031* states a priority in "investigating opportunities for circular economy and regional waste initiatives as part of the regional waste strategy" (p. 44). This enables Waikato Regional Council to facilitate projects such as this one, to research and explore pathways forward.

## 4.2 Climate emission reduction

Circular economy is often framed in the context of waste elimination but should also be considered for its broader benefits, including reducing emissions. The fact the Climate Change Commission (2021) has used circularity to crosscut all its recommendations also highlights the importance of circular economy to mitigating climate change. According to the Ellen McArthur Foundation, 55% of global greenhouse emissions are from meeting energy demand and the remaining 45% are associated with materials production and land management (including agriculture) (Ellen McArthur Foundation 2021). If well implemented, designing out waste will also reduce greenhouse gases, as keeping products and materials in use both reduces energy expended in manufacturing processes and retains embodied energy. Carbon can be sequestered by regenerating natural systems.

Limiting emissions is a significant focus for central and local government. Aotearoa New Zealand is a signatory to the Paris Agreement (Ministry for the Environment 2019c), supported by the Climate Change Response (Zero Carbon) Amendment Act 2019 (Ministry for the Environment 2019b). This Act enables Aotearoa New Zealand to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels.

Under the Resource Management Act 1991 (RMA) local government is mandated to consider how changing climate will affect communities (Ministry for the Environment 2019a). In response to RMA obligations, Waikato Regional Council created the *Climate Action Roadmap* (2020). It outlines several actions that could be aided through a transition to a circular economy. This includes the commitment to look at a pathway to climate positive and regenerative investments.

Per capita, the Waikato Region produces net emissions that are nearly 30% higher than the national average (Waikato Regional Council 2020). The Waikato's high emissions economy includes agriculture, contributing 69% of greenhouse gasses, with waste contributing 2%. Forestry removes about 44% of the total gross emissions produced in the Waikato through habitat restoration and tree planting. There is an opportunity to look at how a circular economy could support the agriculture and food production industries to reduce climate emissions.



## 4.3 Local economic development

Studies undertaken around the world have shown that implementing a circular economy will bring significant economic benefits. In 2017, a report prepared for the United Nations Environmental Programme calculated that more effective resource use would benefit the global economy by \$2 trillion a year (Ekins & Hughes 2017). As previously mentioned, a report by the Sustainable Business Network (2018) predicts an \$8.8 billion economic opportunity for Auckland by 2030 by implementing circular economy principles.

While there may be upfront costs to implement new circular economy initiatives, the long term local economic benefits are expected to include increased employment opportunities. In a circular economy, labour will be valued more than raw materials. This will result in increased employment in recycling and repairs, as well as jobs in local product take-back schemes, and new innovation and business models (World Economic Forum 2014). There is the potential for councils to harness the potential for local economic development through operating meaningful social procurement strategies and support mechanisms for investment in local enterprises. Another opportunity may be to identify how to increase circularity in local economies through a regional stocktake and gap analysis of initiatives already underway, such as local reuse economies.

## 4.4 Collaboration

Collaboration has been identified as a key requirement for creating a circular economy.

Lake Macquarie City in Australia has included people and culture as a key focus area in their circular economy framework (Lake Macquarie City Council 2021), noting that cross sector city wide collaboration is needed.

Québec has established itself as one of the most distinguished regions for circularity in North America. Québec Circulaire is an umbrella for numerous networks and projects that aim to accelerate transition to the circular economy (Jagou et al 2021). The extensive knowledge generated by the Québec model shows the importance of cultivating interdisciplinary communities and partnerships.

The City of Guelph in Ontario has the vision to create a circular food economy, the first of its kind in Canada. This comprises several projects as part of a living lab initiative that “promotes collaboration between food entrepreneurs, farmers, researchers and social innovators – and a rural-urban partnership...” (City of Guelph 2019, title page). Acknowledging that solutions are accelerated through partnership, the second of their ambitious goals is to create 50 new businesses and collaborations by 2025.

