

Kaikoura District Waste Assessment

November 2020



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1 Introduction

Introduction

This Waste Assessment establishes the planning foundations for a Regional Waste Minimisation and Management Plan (WMMP) for the Kaikōura District by describing the waste situation, setting the vision, goals, objectives and targets for the district, and developing options for meeting future demand. Much of the information presented in this Waste Assessment will be summarised in the final WMMP.

This Waste Assessment contains three parts:

- Part 1 – where are we now?
This covers policy context, the current waste situation, including waste flows, waste infrastructure and services, and forecast of future demand. This will be summarised in the WMMP.
- Part 2 – where do we want to be?
Part 2 includes the vision, goals, objectives and targets for the waste assessment, which will form part the WMMP.
- Part 3 – how are we going to get there?
Part 3 identifies options and assesses the suitability of each option (as required by Section 51 of the Waste Management Act 2008 (WMA) and includes a summary of the outcome of consultation with the Medical Officer of Health. The preferred options from the Part 3 assessment will be presented in the WMMP.

Purpose of the Waste Assessment

This draft Waste Assessment and associated draft WMMP summarises the current situation for waste minimisation and management in Kaikōura. It sets out how the Council will progress efficient and effective waste management and minimisation. The document paves the way forward, considering current policy and the legal framework and Kaikōura District Council's vision for waste minimisation and management, with an overarching suite of guiding goals and objectives.

This Waste Minimisation and Management Plan fulfils Kaikōura District Council's obligations under the Waste Minimisation Act (WMA) (2008). The plan uses the waste hierarchy (Figure 1) as a guide to prioritising activity, focussing on reducing waste before recycling or recovery of materials. Where materials cannot be recycled or recovered the focus is on safe treatment and disposal.

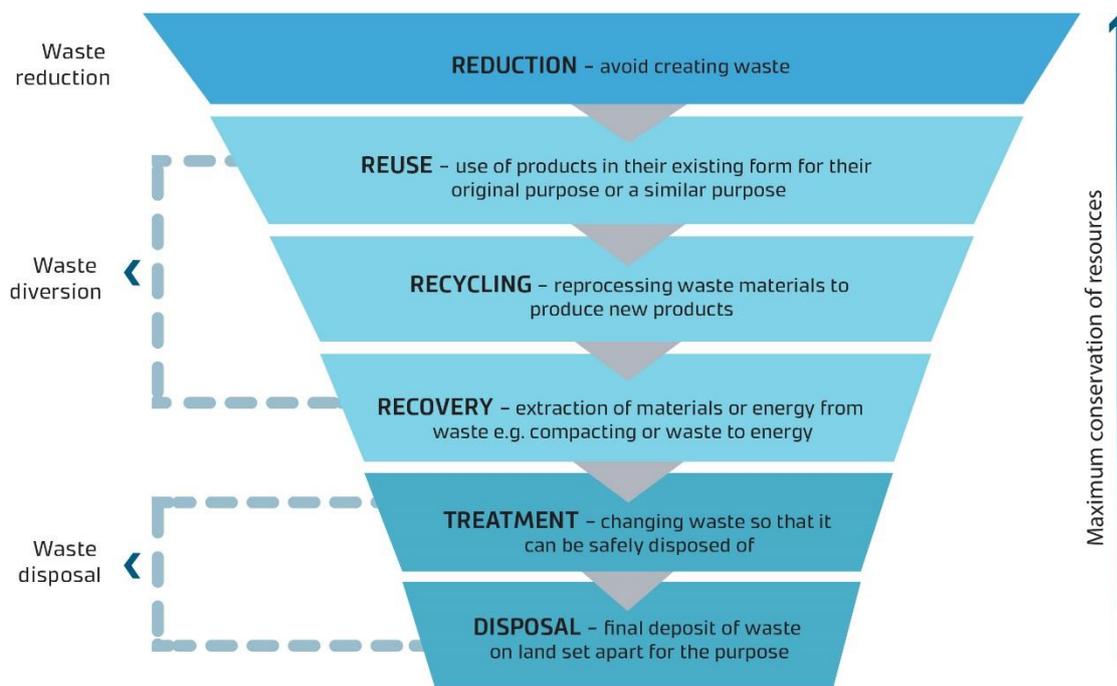


Figure 1 The Waste Hierarchy

Scope

This Waste Assessment and the associated WMMP covers solid waste generated in the Kaikōura District. The focus is on materials entering the waste management system (collection, processing and disposal). Other materials are relevant but not specifically addressed including wastewater treatment solids, industrial by-products and materials re-used on site.

PART 1 - THE WASTE SITUATION

2 Policy context

The New Zealand Waste Strategy¹ (NZWS) provides a useful summary of the New Zealand policy context for waste minimisation and management. A diagram from the NZWS laying out the policy context is reproduced as Figure 2.

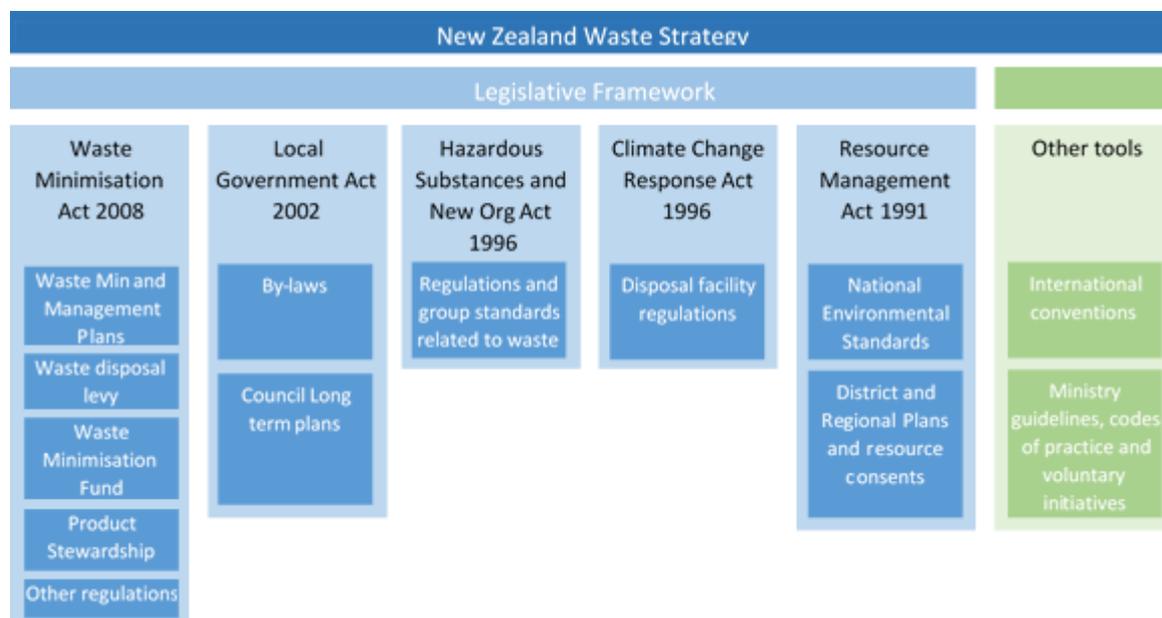


Figure 2: Policy context for waste minimisation and management in New Zealand¹

There is a wide range of statutory documents and associated policies that impact waste minimisation and management in the Kaikōura District. These are summarised in Table 1 and the remainder of Section 2.

Table 1 Relevant policy for waste in the Kaikōura District

National	Kaikōura
Waste Minimisation Act 2008	Three Year Plan 2018-2021 ²
Health Act 1956	Long Term Plan 2015-2025 Volume 1
Hazardous Substances and New Organisms Act 1996	Long Term Plan 2015-2025 Volume 2
Resource Management Act 1991	Kaikōura District Plan 2008
Local Government Act 2002	Kaikōura Annual Plan 2019/20
Climate Change Response Act 2002	Previous Zero Waste Minimisation Plan (adopted 2009)
NZ Waste Strategy 2010	
NZ Emissions Trading Scheme	

¹ The New Zealand Waste Strategy: Reducing harm, improving efficiency (ME1027), 2010.

² Following the November 2016 earthquake, a Three Year Plan was prepared in lieu of the normal Long Term Plan. Authorized by government under an Order in Council.

2.1 Statutory requirements for Waste Assessments and WMMP

This Waste Assessment establishes the planning foundations for the Kaikōura WMMP by describing the waste situation, setting the vision, goals, objectives and targets for the district, and developing options for meeting future demand.

A WMMP must contain a summary of the Council's objectives, policies and targets for waste management and minimisation. The plan should clearly communicate how the Council will deliver on these objectives.

Section 43 of the WMA states that a WMMP must provide:

- a *objectives and policies for achieving effective and efficient waste management and minimisation within the territorial authority's district*
- b *methods for achieving effective and efficient waste management and minimisation within the territorial authority's district, including -*
 - i *collection, recovery, recycling, treatment, and disposal services for the district to meet its current and future waste management and minimisation needs (whether provided by the territorial authority or otherwise); and*
 - ii *any waste management and minimisation facilities provided, or to be provided, by the territorial authority; and*
 - iii *any waste management and minimisation activities, including any educational or public awareness activities, provided, or to be provided, by the territorial authority*
- c *how implementing the plan is to be funded*
- d *if the territorial authority wishes to make grants or advances of money in accordance with section 47, the framework for doing so.*

A WMMP must have regard to the waste hierarchy, the New Zealand Waste Strategy, and a Council's most recent Waste Assessment.

2.2 National policy

2.2.1 Waste Minimisation Act 2008

The Waste Minimisation Act 2008 (WMA (2008)) sets a framework to encourage a reduction in the amount of waste generated and disposed of in New Zealand, minimising the environmental harm of waste and providing economic, social and cultural benefits for New Zealand.

The main elements of this Act include:

- A levy imposed on all waste that is landfilled.
- Product stewardship schemes for businesses and organisations.
- Allows local authorities to create bylaws relating to waste management and minimisation.
- Requires waste operators to undertake waste reporting.
- Establishes a Waste Advisory Board to give independent advice to the Minister for the Environment on related issues.

Territorial authorities, such as Kaikōura District Council, are required by the WMA (2008) to promote waste management and minimisation within the territorial authority's district. Part of this responsibility involves the creation and adoption of a WMMP, updated every six years, which details current and planned objectives and policies, methods and funding for achieving effective and efficient waste management and minimisation. This plan must have regard for the New Zealand Waste Strategy

(see below). The Plan must also consider the following methods of waste management and minimisation (listed in descending order of importance):

- Reduction
- Reuse
- Recycling
- Recovery
- Treatment; and
- Disposal.

Waste Levy

There is currently (November 2019) a \$10 per tonne levy on materials disposed of to landfills accepting household waste. The Ministry for the Environment are required by the WMA to periodically review the levy. The most recent review³ made three recommendations to support targeted investment in areas that will return the greatest waste minimisation outcomes for New Zealand. These are:

- Strategy: develop a clear vision, strategy and set of outcomes for the future direction of the waste disposal levy.
- Data: invest in developing a national waste data collection and evaluation framework that targets key information to prioritise waste issues and measure the effectiveness of the waste disposal levy.
- Approach: develop and implement a staged approach to applying the waste disposal levy across additional classes of landfills.

A parallel evaluation of the waste levy in New Zealand⁴ noted the potential impact of raising the levy rate and/or extending the coverage of the levy.

Following consultation government agreed to increase the levy to \$50 - \$60 per tonne by 2023. They also will extend the scope of the levy to cover industrial landfills and sites accepting construction and demolition waste.

The Waste Minimisation Fund

The Waste Minimisation Fund manages the revenue gathered through the waste levy. 50% of the money collected is allocated to Territorial Local Authorities on a population basis. The remainder, less administration costs, is made available for waste minimisation projects on a contestable basis. The Provincial Growth Fund also made approximately \$40 Million available for projects advancing local processing of recyclable materials in late 2019, and a further \$124 million was announced as being available for improvements to recycling processing infrastructure in 2020.

Product Stewardship

While the WMA provides for mandatory product stewardship schemes, to date no compulsory schemes have been implemented in New Zealand. A range of voluntary schemes have been accredited by the Ministry for the Environment⁵. The Ministry's approach has been to consider mandatory schemes only where significant environmental harm has been established. In practice this means only voluntary schemes have been established in New Zealand to date.

³ Review of the effectiveness of the waste disposal levy 2017 (<http://www.mfe.govt.nz/publications/waste/review-of-effectiveness-of-waste-disposal-levy-2017>)

⁴ The New Zealand Waste Disposal Levy - Potential Impacts of Adjustments to the Current Levy Rate and Structure (<http://www.wasteminz.org.nz/wp-content/uploads/2017/06/NZ-Waste-Disposal-Levy-Final-Report-Eunomia-30-May-2017.pdf>)

⁵ See <http://www.mfe.govt.nz/waste/product-stewardship/accredited-voluntary-schemes>

Many other jurisdictions have implemented container deposit schemes, often with a focus on beverage containers (glass and plastic bottles). There is potential to create a deposit scheme using the product stewardship aspects of the WMA or provisions relating to setting levies on specific waste materials. Government announced in September 2019 that they will fund the 'co-design' of a container return scheme, to be completed by mid-late 2020. Key considerations for Kaikōura District Council will be understanding the impact of deposits on kerbside and recycling station operations. Deposits may provide an additional source of revenue, but may also result in others targeting materials if they have an increased value.

The government also consulted on declaring several priority products in mid-late 2019. This is part of the process of moving to regulated product stewardship schemes stipulated in the Waste Minimisation Act 2008. Potential priority products include e-waste, tyres, packaging, synthetic greenhouse gases, agrichemicals and farm plastics.

2.2.2 The New Zealand Waste Strategy 2010

While the WMA (2008) outlines the regulatory requirements of businesses and organisations, the New Zealand Waste Strategy provides high-level strategic direction around where to focus effort to manage waste, and ways in which this can be achieved. The key aim of the Strategy is 'Reducing Harm, Improving Efficiency'. This aim is further defined as:

- Reducing the harmful effects of waste on both the environment and human health, and
- Improving the efficiency of resource use to reduce the impact on the environment and human health and gain any potential economic benefits.

The strategy highlights other tools and legislative requirements that businesses and organisations should consider when reviewing waste management.

2.2.3 Other national policy

As noted in Table 1, there are several other policy documents of relevance to waste minimisation and management in Kaikōura. These are noted below with content drawn from the MfE Guide for Waste Minimisation and Management Planning⁶.

