WasteNot Consulting

Analysis of Solid Waste Composition in Queenstown Lakes District

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Queenstown Lakes District Council

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Contact details

Queenstown Lakes District Council
Property & Infrastructure
Private Bag 50072
Queenstown 9348

Waste Not Consulting Ltd.
Bruce Middleton
Director
Email: bruce@wastenot.co.nz

Contents

1 Introduction

Waste Management NZ Ltd (WMNZL), trading as WM New Zealand, is contracted to Queenstown Lakes District Council (Council) to collect kerbside rubbish and recycling throughout Queenstown Lakes District, manage the Queenstown and Wānaka transfer stations, and operate the materials recovery facility in Frankton, Queenstown, which processes the Council kerbside recycling and commercial recycling collections.

The contract requires WMNZL to undertake, on behalf of Council, three-yearly surveys of waste disposed of at the District's transfer stations and compositional audits of kerbside rubbish and recycling. The contract further stipulates that these audits and surveys be based on the methodologies recommended by the Ministry for the Environment's Solid Waste Analysis Protocol 2002 (SWAP).

In August 2023, Waste Not Consulting Ltd was engaged to conduct a seven-day sort-and-weigh audit of kerbside rubbish and recycling, commercial recycling, and public place 4-bin recycling stations. The project also included 11 days of visual surveys of the composition of waste disposed of at the two refuse transfer stations (RTS).

The sort-and-weigh audit took place from 8-15 November 2023. The results of the audit are presented in section 3. The first visual survey at Wānaka and Queenstown RTS took place for seven days during the same period. The second visual survey was conducted from 6-9 March 2024. The results of the visual surveys at the RTS are presented in section 4.

The results of the audit and surveys have been combined with weighbridge data from both RTS and from Victoria Flats landfill. The results are shown in sections 5 and 6 and provide an overview of the composition of all waste disposed of to landfill from Queenstown Lakes District.

Waste Not Consulting has previously undertaken visual surveys of waste at Wānaka and Queenstown transfer stations in 2004, 2006, 2008, 2012, 2016, and 2020. The results of the 2023-24 surveys are compared to those of earlier survey in section 7.1.

1.1 Waste disposal services in Queenstown Lakes District

From 1 July 2019, Council introduced new residential kerbside rubbish and recycling collection services, based on a rates-funded model. WMNZL has been contracted by Council to provide the services. The kerbside collections are available in Glenorchy, Kingston, Queenstown, Wakatipu, and Wānaka areas. Only properties that include a residential dwelling are eligible for the services.

Every residential property is supplied with:
- a 240-litre mixed recycling bin, collected fortnightly, for cardboard, paper, cans, plastic bottles, and plastic containers #1, 2, and 5
- a 140-litre glass recycling bin, collected fortnightly, which is to be used for glass bottles and jars only
- a 140-litre rubbish bin, collected weekly, which is to be used for anything that can't be recycled.

Properties rated as 'commercial' or 'accommodation' are required to engage a commercial waste collector. Commercial waste collections are offered by All Waste, SJ Allen Holdings,

Smart Environmental, and WMNZL. These companies offer services based on wheelie bins, front-end loader bins, or gantry bins.

Council owns and provides for the operation of the Queenstown and Wānaka refuse transfer stations, which are operated, under contract, by WMNZL. All waste disposed of at the transfer stations is transported to Victoria Flats landfill.

Victoria Flats landfill is owned by Council and operated by Scope Resources Ltd. Waste from the Cromwell and Alexandra refuse transfer stations (in Central Otago District) is also disposed of at Victoria Flats landfill.

The Queenstown transfer station is located on Glenda Drive, in Frankton Industrial Estate. The Queenstown transfer station is open seven days a week during the hours of 8:00 am to 5:00 pm. The facility has separate drop-off points for greenwaste, scrap metal, and cleanfill. The transfer station has no drop-off facilities for the recycling of cardboard or containers, but these materials can be disposed of at the adjoining Wakatipu Recycling Centre.

The Wānaka transfer station is located on Ballantyne Road, Wānaka, and operates seven days a week, between the hours of 8:00 am to 5:00 pm. The facility has a separate greenwaste drop-off and drop-off areas for metal, whiteware, child car seats, batteries, gas bottles, and tyres. The adjoining Wānaka Wastebusters resource recovery centre accepts recyclable and reusable materials for recycling and reselling, and the adjacent Wānaka Green Waste Depot accepts greenwaste for composting.

Vehicles with loads over 200 kg entering both the Queenstown and Wānaka RTS are required to be weighed when entering and again when leaving and are charged by the tonne for disposal. Traffic movements through the weighbridges are recorded by either licence plate numbers or vehicle identity numbers. Small loads of less than 200 kg may not be weighed, but charged at a flat rate based on volume. Disposal charges at the transfer stations are detailed on the Council website at www.qldc.govt.nz

1.2 Note on presentation of data in tables and figures

Subtotals in tables and figures do not always add to the total due to rounding. This is illustrated in the equations below. In the equation on the left, the subtotals are expressed to three decimal points and add up to the total, as shown. When the three decimal points are rounded to two, one, and no decimal points, the subtotals do not add up to the totals.

1.264	1.26	1.3	1
+ 1.264	+ 1.26	+ 1.3	+ 1
= 2.528	= 2.53	= 2.5	= 3

2 Methodologies

2.1 Visual surveys of vehicle loads of waste at RTS

The methodology for the visual survey was designed to be consistent with the guidelines set out in section 5.4 of Procedure Two: Classification at Disposal Facility of the Ministry for the Environment's Solid Waste Analysis Protocol 2002 (SWAP).

Visual surveying provides information on vehicle loads of waste entering a disposal facility in terms of composition of the waste load and the activity source (including landscaping, residential, and construction and demolition).

The composition of waste is based on the 12 primary categories (such as paper, plastics, timber) recommended by the SWAP. Further secondary categories were chosen after consultation with Council. A description of the categories is provided in Appendix 4.

The activity sources of waste used for the visual surveys were those recommended by the National Waste Data Framework.

2.1.1 Survey schedule

The visual surveys were undertaken over one seven-day and one four-day period as per the following schedule. On two of the days, the survey started at the Wānaka RTS in the morning then moved to the Queenstown RTS in the afternoon.

Table 2-1 – SWAP survey schedule 2023-24

Wednesday 8 November 2023	Queenstown refuse transfer station
Thursday 9 November 2023	Queenstown refuse transfer station
Friday 10 November 2023	Wānaka refuse transfer station
Saturday 11 November 2023	Wānaka refuse transfer station
Sunday 12 November 2023	Queenstown refuse transfer station
Tuesday 14 November 2023	Wānaka refuse transfer station
Wednesday 15 November 2023	Queenstown refuse transfer station
Wednesday 6 March 2024	Queenstown transfer station
Thursday 7 March 2024	Queenstown - morning / Wānaka - afternoon
Friday 8 March 2024	Wānaka refuse transfer station
Saturday 9 March 2024	Wānaka - morning / Frankton - afternoon

2.1.2 Analysing waste streams

For the purpose of analysing waste streams, Waste Not differentiates between kerbside rubbish collections, special waste, transfer station wastes, and general waste. Different methods are used for determining the composition of each waste stream.

Kerbside rubbish collections, in this context, are taken to include both Council and private collections of rubbish bags and wheelie bins from both residential and commercial/industrial

properties. The composition of kerbside collections is most accurately determined by sort-and-weigh auditing, rather than by visual surveying techniques. A sort-and-weigh audit of Queenstown Lakes District kerbside rubbish and recycling from residential properties was conducted in November 2023. Data from this audit has been assumed to be representative of the composition of all kerbside rubbish at the time of the two RTS surveys.

There is no precise definition for 'special waste', as these wastes vary between disposal facilities. Special wastes generated in Queenstown Lakes District are likely to include asbestos, biosolids, and wastewater treatment plant screenings. Special wastes from Queenstown Lakes District are taken directly to landfill and are not disposed of at the transfer stations. Biosolids from the wastewater treatment plants are understood to be disposed of at AB Lime landfill in Southland.

General waste is considered to be all wastes other than kerbside rubbish collections and special wastes. Visual surveying is used primarily for determining the composition of the general waste stream.

2.1.3 Activity sources

The activity sources that were used for classifying waste loads at Wānaka and Queenstown RTS were those recommended by the National Waste Data Framework:

1. **Construction and demolition (C&D)** – waste materials from the construction or demolition of a building

2. **Industrial/commercial/institutional (ICI)** – waste from industrial, commercial, and institutional sources

3. **Kerbside rubbish collection** – waste collected from residential and commercial premises by private and council kerbside rubbish collections

4. **Landscaping and earthworks** – waste from landscaping activity, garden maintenance, and site works, both domestic and commercial

5. **Residential** – all waste originating from residential premises other than that covered by one of the other, more specific classifications (includes drop-offs of bagged domestic waste)

6. **Special wastes** – (usually applies only to waste disposed of directly to landfill) a subjective classification that includes any substantial waste stream (such as biosolids, infrastructural cleanfill, or industrial wastes), that either requires special handling or significantly affects the overall composition of the waste stream and is markedly different from waste streams at other disposal facilities.

7. **Transfer station** – waste entering a facility from another transfer station.

The activity source of each load was assessed and recorded by the surveyor at the same time as the composition was being assessed and recorded. If a load contained materials from more than one activity source, a judgement was made as to which activity source predominated in the load.

2.1.4 Identification of vehicle types

As loads carried by different vehicle types are not affected in similar ways by waste reduction initiatives, vehicles carrying waste were classified according to the system shown in Table 2-2. Photos and more detailed explanations of the truck types are provided in Appendix 5.

Table 2-2 - Vehicle classification system

Vehicle type	Uses
Car-sized loads	Small loads, generally from a single source, can be of either commercial or residential origin. Includes vehicles other than cars carrying very small loads, such as a van carrying a few rubbish bags. Any load that could fit inside a medium-sized station wagon is classified as a 'car-sized load'.
Trailer-sized loads – including vans, small trucks, and utes	Small-medium sized loads, usually from a single source, either commercial or residential, some may be from multiple sources (i.e. a garden contractor)
Kerbside collection compactors	Large load usually from multiple regular sources, either residential or commercial or both combined
Front-end loader trucks	Large loads, usually from numerous commercial sources that are regular users
Gantry trucks	Medium-large loads, usually from a single source, may be one-off disposal for residential or commercial waste, or regularly used by a commercial waste generator
Hook truck	Large loads, usually from a single source, may be one-off loads or regularly used by a large-scale waste generator.
Other trucks – including tip, box, and flat-deck	Medium to large loads, usually commercial, may be one off - loads or regular waste generators

2.1.5   Survey execution

The visual classification was conducted by a Waste Not employee and an experienced sub-contractor over a seven day period in November 2023 and a four-day period in March 2024. As each vehicle to be surveyed entered the tipping area, the surveyor would record the time, the vehicle registration number, and the type of vehicle. Data was not recorded on vehicles disposing of cleanfill, metal, or greenwaste into the separate areas at either RTS designated for their disposal.

With the technique developed by Waste Not for visual waste classification, while each vehicle was being unloaded the surveyor assessed the relative weight of each constituent present in the load (in terms of the secondary classifications given in Appendix 4) on the basis of volume and density. Absolute weights of each material were not estimated; rather, the proportion of weight represented by each material was estimated. These data were recorded as a proportion, by weight, for each constituent present in the load.

For vehicle loads in which it was difficult to distinguish the individual constituents, a generic composition, based on previous sort and weigh surveys of that type of vehicle load, was used as a template for the composition, and was adjusted according to the materials that were visible. For example, a front-end loader carrying large amounts of supermarket or restaurant waste was assessed as having a higher-than-average proportion of food waste.

When the visual survey was completed, the data on proportion of weights was combined with weighbridge records of the weight for each load, and a weight for each of the individual materials in the load was calculated. As not all small loads were weighed at the weighbridge,

the surveyor made an estimate of the weight for all small loads. These estimated weights were based on known averages for the specific vehicle and load type from information made available by disposal facilities that weigh every vehicle load entering the facility.

As transfer station staff occasionally remove scrap metal from waste loads at Wānaka RTS, it was necessary to estimate the proportion of the waste load that was recovered and deduct that amount from the weighbridge weight.

2.1.6   Data for general waste at Victoria Flats landfill

A high proportion of vehicles disposing of waste at Victoria Flats landfill are transporting either transfer station waste or special waste. Fewer than five vehicles per day transport 'general, unclassified' waste. As such, it was not considered cost-effective to have a surveyor gather data at the facility.

General waste is classified at the weighbridge as being either 'commercial' or 'demolition'. As general waste represented only about 15% of all waste disposed of directly to the landfill, the composition of the two types of waste were assumed to be the same as the corresponding classifications at Queenstown RTS.

2.1.7   Data analysis

The raw data collected by the surveyor for each vehicle was cross-referenced with the weighbridge records of the load weight for that vehicle to produce information on the weight of each secondary constituent in each load.

Many loads of mixed waste included a small number of bags of domestic waste. As part of the data-gathering process, the surveyor recorded the number of bags of domestic waste accompanying each load. During the calculation of the waste composition, each bag was assigned a weight of 7 kg and the composition of each bag was assumed to be that determined by the November 2023 sort-and-weigh audit of kerbside rubbish.

For determining the composition of waste entering the landfill, the compositions of waste from the Wānaka and Queenstown RTS were assumed to be that determined by the surveying undertaken at those facilities.

As the domestic waste and unclassified mixed waste streams require different management strategies, the analyses of these waste streams are presented separately. In this report, the unclassified mixed waste is referred to as 'general' waste. When combined with the kerbside rubbish collections (and, in the case of the landfill, any special wastes), the waste stream is referred to as the 'overall' waste stream. A generic waste flow diagram illustrating this method of data analysis is presented in Figure 2-1.
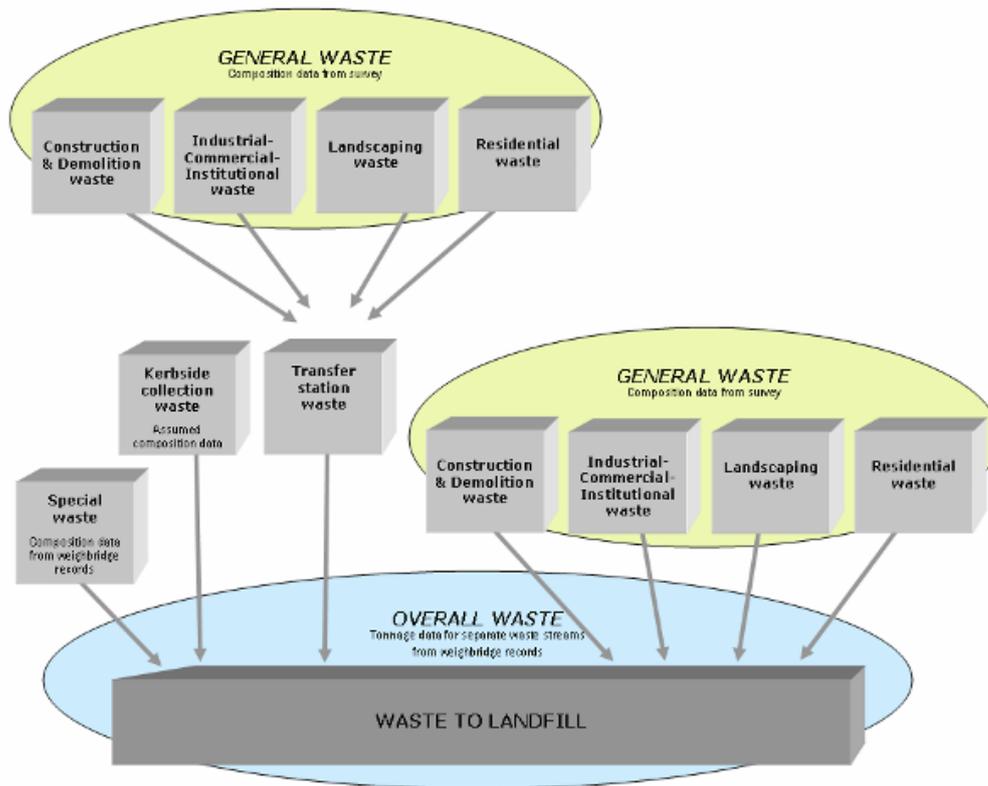
Figure 2-1 - Generic waste flow diagram

2.2 Sort-and-weigh audits

The sort-and-weigh audits involved the sorting of materials over a seven-day period, from 8-15 November 2023. Each weekday, a sample of kerbside rubbish was collected directly from the kerbside. The sample was collected by a Waste Not employee accompanying a WMNZL vehicle and driver. The samples were collected in Queenstown and Arrowtown. No kerbside rubbish was collected from Wānaka as WMNZL, due to operational issues, was not able to provide the vehicle and driver for the Wānaka sample collection.