There are established networks and a general willingness to work together throughout local government in the Waikato region, which could help support the collaborative process required for a circular economy. Collaboration was a key theme in all the Waikato TAs WMMPs. These TAs have a history of communication and joint work which can be seen through the TA Waste Liaison Group. This group comprises those working in local government waste related roles from across the Waikato and Bay of Plenty Regions, as well as New Plymouth, Taranaki, Gisborne and Ruapehu Councils.

An important part of effective collaboration is to identify key local partners at each layer of the waste hierarchy. It is also critical to ensure resourcing is available for communities and mana whenua to engage as partners in collaboration.

## 4.5 Strategies for integration

A review of international literature on circular economy in the public sector (Klein et al 2020) found that, to date, the public sector has focused their circular economy initiatives on public procurement, internal operations and processes, and public service delivery.

The study goes on to propose a more holistic framework for public sector engagement with the circular economy. The study outlines seven areas within public sector organisations within which circular economy can be integrated. These areas are listed below, along with a brief description of their potential application in Aotearoa New Zealand:

Key areas for circular economy integration (Klein et al 2020)	How these might relate to Aotearoa New Zealand
1. Public procurement	Public procurement can be seen as one of the most significant areas of impact for a local authority. Local authorities in Aotearoa spend more than \$10 billion per year on the procurement of goods and services (New Zealand Productivity Commission 2019). If this spend were to favour goods and services that support a circular economy, this would speed up not only the transformation of the local authority but of the surrounding businesses, economy and society.
2. Internal processes and operations	The integration of circular economy principals into internal processes and operations traditionally refers to energy and water efficiency measures, and waste minimisation within council facilities. This is an important element of a council's leadership on sustainability initiatives.
3. Public service delivery	There is scope for local authorities to have a significant impact in public service delivery through the provision of circular economy principles in sectors such as municipal waste management, public transport and public urban spaces. This can be further boosted by a social procurement approach, enabling community enterprises to deliver more low-waste, low-carbon services.
4. Human resources	Educating council staff regarding sustainability and a circular economy raises awareness and ensures staff have the appropriate skills and knowledge to adopt circular economy practices and promote them within councils' strategy and planning processes, procurement processes, and service delivery.
5. Collaboration with other organisations	Collaboration with other organisations is an important lever for local authorities to promote and implement circular economy practices. There is potential for communication, engagement and cooperation between local authorities and other public organisations, as well as a range of other stakeholders, from universities to suppliers, associations, companies, communities, and mana whenua. Resourcing needs to be made available for collaboration with community scale groups and mana whenua.
6. Strategy and management	Embedding circular economy principles into strategy and management would enable councils to provide leadership and further their own transformation.
7. Assessment and communication	Assessing performance and achievements, and reporting and communicating these achievements internally and externally would help ensure continual improvement and provides leadership to other organisations.

**Table 1: Key areas for circular economy integration and how these may apply to NZ**

## 5 Examples of other Circular Economy Initiatives

There are numerous initiatives and projects as well as organisations and networks already participating in a circular economy. This project has not attempted to catalogue or quantify the breadth or extent of circular economic activity happening in the region. However, some examples are outlined below.

The Waikato region has opportunities for product sharing for example, through libraries, toy libraries and tool libraries. Community initiatives such as crop swaps<sup>1</sup>, time banks<sup>2</sup> and repair initiatives (for example, Repair Co-op Cambridge) also provide a platform for community to share goods and skills. Businesses are actively keeping products in use, including farms selling milk in reusable bottles, and beer sold in Swappa Crates. Kaipaki Dairies<sup>3</sup> has developed a new reusable packaging system for milk using stainless steel kegs and taps, setting up refill stations and supplying cafes all around the region.

Bulk stores offer the option to bring a refillable container to reduce packaging. Alongside regular bulk stores, Waikato has a high concentration of zero waste grocers who are also working to reduce their 'back-of-house' waste by working with suppliers to send in reusable packaging, sourcing from local producers (reducing packaging and food miles) and collaborating with other stores to buy bulk quantities of products which further reduces packaging waste. Most of these stores are members of Sustain Aotearoa: Independent Zero Waste Grocers, for example: Shop Without Packaging (SWOP) in Raglan, The StoreRoom in Te Awamutu, Thames Street Pantry in Morrinsville, Re-store in Thames, Aspire Refill & Ecostore in Whangamatā and The Fillery in Whitianga.