2.2.3.1 Local Government Act 2002

The Local Government Act 2002 (LGA) provides the general framework and powers under which New Zealand's democratically elected and accountable local authorities operate.

The LGA contains various provisions that may apply to Councils when preparing their WMMPs, including consultation and bylaw provisions. For example, Part 6 of the LGA refers to planning and decision-making requirements to promote accountability between local authorities and their communities, and a long-term focus for the decisions and activities of the local authority. This part of the Act includes requirements for information to be included in the long-term plan (LTP), including summary information about the WMMP.

2.2.3.2 Resource Management Act 1991

The Resource Management Act 1991 (RMA) promotes sustainable management of natural and physical resources. Although it does not specifically define 'waste', the RMA addresses waste minimisation and management through controls on the environmental effects of waste minimisation and management activities and facilities through national, regional and local policy, standards, plans and consent procedures. In this role, the RMA exercises considerable influence over facilities for waste

⁶ Waste Assessments and Waste Management and Minimisation Planning – A Guide for Territorial Authorities, MfE 2015.

disposal and recycling, recovery, treatment and others in terms of the potential impacts of these facilities on the environment.

Under Section 31 of the RMA, local authority responsibilities include controlling the effects of land-use activities that have the potential to create adverse effects on the natural and physical resources of their district. Facilities involved in the disposal, treatment or use of waste or recoverable materials may carry this potential. Permitted, controlled, discretionary, non-complying and prohibited activities, and their controls, are specified in district planning documents, thereby defining further land-use-related resource consent requirements for waste-related facilities.

In addition, the RMA provides for the development of National Policy Statements (NPS) and for the setting of National Environmental Standards (NES). There is currently one enacted NES that directly influences the management of waste in New Zealand – the Resource Management (National Environmental Standards for Air Quality) Regulations 2004. This NES requires certain landfills (e.g., those with a capacity of more than 1 million tonnes of waste) to collect landfill gases and either flare them or use them as fuel for generating electricity. Unless exemption criteria are met, the NES for Air Quality also prohibits the lighting of fires and burning of wastes at landfills, the burning of tyres, bitumen burning for road maintenance, burning coated wire or oil, and operating high-temperature hazardous waste incinerators. These prohibitions aim to protect air quality.

2.2.3.3 Climate Change Response Act 2002, New Zealand ETS

The Climate Change Response Act 2002 and associated regulations is the Government’s principal response to manage climate change. A key mechanism for this is the New Zealand Emissions Trading Scheme (NZ ETS). The NZ ETS puts a price on greenhouse gas emissions, providing an incentive for people to reduce emissions and plant forests to absorb carbon dioxide.

Certain sectors, including landfill operators, are required to acquire and surrender emission units to account for their direct greenhouse gas emissions, or the emissions associated with their products. Landfills that are subject to the waste disposal levy⁷ are required to surrender emission units to cover methane emissions generated from landfill. These disposal facilities are required to report the tonnages landfilled annually to calculate their emission unit surrender obligations. Kaikōura entered data for this purpose on January 2014.

The Climate Change Response (Zero Carbon) Amendment Act 2019 gained royal assent on 13 November 2019. Information on the Amendment Act provided on the MfE website is summarised below.

The Amendment Act provides a framework by which New Zealand can develop and implement clear and stable climate change policies that:

- *contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels*
- *allow New Zealand to prepare for, and adapt to, the effects of climate change.*

The changes do four key things:

- set a new domestic greenhouse gas emissions reduction target for New Zealand to:
 - reduce net emissions of all greenhouse gases (except biogenic methane) to zero by 2050
 - reduce emissions of biogenic methane to 24–47 per cent below 2017 levels by 2050, including to 10 per cent below 2017 levels by 2030
- establish a system of emissions budgets to act as stepping stones towards the long-term target

⁷ Kaikōura Landfill entered the NZ ETS in January 2014.

- require the Government to develop and implement policies for climate change adaptation and mitigation
- establish a new, independent Climate Change Commission to provide expert advice and monitoring to help keep successive governments on track to meeting long-term goals.

There will be a transitional period to 2021 to get the new provisions up and running.

- The Ministry for the Environment:
 - helped establish the new, independent Climate Change Commission in 2019.
 - has begun work on the first National Climate Change Risk Assessment. Future Risk Assessments will be carried out by the Climate Change Commission.
 - is developing a provisional emissions budget for 2021–2025. This will provide an early sense of direction before the first three emissions budgets (for the emissions budget periods 2022–2025, 2026–2030 and 2031–2035) are recommended by the Climate Change Commission in early 2021, and set by the Government by the end of 2021.
- The NZ ETS will be an important tool in delivering emissions reductions and helping New Zealand achieve its emissions budgets and 2050 target. The provisional emissions budget for 2022–2025 will be used to inform the unit supply settings.

2.2.3.4 Litter Act 1979

Under the Litter Act 1979 it is an offence for any person to deposit litter of any kind in a public place, or onto private land without the approval of the owner.

The Litter Act is enforced by territorial authorities, who have the responsibility to monitor litter dumping, act on complaints, and deal with those responsible for litter dumping. Councils reserve the right to prosecute offenders via fines and infringement notices administered by a litter control warden or officer. The maximum fines for littering are \$5,000 for a person and \$20,000 for a corporation.

Council's powers under the Litter Act can be used to address illegal dumping issues that may be included in the scope of a Council's WMMP.

2.2.3.5 Health Act 1956

The Health Act 1956 places obligations on Councils (if required by the Minister of Health) to provide sanitary works for the collection and disposal of refuse for the purpose of public health protection (Part 2 – Powers and duties of local authorities, Section 25). The Act specifically identifies certain waste management practices as nuisances (Section 29) and offensive trades (Third Schedule). The Health Act enables Councils to raise loans for certain sanitary works and/or to receive government grants and subsidies, where available.

2.2.3.6 Hazardous Substances and New Organisms Act 1996

The purpose of the Hazardous Substances and New Organisms (HSNO) Act 1996 is to protect the environment, and the health and safety of communities, by preventing or managing the adverse effects of hazardous substances and new organisms. The Act covers waste hazardous substances, but not mixtures of materials that have not been manufactured.

2.3 Regional policy

The Canterbury Regional Policy Statement, Canterbury Air Regional Plan, Canterbury Land and Water Regional Plan and Regional Coastal Environment Plan for the Canterbury Region are all relevant for waste minimisation and management activities in the Kaikōura District.

The Canterbury Regional Policy Statement sets the policy framework in the region, where appropriate referencing relevant national policy.

The regional plans set resource specific policies and impose controls in the form of rules. These are relevant for Council activities (transfer station, landfill) as well as activities undertaken by others (farm dumps, burning of waste, disposal of clean fill).

2.4 Local policy

2.4.1 Council's Long Term Plan

Kaikōura District Council (KDC) must review the Long Term Plan (LTP) every three years. The 2015-2025 LTP has since been superseded by a three year plan (2018-2021), which was produced following the November 2016 earthquake to replace the original LTP.

The LTP must include information on activities, goods or services provided by Council, and specific funding and financial management policies and information.

The plan sets Community Outcomes for the Kaikōura District. These are:

- Residents and visitors enjoying an improved quality of life in the District.
- Infrastructure, housing and community facilities which are accessible, cost effective and can withstand natural hazards.
- Value, protect and advance natural environment, biodiversity and sustainably manage waste disposal.
- Safe, resilient and healthy communities.
- Economically diverse, attracts investment and certainty around business and employment continuity.
- Community participation in planning and decisions for the future.

The rationale for the Solid Waste activity is summarised in Table 2.

Table 2 Rationale for solid waste activity (Kaikōura 3 Year Plan, 2018-2021)

Activity	Community Outcome	Council Role
Managing a secure landfill site, preventing contaminants from entering the surrounding environment	Value, protect and enhance Kaikōura's unique natural environment and biodiversity. Sustainably managed waste disposal.	Provider
Diverting solid waste from landfill to recycling and re-use markets, through waste separation and a kerbside recycling collection ⁸		Provider
Reconfiguration of the Resource Recovery Centre to a transfer station, and capping the existing landfill – 2021/22 ⁹		IWK provided funding on behalf of Council
Provision and management of recycling stations and street litter bins at waste generation locations		IWK on behalf of Council

⁸ Some properties receive the kerbside recycling collection (Kaikōura township, Ocean Ridge and Oaro).

⁹ Identified in the 2015-2025 LTP

Activity	Community Outcome	Council Role
Careful Resource Management decisions to ensure sustainable management of the natural environment and biodiversity		Provider?

The 2016 earthquake and the responses to it have caused some Council objectives to be reassessed, with a particular need for a focus on efficiency and affordability.

3 Waste infrastructure and services

3.1 Service Providers

Innovative Waste Kaikōura Limited (IWK) is a Council Controlled Organisation. IWK is 100% owned by the Kaikōura Enhancement Trust (KET), which in turn is 100% owned by Kaikōura District Council. IWK manages and delivers services on behalf of Council. These services include the management of the Kaikōura Landfill, running the Kaikōura Resource Recovery Centre, resource recovery and management of rubbish and recycling services. IWK provide a kerbside recycling service across the District.

KK Bins are a private company that provide waste and recycling collection services for households and businesses in Kaikōura. It is suspected that KK Bins provide collection services to between one third and one half of the residential properties in Kaikōura, but precise details of this and most other metrics of their services are not known.

3.2 Services

3.2.1 Waste and recycling collection

There is no Council provided kerbside refuse collection in the Kaikōura District for residents. Residents are required to take their waste to IWK or make use of a commercial collection provided by KK Bins.

That there is no KDC service is reflective of the previous strong zero waste focus of KDC.

IWK provides a weekly roadside recycling service to residents in the Kaikōura township and South Bay. This service is available in rural areas, where recyclables are taken to designated kerbside locations (Oaro to Kekerengu). Stations are located at:

- Suburban Primary School, Schoolhouse Road
- Lynton Downs Primary School, Inland Road
- Kekerengu, SH1

Kerbside collection of recyclables is available in green bags (paper only) and crates available to those living in urban areas. Alternatively, the public may take household refuse and recycling to the Resource Recovery Centre (RRC) (operated by IWK), see section 3.2.3. In addition to conventional kerbside recycling (paper, cardboard, plastics, tins), residents can put out food scraps in their own container for collection. These containers are emptied into drums on the kerbside collection vehicles for transport to the RRC.

Collection frequency is generally weekly although commercial services are offered twice a week.

Health and safety is an important issue for the collection of refuse and recycling across New Zealand. Key risks including operating in a live traffic environment, manual handling of refuse containers and recycling crates, dangerous items in refuse and recycling (broken glass, needles, putrescible materials). Common approaches to eliminating or mitigating these risks include:

- Rigid containers (for example Mobile Garbage Bins/wheelie bins) that prevent collection staff from exposure to waste or recyclable materials.
- Automated or semi-automated collection e.g. wheelie bins with remote lifting arms for refuse and recycling containers, bin lifters on collection vehicles.
- Specialised collection vehicles with left hand drive, standing driving position, low entry and side loading.

- Activity specific health and safety management drawing on guidance from NZTA and WasteMINZ.

The IWK recycling collection services addresses some, but not all of the safety risks inherent in recycling collection services.

The IWK recycling collection process involves manual emptying of recycling crates and lifting materials into the collection vehicle with further sorting of materials at RRC. The collection also involves staff moving around the collection vehicle and to/from the roadside.

3.2.1 Business waste

Waste (both waste and recycling) from commercial and industrial premises in Kaikōura District must be separated in accordance with District Plan requirements. IWK accepts business recycling free of charge at the IWK site. IWK also provide a recycling collection for businesses which operates twice weekly or as an on-demand service on a cost recovery basis. KK Bins also provide waste and recycling collections for businesses with materials delivered to IWK.

Where materials collected are not recyclable they incur a collection and disposal charge. Waste materials taken to the RRC incur a disposal fee. Disposal charges are on a weight basis.

Skips are available to hire from IWK for business use. IWK also offer recycling services during and post public events.

No data is currently available about materials collected for recycling, treatment or disposal out of the District. Many national businesses with a local presence have comprehensive waste management and recycling systems in place, for example Foodstuffs Ltd (New World) operate waste management systems where some material is recovered and recycled (paper and cardboard) and organic material (food waste) is diverted with only residual waste disposed of at the local landfill.

3.2.2 Litter and illegal dumping

Litter bins are provided in the urban centres and popular visitor spots throughout the District. Litter bin collection is undertaken by IWK with their scope currently including:

- Litter bin emptying.
- Cleaning up after illegal dumping.

There is also evidence of materials being burnt on individual properties (farms and in the township)¹⁰.

3.2.3 Resource recovery centre, processing and disposal

The estimated materials quantities from the Kaikōura District waste management system for the 2019/20 year are presented in the following table. Facility details are provided on the following pages.

Figure 3 is a screen shot from a model of the Kaikōura waste management system that was developed in 2019, which reflects the quantities estimated in the 2018/19 year.

¹⁰ Reported by Environment Canterbury staff and observed in Kaikōura.