Samples of Council's mixed recycling were sourced directly from the materials recovery facility (MRF) in Queenstown, where Council's kerbside recycling is sorted. The sample of commercial recycling was also sourced directly from the MRF.

The sample of material from public place litter bins in Queenstown CBD was collected on Friday 10 November and was sorted on Saturday 11 November.

All materials were sorted at the Queenstown RTS. The kerbside rubbish, kerbside mixed recycling, and commercial recycling were sorted separately into classifications determined in consultation with WMNZL and Council.

2.2.1 Sample of kerbside rubbish

A 'standard' kerbside rubbish SWAP audit is usually three to five days in length, with the equivalent of 60 x 140-litre wheelie bins (about 600kg) of waste being sorted and weighed each day. Such an audit usually gives results of a reasonable level of precision for three to five of the twelve primary categories recommended by the SWAP.

However, as the Queenstown Lakes District audit was designed to include kerbside rubbish and mixed recycling, commercial recycling, and material from public place litter bins, a seven-day audit was undertaken. Kerbside rubbish was collected directly from the kerbside on six weekdays. As kerbside rubbish, mixed recycling, and commercial recycling were sorted each day, the daily sample of kerbside rubbish comprised the contents 28-36 wheelie bins.

2.2.2   Kerbside rubbish sampling strategy and execution

The composition of residential kerbside rubbish, and the quantity generated per household, can vary according to a number of factors, including the socio-economic status of the householders, the occupancy rate per household, the nature of the housing stock, the size of the property, and the range of disposal and recycling services available.

Accordingly, to obtain a representative sample of residential kerbside rubbish from Queenstown Lakes District, the sample was collected from a range of communities over six days in Queenstown and in Arrowtown. As WMNZL was unable to provide the collection vehicle and driver for the Wānaka collection, no kerbside rubbish was collected in Wānaka. The sample was collected only from residential properties. Commercial properties were not included in the sample.

Each day's sample was collected from streets in that day's Council collection area. The sample was collected from a small number of streets selected by WMNZL. The sample collection started at 7:00 each morning and took approximately 2-2.5 hours.

The sampling was undertaken by a team of two in a flatbed truck provided by WMNZL. The truck driver, also provided by WMNZL, assisted a Waste Not supervisor with the collection. The contents of all wheelie bins sampled were emptied individually into large plastic bags. The empty wheelie bins were left on the kerbside with the lid open.

The collected sample was transported to Queenstown RTS each morning for sorting in a marquee installed for the purpose. A team of four, comprising one supervisor from Waste Not or an experienced subcontractor and three casual staff, was used for the sorting process.

The contents of rubbish wheelie bins were sorted in sampling units of four bins. Each bag in each sampling unit of four was weighed individually, opened, the contents spread on a sorting table, and the items sorted into the appropriate categories. When all of the items were sorted, the individual classifications were weighed out and the material disposed of.

Council requested that the classifications used for sorting rubbish and recycling be based on Ministry for the Environment's recently released guidelines for standard materials for kerbside collections [1]. The guidelines were to come into effect on 1 February 2024.

The kerbside rubbish sample was sorted into the 12 primary categories identified in the SWAP and 25 secondary categories. The secondary categories used for the rubbish sorting are presented in Appendix 1. The classifications were chosen to identify the different types of recyclable and compostable materials present in the rubbish. The definitions for each classification were based on the MfE standard materials. The definitions were finalised in consultation with WMNZL and Council.

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[1] Ministry for the Environment. 2023. *Standard materials for kerbside collections: Guidance for territorial authorities*. Wellington: Ministry for the Environment.

Sorting layout for kerbside rubbish audit

2.2.3 Kerbside and commercial recycling audit execution

Kerbside and commercial recycling were sampled and sorted on the same six days as the kerbside rubbish audit. During the day, the sorting supervisor kept in contact with the MRF and was informed when a kerbside or commercial recycling vehicle had arrived. The sorting supervisor took a small flatbed truck to the MRF and a scoop of recycling was dropped onto the back of the truck with a loader. The sample was taken to the marquee for sorting.

The classifications for sorting kerbside and commercial recycling are provided in Appendix 2.

2.2.4 Public place 4-bin recycling station audit execution

Each of the public place 4-bin recycling stations serviced by Council contains one bin for glass bottles and jars, one bin for steel and aluminium cans, and two bins for rubbish. The collection of the sample of rubbish from QLDC's public place 4-bin recycling stations took place during the early evening on Friday 10 November 2023 in the Queenstown central business district. The sample was collected by a WMNZL staff member and a Waste Not staff member. The contents of the rubbish bins in each station were emptied into plastic bags for transport and sorted as a single sample the following day at Queenstown RTS.

The samples from the bins for cans and glass bottles were separately collected in compactors by WMNZL staff in the Queenstown central business district in the late evening on Friday 10 November 2023. This material was taken to the MRF, weighed in the truck, and stored separately.

The 96 kg sample of material from the rubbish bins was sorted as a single sample in the same manner as the kerbside rubbish.

The material from the glass bins was deposited in the glass bunker for sorting. The sorting team used litter pickers to separate and remove contamination from the glass bottles while spreading the pile of glass with a rake and broom. The contamination was collected in crates and subsequently sorted.

The material from the cans bins was deposited on the tipping floor used by kerbside mixed recycling vehicles. The material was sorted into crates from the floor.

The classifications used for material from the public place 4-bin recycling stations are provided in Appendix 3.

3 Sort-and-weigh audits

3.1 Kerbside rubbish audit

A total of 184 kerbside rubbish wheelie bins, collected 8-15 November 2023, were sorted for the audit. The sorted rubbish weighed 2,068 kg.

3.1.1 Kerbside rubbish - Primary composition

The primary composition of kerbside rubbish wheelie bins is presented in Table 3-1 below and Figure 3.1. In Table 3-1, the results of the 2023 audit are compared to the results of a similar kerbside rubbish audit undertaken by Waste Not Consulting in December 2019. Note that slightly different categories were used in the two audits.

The secondary composition, which includes all 25 categories and a statistical analysis of the results, is given in section 3.1.2.

Table 3-1 - Primary composition of kerbside rubbish wheelie bins - November 2023 and December 2019

Queenstown Lakes District Council Kerbside rubbish wheelie bins- November 2023 and December 2019	Proportion of total weight		Mean wt. per wheelie bin	
	2023	**2019**	**2023**	**2019**
Paper	6.5%	7.8%	0.73 kg	0.89 kg
Plastics	9.8%	10.6%	1.10 kg	1.20 kg
Organics	59.1%	54.3%	6.64 kg	6.18 kg
Ferrous metals	1.7%	1.9%	0.19 kg	0.21 kg
Non-ferrous metals	1.2%	1.2%	0.13 kg	0.14 kg
Glass	2.7%	2.4%	0.30 kg	0.27 kg
Textiles	4.6%	4.8%	0.52 kg	0.54 kg
Sanitary paper	7.2%	7.5%	0.81 kg	0.86 kg
Rubble	2.4%	5.0%	0.27 kg	0.57 kg
Timber	1.9%	3.2%	0.21 kg	0.37 kg
Rubber	0.7%	0.3%	0.07 kg	0.03 kg
Potentially hazardous	2.3%	1.0%	0.26 kg	0.12 kg
TOTAL	**100.0%**	**100.0%**	**11.24 kg**	**11.38 kg**

The contents of the average wheelie bin in the 2023 audit weighed 11.24 kg, compared to an average weight of 11.38 kg in the 2019 audit. The compositions were very similar, with Organics and Plastics being the largest categories in both audits. In terms of the secondary categories, the largest difference between the two audits was in the quantity of Greenwaste (included in Organics in the table), which weighed 0.50 kg more per wheelie bin in 2023 compared to 2019.

Batteries and vapes with batteries were separated and counted as part of the 2023 audit. The results indicate there are approximately 33 batteries and 15 vapes with batteries per tonne of kerbside rubbish.

3.1.2 Kerbside rubbish - Secondary composition of kerbside rubbish

Queenstown Lakes District - Kerbside rubbish - November 2023 (margins of error for 95% confidence level)		% of total weight		Kg per rubbish wheelie bin	
Paper	Recyclable paper	3.9%	(±0.4%)	0.44 kg	(±0.04 kg)
	Non-recyclable paper	2.3%	(±0.2%)	0.26 kg	(±0.02 kg)
	Contaminated pizza boxes	0.2%	(±0.1%)	0.03 kg	(±0.01 kg)
		6.5%	**(±0.4%)**	**0.73 kg**	**(±0.04 kg)**
Plastics	#1,2 & 5 bottles/containers	1.8%	(±0.1%)	0.21 kg	(±0.01 kg)
	Coloured #1 bottles/containers	0.1%	(±0.0%)	0.01 kg	(±0.00 kg)
	#3, 4, 6 & 7 containers	0.2%	(±0.1%)	0.03 kg	(±0.01 kg)
	Plastic bags/film	4.8%	(±0.3%)	0.53 kg	(±0.03 kg)
	Other non-recyclable	2.9%	(±0.5%)	0.33 kg	(±0.06 kg)
		9.8%	**(±0.6%)**	**1.10 kg**	**(±0.07 kg)**
Organics	Food waste	33.0%	(±2.0%)	3.71 kg	(±0.23 kg)
	Greenwaste	22.9%	(±3.4%)	2.57 kg	(±0.38 kg)
	Other organic	3.2%	(±0.6%)	0.36 kg	(±0.07 kg)
		59.1%	**(±3.5%)**	**6.64 kg**	**(±0.39 kg)**
Ferrous metals	Steel cans	0.5%	(±0.1%)	0.06 kg	(±0.01 kg)
	Other steel	1.2%	(±0.4%)	0.13 kg	(±0.05 kg)
		1.7%	**(±0.4%)**	**0.19 kg**	**(±0.05 kg)**
Non ferrous metals	Aluminium cans	0.3%	(±0.0%)	0.04 kg	(±0.01 kg)
	Other non-ferrous	0.9%	(±0.3%)	0.10 kg	(±0.03 kg)
		1.2%	**(±0.3%)**	**0.13 kg**	**(±0.03 kg)**
Glass	Bottles & jars	1.9%	(±0.4%)	0.21 kg	(±0.04 kg)
	Non-recyclable glass	0.8%	(±0.2%)	0.09 kg	(±0.02 kg)
		2.7%	**(±0.4%)**	**0.30 kg**	**(±0.04 kg)**
Textiles	Clothing & rags	2.6%	(±0.6%)	0.30 kg	(±0.06 kg)
	Other textiles	2.0%	(±0.4%)	0.22 kg	(±0.04 kg)
		4.6%	**(±0.6%)**	**0.52 kg**	**(±0.07 kg)**
		7.2%	**(±1.0%)**	**0.81 kg**	**(±0.11 kg)**
Rubble		**2.4%**	**(±1.0%)**	**0.27 kg**	**(±0.11 kg)**
Timber		**1.9%**	**(±0.6%)**	**0.21 kg**	**(±0.07 kg)**
Rubber		**0.7%**	**(±0.2%)**	**0.07 kg**	**(±0.02 kg)**
Potentially hazardous	Household	1.5%	(±0.3%)	0.17 kg	(±0.03 kg)
	Other hazardous	0.8%	(±0.3%)	0.09 kg	(±0.03 kg)
	Subtotal	**2.3%**	**(±0.4%)**	**0.26 kg**	**(±0.04 kg)**
TOTAL		**100.0%**		**11.24 kg**	**(±0.43 kg)**
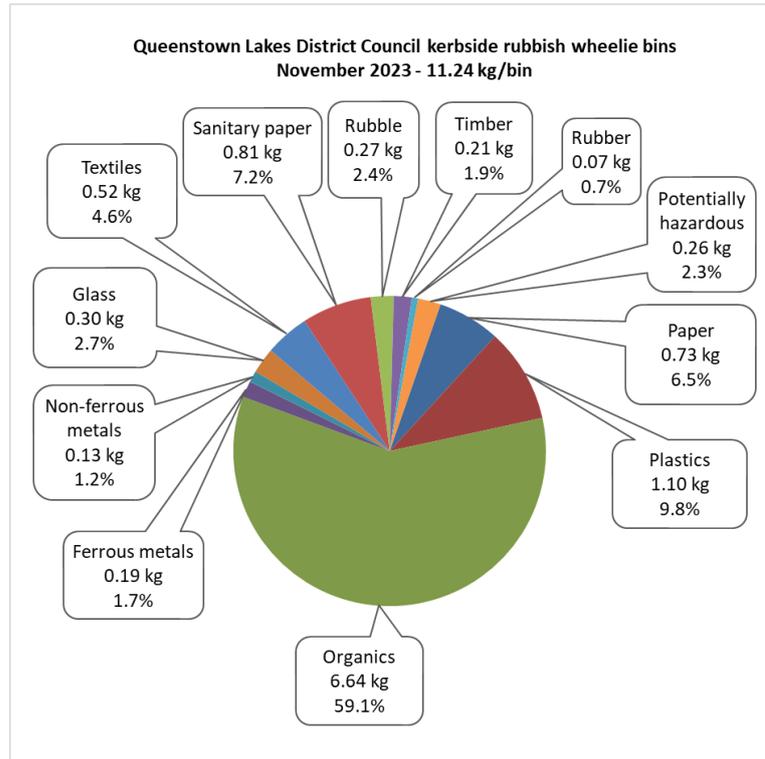
Figure 3.1 - Primary composition of kerbside rubbish - November 2023

3.1.3   Distribution of kerbside rubbish bin weights

A total of 184 kerbside rubbish wheelie bins were sorted for the audit. The sorted rubbish weighed 2,068 kg. The average weight of rubbish in Council's 140-litre rubbish wheelie bins was 11.24 kg.

The median rubbish wheelie bin weight was 9.69 kg. The lightest bin was 0.60 kg and the heaviest, 44.92 kg. The distribution of wheelie bin weights is shown in Figure 3.2.
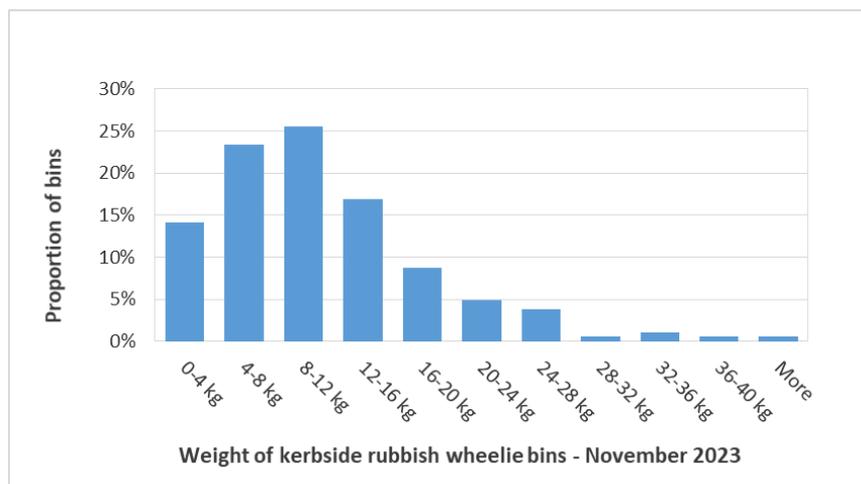
Figure 3.2 - Distribution of kerbside rubbish wheelie bin weights - November 2023

Nearly 14% of wheelie bins contained less than four kilograms of rubbish. Two-thirds (66%) weighed between four and 16 kg. Eleven percent weighed over 20 kilograms.

3.1.4 Diversion potential of kerbside rubbish

To minimise waste to landfill, Queenstown Lakes District Council provides households in the District with separate kerbside collections of mixed recycling and glass, alternating fortnightly, using 240-litre wheelie bins for mixed recycling and 140-litre bins for glass recycling. Recycling facilities are also available to the public at Wakatipu Recycling Centre in Frankton and Wastebusters Recycling Centre in Wānaka. To further reduce waste to landfill, residents are able to dispose of greenwaste separately at Queenstown and Wānaka transfer stations, the privately-owned Wānaka Greenwaste and Landscaping Supplies, and community-run facilities at Glenorchy, Kingston, Lake Hawea, Luggate, and Makarora. A commercial greenwaste kerbside collection service is available in Wānaka only. Greenwaste can also be home-composted. Although food waste collection services are not available in the District, residents are able to home compost their food waste. Council encourages home composting with an educational programme and subsidies for Bokashi bins and worms.

Table 3-2 shows the proportion of rubbish in Queenstown Lakes District Council's kerbside wheelie bins that could have been diverted from landfill disposal using these methods. In the table, the results from the 2023 audit are compared to those from the 2019 audit.