Para Kore Marae, Inc. is a national programme focused on reducing waste through providing te ao Māori worldview-based support and mentorship for marae, kōhanga reo, kura and community organisations. Established in 2010 with support from Waikato Regional Council, Para Kore represents an extensive network of collaboration with the common focus of para kore (zero waste) and carbon neutrality. The goals and collaborative nature of the programme clearly align with the principles of a circular economy.

Xtreme Zero Waste in Whāingaroa (Raglan) is an example of community-based resource recovery. This community enterprise provides employment by identifying how to turn waste into resources. They hold the contract for waste and recycling with Waikato District Council. Holding this contract has played a significant role in allowing Xtreme to grow and flourish, giving the community enterprise a chance to show their value. Business arms include the kerbside collection and processing of food waste and a developing construction and demolition diversion programme. The success of Xtreme Zero Waste in employment and diversion, and their established community position puts the organisation in a prime spot for supporting community transition to a circular economy.

Seagull Centre is another community-based resource recovery facility in Thames. The centre has undergone a redevelopment including workshop space where donated goods can be reconditioned and upcycled and two classrooms that can be used as public repair workshops. As part of this redevelopment, the public is routed through the Seagull Centre prior to refuse transfer station where staff can help diversion over landfilling.

As part of Waikato Regional Council's Community Enterprise Peer Support programme, Xtreme Zero Waste and Seagull Centre are funded to provide business support and advice to emerging community-based resource recovery organisations. This programme operates with the view that

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<sup>1</sup> See <https://www.cropswapnz.co.nz/> for more information

<sup>2</sup> See <https://timeexchange.co.nz/> for more information

<sup>3</sup> See <https://www.kaipakidairies.co.nz/> for more information

this will strengthen the network of community-based resource recovery, develop local employment and increase community knowledge and resilience.

The University of Waikato received funding in 2020 through the Ministry of Business, Innovation and Employment's Endeavor Fund for a five-year *Āmiomio Aotearoa - a circular economy for the wellbeing of New Zealand* programme. This programme has brought together a team of investigators with expertise in materials science, engineering/design, energy, economics, Kaupapa Māori, business, law and regulation, social science, and public policy to explore a circular economy concept for the Aotearoa New Zealand context.

With a focus on business, the Sustainable Business Network (SBN) has been promoting a circular economy since 2014. The SBN is a national membership organisation for businesses engaged with sustainability. In 2018, the SBN released a report entitled "*The Circular Economy Opportunity for Auckland and how business can realise it*". They have also launched *Go Circular 2025*, a programme which aims to provide tools and resources for businesses to apply circular economy principles. The accompanying *Going Full Circle (2021)* report gives an overview of how Aotearoa New Zealand is tracking in the move toward a circular economy and provides businesses key action areas to make change.

## 6 Proposed Pilot Projects

Governments, community, business and people across the globe are trying to understand what transitioning to a circular economy will mean. As there are no complete circular economies to model after, those engaging in the transition are required to trial different initiatives and adapt based on the outcomes. Stakeholders from throughout society will need to come together to share ideas and expertise in a safe learning environment.

As part of this project, discussions were held with a range of people from central government, local government, business organisations, community groups, and research institutes that are engaged with the circular economy. Based on these discussions and the research conducted as part of this report, a series of pilot projects were then suggested.

Pilot projects can be effectively used to create a community of practice. These can be trialled, evaluated, improved, or dismissed, with input from multiple stakeholders. These pilot projects are intended as a starting point for local government in the Waikato Region to begin exploring opportunities to move towards a circular economy. While risks need to be reduced, these projects also need permission to fail, and that the risks of this failure need to be collectivised and well documented in order to gain valuable insight on the right pathway.

The pilot projects were selected with TA WMMPs and the seven key areas outlined in the 'Circular Economy Practices and Strategies in Public Sector Organizations: An Integrative Review' in mind. A table showing the relationship between the WMMPs, the integrative review and the proposed pilot projects is provided in Appendix B.