Tonnes to Landfill

Unspecified	
General Refuse	775.59
Landfill Out	-5.54
Commercial	
KK Bins	316.14
Skip Weights	265.84
IWK own weights	305.12
Special	
Offal	6.24
Construction / Demolition	
Jib Demo	34.76
Builders Skips	21.32
Wood In	2.06
Mixed Demolition	0.40

Total Tonnes Landfilled 1721.93

Tonnes Recycled

Rubble	
Cleanfill	67.98
Organic	
Greenwaste	394.79
Food scraps	25.50
Ferrous	
Whiteware	0.00
Non-Ferrous	
Metal	181.44
Aluminium	8.29
Copper	0.04
Lead	0.00
Brass	0.00
Scrap Metal Casual Sales	26.01
E-Waste	
TV's	1.70
Computer	0.00
Timber	
Wood	0.50
Paper	
Cardboard	147.86
Paper	58.96
Rubber	
Tyres	11.02
Unspecified	
Shop	166.40
Plastic	
Milk Bottles	20.36
PET Clear drink bottles	10.76
Glass	
Glass	439.54
Potent	
HazWasteOilBatteryPaint	28.66

Total Tonnes Diverted 1589.80

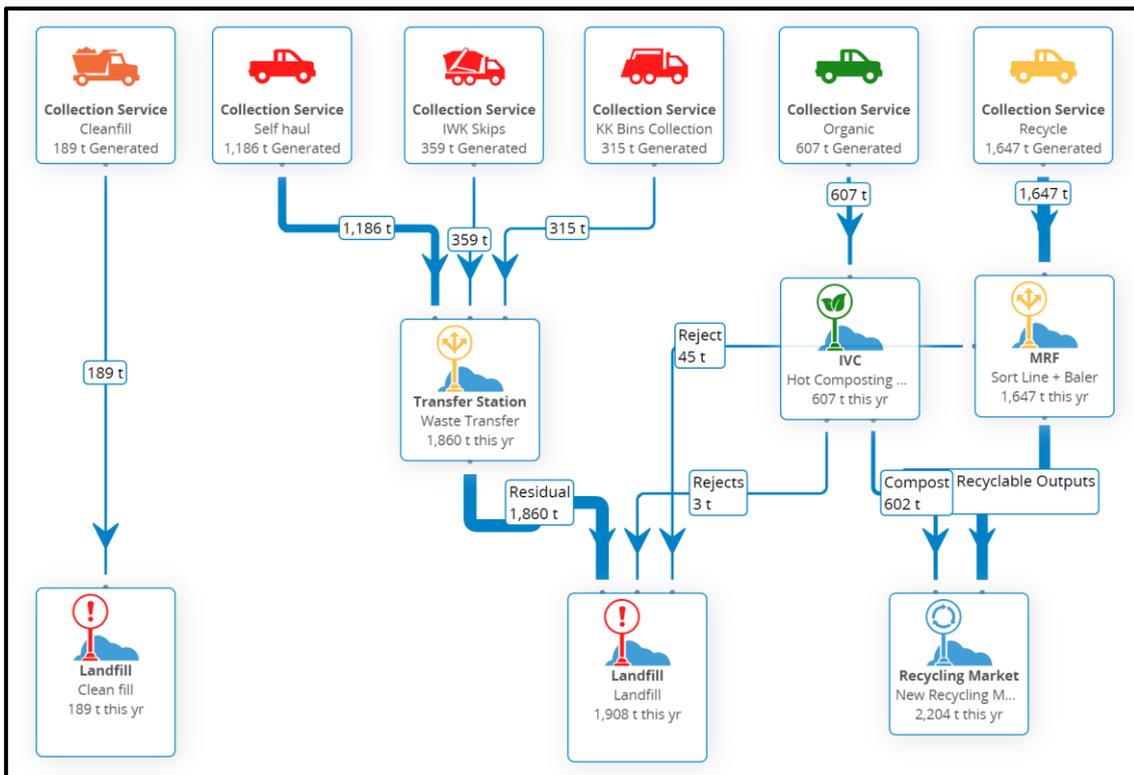


Figure 3: Waste flow diagram - collection, processing and disposal (2018/19 figures)

IWK operate the Resource Recovery Centre on Scarborough Street on behalf of KDC. The RRC consists of a second hand shop, recycling drop off area, space for other materials (paint, used oil, metals, e-waste, timber and tyres), composting (green and food waste), agrochemical containers and silage wrap drop off. The site also receives residual waste with material transferred from a public disposal area to the landfill operation at the western end of the site.

Waste, recyclable and reusable items can be dropped off by the public, businesses or private operators. The recycling drop off area and second hand shop were redeveloped post-earthquake to improve the flow of vehicles and materials.

There is a weighbridge on site. Residual waste is weighed as it enters the site and products leaving the site are also weighed. Materials dropped off for recycling or reuse/re-sale are not weighed.

3.2.4 Recycling drop off

The recycling drop off allows free drop off of recyclables, these are also collected from households at the kerbside and from businesses by IWK and KK Bins. Food scraps can also be dropped off at the RRC.

Metal and e-waste streams are also accepted at the RRC with materials sold on to metal dealers. A range of hazardous waste can be dropped off including hazardous chemicals, oil (including used cooking oils), paints, and asbestos.

One issue of note is the changes in materials entering the RRC with the introduction of a plastic bag ban from July 2019. In addition to the shift to reusable bags many retailers allow customers to use cardboard boxes to carry their purchases, with the boxes ultimately making their way to the RRC. In most cases the boxes would have been brought to the site anyway. For larger retailers, such as the New World supermarket, the boxes would have been baled and transported out of Kaikōura through Foodstuffs' national materials management contracts. This means that IWK is incurring costs (but no revenue) for managing the additional cardboard.

3.2.5 Materials processing

Prior to the 2016 earthquake, food scraps and green waste was processed onsite by IWK, producing compost and bark products. For a period of time after the 2016 earthquake, IWK was unable to accept green and food waste due to lack of suitable equipment for preparing and processing the materials into compost. A new shredder provides capacity for food scraps and green waste processing with compost and bark (overs from screening) available for sale. The overs are also used for landfill cover.

Compost is available for sale in bulk or 40 litre bags. IWK report that the product sells well and at times there is more demand than compost available.

3.2.6 Markets for recyclable materials

International markets for recyclable materials have significantly changed in recent times. China's National Sword initiative, which seeks to improve the quality of recyclable materials imported into China has effectively removed markets for mixed plastics and mixed paper, with other countries placing tight quality control on materials entering for further processing.

In the short-term this and international effects associated with COVID-19 have resulted in some plastics and low grade paper having no market. Many countries, including New Zealand, are actively working towards developing in-country re-processing capability for these materials. In New Zealand, this has yet to develop into viable local processing options, but may do so in the future thanks to increased central government investment in this area.

Due to the National Sword impacts, a number of local authorities including KDC have begun removing plastics 3 to 7 from collections. This is due to their being no internal markets in New Zealand for onward processing of these types of plastics. Currently only types 1, 2 and 5 are accepted by IWK.

The New Zealand Government has also announced support for the design of a Container Return Scheme in New Zealand. Typical schemes target beverage containers with a small refund payable on their return to approved reception point. Introduction of this type of scheme is likely to have an impact on recyclable material markets with recovery rates likely to rise (increasing supply). In some cases, kerbside recycling schemes are able to claim refunds for eligible materials i.e. the scheme could provide another source of revenue for kerbside recycling.

3.2.7 Landfill

The Kaikōura Landfill is located at the RRC. The site was developed by KDC. The day to day operation of the landfill is contracted to IWK. All residual waste from the district is disposed of at the Kaikōura Landfill.

There has been significant recent discussion of the remaining capacity of the landfill. In early 2019 indications were made that the remaining capacity of the landfill would be fully utilised within as little as 18 months, with earthquake demolition waste and the lack of markets for some previously recyclable materials contributing to increasing waste quantities.

Subsequent further technical investigation has however concluded that the remaining life of the landfill is significantly longer, between 6 and 11 years from 2020. This longer life is attributable to revised proposed surface closure contours and an increased level of planned refuse compaction. The latter is because until recently proper compaction processes were not employed, with refuse only compressed by movements of an excavator over it. A sheepsfoot wheeled compactor is now being used, which is believed to have almost doubled the level of compaction being achieved.

Whilst the Kaikoura landfill is in compliance with associated Resource Consents it is recognised that this is an older style of landfill that provides less control over potentially adverse environmental effects than larger more modern facilities.

Landfill charges cover capital and operating costs, the landfill levy (\$10 per tonne at the time of writing) and costs associated with the NZ ETS. The government has however announced that the levy will be increased from \$10 a tonne to \$60 a tonne over four years, with the first increase scheduled for July 2021.

The details of the design of the current site are not available, but it is unlikely to be lined¹¹. Leachate is collected at the base of the fill area (to the west). Daily, intermediate and final capping arrangements have been variable and IWK are currently developing operational management procedures and a plan for completion of the site.

3.3 Costs for waste management

3.3.1 Council funding

The 2018-21 Long Term Plan sets the budget for the waste management activity with provision to make amendments if required through the Annual Plan process. Funding for capital projects is provided through subsidies and grants and the Government's Waste Minimisation Fund. Operational funding is sourced through general rates, uniform annual general charge, rates penalties and targeted rates and infringement fees.

Refuse drop off at the RRC and certain waste materials accepted at the RRC attract user charges. The user charges at the IWK-operated RRC (operated on behalf of Council) do not cover the full cost of providing the service, with the shortfall covered from the targeted rate for waste management and general rates. This is typical for similar facilities in New Zealand with recycling and hazardous waste management funded through rates and the Waste Minimisation Fund.

The funding approach is consistent with the principles set out in the 2012 Waste Minimisation and Management Plan whereby Council costs for waste management services are, where possible, covered by the users of that service.

3.3.2 User charges

The fees charged for recycling vary depending on the material. Refuse and clean fill attract user charges, as do green waste and other materials.

Charges at the RRC are detailed in **Table 3**.

3.3.3 Waste Minimisation Fund

As noted in Section 2.2, Government has agreed to increase in the waste levy and expand the range of disposal facilities covered by the levy. These proposed changes will increase funding significantly. The current proposal retains a distribution of 50% of the revenue to Councils on a population basis. For Kaikōura District this suggests there is a potential future funding stream to support services and/or investment in appropriate infrastructure.

The current proposals are for a \$50 or \$60 per tonne levy on general waste by 2023. Materials disposed of at construction and demolition fills would be levied at \$20 per tonne and at managed or controlled fill at \$10 per tonne. In broad terms this would increase funding to Council from the current approximate value of \$15,000 per year to between \$90,000 and \$100,000 per annum.

¹¹ Based on the age of the site

Table 3 : Kaikōura rubbish & recycling - fees & charges at the RRC

Product	Per Tonne	Min. Charge	Product	Per Item
Asbestos	\$1,250.00	\$25.00	Black Bags (up to 65L)	\$4.50
Cleanfill	\$80.00		Black Bags (large)	\$8.00
General Refuse	\$350.00	\$3.50	Compost - Bag	\$6.00
Green Waste	\$80.00	\$3.50	Compost - Full Scoop	\$60.00
Jib Board	\$350.00		Compost - Half Scoop	\$30.00
Mixed Demolition	\$350.00		Computer Monitors (large old)	\$20.00
Offal	\$105.00		Computers & Laptops	\$5.00
Truck spill	\$1,500.00		Fridge & Freezers	\$15.00
Polystyrene	\$2,080.00	\$150.00	Green Waste - Bag	\$3.50
			LPG-Gas Bottles & Fire Extinguishers	\$17.50
			Microwaves	\$12.00
			Per KM Charge	\$1.35 per km
			Pick Up Fee	\$30.00
			Agwrap - Bagged Drop Off	\$15.00
			Oil Filters	\$2.00
			Printer - Commercial	\$25.00
			Printer - Domestic	\$18.00
			Scrap Metal Casual Sales	Individual pricing
			Skips - Commercial (within 50km zone)	\$350.00
			Skips - Domestic (within 50km zone)	\$290.00
			TV - CRT	\$45.00
			TV - Flat Panel	\$25.00
			Tyre 1 - Car tyre	\$5.00
			Tyre 2 - 4X4 tyre	\$7.00
			Tyre 3 - Light truck tyre	\$15.00
			Tyre 4 - Tractor tyre	\$70.00
			Tyre 5 - Loader tyre	\$80.00
			Tyre 6 - Heavy truck tyre	\$30.00
			Whiteware & Electronics	\$5.00
			Windscreens	\$10.00

3.4 Waste infrastructure and Services - issues identified

In collating and considering information about the delivery of waste services in the Kaikōura District, a number of issues were identified. These issues represent challenges in delivering effective services and achieving the aims of the NZ Waste Strategy - reducing environmental harm and maximising resource efficiency. In many cases the issues also present opportunities for Council, the community and/or the private sector to improve waste minimisation and management in the District.

The issues identified include:

- Questions have been raised about the economic and environmental effectiveness of recycling and some other waste minimisation approaches previously adopted by Council
- Financial pressures on Council have driven a stronger focus on the affordability of waste services
- There has been a suggestion that Council should provide a kerbside refuse collection service
- The current landfill operation requires more detailed operational procedures.
- The remaining capacity of the landfill has been unclear, with suggestions that residual life may be very limited. The most recent evaluation does however suggest that the landfill has capacity for at least 6 more years.
- Whilst landfill capacity may be for 6 years or more there are however environmental factors which may support closure of the facility before its capacity is exhausted.
- Cost of services and sources of revenue may change over time:
 - Likely need for a new disposal option (most likely out of the District) by the mid-2020s.
 - The value of recyclable materials varies dependant on New Zealand and international markets, both of which have recently been in decline.
 - There is potential for changes in how the waste levy is applied (levy rate, types of facilities covered).
 - There is potential for the introduction of a container return scheme in New Zealand that would have an impact on the volume and value of recyclable materials.
 - There is potential for several product stewardship schemes to impact practical arrangements and costs for the management of priority products including packaging (see above), tyres, e-waste, agrichemicals and farm plastics.

4 Waste quantity and composition

4.1 Timeframe

This document focuses primarily on the period between 2012 and 2019. Waste quantities, composition and flows prior to this period are detailed in the Council’s previous Zero Waste Management Plan. Where appropriate, comparison has been made between the quantities and predictions made in that earlier report and what has actually happened.

4.2 Population

Statistics New Zealand estimated the Kaikōura permanent resident population as 4,110 in 2019. The projected population (medium projection) in 2043 is 4012¹². There are an estimated 1,870 occupied dwellings in the District with 60% in the Kaikōura township. Figure 4 presents Statistics NZ’s high, medium and low projections, Figure 5 presents medium population and household numbers used for modelling.