Table 3-2 - Diversion potential of kerbside rubbish wheelie bins - November 2023 and 2019

Divertible materials in kerbside rubbish - November 2023 and December 2019	% of weight	Kg per rubbish bin	
	2023	2023	2019
RECYCLABLE MATERIALS			
Paper - Recyclable	3.9%	0.44 kg	0.68 kg
Plastic #1,2, & 5 bottles/containers	1.8%	0.21 kg	0.20 kg
Plastic coloured #1 bottles/containers	0.1%	0.01 kg	
Steel cans	0.5%	0.06 kg	0.05 kg
Aluminium cans	0.3%	0.04 kg	0.02 kg
Glass - Bottles/jars	1.9%	0.21 kg	0.21 kg
Subtotal	**8.5%**	**0.96 kg**	**1.16 kg**
COMPOSTABLE MATERIALS			
Food waste	33.0%	3.71 kg	3.85 kg
Greenwaste	22.9%	2.57 kg	2.07 kg
Subtotal	**55.9%**	**6.28 kg**	**5.92 kg**
TOTAL DIVERTIBLE	**64.4%**	**7.24 kg**	**7.08 kg**

In the 2023 audit, approximately 8.5% of materials in kerbside rubbish bins could have been recycled. This is equivalent to 0.96 kg per rubbish bin, compared to 1.16 kg per bin in the 2019 audit. Recyclable paper was the largest recyclable component of kerbside rubbish in both 2023 and 2019.

In 2023, a further 55.9% of materials in kerbside rubbish bins (6.28 kg per bin) could have been composted. This compares to 5.92 kg per bin in the 2019 audit. Food waste was the largest compostable component of kerbside rubbish bins in both 2023 (3.71 kg per bin) and 2019 (3.85 kg per bin). Overall, 64.4% of materials in kerbside rubbish bins in 2023 could have been diverted from landfill disposal by either recycling or composting.

3.2 Mixed recycling audit

Mixed recycling (i.e. collections that exclude glass) was audited on six weekdays from 6-15 November 2023. The audit of recycling included samples of Council kerbside mixed recycling from residential properties and privately collected mixed recycling from commercial premises. Council's kerbside glass collection was not sorted due to operational issues at the RTS and health and safety concerns. Kerbside glass had been audited in December 2019.

On each of the six days, scoop samples of recycling were taken by a loader after vehicles unloaded at the MRF. Separate samples of residential and commercial recycling were loaded onto a flat-deck truck and sorted in a marquee at Queenstown RTS. The categories used for the sorting are specified in Appendix 2. A total of 14 loads of recycling, weighing 1,054 kg, were sorted. Approximately 41% of the sorted material was from commercial premises and 59% from residential properties.

The results of the audit are shown in Table 3-3 below. Materials that would be 'acceptable' for Council's kerbside mixed recycling, based on MfE's national standards for kerbside materials, are shown in green font. Materials that would not be acceptable are in red font. Note that Glass bottles & jars are not accepted in either commercial or residential mixed recycling.

Table 3-3 - Composition of mixed recycling - November 2023

Recycling sampled at the MRF - November 2023	Commercial	Residential
Recyclable paper	55.9%	64.9%
Non-recyclable paper	6.5%	5.2%
Contaminated pizza boxes	0.3%	0.4%
Plastic #1,2,&5 bottles/containers	11.8%	10.7%
Plastic coloured #1 bottles/containers	0.3%	0.2%
Plastic #3,4,6,&7 containers	0.0%	0.1%
Other non-recyclable plastics	4.3%	5.7%
Organics	2.0%	0.4%
Steel cans	5.0%	3.7%
Steel other	0.2%	0.4%
Aluminium cans	3.1%	3.5%
Other non-ferrous	0.6%	0.2%
Glass bottles & jars	2.3%	1.1%
Broken glass/fines	0.7%	1.0%
Non-recyclable glass	0.0%	0.0%
Textiles	0.2%	0.0%
Sanitary	0.1%	0.0%
Other Contamination	6.7%	2.5%
TOTAL	100.0%	100.0%
Acceptable	76.1%	82.9%
Not acceptable	23.9%	17.1%

The compositions of recycling from commercial premises and residential properties were similar. Recyclable paper was the largest component, by weight, of both types of recycling (55.9% of commercial and 64.9% of residential) and Plastic #1, 2, & 5 bottles/containers was the second largest component (11.8% of commercial and 10.7% of residential).

Overall, 76.1%, by weight, of materials in recycling collected from commercial premises would be acceptable for Council's kerbside recycling following the introduction of MfE's national standards for kerbside materials. A higher proportion of materials, 82.9%, in recycling collected from residential properties would be acceptable to those standards.

Sorting commercial mixed recycling

Batteries and vapes with batteries were separated and counted as part of the audit. No vapes were found in the residential recycling. The two vapes with batteries found in the commercial recycling indicate there are approximately five vapes with batteries per tonne of commercial recycling.

No batteries were found in the commercial recycling. The single battery found in the residential recycling indicate there are approximately two batteries per tonne of residential recycling.

The figures for vapes and batteries are of an indicative nature only as the sample sizes were very small. In addition, both items, due to their size, are difficult to identify in mixed recycling, which is primarily paper and cardboard.

3.3 Public place 4-bin recycling station audit

Each of the public place 4-bin recycling stations provided by Council contains one bin for glass bottles and jars, one bin for steel and aluminium cans, and two bins for all other materials (rubbish).

The collection of the sample of rubbish from Council's public place 4-bin recycling stations took place during the early evening on Friday 10 November 2023 in the Queenstown central business district. The sample was collected by a WMNZL staff member and a Waste Not staff member. The contents of the rubbish bins in each station were emptied into plastic bags for transport and sorted as a single sample the following day at Queenstown RTS.

The samples from the bins for cans and glass bottles were separately collected by WMNZL staff in the Queenstown central business district in the late evening on Friday 10 November 2023. The results of the audit are shown in Table 3-4.

Table 3-4 - Composition of public place 4-bin recycling stations - November 2023

Public place 4-bin recycling stations - November 2023	Glass bins	Can bins	Rubbish bins
Clean recyclable paper & cardboard	0.1%	3.3%	1.6%
Clean plastic bottles #1,2,&5	0.8%	10.5%	5.7%
Clean plastic food containers #1,2,&5	0.0%	0.0%	0.4%
Clean glass bottles & jars	**95.9%**	3.5%	7.1%
Clean steel & aluminium cans	0.1%	**52.5%**	0.6%
Paper coffee cups	0.0%	1.2%	2.2%
Non-recyclable paper & cardboard	0.5%	7.3%	30.0%
Dirty plastic bottles #1,2,&5	1.1%	4.4%	4.2%
Dirty plastic food containers #1,2,&5	0.0%	0.1%	6.8%
All other plastics	0.2%	2.6%	2.5%
Dirty glass bottles & jars	0.2%	5.9%	0.4%
Other non-recyclable glass	0.2%	0.0%	0.0%
Dirty steel & aluminium cans	0.0%	0.2%	0.0%
Food	0.1%	6.4%	24.9%
Potentially hazardous	0.0%	0.0%	0.0%
All other items	0.7%	2.2%	13.6%
TOTAL	**100%**	**100%**	**100%**
Vapes per tonne	0	0	42

A total of 260 kg of material from public place 4-bin recycling station glass bins was sorted. This weight is based on weighbridge records for the vehicle that delivered the sample to the MRF. The unsorted material is shown in the photo on the next page. The weight of recyclable glass was calculated by deducting the weight of contamination from the weighbridge weight of the load. By weight, 95.9% of the material that was sorted was Clean glass bottles & jars. No vapes or batteries were found in the glass bins.

Material from public place 4-bin recycling station glass bins

A total of 26.4 kg of material from public place 4-bin recycling station can bins was sorted. Just over half, 52.5%, was Clean steel & aluminium cans. The largest category of materials that should not have been disposed of in the can bins was Clean plastic bottles #1,2,& 5, which comprised 10.5% of the total weight. Non-recyclable paper and cardboard was the third largest component, comprising 7.3% of the total weight. The can bins contained 3.5% Clean glass bottles & jars and 5.9% Dirty glass bottles & jars. These materials could have been recycled in the glass bin. No vapes or batteries were found in the can bins.

Material from public place 4-bin recycling station can bins

A total of 95.8 kg of material from public place 4-bin recycling station rubbish bins was sorted. The largest category of rubbish was Non-recyclable paper & cardboard, which comprised 30.0% of the total weight. A substantial proportion of the paper and cardboard packaging originated from a small number of takeaway outlets. The second largest category was Food, which comprised 24.9% of the total weight. Relatively small proportions of material in the rubbish bins could have been recycled in the other bins. Clean glass bottles & jars comprised 7.1% of the total weight, Dirty glass bottles & jars comprised 0.4%, and Clean steel & aluminium cans, 0.6%. The number of vapes counted in the rubbish sample represented 42 vapes per tonne of rubbish. No batteries were found in the rubbish sample.

Material from public place 4-bin recycling station rubbish bins

4 Refuse transfer station waste

4.1 Wānaka Refuse Transfer Station

For the first visual survey, Wānaka RTS was surveyed on 10, 11, and 14 November 2023. On these two days, data was collected on a total of 223 vehicles. For the second visual survey, Wānaka RTS was surveyed on 7, 8, and 9 March 2024. On these three days, data was collected on a total of 105 vehicles.

The data from the first visual survey was matched with the weighbridge records for 5 October - 29 November 2023, an eight-week period that included the visual survey. Based on Victoria Flats landfill records for the same period, an average of 245 T/week was disposed of to landfill from Wānaka RTS. The first survey results were applied to this tonnage.

The data from the second visual survey was matched with the RTS weighbridge records for the eight week-week period 2 February - 28 March 2024. The results were applied to the average of 233 T/week that was disposed of to landfill from Wānaka RTS, based on Victoria Flats landfill records for the same period.

During both visual surveys, all compactor vehicles, primarily kerbside rubbish collections, were identified and registration details recorded. Using the Wānaka RTS weighbridge records, the average tonnage per week of kerbside rubbish collections was calculated. These totals were deducted from the total tonnage disposed of to landfill to determine the tonnage of 'general' waste disposed of at the transfer station.

4.1.1   Wānaka RTS - Overall waste stream - by activity source of waste loads

The proportion of loads, broken down by activity source, from both surveys combined is shown in Table 4-1.

Table 4-1 - Activity sources of Wānaka RTS waste loads - Both visual surveys combined

Activity sources of waste loads at Wānaka RTS - 2023-24 surveys combined	% of loads surveyed	% of total weight	Average tonnes/week
Construction & demolition	29%	29%	69 T/week
Industrial/commercial/institutional	24%	28%	67 T/week
Landscaping & earthworks	3%	1%	2 T/week
Residential	37%	6%	15 T/week
Subtotal - general waste	**94%**	**64%**	**153 T/week**
Council kerbside rubbish collections	7%	29%	69 T/week
Private kerbside rubbish collections		7%	17 T/week
TOTAL	**100%**	**100%**	**239 T/week**

C&D waste comprised 29% of waste disposed of at Wānaka RTS, by weight, or 69 tonnes per week. Industrial/commercial/institutional (ICI) waste comprised 28% of waste and landscaping and earthworks, 1%. Residential waste comprised 37% of all loads, but only represented 6% of the total weight. Kerbside rubbish collections comprised 7% of vehicle loads, but Council and private collections combined represented 36% of all waste, by weight.

The results of the individual visual surveys are compared in Table 4-2, in terms of tonnes per week. The percentage change between the two surveys is also presented. It is noted that the March 2024 survey included the Wānaka A&P Show on 8 and 9 March. Traffic restrictions were in place throughout the town and many normal activities, such as transporting loads of waste to the RTS, would have been disrupted.

Table 4-2 - Activity sources of Wānaka RTS waste loads - 2023-24 visual surveys compared

Activity sources of waste loads at Wānaka RTS - Nov-23 and Mar-24 visual surveys combined	Nov-23 survey	Mar-24 survey	% change
Construction & demolition	90 T/week	49 T/week	-46%
Industrial/commercial/institutional	44 T/week	90 T/week	103%
Landscaping & earthworks	1 T/week	3 T/week	310%
Residential	24 T/week	5 T/week	-79%
Subtotal - general waste	**159 T/week**	**146 T/week**	**-8%**
Council kerbside rubbish collections	70 T/week	68 T/week	-2%
Private kerbside rubbish collections	16 T/week	18 T/week	9%
TOTAL	**245 T/week**	**233 T/week**	**-5%**

The overall tonnage of waste disposed of to landfill from Wānaka RTS decreased 5% between the November 2023 and March 2024. General waste tonnages decreased 8% and there were significant differences in the individual activity sources of waste. C&D waste tonnages decreased 46% between the two surveys while ICI waste increased 103%.

The decrease in C&D tonnage may have been associated with seasonal variations with C&D activity, wider economic conditions, and normal C&D activity being disrupted by the Wānaka A&P Show in the March 2024 survey.

The difference in ICI tonnages is associated with a change in front-end loader activity. Both surveys included data on four front-end loaders, but the average load weight in March 2024 was nearly 5 tonnes, compared to an average load weight of 2.3 tonnes in November 2023. This difference may be associated with one of the waste companies using a larger front-end loader in March 2024 that may not have been disposing of as much waste directly to Victoria Flats landfill. The increase of 103% is not likely to be associated with an actual increase of that magnitude in ICI activity in Wānaka.

Residential waste tonnages decreased 79%. This is likely to be associated with the Wānaka A&P Show. Very few vehicles used the transfer station on Saturday 9 February

Total kerbside rubbish tonnages were identical in the two surveys.

4.1.2   Wānaka RTS - Primary composition of general and overall waste streams

The data from the visual surveys was used to determine the composition of the general waste (i.e. excluding kerbside rubbish collections) disposed of at the facility. The assumed composition of the kerbside rubbish collections (presented in section 3.1.2) was determined with sort-and-weigh audits in November 2023. For the purposes of calculating the composition of the overall waste stream, it has been assumed that the composition of private kerbside rubbish collections is the same as the composition of Council kerbside collections.

The primary compositions of the general waste stream, which excludes kerbside rubbish (both Council and private), and the overall waste stream, which includes kerbside rubbish, disposed of at Wānaka RTS are presented in Table 4-3 and Figure 4.1 and Figure 4.2. The compositions are the weighted average of the results of the two visual surveys conducted in November 2023 and March 2024.

Table 4-3 - Primary composition of Wānaka RTS waste - Both visual surveys combined

Primary composition of Wānaka RTS waste - Nov-23 and Mar-24 visual surveys combined	General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
	% of total	Tonnes per week	% of total	Tonnes per week
Paper	7.7%	12 T/week	7.3%	17 T/week
Plastics	14.3%	22 T/week	12.7%	30 T/week
Organics	8.0%	12 T/week	26.5%	63 T/week
Ferrous metals	5.5%	8 T/week	4.1%	10 T/week
Non-ferrous metals	0.5%	1 T/week	0.8%	2 T/week
Glass	1.8%	3 T/week	2.1%	5 T/week
Textiles	6.5%	10 T/week	5.8%	14 T/week
Sanitary paper	2.4%	4 T/week	4.2%	10 T/week
Rubble	16.4%	25 T/week	11.3%	27 T/week
Timber	35.1%	54 T/week	23.1%	55 T/week
Rubber	1.0%	2 T/week	0.9%	2 T/week
Potentially hazardous	0.6%	1 T/week	1.3%	3 T/week
TOTAL	**100.0%**	**153 T/week**	**100.0%**	**239 T/week**

From the results of both visual surveys combined, Timber was the largest primary component of the general waste stream, comprising 35.1% of the total weight. Rubble was the second largest component of general waste, comprising 16.4% of the total weight.