The nine proposed pilot projects were then presented to the TA Waste Liaison Group and each TA was asked to express their interest in the each in turn. They were also asked whether they would be interested in participating in each pilot project's implementation. Support for all of the proposed pilot projects was very strong.

Section 6.1 provides a brief overview of the nine proposed pilot projects. Section 6.2 provides the outcomes of the TA engagement on these proposed pilot projects.

The relevant core principles used to define a circular economy as part of this project have been assigned to each pilot project.

## 6.1 Pilot projects proposed to TAs

### 6.1.1 Procurement practices

International literature on circular economy practices for the public sector highlight procurement practices as a key tool for local government to use in moving towards a circular economy. A range of circular economy procurement practices are available to the public sector, including ensuring procurement of products with recycled content, leasing of furniture (and even disassembly and remanufacture of furniture), and reuse of materials in construction and infrastructure projects. Local government can also support a circular economy by using sharing services, including online platforms that share in-house equipment (e.g. [Rheaply](#)) or online platforms that encourage wider sharing (e.g. [Share Peterborough](#)), use of car sharing services, and even coworking or desk-sharing and teleworking practices, which all increase the use of assets and increase efficiencies.



A study from 2009 for Waikato Regional Council found that most councils do not have a sustainability or procurement strategy that mandates the use of recovered materials (Wakim N 2009). The study identified opportunities to increase the use of recovered concrete, glass, organics (mulch), and timber, through council procurement.

The 2017 Waikato and Bay of Plenty Waste Stocktake (Eunomia) noted that further work at a regional or cross-regional level is required to quantify opportunities for local authorities to specify recovered material use in civil works and develop common policies and measures to boost markets for recovered materials.

The inclusion of circular economy in procurement practices includes material use and can also lead to wider positive social outcomes. Auckland Council, for example, is among the largest procurers of goods, services and works in New Zealand, with an annual procurement spend of more than \$1 billion. They have recently developed a *Sustainable Procurement Plan* (Auckland Council 2021) with objectives that seek to:

- increase both their direct and indirect spend with Māori-owned businesses, Pasifika-owned businesses and social enterprises
- create quality employment and development opportunities for targeted communities
- increase the delivery of local projects by local suppliers
- minimise waste
- reduce carbon emissions.

**It is recommended that Waikato Regional Council develop procurement practices for goods and services that encourage a circular economy, by designing out waste and pollution, keeping products and materials in use, increasing social and cultural equity, and promoting local spend.**

A local territorial authority within the Waikato region could trial similar Procurement Practices alongside Waikato Regional Council to test their effectiveness in promoting circular economy practices at the local authority level.

## 6.1.2 Resource recovery network

In 2014, Waikato and Bay of Plenty regional councils commissioned a report (Eunomia) attempting to map out a practical way forward for the development of a Resource Recovery Network (RRN) for the Waikato and Bay of Plenty, taking into consideration the drivers and constraints relating to waste service provision in the regions.



A RRN has the potential to provide a wide range of key services, including:

- significantly higher waste diversion than traditional transfer stations
- community hubs to provide waste minimisation education, behaviour change and support for other types of community resilience
- support for product stewardship programmes and reuse systems
- increased employment opportunities
- workshops, training, timebanks, and opportunities for the establishment of other community enterprises.

A RRN should be viewed as a public good transition asset and considered as a piece of critical public good infrastructure in the same way as libraries, swimming pools and roads. A RRN will not necessarily be a commercial asset initially. However, it would provide a raft of positive community outcomes, influence change, educate, and promote behaviour change by encouraging the community to be actively involved in managing material flows.

A number of local authorities across the Waikato and Bay of Plenty are currently investigating opportunities to develop Community Recycling Centres as part of a RRN. Waikato Regional Council is supporting fledgling Community Resource Recovery Centres by providing mentorship and advice through the Community Enterprise Peer Support Programme, a “connect the dots” approach to RRNs, as recommended in *Scoping Study for Development of a Resource Recovery Network for the Bay of Plenty and Waikato* (Eunomia 2014).

It is recommended that a scoping study be undertaken to update designs for a RRN for the Waikato region, building on previous research and current work. Case studies on Xtreme Zero Waste, Seagull Centre, and the Auckland Community Recycling Network could be incorporated, as well as the latest innovations in RRN design.