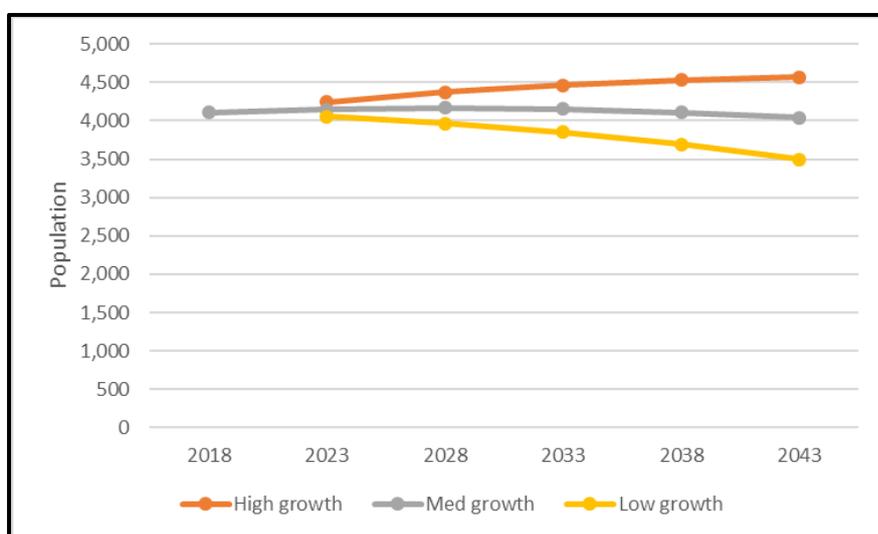


Figure 4: Projected population (high, medium and low growth)

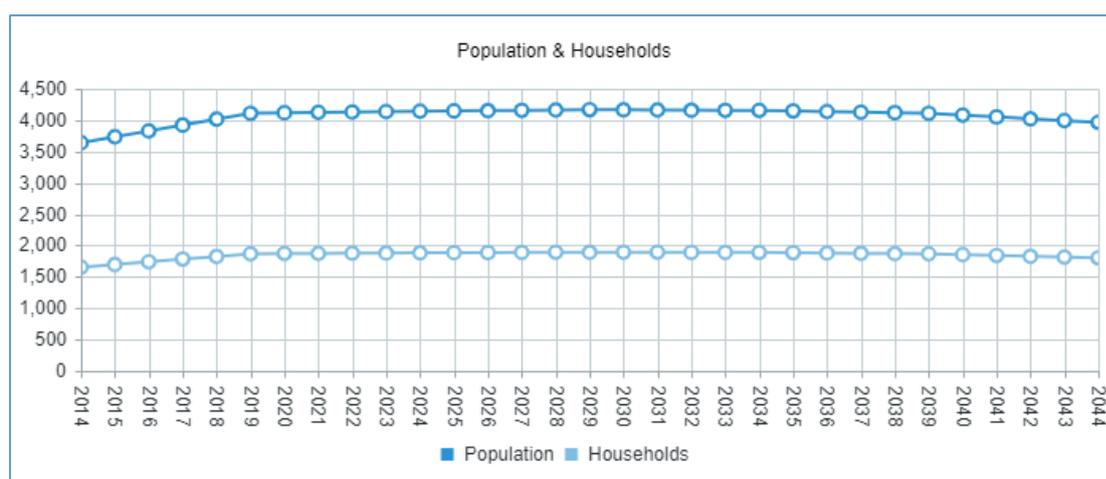


Figure 5: Projected population and households (medium growth, used for waste projections and options modelling)

¹² Based on -0.1% growth in the population used by Statistics NZ for their most recent population projects (based on the 2013 Census data).

4.3 Waste composition

Waste composition audits provide information about the make-up of a waste stream and can help identify materials that make up large or disproportionate parts of the waste stream. These can be targeted when forming waste management and minimisation strategies. For this Waste Assessment, typical waste composition data has been used rather than data specific to Kaikōura District¹³. This has been done because of the difficulty in accurately assessing the composition of all elements of the local refuse stream. A recent audit of local bagged refuse has however indicated a composition generally similar to the typical profile of material from kerbside collections, which suggests that an assessment based on typical national refuse composition is not unreasonable.

Raw composition data is presented in Table 4, and Figure 6 presents the typical national data graphically. Key points to note include:

- Putrescible material (garden waste and food scraps) make up around half of waste collected from households and almost a quarter of waste disposed of to landfill.
- Plastic is a significant portion of the waste stream. More detailed data for other districts suggests a significant portion of plastics are those that are not currently able to be recycled.
- Timber and rubble are significant for general landfilled waste.
- Material taken directly to landfill or transfer station (self-haul) material tends to have a larger proportion of bulky items (timber, rubble) and the putrescible fraction has a higher proportion of garden rather than food waste.

Table 4 Waste composition¹⁴

Primary Category	National - Kerbside collection	National - Direct to landfill	Kaikoura Bagged Refuse
Paper	9%	9%	8%
Plastic	17%	20%	10%
Nappies	12%	5%	16%
Glass	4%	2%	1%
Putrescibles	49%	23%	43%
Textiles	5%	6%	18%
Potential Hazardous	1%	5%	0%
Ferrous Metals	2%	3%	3%
Non-Ferrous Metals	1%	1%	0%
Rubber	0%	2%	1%
Timber	0%	13%	0%
Rubble	1%	11%	0%
TOTAL	100%	100%	100%

¹³ The lack of local waste composition is not unusual in New Zealand.

¹⁴ Waste composition reflects the Solid Waste Analysis Protocol, typical composition drawn from baseline data collected for MfE and composition survey results published in Waste Assessments from across New Zealand in 2017 and 2018.

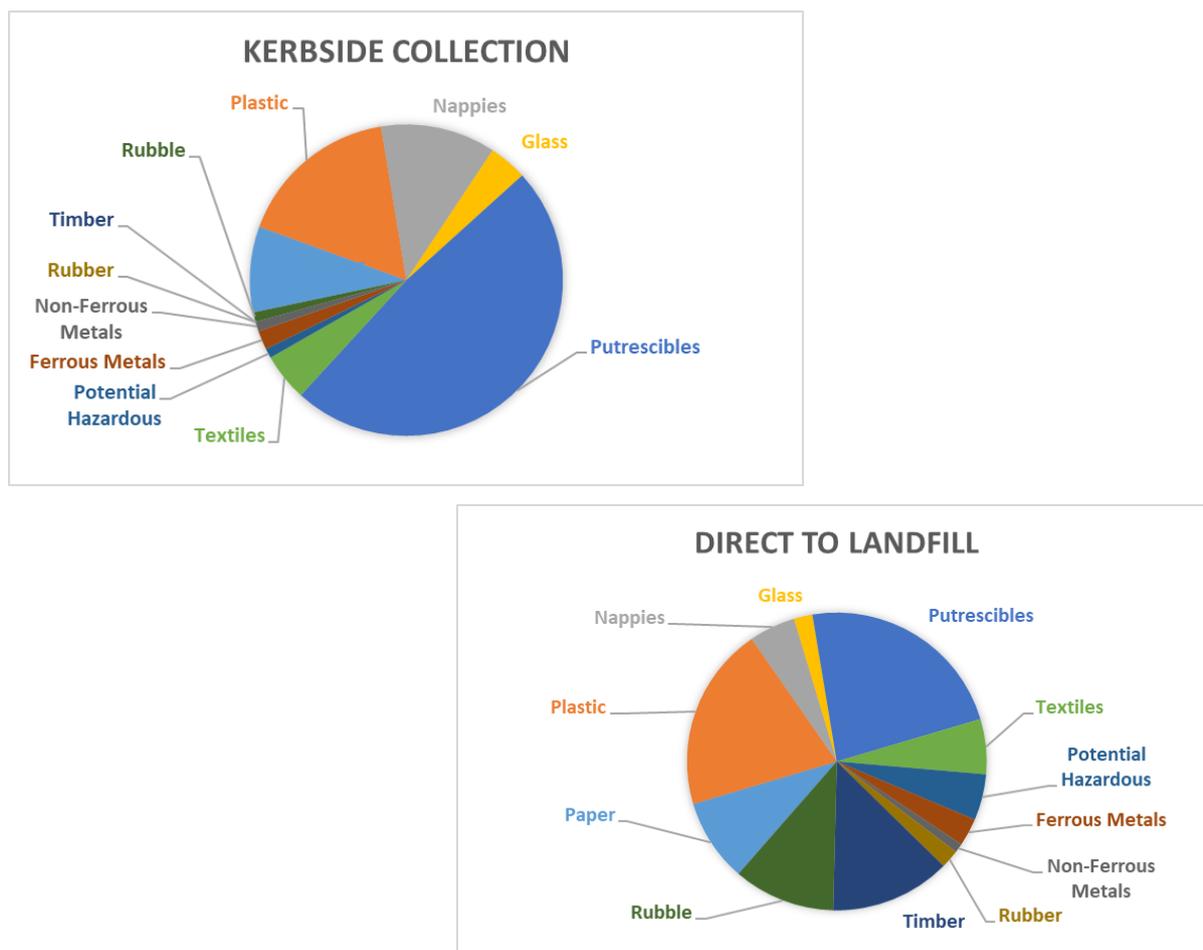


Figure 6 Assumed refuse composition - kerbside and landfilled

4.4 Waste quantities

4.4.1 Kerbside waste quantities

As noted above, kerbside refuse in Kaikōura is believed to be collected from around 50% of households by KK Bins and transported to the RRC for disposal. IWK provide a kerbside recycling service, allowing residents to separate recyclable materials for kerbside collection. Table 5 provides a summary of materials collected from the kerbside in the Kaikōura District noting materials collected for disposal by KK Bins and materials collected for recycling.

Table 5 Kaikōura District - kerbside waste quantities

	2015/16	2016/17	2017/18	2018/19	2019/20
Kerbside Refuse Collection (estimated ¹⁵)	226	232	237	243	
IWK recycle collection	161	175	259	259	
Total Kerbside Waste	387	407	496	502	
Recycling Rate (%)	42%	43%	52%	52%	

¹⁵ Based on 50% of households, bins collected on average every fortnight and 10 kg per bin.

4.4.2 Waste quantities at resource recovery centre and landfill

Table 6 summarises the quantity of materials managed through the RRC. Note that the Annual Plan targets <180kg of solid waste per person and this is comparable to the waste to landfill figures presented in Table 6.

The figures indicate a drop in recycling per person around the time of the 2016 earthquake, with a recovery to pre-earthquake levels in 2017. There has been a marked increase in waste to landfill over the time period presented.

Table 6: Kaikōura District - estimated waste quantities to landfill¹⁶

	2015/16	2016/17	2017/18	2018/19	2019/20
Total waste to landfill.	891	1,034	1,573	1,928	1,722
Total waste to clean fill (at RRC)	282	4,712	3,522	191	68
Total waste recycled	1,267	1,201	1,478	1,625	1,101
Total waste composted	649	688	711	600	421
Diversion (from landfill) rate (%)	71%	86%	78%	56%	48%
Recycling (incl. composting) rate (%)	62%	25%	30%	51%	46%
Waste to landfill per capita (kg per person)	233	264	392	469	440
Recycle waste, per capita (kg per person)	500	482	545	541	389

4.4.3 Unquantified waste

There are several waste streams that are known to exist but are difficult to quantify. Examples include rural waste managed on farms, materials captured as part of commercial activity (e.g. scrap metal, industrial by-products, construction waste), and waste materials managed within manufacturing operations (e.g. waste from food processing, sawdust or shavings from wood processing). This means that both waste disposed to landfill and waste diverted/recovered are likely to be underestimated.

There is an increasing level of interest in rural waste across New Zealand. The rural sector is considering the implications of current waste management approaches and likely increased quantities of materials from farming activities entering Council waste management systems. This could happen via the transfer station network or through commercial on-farm collections.

4.5 Collection and drop off system performance

Combining the waste composition data with data on the quantity of waste disposed of to landfill and recycled provides a basis for determining the capture of various materials 'available' in the waste stream¹⁷. A summary assessment drawing on estimated quantities and composition is presented in Table 7.

It is stressed that this assessment is based upon a number of quite broad assumptions, and as such its reliability is uncertain.

¹⁶ Data sourced from IWK reporting.

¹⁷ From Table 4, Table 5 and Table 6

Table 7: Kaikōura waste management system performance 2019/20

Category	Landfilled (incl. clean fill)	Recovered	Recovery as % of Recovery total	Estimated Recovery %
Paper	161	207	14.8%	56%
Plastic	349	31	2.2%	8%
Putrescible	494	421	29.9%	46%
Ferrous	51	181	12.9%	78%
Non Ferrous	18	34	2.4%	66%
Glass	42	440	31.4%	91%
Textiles/Household	104	166	11.8%	61%
Nappies and Sanitary	112	-	0.0%	0%
Rubble	165	-	0.0%	0%
Timber	192	1	0.1%	0.5%
Rubber	29	11	0.8%	27%
Potentially hazardous	77	29	2.1%	27%
Total	1,793	1,403	100%	48%

Some comments on these performance figures are as follows:

- Estimated **paper/cardboard** recovery of 56% during the 2019/20 year is considered good, but a decrease is likely in future since recent acceptance of paper for recycling has ceased due to absence of a viable recycling market.
- Overall **plastic** recovery is low, but is likely to reflect a realistic recovery rate given challenging markets for many plastics. It may however be possible to achieve some increase in the capture of the currently recyclable plastics (types 1,2 and 5) at both kerbside and transfer stations.
- **Organic** (putrescible) waste recovery is probably under-estimated (there are no estimates for material composted at home), but there is clearly a substantial amount of material that could be targeted.
- **Metal** recovery is likely to be under-estimated, (there is no information on scrap dealer recovery), but the data suggests there may be a limited amount of material available for recovery in waste passing through the transfer station.
- **Glass** recovery is at a good level, though currently it is not provided to an external recycling market, and is instead crushed and used as cover material in the landfill. Whilst this can technically be classified as diversion, it would be highly desirable for a more beneficial use to be found, and this might become possible if glass was sorted by colour, as is currently envisaged.
- The '**textiles**' category has been extended to include miscellaneous household goods for the purpose of this table, to reflect materials that are diverted from landfill through re-use services in which the types and quantities of items re-used are not recorded. The total reuse tonnage recovered is also not directly measured and has instead been inferred from associated revenues from the sale of such materials. This approach is at best a very rough approximation, and the probability is that it significantly over-estimates recovery tonnage and percentage.
- Recovery of **timber** is low and there may be potential to increase this at the transfer station.

As noted in Table 6, recovery via the RRC has been assessed at 48%. This is a good recovery percentage with many Councils in the 20-40% range. The data presented in Table 7 suggests there is potential to increase the recovery of some materials with a focus on material passing through the transfer station and materials with some value. Examples include paper/cardboard and timber.

There are other materials present in the waste stream that require careful management to avoid negative impacts. These include:

- Hazardous waste (chemicals, e-waste, used oil, asbestos).
- Difficult or special waste (tyres, bulky waste, dead animals).
- General waste (household and commercial waste).

Waste from certain sources can also present challenges or opportunities and is worthy of consideration. Examples include:

- **Rural waste**¹⁸ - waste from the business of farming including agricultural plastics (wrap and chemical containers), unwanted chemicals, timber and machinery (including maintenance related waste like used oil).
- Mixed waste from **commercial activity** - examples include packaging (pallet wrap, broken pallets) and containers (cleaners, ingredients, oil).