Organics was the largest component of the overall waste stream, comprising 26.5% of the total weight. Timber, 23.1%, was the second largest component of the overall waste stream, by weight. Organic material is more prevalent in the overall waste stream due to the high proportion of Food waste in kerbside rubbish.
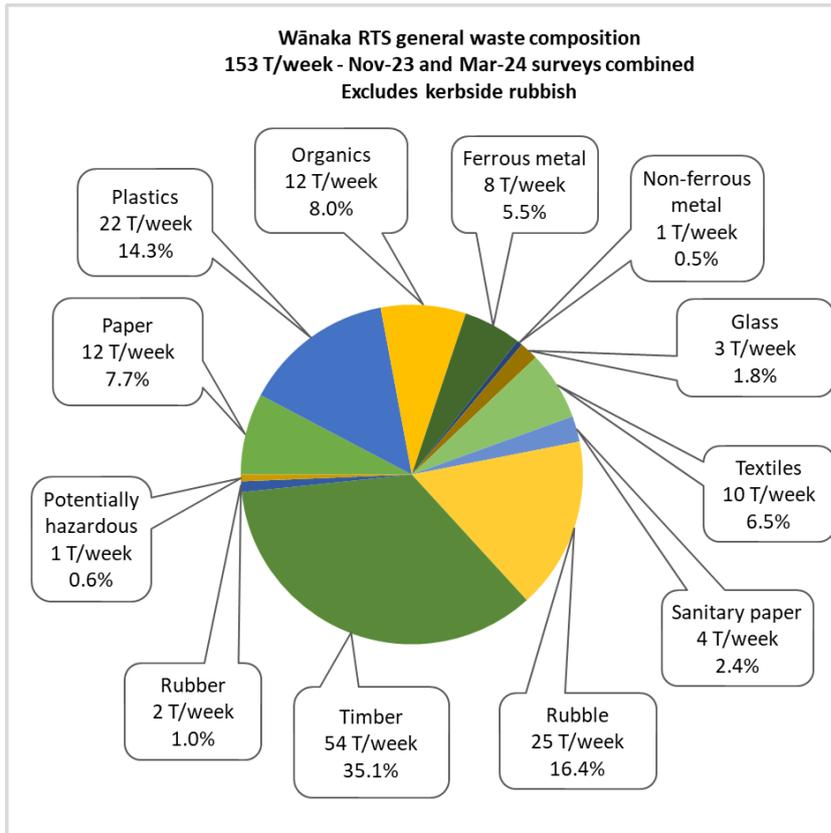
Figure 4.1 - Primary composition of Wānaka RTS general waste - Both surveys combined
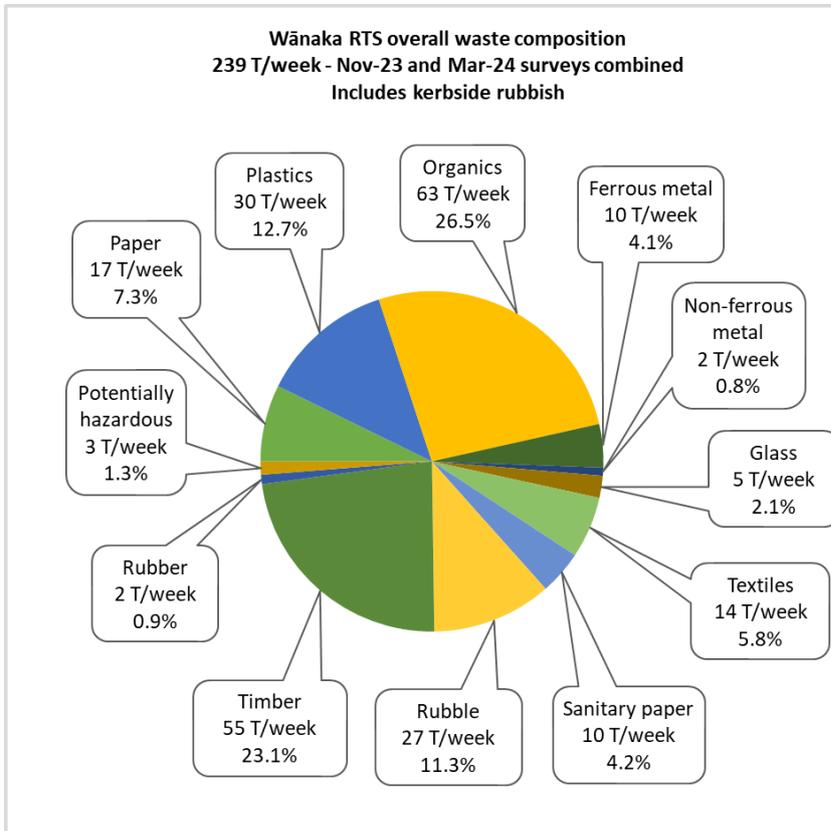
Figure 4.2 - Primary composition of Wānaka RTS overall waste - Both surveys combined

4.1.3   Wānaka RTS - Secondary composition of general and overall waste streams

The secondary compositions of the general waste stream and the overall waste stream disposed of at Wānaka RTS are presented in Table 4-4. The compositions are the weighted average of the results of the two visual surveys conducted in 2023-24. The results of the individual surveys are presented in Appendix 6 and Appendix 7.

Table 4-4 - Secondary composition of Wānaka RTS waste - Both surveys combined

Wānaka RTS General and overall waste streams - Nov-23 and Mar-24 visual surveys combined		General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
		% of total	Tonnes per week	% of total	Tonnes per week
Paper	Recyclable	2.0%	3 T/week	2.5%	6 T/week
	Cardboard	4.7%	7 T/week	3.2%	8 T/week
	Non-recyclable	1.0%	2 T/week	1.6%	4 T/week
	Subtotal	**7.7%**	**12 T/week**	**7.3%**	**17 T/week**
Plastics	Recyclable	0.5%	1 T/week	1.0%	2 T/week
	Non-recyclable	13.8%	21 T/week	11.7%	28 T/week
	Subtotal	**14.3%**	**22 T/week**	**12.7%**	**30 T/week**
Organics	Food waste	4.6%	7 T/week	14.9%	35 T/week
	Compostable greenwaste	1.4%	2 T/week	8.3%	20 T/week
	Other greenwaste	1.1%	2 T/week	1.5%	4 T/week
	Organics other	1.0%	1 T/week	1.8%	4 T/week
	Subtotal	**8.0%**	**12 T/week**	**26.5%**	**63 T/week**
Ferrous metals	Primarily ferrous	3.6%	5 T/week	2.5%	6 T/week
	Steel other	1.9%	3 T/week	1.7%	4 T/week
	Subtotal	**5.5%**	**8 T/week**	**4.1%**	**10 T/week**
Non-ferrous metals		**0.5%**	**1 T/week**	**0.8%**	**2 T/week**
Glass	Recyclable	0.7%	1 T/week	1.1%	3 T/week
	Non-recyclable	1.1%	2 T/week	1.0%	2 T/week
	Subtotal	**1.8%**	**3 T/week**	**2.1%**	**5 T/week**
Textiles	Clothing/textiles	1.8%	3 T/week	2.1%	5 T/week
	Multimaterial/other	4.7%	7 T/week	3.7%	9 T/week
	Subtotal	**6.5%**	**10 T/week**	**5.8%**	**14 T/week**
Sanitary paper		**2.4%**	**4 T/week**	**4.2%**	**10 T/week**
Rubble	Cleanfill	1.7%	3 T/week	1.1%	3 T/week
	New plasterboard	4.0%	6 T/week	2.6%	6 T/week
	Other	10.6%	16 T/week	7.6%	18 T/week
	Subtotal	**16.4%**	**25 T/week**	**11.3%**	**27 T/week**
Timber	Reusable	4.1%	6 T/week	2.6%	6 T/week
	Unpainted & untreated	6.8%	10 T/week	4.4%	10 T/week
	Other timber	24.2%	37 T/week	16.1%	39 T/week
	Subtotal	**35.1%**	**54 T/week**	**23.1%**	**55 T/week**
Rubber		**1.0%**	**2 T/week**	**0.9%**	**2 T/week**
Potentially hazardous		**0.6%**	**1 T/week**	**1.3%**	**3 T/week**
TOTAL		**100.0%**	**153 T/week**	**100.0%**	**239 T/week**

4.1.4 Wānaka RTS - Primary composition of general waste - by activity source

The primary compositions of the four activity sources that made up the general waste stream at Wānaka RTS are shown in Table 4-5 and Table 4-6. The compositions are the weighted average of the results of the two visual surveys. Secondary compositions are in Appendix 8. The results of the individual surveys are shown in Appendix 9 and Appendix 10.

Table 4-5 -Wānaka RTS general waste - By activity source - By % of weight

Wānaka RTS general waste By activity source Both surveys combined By % of total weight	C&D	ICI	Landscaping	Residential
Paper	3.8%	12.1%	0.0%	7.5%
Plastics	5.4%	24.9%	1.4%	9.6%
Organics	0.3%	13.3%	71.6%	13.2%
Ferrous metals	6.3%	4.8%	0.0%	5.4%
Non-ferrous metals	0.1%	1.0%	0.0%	0.5%
Glass	0.3%	3.2%	0.0%	2.4%
Textiles	2.0%	8.8%	0.0%	18.6%
Sanitary paper	0.0%	5.2%	0.0%	1.8%
Rubble	29.1%	6.2%	0.0%	4.2%
Timber	52.2%	17.4%	27.0%	35.3%
Rubber	0.1%	2.0%	0.0%	1.1%
Potentially hazardous	0.2%	1.2%	0.0%	0.4%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 4-6 -Wānaka RTS general waste - by activity source - By tonnes/week

Wānaka RTS general waste By activity source Both surveys combined By tonnes per week	C&D	ICI	Landscaping	Residential
Paper	2.7 T/week	8.1 T/week	0.0 T/week	1.1 T/week
Plastics	3.8 T/week	16.7 T/week	0.0 T/week	1.4 T/week
Organics	0.2 T/week	8.9 T/week	1.3 T/week	1.9 T/week
Ferrous metals	4.4 T/week	3.2 T/week	0.0 T/week	0.8 T/week
Non-ferrous metals	0.1 T/week	0.7 T/week	0.0 T/week	0.1 T/week
Glass	0.2 T/week	2.1 T/week	0.0 T/week	0.3 T/week
Textiles	1.4 T/week	5.9 T/week	0.0 T/week	2.7 T/week
Sanitary paper	0.0 T/week	3.5 T/week	0.0 T/week	0.3 T/week
Rubble	20.2 T/week	4.1 T/week	0.0 T/week	0.6 T/week
Timber	36.3 T/week	11.7 T/week	0.5 T/week	5.1 T/week
Rubber	0.1 T/week	1.3 T/week	0.0 T/week	0.2 T/week
Potentially hazardous	0.1 T/week	0.8 T/week	0.0 T/week	0.1 T/week
TOTAL	**69.4 T/week**	**66.9 T/week**	**1.8 T/week**	**14.5 T/week**

C&D waste was composed primarily of Timber (52.2%) and Rubble (29.1%), which, combined, represented 81.4%, by weight, of C&D waste. ICI waste was more heterogeneous, with Plastics (24.9%) being the largest component. Landscaping waste was 71.6% organic material. Residential waste was also heterogeneous, with Timber (35.3%) being the largest component. Timber was present primarily as furniture and C&D waste, which is frequently present in residential waste.

4.1.5   Wānaka RTS - Overall waste stream - by vehicle type

Table 4-7 shows the percentage of waste loads disposed of at Wānaka RTS by each of the six vehicle types recorded during the surveys, the percentage of total weight carried by each vehicle type, and the tonnes per week. The results are the average of the results of the two 2023-24 visual surveys. Note that no hook trucks were recorded in either survey.

Table 4-7 - Wānaka RTS - By vehicle type - Both surveys combined

Wānaka RTS overall waste By vehicle type Nov-23 and Mar-24 visual surveys combined	% of loads surveyed	% of weight	Tonnes/week
Car-sized loads	27%	3%	7 T/week
Compactors	6%	36%	86 T/week
Front-end loader	2%	11%	27 T/week
Gantry trucks	13%	27%	64 T/week
Other trucks	4%	2%	4 T/week
Trailer-sized loads	48%	21%	50 T/week
TOTAL	100.0%	100.0%	239 T/week

Compactors transported 36% of the total weight, but represented only 6% of the loads surveyed. Gantry trucks transported 27% of the total weight and represented 13% of the loads surveyed. Forty-eight percent of the loads surveyed were trailer-sized loads and these loads represented 21% of the total weight. While 27% of all loads were car-sized, these loads represented only 3% of the total weight of waste.

4.1.6 Wānaka RTS - Primary composition of general waste - by vehicle type

The primary compositions of the five vehicle types transporting general waste (compactors are excluded) are shown in Table 4-8. The results are the weighted average of the results of the two 2023-24 visual surveys. Secondary compositions are presented in Appendix 11.

Table 4-8 - Wānaka RTS general waste - By vehicle type - By % of weight

Wānaka RTS general waste - By vehicle type Nov-23 and Mar-24 visual surveys combined - By % of total weight	Cars	Front-end loaders	Gantry trucks	Other trucks	Trailers
Paper	15.5%	13.7%	3.9%	1.4%	5.2%
Plastics	10.0%	24.9%	9.8%	13.1%	8.2%
Organics	21.2%	17.1%	1.6%	0.0%	6.2%
Ferrous metals	3.9%	4.5%	8.1%	3.9%	3.1%
Non-ferrous metals	0.4%	1.2%	0.2%	0.1%	0.2%
Glass	0.5%	3.0%	0.6%	0.6%	2.6%
Textiles	5.3%	7.7%	1.9%	57.4%	9.2%
Sanitary paper	3.0%	6.1%	0.6%	0.0%	0.4%
Rubble	15.1%	5.0%	27.3%	2.4%	16.3%
Timber	24.7%	12.3%	45.5%	20.7%	47.9%
Rubber	0.1%	2.8%	0.2%	0.4%	0.5%
Potentially hazardous	0.3%	1.6%	0.3%	0.1%	0.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4-9 - Wānaka RTS general waste - By vehicle type - By tonnes/week

Wānaka RTS general waste By vehicle type Nov-23 and Mar-24 visual surveys combined - By tonnes per week	Cars	Front-end loaders	Gantry trucks	Other trucks	Trailers
Paper	1 T/week	4 T/week	2 T/week	0 T/week	0 T/week
Plastics	1 T/week	7 T/week	6 T/week	1 T/week	1 T/week
Organics	2 T/week	5 T/week	1 T/week	0 T/week	0 T/week
Ferrous metals	0 T/week	1 T/week	5 T/week	0 T/week	0 T/week
Non-ferrous metals	0 T/week	0 T/week	0 T/week	0 T/week	0 T/week
Glass	0 T/week	1 T/week	0 T/week	0 T/week	0 T/week
Textiles	0 T/week	2 T/week	1 T/week	3 T/week	3 T/week
Sanitary paper	0 T/week	2 T/week	0 T/week	0 T/week	0 T/week
Rubble	1 T/week	1 T/week	17 T/week	0 T/week	0 T/week
Timber	2 T/week	3 T/week	29 T/week	1 T/week	1 T/week
Rubber	0 T/week	1 T/week	0 T/week	0 T/week	0 T/week
Potentially hazardous	0 T/week	0 T/week	0 T/week	0 T/week	0 T/week
TOTAL	7 T/week	27 T/week	64 T/week	4 T/week	4 T/week

4.1.7 Wānaka RTS - Diversion potential

Of the 25 material classifications used in the visual survey, ten can currently be recycled, composted, or otherwise diverted in Queenstown Lakes District. Five other materials are diverted from landfill disposal in New Zealand, but not in Queenstown Lakes District. The most significant material for which there is no current diversion option in Queenstown Lakes District is Other timber. In the upper North Island, all types of timber are now being recovered for use as fuel at the Golden Bay cement plant near Whangarei.

Based on these 15 materials, Table 4-10 shows the proportion of the general and overall waste streams disposed of at Wānaka RTS that could potentially be diverted from landfill disposal. The percentages and tonnages of materials have been taken from Table 4-4.

Table 4-10 - Diversion potential of Wānaka RTS waste - Both surveys combined

Wānaka RTS - Diversion potential Nov-23 and Mar-24 surveys combined	General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
	% of total	T/week	% of total	T/week
MATERIALS CURRENTLY DIVERTABLE				
Paper - Recyclable	2.0%	3 T/week	2.5%	6 T/week
Paper - Cardboard	4.7%	7 T/week	3.2%	8 T/week
Plastic - Recyclable	0.5%	1 T/week	1.0%	2 T/week
Ferrous metals	5.5%	8 T/week	4.1%	10 T/week
Non-ferrous metals	0.5%	1 T/week	0.8%	2 T/week
Glass - Recyclable	0.7%	1 T/week	1.1%	3 T/week
Textiles - Clothing	1.8%	3 T/week	2.1%	5 T/week
Rubble - Cleanfill	1.7%	3 T/week	1.1%	3 T/week
Timber - Reusable	4.1%	6 T/week	2.6%	6 T/week
Organics - Compostable greenwaste	1.4%	2 T/week	8.3%	20 T/week
Subtotal	**22.9%**	**35 T/week**	**26.9%**	**64 T/week**
MATERIALS NOT CURRENTLY DIVERTABLE				
Organics - Food waste	4.6%	7 T/week	14.9%	35 T/week
Organics - Other greenwaste	1.1%	2 T/week	1.5%	4 T/week
Rubble - New plasterboard	4.0%	6 T/week	2.6%	6 T/week
Timber - Untreated/unpainted	6.8%	10 T/week	4.4%	10 T/week
Other timber	24.2%	37 T/week	16.1%	39 T/week
Subtotal	**40.8%**	**62 T/week**	**39.5%**	**94 T/week**
TOTAL - POTENTIALLY DIVERTABLE	**63.7%**	**97 T/week**	**66.3%**	**158 T/week**

Divertable materials comprised 22.9% of the general waste stream at Wānaka RTS and 26.9% of the overall waste stream. Materials that are not currently divertable in Queenstown Lakes District, but are diverted elsewhere, comprised 40.8% of the general waste stream and 39.5% of the overall waste stream. In total, materials that are potentially divertable comprised 63.7% of the general waste stream and 66.3% of the overall waste stream

The largest single divertable component was Other timber, which comprised 16.1% of the overall waste stream, or 39 tonnes per week. Food waste comprised 14.9% of the overall waste. Approximately 87% of Food waste was in kerbside rubbish collections.