The study would make recommendations on regional RRN infrastructure needs, high-level infrastructure and operational costings, and local community benefits. Given the need to move up the waste hierarchy, it would also be good to consider 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 report would also provide recommendations on preparing a regional Waste Minimisation Fund application. The Waste Minimisation Fund is due to increase significantly in size with increases to the Waste Levy, providing an opportunity for the region to implement game-changing transition assets such as regional Resource Recovery Network.

## 6.1.3 Organic waste processing

Many local authorities are currently investigating opportunities to divert organic waste, and specifically food scraps, from landfill. The *Recommendations for standardisation of kerbside collections in Aotearoa* report (WasteMinz 2020) recommended that all local authorities



should eventually provide food scrap collections. Similarly, the Climate Change Commission (2021) noted that (p. 68):

Reusing and recovering waste materials is a key part of a circular economy. The demonstration path would see a reduction in the amount of waste generated, and a focus on reducing the amount of organic waste, such as food, wood and paper, that goes into landfills. Overall, the share of total organic waste avoided, or recovered from landfill, would increase to 28% by 2030.

**A regional working group could be established to investigate opportunities for local authorities to collaborate on organic waste reduction and processing.**

**Research could be commissioned to investigate:**

- 1. infrastructure options for organic waste processing in the Waikato, and assessment of their circularity**
- 2. emerging contaminants in compost (e.g. broadleaf herbicides and plastic contaminants), with a view to increasing compost quality**
- 3. market research into the end use of compost**

#### **6.1.4 Waste infrastructure strategy**

Local and regional authorities are frequently approached by third parties presenting waste infrastructure opportunities. Currently, there are no criteria available to assess whether these opportunities would further a move towards a circular economy.

It should be noted that engaging in a waste infrastructure strategy process risks placing focus towards traditional waste/resource recovery sector actors and resulting in focus on the bottom of the hierarchy, with infrastructure that then locks in those outcomes. Many of the gaps in our economy, when it comes to circularity, are around lack of services/business models at the reduce/reuse layers of the waste hierarchy. Although this was not proposed in the original consultation with TA waste officers, an alternative would be to approach infrastructure from a stocktake and gap analysis for services (whether commercial, non-profit or public) and infrastructure at each layer of the waste hierarchy in order to gain a whole picture of what might be needed.



**It is recommended that a working group be set up to develop a strategy to assist in assessing new infrastructure opportunities, both in terms of circularity and appropriateness for the Waikato region. The working group could comprise members from key stakeholders such as Tainui, Te Waka, and the University of Waikato, as well as local government.**

A strategy developed by a working group like this could assist in decision making and ensure that new infrastructure spending is assisting the region to transition towards a more circular economy.

### 6.1.5 Education on circular economy

Moving to a circular economy is a process that will involve systemic change. To encourage and support that change, training, education and engagement must be available to local government staff.

Successfully integrating circular economy practices into the public sector relies on the ongoing education and training of staff, and elected officials, to ensure they understand their complexities and challenges.

**Circular economy workshops across the whole of local government organisations would provide capacity building and training, best practices and on-the-ground support to address the unique goals and challenges of the Waikato region.**



### 6.1.6 Resource consents and bylaws

**Reviewing mechanisms that could be put in place through territorial authority bylaws and the consenting process would be valuable to support transition to a circular economy.**

A scoping study could be undertaken into the opportunities for regional and local authorities to encourage businesses to adopt circular economy practices prior to the resource consent process.

It may also be useful to investigate opportunities to ensure circular economy practices are included in local government plans and strategies across the region. For example, some TAs are looking at requiring a Waste Management Plan for building consent application as part of local bylaw requirements.

Another area of investigation would be in relation to the other projects mentioned in this report. For example, we know anecdotally that composting enterprises around the country, particularly small-scale urban ones, are bumping up against planning rules and resource consenting issues. A review of organics processing consenting and set up requirements would contribute to *Organics waste processing*, discussed in section 6.1.3.



### 6.1.7 Business support for circular economy projects

Moving to a circular economy will require creativity and entrepreneurship. Business as usual will not facilitate the transformation required.