4.6 Waste quantity and composition data - issues and constraints

While there is some information available about the quantity and composition of waste generated in the Kaikōura District, the data is incomplete. The available data needs to be interpreted considering that:

- There is a mix of volume based estimates, measured weights and in the case of the reuse shop, a very rough weight estimate based on shop sales revenue.
- The lack of specific residual waste composition data means that the potential for additional recovery is based on typical waste composition figures.
- The quantity of general waste (including material coming in via IWK skips) has generally been increasing over time, but in recent times this will in part be due to disposal associated with the earthquake rebuild.
- The recycling rate for kerbside collections is high, but this reflects the limited coverage (estimated at 50%) for kerbside refuse collections¹⁹.
- The assumed quantities and composition of landfill materials suggests the most promising targets for increased diversion are putrescibles, timber and rubble (for diversion to a cleanfill)
- The data regarding the quantity of waste collected or processed is not complete. For example no data is available for:
 - The quantity of waste collected from commercial premises and transported out of Kaikōura for recycling.
 - The quantity of waste generated on rural properties and processed or disposed of on site.

¹⁸ The RRC is already a collection point for silage wrap and chemical containers. There is no data on the proportion of rural waste currently captured at the RRC.

¹⁹ The recycling rate at kerbside is calculated by dividing the quality (Should this be quantity?) of waste collected for recycling at kerbside by the total quantity of material collected at kerbside (for recycling and for disposal). In most areas urban households use a mix of public and privately operated kerbside refuse collection services with 100% participation. In Kaikōura, the participation is estimated at 50% i.e. the refuse component of kerbside is unusually low. In effect households are taking their 'kerbside' waste directly to the RRC.

5 Delivery of waste minimisation and management services

The Council has adopted a Council Controlled Organisation with private sector involvement approach to the delivery of waste minimisation and management services in the district. Innovative Waste Kaikōura provide most waste and recycling services in the district, funded by a mix of user charges and rates-based funding from the Council. KK Bins provide refuse collection to households and businesses and recycling collections for businesses.

Funding is a mix of user pays, rates and the Waste Minimisation Fund. Where there is a community desire for a specific service, but difficulty in making the service fully commercially viable, Council has provided supporting funding, for example for recycling drop off centres. Services with a public good component are funded by Council, for example kerbside recycling, servicing of litter bins, cleaning up illegal dumping, and the management of closed landfills.

Council owns the key infrastructure for waste minimisation and management in the district. This includes the RRC, collection vehicles, recycling bins and litter collection bins.

Council provides information on waste minimisation and management on their website and contracts educational services for schools.

6 Forecast of future demand

Forecasts of waste ‘generated’ have been developed using population projections, historic waste quantities and recent or likely near future changes to waste generating activities. In this context, waste generation refers to material entering the waste management system i.e. collected or taken to transfer stations.

There are several factors which create significant uncertainty in the forecasts and these need to be considered in any decisions made based on the forecast demands. These factors include:

- The management of waste on individual properties e.g. burning household waste, farm dumps and burning farm waste, for which quantities are not known, and for which no attempt is made to include them in this forecast.
- The impact of the current (regional and national) focus on rural waste. It is possible there will be a resultant significant increase in commercial quantities of rural waste such as plastic wrap, chemical containers and treated timber (fencing/construction) making their way to the RRC.
- The impact of varying economic activity – rebuild, tourism, dairy, sheep and beef, small scale manufacturing. This variability is demonstrated in Figure 7 by the significant peaks in waste volumes in 2016 and 2017 following the earthquake, and to a lesser extent in 2018, 2019 and 2020 associated with the subsequent rebuild programme.

Figure 7 provides a summary of forecast waste generation. This includes material collected and disposed of to landfill and material collected for recycling or composting, and is based on maintaining current levels of service. If current services and performance are maintained and linked to population and household numbers, then waste generation remains relatively static.

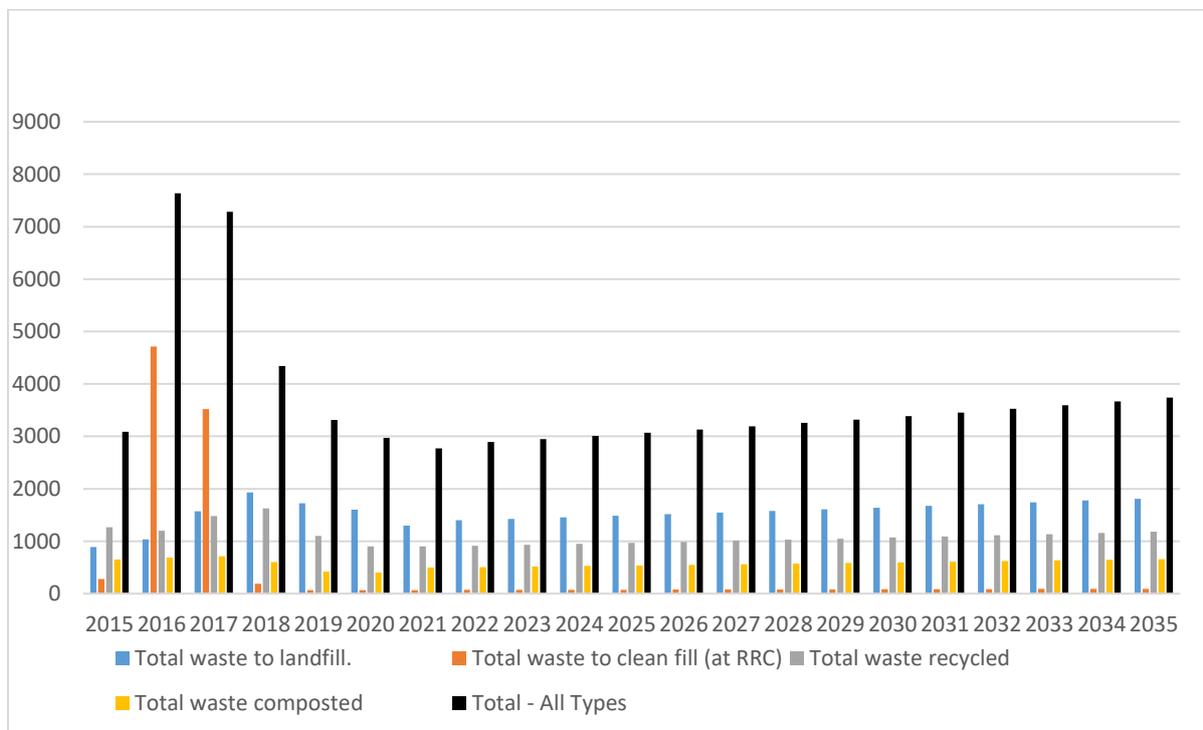


Figure 7: Forecast waste quantities (tonnes per year)

This forecast is based on a number of assumptions regarding the current state, which may change, in particular:

- Waste minimisation services may be revised to achieve better cost efficiency.
- Central government intervention (increased landfill levy, container deposit and packaging regulation) may cause change in waste generation behaviours.
- Further changes to global markets for recycling.

For these reasons it is believed that a relatively low level of confidence should be assigned to this or any other projection of waste volumes at this time.

PART 2 - WHERE DO WE WANT TO BE?

7 Where do we want to be?

7.1 Background

The preparation of this Waste Assessment has included a review of the Vision - Goals - Objectives framework set out in the previous Waste Minimisation and Management Plan. The relationship between Vision, Goals and Objectives is illustrated in Figure 8²⁰ and defined in Table 8²⁰.

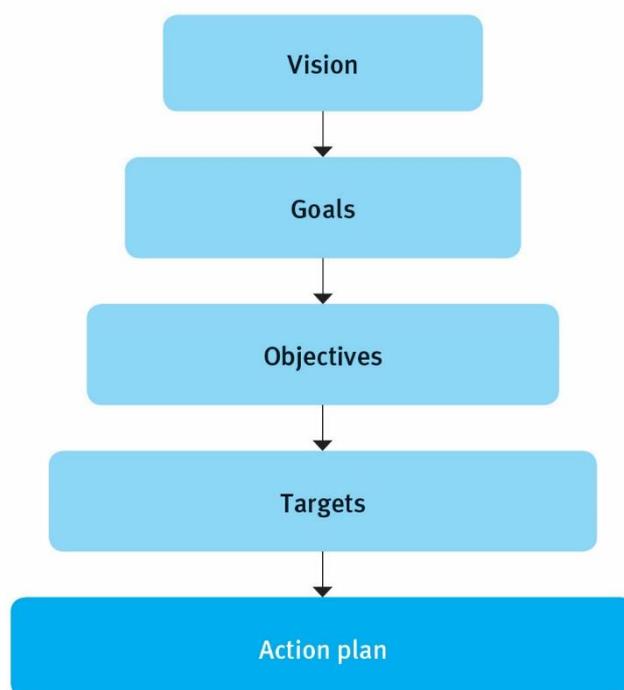


Figure 8: Vision, goals, objectives and targets

Table 8 provides definitions for vision, goals, objectives and targets.

Table 8: Definitions for vision, goals, objectives and targets (adapted from MfE 2015)

Vision	The aspirational outcome for the Kaikōura District - providing an overall direction and focus.
Goal	What the Council wants to achieve through the WMMP. The goal is not aspirational; it is achievable. It is a major step in achieving Council's vision for the WMMP.
Objective	The specific strategies and policies to support the achievement of the goals. Objectives are 'SMART' (specific, measurable, achievable, relevant and timely).
Target	A clear and measurable way to determine how well the Council is achieving its goals. Targets should also be SMART.

²⁰ Sourced from Waste Assessments and Waste Management and Minimisation Planning – A Guide for Territorial Authorities, MfE 2015.

7.2 Vision, goals, objectives and targets

Council's vision and goals for waste management is²¹:

Our community has effective, efficient and affordable means of managing solid waste

Table 9 provides a summary of the Objectives, Goals and Targets supporting this vision.

These are changed from what was in place previously, with a much stronger focus on issues of efficiency and affordability that has been driven by the challenging financial circumstances currently faced by Council, and has been compounded by COVID19.

The revised objectives, goals and targets recognise that at present the costs of disposal and waste diversion on a per tonne basis are high, at levels that are difficult to justify in relation to both market norms and readily quantifiable benefits.

In the past, Council's vigorous pursuit of 'Zero Waste' has focussed on maximising the level of diversion from landfill achieved rather than economic efficiency, but the limitations and disadvantages of some diversion activities have become increasingly apparent.

Diversion activities such as recycling are not the environmental panacea that they were once considered to be. The materials recovered often have low (or no) value, and in many cases the only viable markets for them have been in less developed nations, where processing of them has generated adverse environmental impacts, potentially much greater than the impacts that would have resulted from these materials having been landfilled at their source.

Whilst there is still a desire to reduce waste quantities to landfill, the means by which this is pursued should be selected with appropriate regard to not only social, environmental and cultural outcomes, but also economics.

When considered objectively, some of the waste diversion activities being currently undertaken by Council appear to lack such justification, being very expensive means of keeping materials with very low value out of the landfill with the potential for that expenditure to deliver much greater environmental benefit if used in other ways.

Objective 3, 'Services are Cost Efficient', attempts to quantify this by putting limits on the per tonne cost of disposal or diversion activities. It is considered that additional expenditure of around \$100 per tonne can be justified for the social, environmental and cultural benefits of diverting refuse from landfill.

It is increasingly apparent that reduction at source is key to minimising the environmental impact of waste, and that it is central government rather than local authorities that have the opportunity to enable this, but an important role for Councils is to advocate for it.

It is however recognised that people value convenience, and as such may not strongly support waste minimisation actions that compromise this. Recent expressions of support for the re-establishment of a kerbside refuse collection is an example of this. Objective 7, 'General community satisfaction with Council solid waste levels of service' reflects the need for services to align with community desires, even if that does not necessarily support waste minimisation.

²¹ This vision has been developed in a workshop with Kaikōura District Council Councillors.

Table 9: Vision - Goals - Objectives - Targets

Vision:	<i>Our community has effective, efficient and affordable means of managing solid waste</i>	
Objective	Relevant Goal(s)	Target(s)
1. <i>Essential waste management services are available</i>	Ensure that services are available for the disposal of solid waste to prevent potential development of unsanitary conditions.	1.1 Annual number of residential properties classified as unsanitary under the Health Act 1952 because of a lack of available refuse disposal services. Target: 0
2. <i>Waste quantities are reduced</i>	That the community is made aware of and encouraged to adopt practices that will reduce waste generation at source. Advocacy is conducted with central government for measures to reduce waste generation at source. Recycling, reuse and resource recovery services are provided where these offer cost efficiency similar to or better than that for disposal of the material as refuse.	2.1 To reduce the total quantity of waste disposed of to landfill from Kaikōura on a district per capita basis. The current figure is <i>440 kg per person per year</i> . Target: < 380 kg per person per year
3. <i>Services are cost efficient</i>	Provide waste management services that are efficient on a cost per unit of material basis.	3.1 Charges for disposal of general refuse at the Kaikoura landfill. Target: <\$240 + currently applicable landfill levy rate* per tonne 3.2 Estimated annualised average nett cost (inclusive of associated revenue) of all materials delivered to beneficial markets through recycling, reuse or resource recovery services. Target: <\$340 + currently applicable landfill levy rate* per tonne <i>*At present the levy rate is \$10 per tonne, but it is to increase to \$60 per tonne in 4 steps, the first of which is at 1 July 2021</i>

Vision:	<i>Our community has effective, efficient and affordable means of managing solid waste</i>	
Objective	Relevant Goal(s)	Target(s)
4. <i>User pays principles are applied in funding solid waste services</i>	Whenever possible, costs of providing waste management services are recovered from users of those services in proportion to their use of those services.	4.1 <i>>80% of KDC costs for KDC refuse collection and disposal activities (excluding those for street litter bins and clean-up of illegal dumping) are recovered on a user pays basis.</i>
5. <i>Council solid waste services are used appropriately to maximise efficiency</i>	Users deposit only the relevant appropriately presented materials to particular Council services. Street litter bins are used for street litter only. Materials for recycling, resource recovery or re-use are not contaminated with other substances.	5.1 Less than 75 reported incidents per year of street litter bins being used for grossly inappropriate purposes. 5.2 Less than 5% of materials by weight deposited to recycling, resource recovery or re-use services are contaminated to the extent they have to be treated as refuse.
6. <i>Adverse local environmental effects of KDC solid waste services are minimised</i>	Operation of Council's refuse disposal, resource recovery, reuse and recycling activities are conducted in a way that adverse effects on the local environment are no more than minor.	6.1 Full compliance is achieved with all conditions of regional council Resource Consents for the operation of the Kaikoura landfill. 6.2 Number of complaints per year received regarding the environmental effects associated with the landfill and Resource Recovery Centre. Target: <5
7. <i>General community satisfaction with Council solid waste levels of service</i>	A majority of customers prefer status quo levels of service (LoS) for Council solid waste activities over other feasible alternatives.	7.1 <i>Less than 10% of recipients of a three-yearly survey of solid waste LoS options (that also contains estimated rates or charge impacts of those options) express desire for change from the status quo.</i>

7.3 Council's intended role

Council will continue to adopt a mixed user pays and public good funding approach to the delivery of essential waste transfer and disposal services in the District.