4.1.8 Wānaka RTS - Divertable materials - by activity source

Waste minimisation initiatives can be directed at a specific material type, such as food waste, at a waste-generating activity, such as domestic activity, or at a combination of both, such as food waste in kerbside rubbish. In Table 4-11 the average weekly tonnages for the divertable materials in overall waste to Wānaka RTS are broken down by activity source. The materials are shown in the same order as in Table 4-10. The cells for the individual materials have been formatted from the lowest value (no shading) to the highest value (red shading).

Table 4-11 - Divertable materials in waste to Wānaka RTS - By activity source

Wānaka RTS waste - Divertable materials - By activity source - Nov-23 and Mar-24 surveys combined	Construction & demolition	ICI	Landscaping & earthworks	Residential	Kerbside rubbish
Paper - Recyclable	0.0 T/week	2.7 T/week	0.0 T/week	0.3 T/week	3.1 T/week
Paper - Cardboard	2.3 T/week	4.3 T/week	0.0 T/week	0.7 T/week	0.3 T/week
Plastic - Recyclable	0.2 T/week	0.4 T/week	0.0 T/week	0.1 T/week	1.7 T/week
Ferrous metals	4.4 T/week	3.2 T/week	0.0 T/week	0.8 T/week	1.5 T/week
Non-ferrous metals	0.1 T/week	0.7 T/week	0.0 T/week	0.1 T/week	1.0 T/week
Glass - Recyclable	0.1 T/week	0.9 T/week	0.0 T/week	0.1 T/week	1.6 T/week
Textiles - Clothing	0.1 T/week	1.9 T/week	0.0 T/week	0.8 T/week	2.3 T/week
Rubble - Cleanfill	2.2 T/week	0.2 T/week	0.0 T/week	0.3 T/week	0.0 T/week
Timber - Reusable	5.4 T/week	0.5 T/week	0.0 T/week	0.3 T/week	0.0 T/week
Compostable greenwaste	0.2 T/week	1.0 T/week	0.5 T/week	0.5 T/week	17.8 T/week
Food waste	0.0 T/week	6.2 T/week	0.0 T/week	0.8 T/week	28.5 T/week
Other greenwaste	0.1 T/week	0.3 T/week	0.8 T/week	0.6 T/week	2.0 T/week
Rubble - New plasterboard	6.1 T/week	0.1 T/week	0.0 T/week	0.0 T/week	0.0 T/week
Timber - Untreated/unpainted	4.6 T/week	3.9 T/week	0.2 T/week	1.7 T/week	0.0 T/week
Other timber	26.3 T/week	7.2 T/week	0.2 T/week	3.1 T/week	1.6 T/week
TOTAL	**51.9 T/week**	**33.4 T/week**	**1.7 T/week**	**10.1 T/week**	**61.3 T/week**

The largest tonnage of divertable materials in overall waste to Wānaka RTS was in kerbside rubbish (61.3 tonnes per week), comprising primarily Food waste (28.5 tonnes per week) and Compostable garden waste (17.8 tonnes per week).

The second largest tonnage of divertable materials was in C&D waste. Of the 51.9 tonnes per week of divertable materials, over half, 26.3 tonnes per week, was Other timber.

The 33.4 tonnes per week of divertable materials in ICI waste were more evenly spread than in the other activity sources.

4.2 Queenstown Refuse Transfer Station

For the first visual survey, Queenstown RTS was surveyed on 8, 9, 12, and 15 November 2023. Over these four days, data was collected on a total of 443 vehicles. For the second visual survey, Queenstown RTS was surveyed on 6, 7, and 9 March 2024. On these three days, data was collected on a total of 292 vehicles.

The data from the first visual survey were matched with the weighbridge records for 5 October - 29 November 2023, an eight-week period that included the visual survey. Based on Victoria Flats landfill records for the same period, an average of 563 T/week was disposed of to landfill from Queenstown RTS. The first survey results were applied to this tonnage.

The data from the second visual survey were matched with the RTS weighbridge records for the eight week-week period 2 February - 28 March 2024. The results were applied to the average of 539 T/week that was disposed of to landfill from Queenstown RTS, based on Victoria Flats landfill records for the same period.

During both visual surveys, all compactor vehicles, primarily kerbside rubbish collections, were identified and registration details recorded. Using the Queenstown RTS weighbridge records, the average tonnage per week of kerbside rubbish collections was calculated. These totals were deducted from the total tonnage disposed of to landfill to determine the tonnage of 'general' waste disposed of at the transfer station.

4.2.1   Queenstown RTS - Overall waste stream - by activity source of waste loads

All loads of waste, broken down by activity source, from both surveys combined is shown in Table 4-12.

Table 4-12 - Activity sources of Queenstown RTS waste - Both visual surveys combined

Activity sources of waste loads at Queenstown RTS - Nov-23 and Mar-24 visual surveys combined	% of loads surveyed	% of total weight	Average tonnes/week
Construction & demolition	32%	36%	199 T/week
Industrial/commercial/institutional	19%	12%	64 T/week
Landscaping & earthworks	25%	7%	38 T/week
Residential	17%	3%	17 T/week
Subtotal - general waste	**92%**	**58%**	**319 T/week**
Council kerbside rubbish collections	8%	25%	136 T/week
Private kerbside rubbish collections		18%	97 T/week
TOTAL	**100%**	**100%**	**551 T/week**

C&D waste comprised 36% of waste disposed of at Queenstown RTS, by weight, or 199 tonnes per week. Industrial/commercial/institutional (ICI) waste comprised 12% of waste and landscaping and earthworks, 7%. Residential loads comprised 17% of all loads, but only represented 3% of the total weight. Kerbside rubbish collections comprised 8% of vehicle loads, but represented 43% of all waste, by weight.

The results of the individual visual surveys are compared in Table 4-13, in terms of tonnes per week. The percentage change between the two surveys is also presented.

Table 4-13 - Activity sources of Queenstown RTS waste - 2023-24 visual surveys compared

Activity sources of waste loads at Queenstown RTS - Nov-23 and Mar-24 visual surveys compared	Nov-23 survey	Mar-24 survey	% change
Construction & demolition	208 T/week	190 T/week	-9%
Industrial/commercial/institutional	70 T/week	59 T/week	-16%
Landscaping & earthworks	44 T/week	33 T/week	-24%
Residential	13 T/week	21 T/week	63%
Subtotal - general waste	**334 T/week**	**303 T/week**	**-9%**
Council kerbside rubbish collections	136 T/week	137 T/week	1%
Private kerbside rubbish collections	93 T/week	100 T/week	7%
TOTAL	**563 T/week**	**539 T/week**	**-4%**

The overall tonnage of waste disposed of to landfill from Queenstown RTS decreased 4% between the November 2023 and March 2024 surveys. General waste tonnages decreased 9%. All of the activity sources in general waste decreased between the two surveys

A significant proportion of residential loads are disposed of on weekends. In November 2023, Queenstown RTS was surveyed for a full Sunday. In March 2024, Queenstown RTS was surveyed for half of one Saturday. This difference may have been associated with the decrease in the number of residential loads surveyed and the corresponding decrease in tonnages.

Both Council and private kerbside rubbish collections increased marginally between the two surveys.

4.2.2 Queenstown RTS - Primary composition of general and overall waste streams

The data from the visual surveys was used to determine the composition of the general waste (i.e. excluding kerbside rubbish collections) disposed of at the facility. The composition of kerbside rubbish collections (presented in section 3.1.2) was determined with sort-and-weigh audits in November 2023. For the purposes of calculating the composition of the overall waste stream, it has been assumed that the composition of private kerbside rubbish collections is the same as the composition of Council kerbside collections.

The primary compositions of the general waste stream, which excludes kerbside rubbish (both Council and private), and the overall waste stream, which includes kerbside rubbish, disposed of at Queenstown RTS are presented in Table 4-14 and Figure 4.3 and Figure 4.4. The compositions are the weighted average of the results of the two visual surveys conducted in 2023-24. The secondary compositions are shown in Table 4-15.

Table 4-14 - Primary composition of Queenstown RTS waste - Both visual surveys combined

Primary composition of Queenstown RTS waste - Nov-23 and Mar-24 visual surveys combined	General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
	% of total	Tonnes per week	% of total	Tonnes per week
Paper	8.6%	28 T/week	7.7%	43 T/week
Plastics	7.3%	23 T/week	8.4%	46 T/week
Organics	12.9%	41 T/week	32.4%	179 T/week
Ferrous metals	2.5%	8 T/week	2.2%	12 T/week
Non-ferrous metals	0.3%	1 T/week	0.6%	4 T/week
Glass	0.9%	3 T/week	1.7%	9 T/week
Textiles	3.8%	12 T/week	4.1%	23 T/week
Sanitary paper	0.4%	1 T/week	3.3%	18 T/week
Rubble	18.9%	60 T/week	11.9%	66 T/week
Timber	43.1%	137 T/week	25.7%	142 T/week
Rubber	1.0%	3 T/week	0.8%	5 T/week
Potentially hazardous	0.1%	0 T/week	1.1%	6 T/week
TOTAL	**100.0%**	**319 T/week**	**100.0%**	**551 T/week**

When the results of both visual surveys are averaged, timber was the largest component of the general waste stream, comprising 43.1% of the total weight. Rubble was the second largest component of general waste, comprising 18.9% of the total weight.

Organics was the largest component of the overall waste stream, comprising 32.4% of the total weight. The high proportion of organic waste in the overall waste stream is associated with the high proportion of Food waste in kerbside rubbish. Timber, 25.7%, was the second largest component of the overall waste stream, by weight.
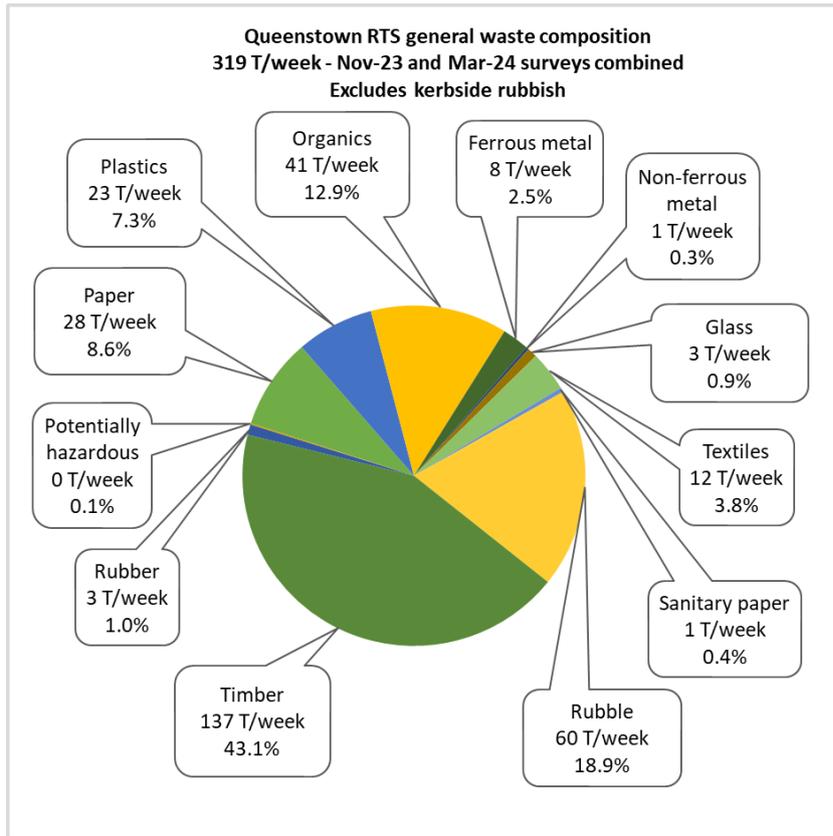
Figure 4.3 - Primary composition of Queenstown RTS general waste - Both surveys combined
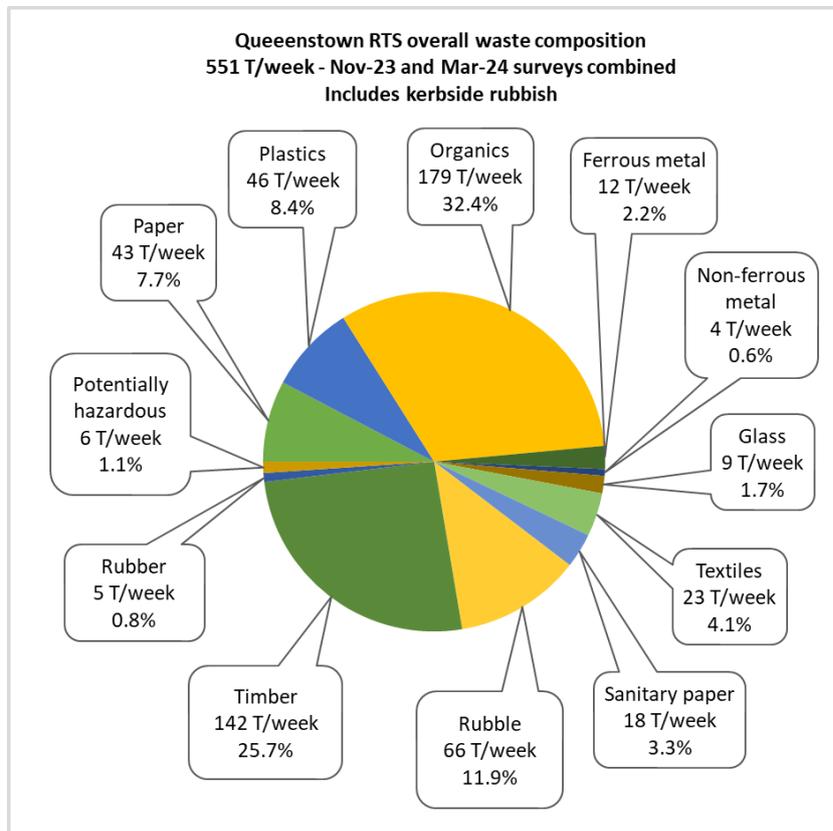
Figure 4.4 - Primary composition of Queenstown RTS overall waste - Both surveys combined

4.2.3   Queenstown RTS - Secondary composition of general and overall waste streams

The secondary compositions of the general waste stream and the overall waste stream disposed of at Queenstown RTS are presented in Table 4-15. The compositions are the weighted average of the results of the two visual surveys conducted in 2023-24. The results of the individual surveys are presented in Appendix 12 and Appendix 13.

Table 4-15 - Secondary composition of Queenstown RTS waste - Both surveys combined

Queenstown RTS General and overall waste streams - Nov-23 and Mar-24 visual surveys combined		General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
		% of total	Tonnes per week	% of total	Tonnes per week
Paper	Recyclable	2.5%	8 T/week	3.0%	16 T/week
	Cardboard	5.1%	16 T/week	3.1%	17 T/week
	Non-recyclable	1.0%	3 T/week	1.7%	9 T/week
	Subtotal	**8.6%**	**28 T/week**	**7.7%**	**43 T/week**
Plastics	Recyclable	0.4%	1 T/week	1.1%	6 T/week
	Non-recyclable	6.9%	22 T/week	7.3%	40 T/week
	Subtotal	**7.3%**	**23 T/week**	**8.4%**	**46 T/week**
Organics	Food waste	0.9%	3 T/week	14.4%	80 T/week
	Compostable greenwaste	1.5%	5 T/week	9.6%	53 T/week
	Other greenwaste	10.4%	33 T/week	7.0%	38 T/week
	Organics other	0.1%	0 T/week	1.4%	8 T/week
	Subtotal	**12.9%**	**41 T/week**	**32.4%**	**179 T/week**
Ferrous metals	Primarily ferrous	1.5%	5 T/week	1.1%	6 T/week
	Steel other	1.0%	3 T/week	1.1%	6 T/week
	Subtotal	**2.5%**	**8 T/week**	**2.2%**	**12 T/week**
Non-ferrous metals		**0.3%**	**1 T/week**	**0.6%**	**4 T/week**
Glass	Recyclable	0.2%	1 T/week	0.9%	5 T/week
	Non-recyclable	0.7%	2 T/week	0.8%	4 T/week
	Subtotal	**0.9%**	**3 T/week**	**1.7%**	**9 T/week**
Textiles	Clothing/textiles	0.4%	1 T/week	1.4%	7 T/week
	Multimaterial/other	3.4%	11 T/week	2.8%	15 T/week
	Subtotal	**3.8%**	**12 T/week**	**4.1%**	**23 T/week**
Sanitary paper		**0.4%**	**1 T/week**	**3.3%**	**18 T/week**
Rubble	Cleanfill	2.0%	6 T/week	1.2%	6 T/week
	New plasterboard	3.3%	10 T/week	1.9%	10 T/week
	Other	13.7%	43 T/week	8.9%	49 T/week
	Subtotal	**18.9%**	**60 T/week**	**11.9%**	**66 T/week**
Timber	Reusable	1.7%	5 T/week	1.0%	5 T/week
	Unpainted & untreated	3.4%	11 T/week	2.0%	11 T/week
	Other timber	38.0%	121 T/week	22.7%	125 T/week
	Subtotal	**43.1%**	**137 T/week**	**25.7%**	**142 T/week**
Rubber		**1.0%**	**3 T/week**	**0.8%**	**5 T/week**
Potentially hazardous		**0.1%**	**0 T/week**	**1.1%**	**6 T/week**
TOTAL		**100.0%**	**319 T/week**	**100.0%**	**551 T/week**

4.2.4 Queenstown RTS - Primary composition of general waste - by activity source

The primary compositions of the activity sources that made up the general waste stream at Queenstown RTS are shown in Table 4-16 and Table 4-17. The compositions are the weighted average of the results of the two visual surveys. Secondary compositions are in Appendix 14.