**Waikato Regional Council could partner with an external organisation to provide assistance to community organisations, social enterprises and small entrepreneurs to prepare business plans, locate appropriate funding sources, and prepare funding applications for new circular economy projects.**

This would ensure that circular economy aspects of these projects are fully developed within their business plans, and that organisations are linked with funding providers who may be able to assist with start-up or improvement capital.

Waikato Regional Council could also work with large funders to incentivise circular economy practices, and even provide funding rounds specifically for circular economy projects.





## 6.1.8 Trialling a cross-organisation sharing platform

Through this initial research, it has become apparent that many organisations (such as AgRecovery, University of Waikato and the Sustainable Business Network) are beginning to work in the circular economy space, but there is no existing platform to share ideas across organisations.

**It is recommended that a platform for communication be investigated, such as a twice annual online meeting or an annual in-person hui.**

Design out  
waste and  
pollution

Keep products  
and materials  
in use

Increase social  
and cultural  
equity

Regenerate  
natural  
systems

Such a platform would enable the cross-pollination of projects, collaboration between different organisations, and a more coherent regional approach to circular economy projects.

## 6.1.9 Case studies on existing circular economy initiatives in the Waikato Region

Tool libraries, sharing or green shed, community fridges, toy libraries, time banks, crop sharing, and community resource recovery centres are all local initiatives that support a circular economy.

Design out  
waste and  
pollution

Keep products  
and materials  
in use

These initiatives facilitate the sharing of resources and the minimisation of waste, while strengthening community bonds and enabling communities to become more resilient.

Increase social  
and cultural  
equity

A number of these initiatives are already operating in the Waikato Region, including libraries, [toy libraries](#), and a [tool library](#) at the Whāingaroa Environment Centre.

**To encourage the expansion of these initiatives, it is recommended that a case study be undertaken to:**

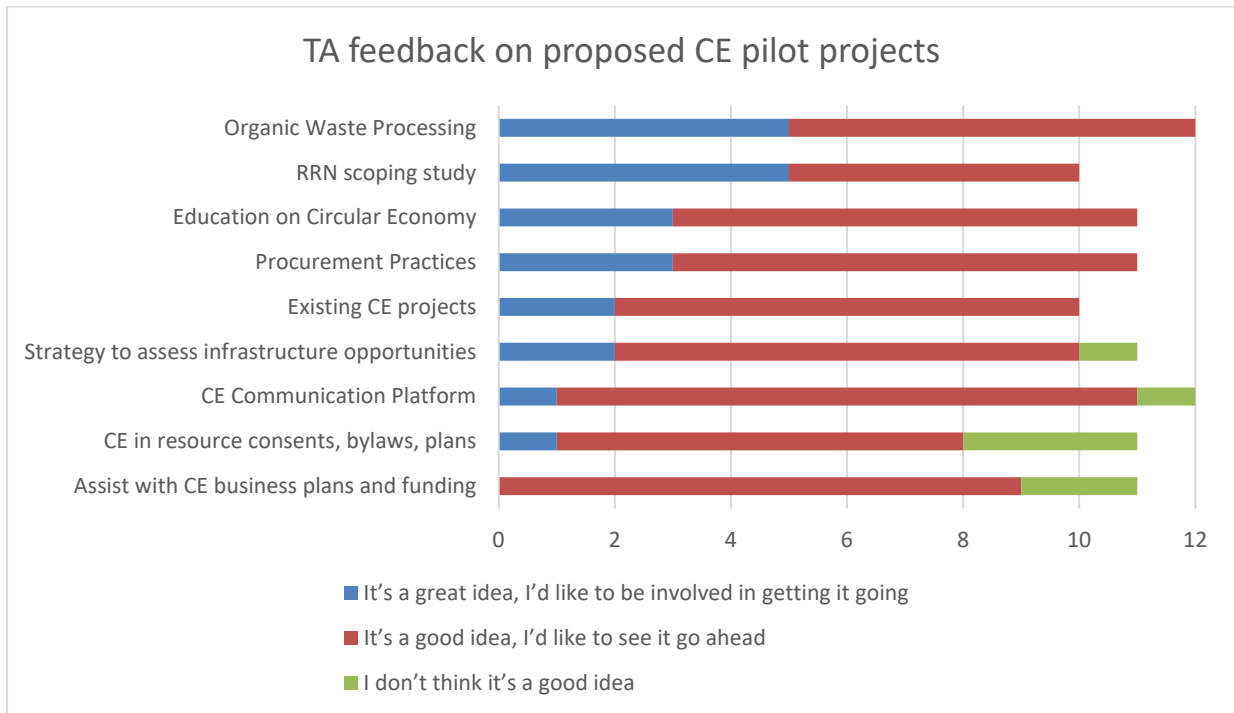
- **identify existing initiatives across the Waikato Region**
- **investigate the true economic benefit of these initiatives within their communities**
- **investigate the community and environmental benefits of these initiatives**
- **investigate the uptake of current initiatives**
- **identify barriers currently impacting on their uptake**
- **identify opportunities for them to scale out, and more widely available across the region.**