Whilst Council favours adopting user pays principles, it recognises that there are services with a public good component where Council should provide funding in whole or in part. Particular examples include ensuring availability of refuse disposal services, servicing of litter bins, and cleaning up illegal dumping.

Council will continue to own and support the operation of key infrastructure for waste management in the District, in particular the RRC and the Kaikōura landfill. It is however recognised that the Kaikōura landfill is approaching the limit of its capacity and that it may be appropriate to close that facility in the relatively near future, potentially before its capacity is exhausted. This is discussed further in section 8.2.2.

Council will provide information on waste minimisation and management to the community and make staff available for education purposes. Council will also work closely with other promoters of effective waste minimisation and management.

7.4 Protecting public health

Waste, particularly putrescible and hazardous waste, has the potential to be detrimental to health. Therefore, a key objective of any waste minimisation and management system is to protect public health. The risk of public health impacts can be significantly reduced by avoiding, where possible, and carefully managing, where not, contact with waste. In practice this means:

- Ensuring services are available for waste disposal to prevent accumulations on occupied properties.
- Containing waste effectively, including:
 - Providing appropriate containers for storing waste prior to collection - these may be reusable (wheelie bins) or single use (rubbish bags).
 - Providing dedicated public drop off areas at the RRC.
 - Regular collection and disposal.
 - Suitable collection and transport vehicles.
 - Disposal at a well-constructed and operated landfill including provision of appropriate barrier systems such as base liner and adequate daily, intermediate and final cover.
- Excluding as far as possible vermin²² that may spread waste or associated contaminants.
- Effectively managing hazardous wastes such as agrichemicals, household chemicals, e-waste and asbestos.

²² For example rodents, other stray animals, insects (flies, wasps).

PART 3 - HOW ARE WE GOING TO GET THERE?

8 Options Identification and Analysis

8.1 Introduction

Section 51 of the WMA requires that a Waste Assessment contain a statement of options available to meet the forecast demands of the district with an assessment of the suitability of each option.

This section summarises the identification and evaluation of options to meet the forecast demands of the district and to meet the goals set out in Section 7. The preferred options from this assessment will be incorporated into WMMP as methods and feature in the Action Plan.

For the Kaikōura District, the total quantity of waste generated is forecasted to stay relatively static over the life of this plan in line with population and economic activity. Infrastructure planning needs to take account of this forecast.

The available data suggests that there is potential to increase the diversion of material from the current estimate of over 50 % across the waste management system. There are also ongoing issues with illegal dumping, challenges with obtaining robust data on waste and recycling activity, and the potential for increasing quantities of materials entering the waste stream from rural properties. The focus of option identification and evaluation has been addressing these issues alongside meeting forecast demands.

8.2 Identifying options

There are a wide range of approaches to providing waste minimisation and management services and programmes that could be adopted. A useful way to consider options is the model set out in Figure 9.

Effective waste minimisation and management relies on a combination of infrastructure (including collection), education/information, and regulation or policy with the right data informing strategic and operational decision making.

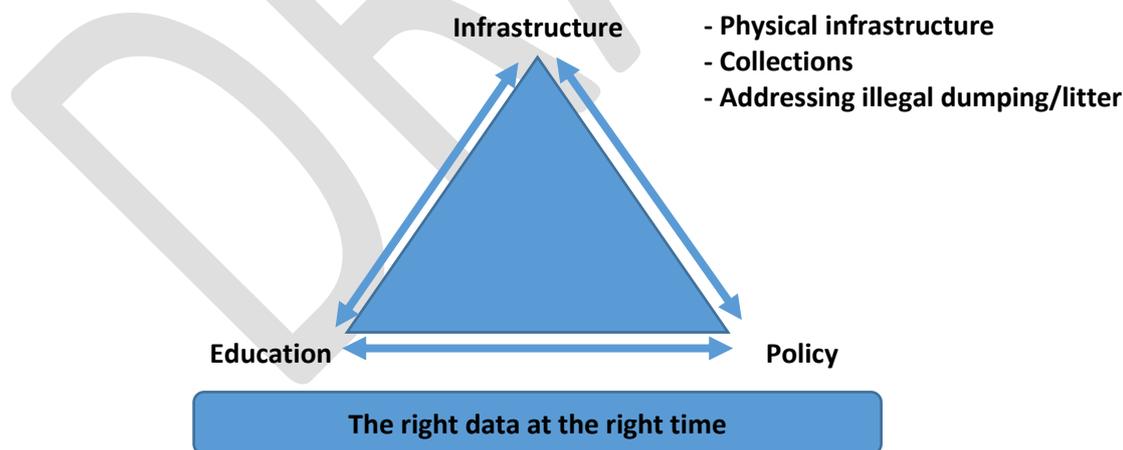


Figure 9: Effective Waste Minimisation and Management

For this Waste Assessment, options have been identified by considering key challenges for waste minimisation and management in the Kaikōura District referencing approaches adopted elsewhere and looking for new solutions where appropriate. Options have also been considered with reference to the current recovery rates of key materials²³ (see Section 4.5).

²³ Key materials include paper/card, plastics, glass, organic waste, metals, glass and timber.

Based on the model set out in Figure 9, options considered can be grouped as follows.

Infrastructure

- Providing **collection** services - collection of waste (by Council or others), recyclable materials (at kerbside or transfer station), organic waste and/or bulky items, litter bins.
- Providing **physical infrastructure** - fixed location or mobile drop off facilities, waste sorting, waste processing and/or disposal facilities.
- **Managing the negative impacts of waste** - litter/illegal dumping clean-up, closed landfills.

Education

- Changing behaviour - **education** programmes targeting schools, businesses and/or households.
- Supporting infrastructure - **information** on how to use collection and drop-off services to maximise recovery and maintain the quality of recovered materials (to maximise their value).
- Contributing to national education/information programmes.

Policy

- Implementation of **licensing** provisions drawing on **by-laws** developed elsewhere (for example provisions relating to funding, service levels, litter or data provision).
- Data collection via **licensing of waste operators** (as above).
- **Targeted data collection**, for example waste surveys.
- Making **information on waste** issues and opportunities available.
- **Grant co-funding** for projects that deliver on the goals and objectives for waste minimisation and management.
- Working with local authorities and other stakeholders to progress **national debate on waste issues and policy**.

These options focus on the priority waste streams identified through the review of the current situation in Section 4.5 and summarised in Table 10.

Table 10: Priority wastes and waste sources

Recyclable materials	Other materials requiring active management include:	Waste sources
• Organic (putrescible)	• Hazardous waste	• Rural waste
• Glass (alternative use)	• Difficult or special waste	• Construction waste
• Timber	• General waste	
	• e-waste	

8.2.1 Collection options

Current Arrangement and issues

Currently KK Bins provides a kerbside refuse collection to a proportion of residents (estimated at 50%) and many businesses across the district at no cost to Council. Many residents bring their waste to the Resource Recovery Centre (RRC), but there is also evidence of materials being burnt or buried on individual properties.

A Council kerbside recycling collection, conducted by IWK is funded through rates. Businesses can pay to have their recycling collected by IWK or KK Bins or dispose of their recycling at the RRC at no charge. Food waste is collected from households and can be dropped at the RRC for no charge.

Apparent issues with the current service provision include the following:

- Some components of the recycle service recover only a relatively small proportion of the material present – the most notable example is plastics.
- There are health and safety risks associated with bag and crate based collections.
- Illegal dumping of waste is on the increase.

As noted previously, the reported percentage of waste materials diverted from landfill is at the upper end for New Zealand, though there are elements of this, such as the use of glass, which whilst technically qualifying as diversion, appear to have little overall benefit.

As such, better validation of existing diversion is considered an important step towards the objective of reducing waste quantities. To increase beneficial diversion beyond this, the obvious target is putrescible wastes by virtue of the large quantity present.

Refuse Collection

Households have access to refuse collection if they are prepared to pay for it. The information presented in this Waste Assessment suggests around half of the households in the district use the collection service. The current refuse collection system is fully funded by user charges. Some approaches adopted elsewhere and their alignment with KDC's solid waste objectives are outlined in Table 11. In accordance with Objective 4, the expectation is that refuse collection and disposal is largely funded on a direct user pays basis rather than through Council rates.

KDC's previous decision to not provide a kerbside refuse collection has been based upon a belief that making it less easy to dispose of refuse will encourage use of diversion services such as recycling. This approach does however perhaps overlook the fact that not having a kerbside refuse service creates other forms of wastage, in particular the wastage of fuel and residents time associated with having to take their own refuse to the RRC.

The waste diversion services provided by Council at kerbside will not, and cannot, remove the need for many urban residents to make regular trips to the RRC if they are not using private kerbside refuse services.

As such it is arguable that the environmental benefit of not having a kerbside refuse service is at best relatively small.

A petition requesting a kerbside refuse collection gained a significant number of signatures and whilst the petition request was of an aspirational nature and not grounded in fact or robust analysis, the apparent support for it did suggest that many in the community are placing a greater value on convenience than on traditional approaches to waste minimisation.

Recycle collection

To date, KDC's recycling and other waste diversion services have been rates funded, but are also believed to have received some financial support from other branches of activity within IWK. It is however considered desirable to avoid such cross subsidy to make the economics of particular activities more transparent.

It is also suggested that because recycling is an expensive activity that is often not without some associated adverse environmental effects, it would not be unreasonable to also impose some extent of direct user pays charging for it, but at a lower level than for refuse to encourage its adoption.

Table 11: Refuse Collection Options - Alignment with Objectives

Refuse Collection Option	<i>Essential waste management services are available</i>	<i>Waste quantities are reduced</i>	<i>Services are cost efficient</i>	<i>User pays principles are applied in funding solid waste services</i>	<i>Council solid waste services are used appropriately to maximise efficiency</i>	<i>Adverse local environmental effects of KDC solid waste services are minimised</i>	<i>General community satisfaction with Council solid waste levels of service</i>
RF1: Continue the current approach of providing no kerbside refuse collection, allowing residents to select a private sector provider for roadside collection or transport their waste to the RRC. This approach has been adopted in some other locations in New Zealand (Kaipara, Kapiti, Western Bay of Plenty).	Medium	High	Potentially High	High (discounting recycling cross subsidy)	Medium/High	Medium (potential for illegal dumping)	Low/Medium?
RF2: Provide a new user pays collection service across the District Many Councils in New Zealand sell refuse bags with collection services provided by Council or a contractor on their behalf. Costs are typically in the range \$2.00 - \$5.00 per bag. Some Councils provide opt-in wheelie bin collection services funded by a variable targeted rate ²⁴ or selling bin tags ²⁵ .	High	Medium/High	Potentially High	High (discounting recycling cross subsidy)	Medium	Medium (potential for illegal dumping)	Medium/ High?
RF3: A Council run, targeted rate funded refuse bag service i.e. Council provide bags and associated collection service funded by a targeted rate for serviced properties. There have been examples of this approach in New Zealand but rates funded systems have moved to wheelie bin based systems to address safety and efficiency issues ²⁶ . Considering similar systems in other parts of New Zealand a rates funded system of this type is anticipated to cost \$130 - \$150 per serviced household as a targeted rate.	High	Medium/Low	Medium	Low	Medium	High	Medium?
RF4: A Council run, targeted rate funded refuse wheelie bin service i.e. Council provide a refuse wheelie bin collection service funded by a targeted rate for serviced properties. There are examples of this approach in New Zealand e.g. New Plymouth, Rotorua, Greymouth, Hamilton. Considering similar systems in other parts of New Zealand, a rates funded system of this type of service is typically costs around \$130 - \$150 per serviced household for small wheelie bins.	High	Low	Medium	Low	High	High	High?
RF5: Put in place a Solid Waste by-law to limit receptacle size and/or weekly capacity. This approach has been implemented in Taupo with new wheelie bin services limited to 140L. This approach balances the flexibility of a user pays bag service for small households while allowing larger households to use a wheelie bin based system if desired.	Potentially High	Increases, but depends on other factors	Potentially High	Uncertain, probably medium	Uncertain	High	High

Table 12: Recycling Collection Options - Alignment with Objectives

Recycling Collection Option	<i>Essential waste management services are available</i>	<i>Waste quantities are reduced</i>	<i>Services are cost efficient</i>	<i>User pays principles are applied in funding solid waste services</i>	<i>Council solid waste services are used appropriately to maximise efficiency</i>	<i>Adverse local environmental effects of KDC solid waste services are minimised</i>	<i>General community satisfaction with Council solid waste levels of service</i>
RC1: Continue the existing Council run, targeted rates funded recycle crate service. Current costs to Council are around \$40 per year for each serviced property but are likely to increase if improvements are made to the collection methodology and as a combined result of the falling value of collected materials, increasing costs of managing safety risks and general operating cost increases.	High	Potentially High	Low	Low	Medium	High	Medium?
RC2: A Council run, targeted rates funded wheelie bin and recycle crate based service. This is a common approach in New Zealand with paper, cardboard, plastics and tins collected in wheelie bins (140-240 L) and glass collected in recycle crates. In some cases glass is collected in wheelie bins. Charges per household are in the range \$50-\$125 per household each year, typically levied as a targeted rate.	High	Potentially High	Low	Low	Medium	High	Medium/High if higher cost is accepted?
RC3: A Council run, targeted rates funded recycling wheelie bin service. This is the approach adopted in Auckland, Christchurch, Southland and the Bay of Plenty with all materials collected in a single 240 L wheelie bin. Providing this service relies on having access to a sorting facility that can handle a fully mixed recyclables stream ²⁴ . Charges for this service depend on the specific service configuration but are likely to be in the range \$75-\$125 per household.	High	Potentially High	Low	Low	Medium/Low	High	Medium/High if higher cost is accepted?
RC4: Council could exit the provision of recycling collection services in rural parts of the district, allowing rural residents to either procure a private sector recycling collection service or transport their recyclable materials to their local transfer station. This is consistent with some rural areas in other parts of New Zealand.	Medium	Medium	Medium	Medium	Medium/ High	Medium/High	Uncertain, likely to be variable

²⁴ Materials would most need to be transported to a suitable facility, for example EcoSort in Christchurch

RC5: Council could exit recycling collection altogether, allowing residents to select a private sector provider for roadside recyclables collection or transport their recyclable materials to the closest transfer station or recycle station. This approach has been adopted in some locations in New Zealand (Kapiti, Western Bay of Plenty). This might also be accompanied by reducing the accepted recycling range.	Medium/Low	Low	High	Medium/ High	Medium/Low	Medium/Low	Uncertain, likely to be variable
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Table 13: Organic Waste Collection Options - Contributions to Objectives

Organic Waste Collection Option	<i>Essential waste management services are available</i>	<i>Waste quantities are reduced</i>	<i>Services are cost efficient</i>	<i>User pays principles are applied in funding solid waste services</i>	<i>Council solid waste services are used appropriately to maximise efficiency</i>	<i>Adverse local environmental effects of KDC solid waste services are minimised</i>	<i>General community satisfaction with Council solid waste levels of service</i>
O1: Continue with the IWK run, targeted rates funded food scraps collection service funded by a targeted rate for serviced properties. Examples in New Zealand include Auckland (roll out starting), New Plymouth, Hamilton (pending).	Low	Low/Medium	Medium	Low	??	Medium	Low/Medium??
O2: Extend the current food scraps collection to include garden waste, funded by a targeted rate. Examples of this approach include Christchurch and Timaru.	Medium	High	Medium	Low	??	Medium	Medium
O3: A Council run, targeted rates funded food and garden waste collection service with individual properties able to opt in to the service i.e. Council providing a bag or bin based collection service funded by a targeted rate for properties that have joined the service. Examples in New Zealand include Selwyn and South Taranaki.	Medium	High		Medium/High	??	Medium	Medium/High

²⁴ For example Selwyn District Council currently charge \$126/year for an 80 L wheelie bin or \$400/year for a 240 L bin.