Table 4-16 -Queenstown RTS general waste - By activity source - By % of weight

Queenstown RTS general waste By activity source - Nov-23 and Mar-24 visual surveys combined - By % of total weight	C&D	ICI	Landscaping	Residential
Paper	3.1%	30.6%	0.5%	9.0%
Plastics	4.4%	19.8%	0.6%	8.7%
Organics	0.4%	4.1%	91.6%	15.2%
Ferrous metals	2.1%	2.4%	0.1%	14.2%
Non-ferrous metals	0.2%	0.6%	0.0%	0.4%
Glass	0.6%	2.3%	0.1%	0.8%
Textiles	1.7%	7.8%	0.3%	20.4%
Sanitary paper	0.0%	1.6%	0.2%	1.3%
Rubble	28.3%	3.0%	4.9%	1.9%
Timber	58.1%	25.9%	1.6%	27.1%
Rubber	1.0%	1.5%	0.0%	0.6%
Potentially hazardous	0.0%	0.4%	0.0%	0.4%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 4-17 -Queenstown RTS general waste - by activity source - By tonnes/week

Queenstown RTS general waste By activity source - Nov-23 and Mar-24 visual surveys combined - By tonnes per week	C&D	ICI	Landscaping	Residential
Paper	6.1 T/week	19.7 T/week	0.2 T/week	1.5 T/week
Plastics	8.8 T/week	12.7 T/week	0.2 T/week	1.5 T/week
Organics	0.8 T/week	2.6 T/week	35.2 T/week	2.6 T/week
Ferrous metals	4.1 T/week	1.6 T/week	0.0 T/week	2.4 T/week
Non-ferrous metals	0.4 T/week	0.4 T/week	0.0 T/week	0.1 T/week
Glass	1.3 T/week	1.5 T/week	0.0 T/week	0.1 T/week
Textiles	3.5 T/week	5.0 T/week	0.1 T/week	3.5 T/week
Sanitary paper	0.0 T/week	1.0 T/week	0.1 T/week	0.2 T/week
Rubble	56.3 T/week	1.9 T/week	1.9 T/week	0.3 T/week
Timber	115.6 T/week	16.7 T/week	0.6 T/week	4.6 T/week
Rubber	2.1 T/week	1.0 T/week	0.0 T/week	0.1 T/week
Potentially hazardous	0.1 T/week	0.3 T/week	0.0 T/week	0.1 T/week
TOTAL	**199 T/week**	**64 T/week**	**38 T/week**	**17 T/week**

C&D waste was composed primarily of Timber (58.1%) and Rubble (28.3%), which, combined, represented 86.4%, by weight, of C&D waste. ICI waste was more heterogeneous, with Paper (30.6%) being the largest component. A significant proportion of Paper was generated by the processing of Council's kerbside recycling collection at the Frankton MRF.

Landscaping waste was 91.6% organic material. Residential waste was also heterogeneous, with Timber (27.1%) being the largest component. Timber was present primarily as furniture and C&D waste, which is frequently present in residential waste.

4.2.5   Queenstown RTS - Overall waste stream - by vehicle type

Table 4-18 shows the percentage of waste loads disposed of at Queenstown RTS by each of the vehicle types recorded during the surveys, the percentage of total weight carried by each vehicle type, and the tonnes per week. The results are the average of the results of the two 2023-24 visual surveys. Note that no hook trucks or front-end loaders were recorded in either survey but Queenstown RTS weighbridge records showed a small number of front-end loader movements disposing of waste during the November 2023 survey.

Table 4-18 - Queenstown RTS - By vehicle type - Both surveys combined

Queenstown RTS overall waste By vehicle type - Nov-23 and Mar-24 visual surveys combined	% of loads surveyed	% of weight	Tonnes/week
Car-sized loads	19%	2%	10 T/week
Compactors	7%	42%	233 T/week
Front-end loaders	0%	0%	1 T/week
Gantry trucks	17%	29%	162 T/week
Hook trucks	0%	0%	0 T/week
Other trucks	11%	8%	44 T/week
Trailer-sized loads	45%	18%	101 T/week
TOTAL	**100.0%**	**100.0%**	**551 T/week**

Compactors transported 42% of the total weight of waste disposed of at Queenstown RTS, but represented only 7% of the loads surveyed. Gantry trucks transported 29% of the total weight, and represented 17% of the loads surveyed. Forty-five percent of the loads surveyed were trailer-sized loads, and these loads represented 18% of the total weight.

4.2.6 Queenstown RTS - Primary composition of general waste - by vehicle type

The primary compositions of the vehicle types transporting general waste (compactors, front-end loaders, and hook trucks are excluded) are shown in Table 4-19. The 'Other trucks' category included the fork-truck from the recycling processing plant. The results are the average of the results of the two 2023-24 visual surveys. Secondary compositions are presented in Appendix 15.

Table 4-19 - Queenstown RTS general waste - By vehicle type - By % of weight

Queenstown RTS general waste - By vehicle type Nov-23 and Mar-24 visual surveys combined - By % of total weight	Cars	Gantry trucks	Other trucks	Trailers
Paper	10.0%	4.4%	11.7%	4.3%
Plastics	9.7%	7.9%	6.8%	4.8%
Organics	45.8%	2.6%	13.7%	32.7%
Ferrous metals	3.1%	3.3%	0.4%	1.6%
Non-ferrous metals	0.3%	0.2%	0.2%	0.1%
Glass	2.4%	0.5%	0.6%	1.5%
Textiles	13.2%	2.2%	5.7%	5.3%
Sanitary paper	2.2%	0.3%	0.2%	0.5%
Rubble	0.7%	21.4%	31.6%	12.2%
Timber	11.7%	55.7%	26.7%	36.6%
Rubber	0.7%	1.4%	2.1%	0.2%
Potentially hazardous	0.3%	0.1%	0.2%	0.1%
TOTAL	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 4-20 - Queenstown RTS general waste - By vehicle type - By tonnes/week

Queenstown RTS general waste - By vehicle type Nov-23 and Mar-24 visual surveys combined - By tonnes per week	Cars	Gantry trucks	Other trucks	Trailers
Paper	1 T/week	7 T/week	5 T/week	4 T/week
Plastics	1 T/week	13 T/week	3 T/week	5 T/week
Organics	4 T/week	4 T/week	6 T/week	33 T/week
Ferrous metals	0 T/week	5 T/week	0 T/week	2 T/week
Non-ferrous metals	0 T/week	0 T/week	0 T/week	0 T/week
Glass	0 T/week	1 T/week	0 T/week	1 T/week
Textiles	1 T/week	4 T/week	3 T/week	5 T/week
Sanitary paper	0 T/week	1 T/week	0 T/week	1 T/week
Rubble	0 T/week	35 T/week	14 T/week	12 T/week
Timber	1 T/week	90 T/week	12 T/week	37 T/week
Rubber	0 T/week	2 T/week	1 T/week	0 T/week
Potentially hazardous	0 T/week	0 T/week	0 T/week	0 T/week
TOTAL	**10 T/week**	**162 T/week**	**44 T/week**	**101 T/week**

4.2.7 Queenstown RTS - Diversion potential

Of the 25 material classifications used in the visual survey, ten can currently be recycled, composted, or otherwise diverted in Queenstown Lakes District. Five other materials are diverted from landfill disposal in New Zealand, but not in Queenstown Lakes District. The most significant material for which there is no current diversion option in Queenstown Lakes District is Other timber. In the upper North Island, all types of timber are now being recovered for use as fuel at the Golden Bay cement plant near Whangarei. At Queenstown RTS, the types of greenwaste accepted for diversion are very limited compared to other area, resulting in the landfill disposal of a significant quantity of greenwaste that could be diverted in other parts of New Zealand.

Based on these 15 materials, Table 4-21 shows the proportion of the general and overall waste streams disposed of at Queenstown RTS that could potentially be diverted from landfill disposal. The percentages and tonnages of materials have been taken from Table 4-15.

Table 4-21 - Diversion potential of Queenstown RTS waste - Both surveys combined

Queenstown RTS - Diversion potential - Nov-23 and Mar-24 surveys combined	General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
	% of total	T/week	% of total	T/week
MATERIALS CURRENTLY DIVERTABLE				
Paper - Recyclable	2.5%	8 T/week	3.0%	16 T/week
Paper - Cardboard	5.1%	16 T/week	3.1%	17 T/week
Plastic - Recyclable	0.4%	1 T/week	1.1%	6 T/week
Ferrous metals	2.5%	8 T/week	2.2%	12 T/week
Non-ferrous metals	0.3%	1 T/week	0.6%	4 T/week
Glass - Recyclable	0.2%	1 T/week	0.9%	5 T/week
Textiles - Clothing	0.4%	1 T/week	1.4%	7 T/week
Rubble - Cleanfill	2.0%	6 T/week	1.2%	6 T/week
Timber - Reusable	1.7%	5 T/week	1.0%	5 T/week
Organics - Compostable greenwaste	1.5%	5 T/week	9.6%	53 T/week
Subtotal	**16.7%**	**53 T/week**	**23.9%**	**132 T/week**
MATERIALS NOT CURRENTLY DIVERTABLE				
Organics - Food waste	0.9%	3 T/week	14.4%	80 T/week
Organics - Other greenwaste	10.4%	33 T/week	7.0%	38 T/week
Rubble - New plasterboard	3.3%	10 T/week	1.9%	10 T/week
Timber - Untreated/unpainted	3.4%	11 T/week	2.0%	11 T/week
Other timber	38.0%	121 T/week	22.7%	125 T/week
Subtotal	**56.0%**	**178 T/week**	**48.0%**	**265 T/week**
TOTAL - POTENTIALLY DIVERTABLE	**72.7%**	**232 T/week**	**72.0%**	**397 T/week**

Divertable materials comprised 16.7% of the general waste stream at Queenstown RTS and 23.9% of the overall waste stream. Materials that are not currently divertable in Queenstown Lakes District, but are diverted elsewhere, comprised 56.0% of the general waste stream and 48.0% of the overall waste stream. In total, materials that are potentially divertable comprised 72.7% of the general waste stream and 72.0% of the overall waste stream

The largest single divertable component was Other timber, which comprised 22.7% of the overall waste stream, or 125 tonnes per week. Food waste comprised 14.4% of all waste. Approximately 96% of the food waste was in kerbside rubbish collections.

4.2.8   Queenstown RTS - Divertable materials - by activity source

Waste minimisation initiatives can be directed at a specific material type, such as food waste, at a waste-generating activity, such as domestic activity, or at a combination of both, such as food waste in kerbside rubbish. In Table 4-22 the average weekly tonnages for the divertable materials in overall waste to Queenstown RTS are broken down by activity source. The materials are shown in the same order as in Table 4-21. The cells for the individual materials have been formatted from the lowest value (no shading) to the highest value (red shading).

Table 4-22 - Divertable materials in waste to Queenstown RTS - By activity source -

Queenstown RTS waste - Divertable materials - By activity source - Nov-23 and Mar-24 surveys combined	Construction & demolition	ICI	Landscaping & earthworks	Residential	Kerbside rubbish
Paper - Recyclable	0 T/week	7 T/week	0 T/week	0 T/week	8 T/week
Paper - Cardboard	5 T/week	10 T/week	0 T/week	1 T/week	1 T/week
Plastic - Recyclable	0 T/week	1 T/week	0 T/week	0 T/week	4 T/week
Ferrous metals	4 T/week	2 T/week	0 T/week	2 T/week	4 T/week
Non-ferrous metals	0 T/week	0 T/week	0 T/week	0 T/week	3 T/week
Glass - Recyclable	0 T/week	1 T/week	0 T/week	0 T/week	4 T/week
Textiles - Clothing	0 T/week	0 T/week	0 T/week	1 T/week	6 T/week
Rubble - Cleanfill	4 T/week	1 T/week	2 T/week	0 T/week	0 T/week
Timber - Reusable	4 T/week	1 T/week	0 T/week	0 T/week	0 T/week
Compostable greenwaste	0 T/week	1 T/week	3 T/week	1 T/week	48 T/week
Food waste	0 T/week	1 T/week	0 T/week	1 T/week	77 T/week
Other greenwaste	0 T/week	0 T/week	31 T/week	1 T/week	5 T/week
Rubble - New plasterboard	10 T/week	0 T/week	0 T/week	0 T/week	0 T/week
Timber - Untreated/unpainted	7 T/week	4 T/week	0 T/week	0 T/week	0 T/week
Other timber	104 T/week	12 T/week	1 T/week	4 T/week	4 T/week
TOTAL	**140 T/week**	**42 T/week**	**37 T/week**	**12 T/week**	**165 T/week**

The largest tonnage of divertable materials in overall waste to Queenstown RTS was in kerbside rubbish (165 tonnes per week), comprising primarily Food waste (77 tonnes per week) and Compostable garden waste (48 tonnes per week).

The second largest tonnage of divertable materials was in C&D waste. Of the 140 tonnes per week of divertable materials in C&D waste, 75%, 104 tonnes per week, was Other timber.

5 Victoria Flats landfill

5.1 Victoria Flats landfill - types of waste

Waste entering the Victoria Flats landfill consists of consolidated waste loads from five refuse transfer stations in the region (Wānaka, Queenstown, Alexandra, Ranfurly, and Cromwell) and waste loads delivered directly to the landfill, including small amounts from Mackenzie District. Waste loads delivered directly to landfill include C&D waste, special wastes, and commercial wastes.

Table 5-1 shows the tonnages entering the landfill from each of these sources from 5 October - 29 November 2023 and from 2 February - 28 March 2024, and an average of the two periods. The waste types, geographic origins, and tonnages in this table are based on information recorded for each load by Victoria Flats landfill staff at the weighbridge. The 'Commercial' and 'Demolition' categories are those used on the weighbridge records. These categories correspond roughly to the ICI and C&D activity sources. The majority of Commercial waste is from front-end loader trucks.

Table 5-1 - Types of waste entering Victoria Flats landfill

Victoria Flats landfill Types of waste - 2023-24		5/10 - 29/11 2023	2/02 - 28/03 2024	% change	% of total weight	Mean tonnes per week
Transfer station waste	**Alexandra**	73 T/week	70 T/week	-5%	6%	72 T/week
	Cromwell	66 T/week	55 T/week	-17%	5%	61 T/week
	Frankton	563 T/week	539 T/week	-4%	49%	551 T/week
	Ranfurly	1 T/week	1 T/week	1%	0%	1 T/week
	Wānaka	245 T/week	233 T/week	-5%	21%	239 T/week
	Subtotal	**950 T/week**	**898 T/week**	**-5%**	**83%**	**924 T/week**
General waste	*Commercial **	135 T/week	134 T/week	-1%	12%	135 T/week
	Demolition *	34 T/week	53 T/week	59%	4%	43 T/week
Other wastes		8 T/week	3 T/week	-63%	1%	6 T/week
	Subtotal	**177 T/week**	**191 T/week**	**8%**	**16%**	**184 T/week**
Special wastes		18 T/week	7 T/week	-62%	1%	12 T/week
TOTAL		**1,144 T/week**	**1,095 T/week**	**-4%**	**100%**	**1,120 T/week**

* Weighbridge classifications

Between the October-November and February-March periods, the average weekly tonnage of waste disposed of at Victoria Flats landfill decreased by 4%. This decrease is likely to be associated with seasonal variations in waste generation.

From the average of the two periods, waste from the five transfer stations in the region accounted for 83% of all waste entering Victoria Flats landfill. Waste from Frankton transfer station represented 49% of all waste disposed of at the facility.