This work could be done in conjunction with the stocktake and gap analysis discussed in section 6.1.4.

## 6.2 Consultation with TAs

After the nine proposed pilot projects outlined in the previous sections were designed, these were presented to members of the TA Waste Liaison Group. An outline of this process is presented in *Appendix A*.

After detailing what may be involved, participants were asked to rank their reaction to each possible project. The results of the poll were gathered and analysed and are presented below.



**Figure 3: TA feedback on proposed circular economy pilot projects**

Figure 3 shows that, overall, there was strong support for each of the nine proposed pilot projects.

### 6.3 Proposed projects conclusion

The projects with the most support from TA waste officers were 'Organic Waste Processing' and 'RRN scoping study'. Since there is support and interest for this work, these projects could be good starting places for local government engagement. The project with the least support from this group was the 'CE in resource consents, bylaws and plans'. However, discussions with the community sector have indicated there is need to get the policy/regulatory environment right to enable and incentivise circular infrastructure. Although not ranked the highest among TA waste officers, further study in this area could occur in partnership with other organisations. An other approach would be for the Council to build on the present study by conducting further investigation with community organisations, iwi, hapu and business to see what projects they would like to pursue to co-develop circular economy understanding and action.

## 7 Summary and Next Steps

Local government can play a key role in moving our society towards a more circular economy. As circular economy principles continue to become more mainstream, and central government calls for its implementation, local government will be able to work in the circular economy space to:

- respect and value te ao Māori and fulfil their Te Tiriti obligations
- fulfil their statutory obligations (for example, under the RMA and the WMA 2008)
- reduce climate emissions
- increase local economic development and resilience
- and reduce pollution.

Local government, along with other stakeholders, can explore and trial circular economy principles in order to gain a shared understanding. Research shows collaboration is key to success as circular economy is underpinned by strong relationships. It is essential that circular

economy work be undertaken in cooperation with other organisations, Iwi and hapū, the community, and businesses.

**Waikato Regional Council should support the development of a shared understanding of circular economy to see common outcomes realised. This includes ensuring that Iwi and hapū are authentically represented as key partners in the formulation of a common language and principles. Tracking progress and communicating learning through case studies can help demonstrate how circular economy is expressed in Aotearoa New Zealand.**

The proposed pilot projects in this report are seen as opportunities for Waikato Regional Council and the TAs of the Waikato region to embark on a journey of learning and collaborating towards a circular economy future. Waikato Regional Council could also partner with other organisations to see this work progressed. Developing a resource recovery network and organics options were highly rated by TAs so these could be good starting points for collaboration.

In the Waikato Region, 69 per cent of greenhouse gas emissions are from agriculture. Working with those in the agriculture and food sectors could be a significant area of focus. AgResearch is also working in the circular economy space and could become a key partner.