²⁵ Auckland Council sell tags for refuse bins, \$2.70 for an 80 L bin, \$3.95 for a 120-140 L bin and \$5.70 for a 240 L bin.

²⁶ For example Hamilton City Council are introducing wheelie bins for refuse from July 2020.

Some approaches adopted elsewhere and their alignment with KDC's solid waste objectives are outlined in table 12.

Variations could be made to all these options other than RC5 in respect of the range of materials accepted, which is discussed further in section 8.2.2.

Organic waste collection

IWK currently provide a food scraps collection for households, but it is relatively little utilised. Councils around New Zealand are increasingly looking at offering organic waste collection services to address the high proportion of organic waste in refuse bags or bins. Existing services elsewhere in New Zealand target garden waste (Whakatane, South Taranaki, commercial services) or garden and food waste (Christchurch, Selwyn, Timaru). New Plymouth District Council has recently introduced a food only collection, Auckland Council are progressively rolling out a new food only service, and Hamilton City Council is introducing a food only service. Several other Councils (for example Palmerston North City Council and Dunedin City Council) are considering organic waste collection options.

The current targeting of food scraps is consistent with the emerging approach in parts of New Zealand. These services avoid conflict with commercial green waste collection services and allow the collected materials to be composted or put through alternative processing such as anaerobic digestion.

Food and garden waste collection is common in Australia and implemented in Timaru and Christchurch via rates funded collections. A typical food and garden waste collection will deliver a good food and green waste mix for composting i.e. may be well suited to the current processing at the RRC.

Some approaches adopted elsewhere and their alignment with KDC's solid waste objectives are outlined in table 13.

Bulky Solid Waste Collection

A service that Council does not provide is a periodic bulky waste collection from the roadside (sometimes termed 'inorganic collection'). Similar services elsewhere target refuse only or allow for recovery of recyclable and/or organic waste materials.

Bulky solid waste collections are generally rates funded and would not align well with the Council objective of applying user pays principles or reducing waste quantities. Such collections are also often relatively expensive, with a cost of up to \$50 per household per annum, and the benefit that individual residents obtain from this service is highly variable.

8.2.2 Physical infrastructure options

The physical infrastructure in the Kaikōura District is adequate to handle the quantity of waste generated. Current arrangements are:

- Disposal of refuse at the landfill at the Kaikōura Resource Recovery Centre (RRC).
- Disposal of clean fill and inert construction and demolition waste in a clean fill at the RRC.
- Rural recycle stations in the district, funded by rates revenue.
- Composting of green waste and food scraps at the RRC.
- Sorting of kerbside recyclable materials in a hand sort line at the RRC.
- Re-use facilities for household goods, hardware etc. at the RRC.

There are however some issues with this infrastructure, including the following:

- Resource Recovery Centre configuration:
 - Safety of site users, particularly the risk of conflict between pedestrians, cars and site equipment.
 - Placement of some operations (weighbridge, composting) that limits options for other activities.
 - Difficulty with recovery/sorting of materials dropped off as residual waste.
- Limited remaining capacity in the landfill operation.
- Use of 'recovered' materials for landfill operations (glass crushed and used as a cover layer, collected unrecyclable plastic has been used for cell walls)
- Rural recycle centres are expensive to operate and have in some cases been misused as drop-off points for refuse.
- Rural waste²⁵ increasingly entering the Council waste management system - via commercial collections, rural roadside collections and transfer stations.

Processing

While the current infrastructure in the district is adequate, there is potential to add additional facilities or activities to enable increased diversion of material from landfill, or to process a smaller range of materials, excluding those which are least economically viable.

Upgrading Options

Materials that could be targeted include:

- Construction and demolition waste e.g. timber, concrete and demolition rubble.
- Additional garden waste - lawn clippings and prunings.
- Additional food scraps and other highly putrescible waste.

The processing options that could be considered include:

- Upgrade the current sorting facility or establish a new sorting operation at the RRC. The current operation is designed around a crate based, partially sorted, materials stream and manual sorting at the RRC. Any change to the materials collection approach is likely to require change to the sorting component of the system.
- Transport recyclable material collected at kerbside for sorting out of the district. There are sorting operations in Blenheim (130 km) and Christchurch (180 km). Christchurch processes fully co-mingled materials (collected in a single wheelie bin), Blenheim processes co-mingled materials collected from 55 L crates. Any change to the sorting arrangement may require a change to the collection approach.
- Implement sorting of mixed dry waste loads - commercial or construction waste. This could occur at the waste disposal/transfer area or another location at the RRC. Examples of this approach include basic sorting of loads dumped on a sorting floor/pad through to highly complex sorting systems. Marlborough District Council operate a semi-automated sort line targeting general waste and there are several construction waste sorting operations in Auckland. The scale of such activities in Kaikōura may not however be sufficient to make this efficient.
- Expand capacity for composting of organic materials.

²⁵ Waste from farming activities including plastic wrap, chemical containers and fencing materials (timber, wire). This material has traditionally been stored or disposed of on individual farms.

Service Reduction Options

There is also the potential to reduce the range of materials accepted for recycling or re-use. Few of the materials currently being accepted for recycling will have processing costs comparable to that for refuse, with many being substantially more, some potentially above \$800 per tonne.

Plastics, paper/card and glass all have extremely unfavourable economics, and in the case of glass the material - currently collected as mixed colours – is not delivered to a beneficial market and is instead crushed and used as a cover layer in the landfill.

There are a range of options for the range of materials collected or received at the RRC or other recycling centres.

Landfill

The current landfill is projected to be filled to capacity around 2025/26 based on current waste disposal quantities and assumed landfill material density.

It may however be preferable to close the landfill prior to this because of factors that include:

- As the landfill reaches full capacity the working areas will become increasingly visible from surrounding area.
- The landfill is of an older type without all the environmental controls that would be expected of a more modern facility. Whilst it is currently complying with the Resource Consent conditions applicable to it, Environment Canterbury have expressed a desire for improvements that could be reflected in expanded consent conditions.
- Probability that out of district disposal could be undertaken at a cost lower than what is currently charged for refuse disposal in Kaikōura.
- Not operating a landfill would provide greater clarity in respect of the cost and efficiency of Council's other solid waste services.
- Very low current interest rates on borrowing make it financially more practical to bring forward the investment required for site closure.

Options in respect of the landfill are:

- Continuing the operation of the landfill at the RRC until full capacity is reached under similar operational arrangements covering landfill operations and management.
- Dispose of all waste accepted for disposal at the RRC at an alternative landfill. Kate Valley Landfill (Waipara) and Blue Gums Landfill (Blenheim) are both a similar distance from Kaikōura (130 km). Key considerations include transport distance, travel time, disposal charges, long term security of access and the net financial impact for Council.
- Continue operation of the landfill under revised arrangements - revised contract(s) with IWK or an alternative operations contractor, perhaps using the landfill in conjunction with an alternative landfill (for example use local landfill for higher density waste, another facility for low density waste).

The potential for an alternative operations contractor has been diminished by the complexity created by the combination of central government's 3 waters reform program (which is considered likely to

result in operational delivery of 3 waters services being undertaken by large multi-regional entities within 3 to 5 years), and a probable limited remaining life of the landfill of a similar order.

It would appear that if there is to be a change of solid waste operations contractor, the timing for this would be driven by the implementation date for the revised arrangements under the 3 waters reforms, since this has potential to have significant impact on the structure of IWK.

There are several aspects of providing the infrastructure components of the waste management system in Kaikōura that are not options but are noted here for completeness. These include:

- Continuing to monitor illegal dumping including adjacent to the RRC and recycling sites.
- The requirements for the processing of recyclables collected from the kerbside will be determined in part by the collection methodology adopted.
 - A fully co-mingled collection would require new sorting infrastructure.
 - If glass is collected separately, it may be possible to establish a sorting infrastructure in Kaikōura²⁶ or make use of existing facilities in Blenheim or Christchurch.

8.2.3 Options to manage the negative impacts of waste

In the context of waste minimisation and management, it is important to recognise that there are negative impacts of waste generation and management. Some of these are historical (e.g. unmanaged closed landfills) and some are related to misuse of existing systems or illegal activity.

Some litter bins are highly utilised by visitors or park/facility users and servicing these is included in IWK contracts. In other parts of New Zealand, these issues have been addressed by removing litter bins, configuring the bins to prevent the deposit of large waste items and/or increasing capacity. Taupo District Council, Waikato District Council (Raglan) and Thames Coromandel District Council (Whiritoa) are all using the Big Belly system combining small openings, a compactor bin system and remote notification to contractors when the bins are full.

Current arrangements include:

- Programme of monitoring and works at closed landfills.
- Illegal dumping collected by IWK (or ECan).
- Litter bins in selected locations around the district, serviced by IWK.
- Accepting a range of hazardous wastes at the RRC including paint, oil, e-waste and chemicals.

Issues:

- Illegal dumping in some areas.
- Inappropriate use of litter bins for household waste, particularly holiday homes.

²⁶ Sorting can be automated, manual (hand picking) or a combination of the two.

8.2.4 Education options

Providing clear information is an important aspect of successfully implementing a waste minimisation and management plan or programme. Information needs to clearly explain what is required of people using waste and recycling services, including visitors to the District. Communications should also set out the costs, benefits and limitations of waste minimisation and management.

Education activities in Kaikōura have been focussed on supporting schools and providing opportunities for students to visit the RRC. IWK also provide information on their website and at public events about waste and resource recovery activity.



Figure 10: Information boards on waste and resource recovery in Kaikōura

Other areas Council could get involved with include:

- Encouraging practices that minimise generation of waste at source.
- Getting involved in collaborative information campaigns like the Love Food, Hate Waste campaign.

8.2.5 Policy options

Providing the right policy framework for effective waste minimisation and management is a critical component of Kaikōura District Council's role. This includes the Kaikōura District Plan, funding initiatives under the Waste Minimisation and Management Plan and regulation under a bylaw. This Waste Assessment considers funding and bylaw components.

Funding

Services for households and businesses are currently funded through user charges (refuse) and rates (recycling). As noted in the discussion on collection options, there is potential to consider funding of refuse collection services at least in part through targeted rates - effectively compulsory user charges recovered through the rating system. There is also potential to fund activities through general rates - current examples in Kaikōura include collection of litter and illegally dumped material.

Rates funding of services provides a guaranteed income to cover anticipated costs, but in most cases, involves a standard charge regardless of how much a business or household uses a particular service. There are examples in New Zealand of Councils imposing a variable target rate depending on the service being used. For example in Selwyn District the targeted rate for refuse and recycling varies depending on the refuse collection (bag or bin), recycling and organic waste collection service selected.

Some Councils provide grant funding for waste minimisation activity by community groups and businesses. This provides an opportunity for businesses to test ideas that may be risky or commercially unattractive. It also provides a mechanism for Council to support community action on waste minimisation and management.

As noted in Section 2.2.1 there is potential for a significant increase in waste minimisation funding from Central Government. This will potentially provide a greater opportunity for KDC to support external waste minimisation initiatives.

Any increase in funding is however likely to be accompanied by increased audit requirements. Government has clearly signalled that funds will need to be targeted at new waste minimisation and resource recovery activities.

Regulation

There are currently no bylaws in place covering waste minimisation and management in the Kaikoura district. Some other districts have implemented solid waste bylaws which impose regulation or control in respect of matters such as the use of refuse and recycling services, the accumulation, storage and ownership of waste, the management of waste from particular events or activities and the licensing of private parties or facilities engaged in the collection or disposal of waste.

It is however not believed that the lack of such a bylaw in the Kaikōura district has to date caused any significant issues, and at this time there are no plans to introduce such a bylaw.

National policy debate and implementation

As noted previously, Council will work with other territorial authorities, central government, industry and other parties to improve waste minimisation and management in New Zealand, with a particular focus on reducing the generation of waste at source. In part this involves engaging in the broader policy debate working with industry partners and organisations like Local Government New Zealand, the Waste Management Institute of New Zealand and the Product Stewardship Council.

Council can also work with accredited product stewardship schemes to maximise services available to Kaikōura businesses and residents. Schemes available to Kaikōura residents or businesses include Resene's Paintwise (Blenheim or Christchurch), Plasbak, AgRecovery (Cheviot or Seddon), Re:Mobile (free post or drop off at IWK). Council can support existing services and advocate for the introduction or expansion of services in Kaikōura.



Actions proposed:

- Develop criteria for making grants available from Council's allocation of increasing Waste Levy funds. Provisionally, criteria will be based on contribution to the vision, goals and objectives for waste minimisation and management with consideration of co-funding. Applications for funding should also be assessed for their ability to deliver the promised benefits i.e. due diligence on organisation capability, governance and accountability.

- Continuing regular reporting on progress against the WMMP targets as part of the Kaikōura District Annual Report.
- Collaborating with local government organisations, non-government organisations (NGO) and other key stakeholders to progress national activity on waste minimisation and management policy.