6 Waste from Queenstown Lakes District to landfill

The overall waste stream analysed in section 5.1 includes waste from Queenstown Lakes District, Central Otago District, and minor quantities from Mackenzie District. In this section, waste originating from Queenstown Lake District is analysed separately. Waste from the District is identified from the 'Ex' field in the weighbridge records.

Waste from Queenstown Lakes District includes consolidated waste loads from the two refuse transfer stations (Wānaka and Queenstown) and waste loads delivered directly to the landfill. Waste loads delivered directly to landfill include commercial and demolition waste and special wastes.

Table 6-1 shows the tonnages entering the landfill from these sources from 5 October - 29 November 2023, 2 February - 28 March 2024, and an average of the two periods. The waste types, geographic origins, and tonnages in this table are based on information recorded for each load by Victoria Flats landfill weighbridge. The 'Commercial' and 'Demolition' categories are those used on the weighbridge records. These categories correspond roughly to the ICI and C&D activity sources.

Table 6-1 - Waste disposed of at Victoria Flats landfill from Queenstown Lakes District

Victoria Flats landfill - Waste from Queenstown Lakes District - 2023-24		5/10 - 29/11 2023	2/02 - 28/03 2024	% change	% of total weight	Mean tonnes per week
Transfer station waste	**Frankton**	563 T/week	539 T/week	-4%	60%	551 T/week
	Wānaka	245 T/week	233 T/week	-5%	26%	239 T/week
	Subtotal	**809 T/week**	**772 T/week**	**-5%**	**86%**	**790 T/week**
General waste	*Commercial* *	67 T/week	79 T/week	18%	8%	73 T/week
	Demolition *	28 T/week	53 T/week	86%	4%	41 T/week
Other wastes		8 T/week	3 T/week	-61%	1%	5 T/week
	Subtotal	**103 T/week**	**135 T/week**	**31%**	**13%**	**119 T/week**
Special wastes		16 T/week	6 T/week	-65%	1%	11 T/week
TOTAL		**928 T/week**	**912 T/week**	**-2%**	**100%**	**920 T/week**

 * Weighbridge classifications

Using data from two eight-week periods, it has been calculated that an average of 920 tonnes per week of waste from Queenstown Lakes District was disposed of at Victoria Flats landfill. The two transfer stations, in Frankton and Wānaka, accounted for 86% of this total.

Between the October-November and February-March periods, the total tonnage of waste disposed of from Queenstown Lakes District decreased by 2%. This decrease is associated with a reduction in special wastes, particularly contaminated soil.

6.1 Activity sources of waste from Queenstown Lakes District to landfill

The activity sources of waste disposed of at Victoria Flats landfill solely from Queenstown Lakes District can be calculated using the tonnage data in Table 6-1 and applying the transfer station activity source data from Table 4-1 and Table 4-12. The results of the calculations are presented in Table 6-2. All data used for the calculations is from the average of the two surveys.

The analysis excludes biosolids from the District that are transported to AB Lime landfill in Southland for disposal.

Table 6-2 - Activity sources of all waste from Queenstown Lakes District to landfill

Activity sources of all waste from Queenstown Lakes District to landfill - 2023-24	Frankton RTS	Wānaka RTS	Direct to landfill	% of total	Total from QLDC
Construction & demolition	199 T/week	69 T/week	41 T/week	34%	309 T/week
Industrial/commercial/institutional	64 T/week	67 T/week	78 T/week	23%	210 T/week
Landscaping & earthworks	38 T/week	2 T/week	-	4%	40 T/week
Residential	17 T/week	15 T/week	-	3%	31 T/week
Subtotal - general waste	**319 T/week**	**153 T/week**	**119 T/week**	**64%**	**590 T/week**
Council kerbside rubbish collections	136 T/week	69 T/week	-	22%	205 T/week
Private kerbside rubbish collections	97 T/week	17 T/week	-	12%	114 T/week
Special wastes	-	-	11 T/week	1%	11 T/week
TOTAL	**551 T/week**	**239 T/week**	**130 T/week**	**100%**	**920 T/week**

C&D waste and kerbside rubbish collections (Council and private collections combined) each comprised 34% of the total weight of waste. Council kerbside rubbish collections comprised 64% of kerbside rubbish.   ICI waste represented 23% of waste, by weight.

6.2 Composition of waste from Queenstown Lakes District to landfill

To calculate the composition of all waste from Queenstown Lake District discharged at Victoria Flats landfill, the compositions used for individual waste streams are as follows:

- Wānaka transfer station - the composition for the overall waste given in section 4.1.3
- Queenstown transfer station - the composition for the overall waste given in section 4.2.3
- General waste disposed of directly to Victoria Flats landfill - the composition of the 'Commercial' and 'Demolition' waste streams have been assumed to be the same as the ICI and C&D activity sources respectively at Queenstown RTS, as given in Appendix 14
- Special waste - assumed to be 100% potentially hazardous.

The primary composition of the overall waste stream from Queenstown Lakes District disposed of at Victoria Flats landfill is shown in Table 6-3 and Figure 6.1 on the following page. The secondary composition is given in section 6.2.1.

Table 6-3 - Primary composition of all waste from Queenstown Lakes District to Victoria Flats landfill - Both surveys combined

Primary composition of all waste from Queenstown Lakes District to landfill - Nov-23 and Mar-24 surveys combined	% of total	Tonnes/week
Paper	7.9%	72 T/week
Plastics	10.5%	97 T/week
Organic	27.4%	252 T/week
Ferrous metals	2.8%	26 T/week
Nonferrous metals	0.7%	6 T/week
Glass	1.8%	17 T/week
Textiles	4.8%	44 T/week
Sanitary paper	3.5%	32 T/week
Rubble	11.8%	109 T/week
Timber	25.3%	233 T/week
Rubber	1.3%	12 T/week
Potentially hazardous	2.2%	20 T/week
TOTAL	**100.0%**	**920 T/week**
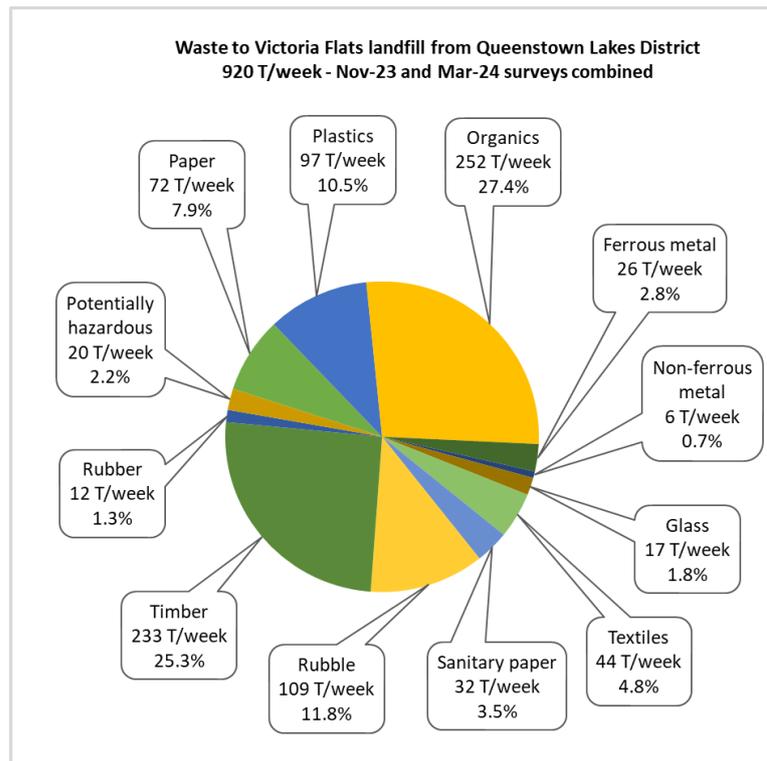
Figure 6.1 - Primary composition of all waste from Queenstown Lakes District to Victoria Flats landfill - Both surveys combined

Organic material was the largest component of the overall waste to landfill from Queenstown Lakes District, comprising 27.4% of the total, by weight. Timber was the second largest component, comprising 25.3% of the total weight. Rubble was the third largest component, comprising 11.8%. Plastics comprised 10.5% of the total weight.

6.2.1   Secondary composition of waste from Queenstown Lakes District to landfill

Table 6-4 - Secondary composition of all waste from Queenstown Lakes District to Victoria Flats landfill - Both surveys combined

Secondary composition of all waste from Queenstown Lakes District to Victoria Flats landfill - Nov-23 and Mar-24 surveys combined		% of total	Tonnes per week
Paper	Recyclable	2.9%	27 T/week
	Cardboard	3.4%	31 T/week
	Non-recyclable	1.6%	14 T/week
	Subtotal	**7.9%**	**72 T/week**
Plastics	Recyclable	1.0%	9 T/week
	Non-recyclable	9.6%	88 T/week
	Subtotal	**10.5%**	**97 T/week**
Organics	Food waste	13.2%	122 T/week
	Compostable greenwaste	8.0%	74 T/week
	Other greenwaste	4.6%	42 T/week
	Organics other	1.5%	14 T/week
	Subtotal	**27.4%**	**252 T/week**
Ferrous metals	Primarily ferrous	1.6%	15 T/week
	Steel other	1.3%	12 T/week
	Subtotal	**2.8%**	**26 T/week**
Non-ferrous metals		**0.7%**	**6 T/week**
Glass	Recyclable	0.9%	9 T/week
	Non-recyclable	0.9%	8 T/week
	Subtotal	**1.8%**	**17 T/week**
Textiles	Clothing/textiles	1.6%	15 T/week
	Multimaterial/other	3.2%	29 T/week
	Subtotal	**4.8%**	**44 T/week**
Sanitary paper		**3.5%**	**32 T/week**
Rubble	Cleanfill	1.1%	10 T/week
	New plasterboard	2.0%	19 T/week
	Other	8.7%	80 T/week
	Subtotal	**11.8%**	**109 T/week**
Timber	Reusable	1.4%	13 T/week
	Unpainted & untreated	2.9%	27 T/week
	Other timber	21.0%	193 T/week
	Subtotal	**25.3%**	**233 T/week**
Rubber		**1.3%**	**12 T/week**
Potentially hazardous		**2.2%**	**20 T/week**
TOTAL		**100.0%**	**920 T/week**

6.3 Diversion potential of waste from Queenstown Lakes District to landfill

Of the 25 material classifications used in the visual survey, ten can currently be recycled, composted, or otherwise diverted in Queenstown Lakes District. Five other materials are diverted from landfill disposal in New Zealand, but not in Queenstown Lakes District. The most significant material for which there is no current diversion option in Queenstown Lakes District is Other timber. In the upper North Island, all types of timber are now being recovered for use as fuel at the Golden Bay cement plant near Whangarei. At Queenstown RTS, the types of greenwaste accepted for diversion are very limited compared to other area, resulting in the landfill disposal of a significant quantity of greenwaste that could be diverted elsewhere.

Based on these 15 materials, Table 6-5 shows the proportion of all waste from Queenstown Lakes District disposed of at Victoria Flats landfill that could potentially be diverted from landfill disposal. The percentages and tonnages of materials have been taken from Table 6-4.

Table 6-5 - Diversion potential of waste from Queenstown Lakes District to Victoria Flats landfill - Both surveys combined

Diversion potential - All waste from Queenstown Lakes District to Victoria Flats landfill - Nov-23 and Mar-24 surveys combined	Overall waste (includes kerbside rubbish)	
	% of total	T/week
MATERIALS CURRENTLY DIVERTABLE		
Paper - Recyclable	2.9%	27 T/week
Paper - Cardboard	3.4%	31 T/week
Plastic - Recyclable	1.0%	9 T/week
Ferrous metals	2.8%	26 T/week
Non-ferrous metals	0.7%	6 T/week
Glass - Recyclable	0.9%	9 T/week
Textiles - Clothing	1.6%	15 T/week
Rubble - Cleanfill	1.1%	10 T/week
Timber - Reusable	1.4%	13 T/week
Organics - Compostable greenwaste	8.0%	74 T/week
Subtotal	**23.8%**	**219 T/week**
MATERIALS NOT CURRENTLY DIVERTABLE		
Organics - Food waste	13.2%	122 T/week
Organics - Other greenwaste	4.6%	42 T/week
Rubble - New plasterboard	2.0%	19 T/week
Timber - Untreated/unpainted	2.9%	27 T/week
Other timber	21.0%	193 T/week
Subtotal	**43.8%**	**403 T/week**
TOTAL - POTENTIALLY DIVERTABLE	**67.7%**	**623 T/week**

Materials currently divertable in Queenstown Lakes District comprised 23.8% of waste disposed of to Victoria Flats landfill. Materials that are not currently divertable, but are diverted elsewhere, comprised 43.8% of the overall waste stream. In total, materials that are potentially divertable comprised 67.7% of the overall waste stream or 623 tonnes per week.

The largest single divertable component was Other timber, which comprised 21.0% of the overall waste stream, or 193 tonnes per week. Food waste comprised 13.2% of all waste. Approximately 86% of the Food waste was in kerbside rubbish collections.

6.3.1   Waste from Queenstown Lakes District to landfill - Divertable materials - by activity source

Waste minimisation initiatives can be directed at a specific material type, such as food waste, at a waste-generating activity, such as domestic activity, or at a combination of both, such as food waste in kerbside rubbish. In Table 6-6 the average weekly tonnages for the divertable materials in overall waste to Victoria Flats landfill from Queenstown Lakes District are broken down by activity source. The materials are shown in the same order as in Table 6-5. The cells for the individual materials have been formatted from the lowest value (no shading) to the highest value (red shading).

Table 6-6 - Divertable materials in waste from Queenstown Lakes District to Victoria Flats landfill - By activity source - Both surveys combined

Diversion potential - All waste from QLD to Victoria Flats landfill - By activity source - Nov-23 and Mar-24 surveys combined	Construction & demolition	ICI	Landscaping & earthworks	Residential	Kerbside rubbish
Paper - Recyclable	0 T/week	15 T/week	0 T/week	1 T/week	11 T/week
Paper - Cardboard	8 T/week	20 T/week	0 T/week	2 T/week	1 T/week
Plastic - Recyclable	0 T/week	2 T/week	0 T/week	0 T/week	6 T/week
Ferrous metals	9 T/week	8 T/week	0 T/week	3 T/week	5 T/week
Non-ferrous metals	1 T/week	2 T/week	0 T/week	0 T/week	4 T/week
Glass - Recyclable	0 T/week	2 T/week	0 T/week	0 T/week	6 T/week
Textiles - Clothing	0 T/week	4 T/week	0 T/week	2 T/week	8 T/week
Rubble - Cleanfill	7 T/week	1 T/week	2 T/week	0 T/week	0 T/week
Timber - Reusable	11 T/week	2 T/week	0 T/week	0 T/week	0 T/week
Compostable greenwaste	1 T/week	3 T/week	4 T/week	1 T/week	66 T/week
Food waste	0 T/week	14 T/week	0 T/week	2 T/week	105 T/week
Other greenwaste	0 T/week	1 T/week	32 T/week	2 T/week	7 T/week
Rubble - New plasterboard	19 T/week	0 T/week	0 T/week	0 T/week	0 T/week
Timber - Untreated/unpainted	13 T/week	12 T/week	0 T/week	2 T/week	0 T/week
Other timber	152 T/week	27 T/week	1 T/week	7 T/week	6 T/week
TOTAL	**221 T/week**	**114 T/week**	**39 T/week**	**22 T/week**	**227 T/week**

The largest tonnage of divertable materials in overall waste to Queenstown RTS was in kerbside rubbish (227 tonnes per week), comprising primarily Food waste (105 tonnes per week) and Compostable garden waste (66 tonnes per week).

The second largest tonnage of divertable materials was in C&D waste. Of the 221 tonnes per week of divertable materials in C&D waste, 69%, 152 tonnes per week, was Other timber.

7 Discussion

7.1 Comparison of activity sources with previous surveys

Previous surveys of waste disposed of to Victoria Flats landfill from Queenstown Lakes District were undertaken by Waste Not Consulting in 2004, 2006, 2008, 2012, 2016, and 2020. In Table 7-1, the 2012, 2016, and 2020 total weekly tonnages of the activity sources of waste being disposed of at the transfer stations and direct to Victoria Flats landfill are compared to those from the 2023-24 survey. Comparisons of the data from the individual facilities over time is not reliable as the disposal site used for individual waste streams, such as Council kerbside rubbish collections and front-end loaders, has changed over time.