# Glossary

Biomimicry	The Biomimicry Institute defines biomimicry as “an approach to innovation that seeks sustainable solutions to human challenges by emulating nature’s time-tested patterns and strategies. The goal is to create products, processes, and policies—new ways of living—that are well-adapted to life on earth over the long haul.”
Cascades	The sequential and consecutive use of resources to maximise resource effectiveness and create the most economic value over multiple product lifetimes.
Cradle-to-cradle design	Cradle-to-cradle design is an approach to the design of products and systems that models nature's processes, and views materials as nutrients circulating in healthy, safe metabolisms.
Industrial ecology	Industrial ecology is concerned with shifting industrial process from linear systems, in which resource and capital investments move through the system to become waste, to closed loop systems where wastes can become inputs for new processes.
Natural capitalism	Natural Capitalism is a 1999 book that defines the next industrial revolution as requiring: "the conservation of resources through more effective manufacturing processes, the reuse of materials as found in natural systems, a change in values from quantity to quality, and investing in natural capital, or restoring and sustaining natural resources"
Permaculture	Permaculture is a philosophy of working with, rather than against nature and includes 12 principles that are used as a basis for regenerative agriculture as well as community resilience: <ul style="list-style-type: none"> <li>• Observe and interact</li> <li>• Catch and store energy</li> <li>• Obtain a yield</li> <li>• Apply self-regulation and accept feedback</li> <li>• Use and value renewable resources and services</li> <li>• Produce no waste</li> <li>• Design from patterns to details</li> <li>• Integrate rather than segregate</li> <li>• Use small and slow solutions</li> <li>• Use and value diversity</li> <li>• Use edges and value the marginal</li> <li>• Creatively use and respond to change</li> </ul>
Product stewardship	Product stewardship places responsibility for the environmental impact of a product’s life cycle on the designer, producer, and vendor of a product.
Waikato Wellbeing Project	The Waikato Wellbeing Project is a regional initiative to achieve a more environmentally sustainable, prosperous and inclusive Waikato region by 2030, based on the United Nations Sustainable Development Goals. Mātauranga and te ao Māori principles are also embedded into the project.
Waste Minimisation Fund	The Waste Minimisation Fund (WMF) is a fund managed by the Ministry for the Environment and funded by the Waste Disposal Levy. Half of the fund is provided to TAs to spend on “matters to promote or achieve waste minimisation; and in accordance with its waste management and minimisation plan.” (Waste Minimisation Act 2008)
Zero waste	Zero waste encourages the redesign of resource life cycles so that all products are reused. The goal is for no resources to be sent to landfills, incinerators or the ocean.

# Appendix A – Consultation with TAs

After the nine proposed pilot projects were designed, they were presented to members of the TA Waste Liaison Group.

An online meeting was held on 4 May 2021 with 13 members of the TA Waste Liaison Group (12 TA members and the WRC coordinator) attending. Ten separate TAs were represented, of which six were from the Waikato region.

Representatives from the following TAs attended the meeting:

- Otorohanga District Council
- South Waikato District Council
- Matamata Piako District Council
- Waikato District Council
- Hauraki District Council
- Waipā District Council
- Western Bay District Council
- Whakatāne District Council
- South Taranaki District Council
- Ruapehu District Council

A project overview was provided to the participants, followed by an overview of each of the nine proposed pilot projects. After each pilot project was presented, and questions answered, an online poll was taken asking participants to check one of the following statements:

1. I don't think it's a good idea
2. It's a good idea and I'd like to see it go ahead
3. It's a great idea, I'd like to be involved in getting it going

Not all participants voted during each poll.

## Appendix B – Interface Between Pilot Projects, TA Influence and Action Plans

Interface between proposed pilot projects and TAs areas of influence and action		Proposed pilot projects to move Waikato Region towards a circular economy								
		Procurement practices	Resource Recovery Network	Organic waste processing	Waste infrastructure strategy	Education on CE	Resource Consents and Bylaws	Business support for CE projects	Cross-organisational sharing platform	Case studies on existing CE initiatives
Key areas of Local Govt. influence on CE	Public procurement									
	Internal processes and operations									
	Public service delivery									
	Human resources									
	Collaboration with other organisations									
	Strategy and management									
	Assessment and communication									
Actions present in 75-100% of Waikato TAs WMMPs	Collaboration									
	Communication, education, promotion									
	Recycling kerbside, optimise, review									
	Product stewardship									
	Drop-off and RTS actions									
	Monitor and report – data									
	Bylaw review/actions									
	Food waste actions									
	National Waste Data Framework									

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