8.3 Assessing Options

Waste management is delivered as a package of component services which are interrelated. As such this overall package can take a wide variety of forms, and it is very difficult to establish a fully integrated evaluation framework that will determine exactly how that package should be composed.

In recent times issues of affordability and convenience have become more prominent in discussions of these services, and the cost of particular options and the level of efficiency (particularly in respect of the recycling) has been central to option evaluations.

One such option evaluation matrix that was prepared as part of the process to develop Council's 2020/21 Annual Plan is presented in the following table. This evaluation favoured adoption of a reduced range of waste diversion services and user pays urban kerbside refuse collection.

A limitation of this evaluation was however that the cost estimates for the different options were largely theoretical, and not based on contract tender prices or other approaches that would reliably reflect the market.

In recent times some further information has been received from IWK that has enabled Council to better assess the options available and the following are comments in respect of particular materials and services based upon this.

It is recognised that IWK needs to safeguard their commercial position in relation to solid waste services and for this reason no direct reference is made to any specific service prices provided by them.

Glass

Of the materials currently received for recycling, glass makes up the largest proportion of the materials 'recovered' with an estimated 440 tonnes per annum, which comprises 31.4% of the total quantity 'diverted'.

Glass recovery is very efficient, with an estimated 91% of this material captured.

The fundamental problem is what is done with this material. Currently, collected in bulk without sorting by colour, there is no viable market for it, and it is crushed and used as a cover layer in the landfill. As such its classification as being diverted, whilst in accordance with permitted central government methodology, is questionable and it is therefore very difficult to justify this current practice.

If the glass was sorted by colour a market would be available, though the associated revenue (if any) would be expected to be minimal.

It is therefore considered that there are in essence only two potentially reasonable options in respect of glass, which is to either cease accepting it for recycling, or for it to be colour sorted, and the latter would be at additional cost, perhaps in the order of \$30,000 per annum.

Based on the available information, it appears that the collection and colour sorted recycling of glass (including that directly deposited at the RRC) may have a cost of something over \$100,000. If this is correct, the unit cost may be around \$230 per tonne.

Table 14: Service Options Considered as Part of 2020/21 Annual Plan Development

Option No.	Description	Guesstimate Annual Cost Variance to the community relative to pre-COVID19	Suggested overall user pays /rates split	Estimated proportion of waste stream effectively diverted	Marginal cost per % diversion relative to Minimum Services (option3)	Ratepayer diversion value index (lower means better value)	Comments
1	<u>Similar to pre-COVID19</u> (but not the same, as recycling markets have radically changed). Fully functioned RRC, urban (crate) kerbside and rural <u>centre based</u> recycling, user pays landfill, user pays private urban kerbside refuse service for those who want it.	+\$273,000	50 / 50	36%*	\$27,000 per 1%	27	Cost is based on the price quoted in January 2020 for proposed new KDC Contract 160. <u>In light of COVID19</u> this should be considered indicative only.
2	Services as delivered during COVID19 Level 3; As for option 1 but with all collected 'recycling' disposed of as waste, no re-use shop, reduced RRC hours, user pays private urban kerbside refuse service for those who want it.	Currently no change – but perhaps should be lower.	60 / 40	25%	\$30,000 per 1%	20	
3	Minimum Services; Full or near full user pays landfill and green waste services operating for reduced hours, full or near full user pays green waste (composting if profitable) no rural services. Private user pays kerbside refuse service, no re-use shop. Only cost neutral or profitable recycling or composting services.	-\$300,000	90 / 10	15% (only metals and reduced <u>greenwaste</u>)	NA (baseline)	NA (baseline)	
4	As for option 3 plus support of large item re-use shop/yard, limited subsidy of composting	-\$250,000	85 / 15	25%	\$5,000 per 1%	1	Suggested preferred option
5	Cost based recycling material exclusion (NOT PRACTICAL)	NA	NA	NA	NA	NA	
6	As for option 1 but without kerbside or rural recycling	-\$50,000	60/ 40	30%	\$17,000 per 1%	11	
7	As for option 1 but without acceptance of glass as recyclable	-\$50,000	55 / 45	25%	\$25,000 per 1%	20	
8	Combination of options 6 & 7 – no kerbside or rural recycling and no glass recycling	-\$90,000	60/40	20%	\$18,000 per 1%	12	

*Glass whilst previous considered as being 'diverted' is placed in the landfill and therefore viewed as waste.

Plastics

Plastics are assessed to make up only a slightly smaller proportion of the waste stream at an estimated 380 tonnes per year, but the recovery performance is very different, with only 8% (31 tonnes per annum) of this material being captured, representing a mere 2.2% of the material recorded as being diverted.

Whilst information has not been obtained from IWK on the total cost of plastic recycling, information of costs of certain elements of the process – in particular sorting and baling – suggest that the unit cost is very high, over \$800 per tonne.

Kerbside Recyclables other than Glass

Available data suggests that if glass is excluded, the remaining quantity of the other recyclable materials that are recovered from the current kerbside collection (Type 1, 2 and 5 plastics, steel and aluminium cans and cardboard) does not exceed 100 tonnes per annum, and that the unit cost for handling this material, even if only collected fortnightly, is at least \$450 per tonne.

Food Waste

With between 40% and 50% of kerbside refuse likely to be putrescible materials (largely food waste), it is likely that this component of the waste stream exceeds 200 tonnes per year. Effectively diverting this material from landfill is however likely to be challenging. KDC already accepts food waste from kerbside, but does not provide containers or bags for such collection, and the utilisation of the service is low.

Provision of such containers and bags and more vigorous promotion of the service (which would need to be weekly to avoid issues associated with decomposition, particularly in the warmer months) may increase uptake, but it seems unlikely that a high level of overall recovery will ever be achieved, particularly if – as is suggested in a later section – a very affordable kerbside refuse service is made available.

On this basis it appears that the unit cost for a kerbside food waste collection and processing service might be relatively high, perhaps \$500 per tonne or more, but it is believed that there is significant uncertainty regarding this and that it might be appropriate to undertake a limited term trial of such a service in a few areas of Kaikōura before considering any potential broader application.

Kerbside Collection Frequency

Pricing has been obtained for conducting kerbside recycling collections fortnightly rather than weekly, as is currently done. As would be expected, there is a cost saving relative to the new revised rate that had been proposed, but even with this reduction the new rate is still \$20,000 per annum above what is currently paid.

Kerbside Refuse

Information received from IWK indicates potential for a very affordable kerbside refuse collection, with a unit cost potentially in the order of \$200 to \$250 per tonne. This is equivalent to less than half of the estimated unit cost for bagged refuse delivered to the recycling centre, for which \$4.50 is currently charged for a 60 litre black bag.

This service would be proposed to be a fortnightly collection using a 120 litre wheelie bin. Such a bin is relatively small, but this would potentially be adequate for waste conscious households and could leave some incentive for waste minimisation to ensure that the capacity of the bin was not exceeded.

Where refuse was created that exceeded the capacity of the wheelie bin, it would have to be taken to the RRC and paid for in the conventional way. To ensure fairness for rural residents, it is believed that

charges for the deposit of refuse at the RRC should not be more – and should preferably be less – than the unit cost for the kerbside refuse service.

This would bring those charges into line with the affordability target presented in section 7.2.

Consideration has been given to how such a kerbside refuse collection should be funded. The objective of Council that *'User pays principles are applied in funding solid waste services'* is considered to be particularly important in respect of refuse, where a user pays approach has potential to encourage waste reduction.

It is however recognised that the form of service described above – a 120 litre bin that is only collected fortnightly – might be considered a 'base' level of service and that it may be challenging for many households to produce less refuse than could be accommodated by this, and in summer to have refuse accumulate for more than 2 weeks is likely to result in unpleasant odour and other adverse effects.

As such, it might not be unreasonable for such a service to be provided on a rate funded rather than user pays basis in some circumstances. A factor that is considered of significance in this case is however the proportion of properties that are not permanently occupied, in particular holiday homes. Having properties that may only be occupied for 1 or 2 months a year being required to pay the same for a kerbside refuse service as one that is permanently occupied does not seem appropriate when a user-pays approach – such as the purchase of pick-up stickers for the bins – is feasible.

The previously described need to fairly align costs for refuse disposal by both urban and rural properties would however potentially become an issue if a user pays urban kerbside refuse collection was offered at very low cost. The cost for such a kerbside service indicated by IWK suggests that the cost per tonne for this service could be less than what is currently charged for receipt of refuse at the RRC, and it would not seem unreasonable for rural residents to object if such an inequity was created.

A potential way of managing this could be to have a portion of the cost of the urban kerbside service recovered through a targeted rate.

For example the cost of the kerbside collection service was \$5.00* per collection then an appropriate approach might be to have the majority – in this example perhaps \$3.50 funded through a user pays mechanism such as purchase of bin voucher stickers, with the balance of \$1.50 recovered through a targeted rate applicable to all these properties.

This approach is considered to have the following benefits:

1. It retains a degree of user pays principles.
2. It recognises that there is a benefit to all properties in the service being available even if it is not used.
3. It permits a higher rate of charge for additional refuse deposited directly at the RRC (in this example perhaps \$4.50 for an equivalent quantity) than the user pays component of the kerbside service whilst ensuring that similar value for money in respect of refuse disposal is available to rural properties.
4. In having this higher rate of 'user pays' charges for additional disposal of refuse by urban properties, it further incentivises them to limit waste generation so that they do not exceed the capacity of the bin.

Such funding aspects will be considered in more detail in the development of the WMMP.

Uncertainties in respect of overall levels of use of such a bin service would however also be reflected in initial uncertainty regarding the levels of user pay charges required to cover the cost of the service.

Another issue associated with a Council operated kerbside refuse service is that a privately operated kerbside bin service is already available through KK Bins. This has however been recognised by IWK,

*Hypothetical figure only

who have indicated that the proposed kerbside service could be through an association with this private service provider.

Rural Recycling Centres

Rural recycling centres at the Suburban School, Lynton Downs and Kekerengu have been operated to provide opportunities for residents in those areas to reduce residual waste.

There are however a number of factors that make the appropriateness of providing these services questionable, including:

- The comments previously made regarding the economics of recycling of particular materials are also generally applicable to the collection of those materials from rural recycling centres. For most of those materials the costs per tonne are high.
- The only practical means of refuse disposal for most rural residents within the Kaikōura district to take their refuse to the Kaikōura RRC or to dispose of it by burning and/or burial on their property.

For smaller rural properties (and approximately half of the rural properties in the district have an area of less than 2 hectares), on-site disposal may be either impractical or unattractive, and as such the only option they have is to bring their refuse to the RRC. Because they have to visit the RRC anyway, there appears to be little benefit to these parties of Council providing other facilities that accept recycling only in the rural area.

- The rural recycling centre at the Suburban School is located very close to Kaikōura, and there would be very little difference in convenience for residents between using this facility or taking their recycling to the Kaikōura RRC.
- Rural recycling centres, being unattended and not otherwise monitored, are susceptible to being misused, with some facilities – in particular the Suburban School – having regularly been dumping places for refuse.

Green waste

Data suggests that in the order of 600 tonnes of green waste per year is received by the services operated by Council and of this, approximately two thirds is composted. The remainder which goes to landfill comprises materials that cannot be readily composted, such as larger tree branches or fibrous plants such as flaxes that cannot be mulched.

There have been varied assessments of the quality of compost produced, but it is understood that there is generally adequate demand to utilise all of the compost that is produced. The nett cost of the green waste composting activity (presumably significantly offset by charges for receipt and compost sales revenue) appears to be less than \$50 per tonne.

As such this appears to be an element of the existing service that is very efficient and that the status quo should be maintained.

Re-Use Services

Reliable data on the quantity of material diverted from landfill by IWK's re-use services is not available, but it is suspected to be modest, less than that estimated by the previous revenue based calculation, perhaps in the order of 50 tonnes per year. The nett cost per tonne diverted from landfill by these

services may be relatively high, perhaps around \$500, but they do have the benefit of delivering other real value to the community through the supply of those re-usable items at relatively low prices.

As such it is believed that these services, as currently conducted, are effective and efficient and should be retained and perhaps extended.

8.3.1 Suggested Options

Based on previous considerations, two potential configurations of the waste management system are suggested, as summarised in Tables 15 and 16.

The configuration outlined in Table 15 is what would be described as a ‘revised status quo’ service, whilst that in Table 16 is termed a ‘minimised cost’ service, which is similar that which was the suggested option put forward during consultation on the 2020/21 Annual Plan.

Table 15: Suggested Waste Management System Configuration – Revised Status Quo

System Component	Preferred Option(s)
Existing Components	
Refuse collection	Fortnightly 120 litre wheelie bin Mixed user pays & targeted rate funded for Kaikōura urban (includes Hapuku & communities to south)
Recycle collection (Kaikōura Urban)	Fortnightly rates funded colour sorted glass collection only Fortnightly rates funded, crate based collection (status quo)
Food scrap collection (Kk Urban)	Food scrap collection with kerbside recycling (status quo) Limited trial of enhanced kerbside service (bins and bags supplied)
Transfer station	Develop simple new transfer area at RRC
Landfill	Close within 3 to 5 years
Greenwaste	Status Quo
Bulky waste collection	Do not conduct
Rural Recycling Centres	Close Suburban School, maintain Lynton Downs, Kekerengu – services as per recycle collection
Re-use Services	Retain status quo, perhaps explore extending range of materials offered for re-use

Table 16: Suggested Waste Management System Configuration – Minimised Cost

System Component	Preferred Option(s)
Existing Components	
Refuse collection	Fortnightly 120 litre wheelie bin Mixed user pays & targeted rate funded for Kaikōura urban (includes Hapuku & communities to south)
Recycle collection (Kaikōura Urban)	None. Metals and any other potentially profitable materials only accepted for recycling at RRC
Food scrap collection (Kk Urban)	None (food scraps would however be accepted for composting at RRC)
Transfer station	Develop simple new transfer area at RRC
Landfill	Refuse disposal charges reflect cost. Not used to subsidise other activities. Close landfill within 3 to 5 years
Greenwaste	Status Quo, potentially with some subsidy of composting if it can increase useful diversion
Bulky waste collection	Do not conduct
Rural Recycling Centres	None
Re-use Services	Retain status quo, perhaps explore extending range of materials offered for re-use

9 Consultation with the Medical Officer of Health

Comment from Community and Public Health’s Medical Officer of Health for the Kaikōura District is included as Appendix A.

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Appendix A: Medical Officer of Health Commentary

- To follow