Table 7-1 - Activity sources of all waste from Queenstown Lakes District to landfill

Activity sources of all waste from Queenstown Lakes District to landfill - 2012 - 2023-24	2012	2016	2020	2023-24
Construction & demolition	100 T/week	210 T/week	242 T/week	309 T/week
Industrial/commercial/institutional	110 T/week	203 T/week	189 T/week	210 T/week
Landscaping & earthworks	9 T/week	5 T/week	19 T/week	40 T/week
Residential	12 T/week	23 T/week	27 T/week	31 T/week
Subtotal - General waste	**231 T/week**	**441 T/week**	**476 T/week**	**590 T/week**
Council kerbside rubbish collections	139 T/week	103 T/week	178 T/week	205 T/week
Private kerbside rubbish collections	0 T/week	77 T/week	97 T/week	114 T/week
Subtotal - Kerbside rubbish	**139 T/week**	**180 T/week**	**275 T/week**	**319 T/week**
Special wastes	27 T/week	30 T/week	6 T/week	11 T/week
TOTAL	**396 T/week**	**651 T/week**	**757 T/week**	**920 T/week**

The weekly tonnage of waste disposed to Victoria Flats landfill from Queenstown Lakes District increased 132% between the 2012 and 2023-24 surveys, from 396 tonnes per week to 920 tonnes per week. Kerbside rubbish increase by an almost identical percentage. C&D waste increased at the highest rate, with the 309 tonnes per week in 2023-24 being 208% higher than the 100 tonnes per week in 2012.

The significant increase in ICI waste between 2012 and 2016 and subsequent drop to 2020 was caused by all glass from the MRF being disposed of to landfill in 2016.

7.2 Types of waste at Victoria Flats landfill – 2006 - 2023-24

Previous surveys of waste disposed of at Victoria Flats landfill from Queenstown Lakes District were undertaken by Waste Not Consulting in 2004, 2006, 2008, 2012, 2016 and 2020. In Table 7-2, the weekly tonnages of the types of waste at Victoria Flats landfill from the previous surveys are compared with the 2023-24 results. Note that the table includes all waste disposed of at Victoria Flats landfill, not only waste from Queenstown Lakes District.

Table 7-2 - Types of waste disposed of at Victoria Flats landfill - 2006 - 2023-24

Victoria Flats landfill - Types of waste from all districts - 2006 - 2023-24 - Tonnes per week		2006	2008	2012	2016	2020	2023-24
Transfer station waste	Alexandra	152	101	123	59	82	72
	Cromwell	78	56	66	66	68	61
	Frankton	290	179	157	297	488	551
	Ranfurly	-	-	-	-	-	1
	Wānaka	133	110	96	134	193	239
Subtotal		**654**	**445**	**442**	**555**	**830**	**924**
General waste	*Commercial *	82	62	61	104	87	135
	Other wastes	42	2	0	0	26	6
	*Demolition *	13	82	17	17	44	43
Subtotal		**137**	**147**	**78**	**121**	**157**	**184**
Special waste		8	9	27	38	9	12
Glass from Wakatipu Recycling		-	-	-	51	-	-
QLDC kerbside collection		12	42	39	41	-	-
TOTAL		**811**	**642**	**585**	**805**	**996**	**1,120**

* Weighbridge classifications

The global financial crisis of 2008 resulted in a reduced level of economic activity and a reduction in waste to landfill in most areas, with the tonnages at Victoria Flats landfill reflecting this pattern. Between 2012 and 2016, the total tonnage to Victoria Flats landfill increased 38%. Between 2016 and 2023-24, the total tonnage increased a further 39%.

7.3 Per capita waste to Class 1 landfills

The total quantity of waste disposed of at Class 1 landfills from a specific area is related to a number of factors, including:
- the size and levels of affluence of the population
- the extent and nature of waste collection and disposal activities and services
- the extent and nature of resource recovery activities and services
- the level and types of economic activity, particularly industrial activity and construction and demolition activity
- the relationship between the costs of landfill disposal and the value of recovered materials
- the availability and cost of disposal alternatives, such as Class 2-4 landfills
- seasonal fluctuations in population (including those related to tourism).

By combining Council's medium scenario demand projections for the resident population in 2023[2] and an annualised tonnage based on the weekly disposal data for the District in Table 6-1, the per capita per annum waste to Victoria Flats landfill in 2023-24 from Queenstown

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[2] https://www.qldc.govt.nz/media/iquhudlg/demand-projections-summary-march-2022.pdf

Lakes District can be calculated, as shown in Table 7-3. The estimate includes special wastes disposed of at Victoria Flats landfill, but not biosolids disposed of at AB Lime landfill.

The table also includes the same calculation using Council's medium scenario demand projections for residents plus visitors.

Table 7-3 - Waste disposal per capita - Queenstown Lakes District

Calculation of per capita waste to Victoria Flats landfill from Queenstown Lakes District	
Estimated resident population - medium demand scenario	51,009
Weekly tonnage of waste to Victoria Flats landfill from Queenstown Lakes District (both surveys combined)	920 T/week
Annualised tonnage of waste to Victoria Flats landfill from Queenstown Lakes District	47,972 T/annum
Tonnes/capita/annum of waste to Class 1 landfills - residents only	**0.940 T/capita/annum**
Estimated resident + visitor population - medium demand scenario	70,205
Tonnes/capita/annum of waste to Class 1 landfills - residents + visitors	**0.683 T/capita/annum**

It is estimated that 0.940 tonnes of levied waste was disposed of annually at Victoria Flats landfill for each resident in Queenstown Lakes District. Visitors from New Zealand and overseas are not counted as being 'residents'. When the estimated number of visitors is added to the residents, 0.683 tonnes/per capita/annum are disposed of to Victoria Flats landfill from Queenstown Lakes District.

The per capita estimate for waste disposal for Queenstown Lakes District is compared to estimates for other districts in Table 7-4. Only the Queenstown Lakes District per capita figures for residents (i.e. excluding visitor numbers) are included in the table in order that the figures can be reliably compared to the other areas. The data for other districts has been taken from the results of SWAP surveys by Waste Not Consulting Ltd. The table also includes the per capita waste disposal rate from the 2012 and 2016 surveys in Queenstown Lakes District.

The national average in Table 7-4 has been calculated using data from MfE's waste levy data [3] and Stats NZ usually resident population estimates [4].

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[3] https://www.mfe.govt.nz/waste/waste-guidance-and-technical-information/waste-disposal-levy/monthly-levy-graph
[4] https://www.stats.govt.nz/indicators/population-of-nz

Table 7-4 - Per capita waste to Class 1 landfills compared to other districts

Levied waste to landfill including special wastes	Tonnes per capita per annum
Waimakariri District 2017	0.325
Invercargill City 2018	0.528
Palmerston North 2017	0.545
Kāpiti Coast District 2017	0.546
Dunedin City 2018	0.554
Tauranga and WBOP District 2020	0.560
Napier/Hastings 2022	0.595
Wellington region 2016	0.608
Porirua City 2022 & 2023	0.652
New Zealand (2021)	0.685
Taupō District 2022	0.716
Hamilton City 2017	0.718
Queenstown Lakes District 2012	**0.735**
Queenstown Lakes District 2020	**0.833**
Auckland region 2024	0.873
Hutt Valley 2022	0.899
Queenstown Lakes District 2023-24	**0.940**
Queenstown Lakes District 2016	**1.103**

The districts with the lowest per capita waste disposal rates tend to be rural areas or urban areas with relatively low levels of manufacturing activity. The areas with the higher per capita waste generation rates are those with significant primary manufacturing activity, such as Auckland and Hutt Valley, or with large numbers of tourists, such as Taupō and Queenstown Lakes Districts.

The 2016 per capita disposal rate for Queenstown Lakes District was the highest of any district measured by Waste Not Consulting Ltd. The disposal rate for 2020 was 25% lower than the comparable result for 2016. The disposal rate for 2023-24 is 13% higher than the 2020 disposal rate.

7.4 Carbon emissions from waste to class 1 landfills

When waste is landfilled, it decomposes anaerobically and methane (CH_4) is produced. Methane is one of the six greenhouse gases (GHG) recognised in the international climate change agreement, the Kyoto Protocol. For GHG accounting purposes, all six greenhouse gases are measured and expressed in terms of carbon dioxide equivalent units, in tonnes (tCO2-e unit). The ETS (emissions trading scheme) requires all Class 1 landfills to surrender carbon credits, based on the quantity of waste the landfill receives.

Large Class 1 landfills in New Zealand, those over 1 million tonnes total capacity, are required to operate landfill gas capture systems, which reduce the amount of methane gas emitted to the atmosphere. In 2020, Victoria Flats landfill installed a landfill gas capture system. A landfill gas recovery system does not, however, capture all the methane gas that a landfill generates and a proportion is still released.

The Climate Change (Unique Emissions Factors) Regulations 2009 provide a process through which a Class 1 landfill may apply for a unique emissions factor (UEF), based on the proportion of landfill gas that is captured. Gaining approval for a UEF reduces a Class 1 landfill's liability for surrendering carbon credits under the ETS.

UEFs are published annually in the New Zealand Gazette. Victoria Flats landfill had its second UEF approved in February 2024. Using the published UEF for 2024 for Victoria Flats landfill of 0.328 t/CO_{2e}/T waste, it is calculated, based on the Regulations' default emissions factor of 0.91 used in the formula in 23C(1)(g), that Victoria Flats landfill's gas capture system reduces the quantity of methane released to the atmosphere by 64%.

Landfill methane emissions are calculated, in terms of carbon dioxide equivalent, based on the composition of waste, with a different emissions factor being applied to each type of material with methane-generating potential. Table 6-5 lists the materials that could potentially be diverted from Class 1 landfill disposal. Many of these materials are organic in nature, so diverting them from landfill will not only reduce the tonnage of waste to landfill but will change the methane-generating potential of the materials that remain. Table 7.5 presents:

- the carbon dioxide equivalent emissions potential of all waste disposed of to Victoria Flats landfill from Queenstown Lakes District, before and after landfill gas is captured
- the carbon dioxide equivalent emissions potential from the same waste after all divertible materials in Table 6-5 have been removed, before and after landfill gas is captured

Table 7.5 - Carbon emissions from waste to Victoria Flats landfill

Carbon emissions from waste from Queenstown Lakes District disposed of at Victoria Flats landfill	All waste	Waste after removal of divertable materials	Change
Tonnes to Victoria Flats landfill	47,972	15,252	-68.2%
Calculated emissions factor in tCO$_2$-e per tonne of waste	1.746	0.646	-63.0%
Emissions potential, based on calculated emissions factor, in tCO$_2$-e	83,768	9,846	-88.2%
Actual emissions, with landfill gas capture, in tCO$_2$-e	30,193	3,549	-88.2%

The 47,972 tonnes of waste currently disposed of to Victoria Flats landfill from Queenstown Lakes District (annualised from the weekly tonnage in Table 6-1) has the potential to emit 83,768 tonnes of carbon dioxide equivalent per annum. Landfill gas capture systems in place at the landfill are assumed to reduce this potential to 30,193 tonnes of carbon dioxide equivalent.

Removal of all possible divertible materials (as per Table 6-5) reduces the tonnage of waste by 68.2% (to 15,252 tonnes) and decreases the emissions factor of the waste by 63.0%. Potential carbon dioxide equivalent emissions would be reduced by 88.2% to 9,846 tonnes. Landfill gas capture systems currently in place at Victoria Flats landfill are assumed to reduce this potential to 3,549 tonnes.

The estimated reduction of emissions by 88% is a theoretical maximum only. Complete diversion of materials, such as timber, from the waste stream is not possible using current technology and systems.

Appendix 1 - Kerbside rubbish classifications

Primary category	Secondary category	Definitions
Paper	Recyclable paper	Clean cardboard incl. pizza boxes (with food scraps removed), brochures, office paper, books, printer paper, other paper packaging, must be larger than 100 x 140mm
	Non-recyclable paper	Coffee cups, photographic paper, laminated paper, plastic coated paper and card, liquid paperboard packaging incl. Tetra Pak, smaller than 100 x 140mm, shredded paper
	Contaminated pizza boxes	Pizza boxes that don't meet market criteria
Plastics	#1,2 & 5 bottles/containers	Clear household plastic bottles, trays, and containers numbered 1, 2 & 5, 4 litres or less and more than 50mm at widest point
	Coloured #1 bottles/containers	Coloured household plastic bottles, trays, and containers number 1, 4 litres or less and more than 50mm at widest point
	#3, 4, 6 & 7 containers	Bottles & containers with #3, 4, 6 & 7
	Plastic bags/film	All plastic bags, film, and other soft plastics
	Other non-recyclable	All other non-recyclable items made primarily of plastic, including loose lids and caps, 1, 2, & 5 containers more than 4 litres or less than 50mm at widest point, all plant pots, paint cans, and hazardous substance containers
Organics	Food waste	All kitchen food waste
	Greenwaste	All organic garden waste, excludes soil
	Other organic	All other primarily organic items – includes cat tray litter, hair, vacuum cleaner bags, candles, tea bags
Steel	Steel cans	All steel cans 4 litres or less and more than 50mm at widest point, excluding aerosols and hazardous substance containers
	Other steel	All non-packaging items made primarily of ferrous metal, including aerosol cans, paint cans, and loose lids and cap
Non-ferrous metals	Aluminium cans	All aluminium cans 4 litres or less and more than 50mm at widest point, excluding aerosols
	Other non-ferrous	All other items made primarily of non-ferrous metal, incl. aerosol cans
Glass	Bottles & jars	All bottles and jars, with the contents removed, 4 litres or less and more than 50mm at widest point
	Non-recyclable glass	All other items made primarily of glass, includes light bulbs, drinking glasses, window glass, cosmetic glass, broken glass, and glass with other materials attached
Textiles	Clothing & rags	All woven items primarily made of a fabric, which are suitable for rags
	Other textiles	Includes shoes, backpacks, handbags, rugs, not suitable for rags
Sanitary paper		Includes nappies, paper towels, tissues, period products, wet wipes
Rubble, concrete		All concrete, rubble, ceramics, and soil
Timber		All items made primarily of timber
Rubber		All items made primarily of rubber (e.g. kitchen gloves)
Potentially hazardous	Household	Medicines and cosmetics, cleaning agents
	Batteries	To be counted then weighed out as 'Household'
	Vape pods w/batteries	To be counted then weighed out as 'Household'
	Other hazardous	Potentially hazardous items not associated with domestic activity, such as used oil and garden chemicals.

Appendix 2 - Recycling classifications

Primary category	Secondary category	Definitions
Paper	Recyclable paper	Clean cardboard incl. pizza boxes (with food scraps removed), brochures, office paper, books, printer paper, other paper packaging, must be larger than 100 x 140mm
	Non-recyclable paper	Coffee cups, photographic paper, laminated paper, plastic coated paper and card, liquid paperboard packaging incl. Tetra Pak, smaller than 100 x 140mm, shredded paper
	Contaminated pizza boxes	Pizza boxes with grease soaked through the bottom
Plastics	#1,2 & 5 bottles/containers	Clear household plastic bottles, trays, and containers numbered 1, 2 & 5, 4 litres or less and more than 50mm at widest point
	Coloured #1 bottles/containers	Coloured household plastic bottles, trays, and containers number 1, 4 litres or less and more than 50mm at widest point
	#3, 4, 6, & 7 containers	Bottles & containers with #3, 4, 6 & 7
	Other non-recyclable	All other non-recyclable items made primarily of plastic, including loose lids and caps, 1, 2, & 5 containers more than 4 litres or less than 50mm at widest point, all plant pots, paint cans, and hazardous substance containers. All plastic bags, film, and other soft plastics
Organics		All kitchen food waste, greenwaste, other organic items
Steel	Steel cans	All steel cans 4 litres or less and more than 50mm at widest point, excluding aerosols and hazardous substance containers
	Other steel	All non-packaging items made primarily of ferrous metal, including aerosol cans, paint cans, and loose lids and cap
Non-ferrous metals	Aluminium cans	All aluminium cans 4 litres or less and more than 50mm at widest point, excluding aerosols
	Other non-ferrous	All other items made primarily of non-ferrous metal, incl. aerosol cans
Glass	Bottles & jars	All bottles and jars, with the contents removed, 4 litres or less and more than 50mm at widest point
	Broken glass and fines	Broken pieces of glass unsuitable for hand sorting
	Non-recyclable glass	All other items made primarily of glass, includes light bulbs, drinking glasses, window glass, cosmetic glass, broken glass, and glass with other materials attached
Textiles		All items made of textiles (woven materials)
Sanitary paper		Includes disposable nappies, paper towels, tissues, period products, wet wipes
Potentially hazardous		Batteries - counted then weighed in 'Other contamination'
		Vape pods with batteries - counted then weighed in 'Other contamination''
Other contamination		All other non-recyclable items

Appendix 3 - Public place recycling station audit classifications

Classification	Description
Clean recyclable paper & cardboard	Clean cardboard incl. pizza boxes (with food scraps removed), brochures, office paper, books, printer paper, other paper packaging, must be larger than 100 x 140mm. Excludes those types listed below as non-recyclable. Large quantities of undelivered junk mail to be weighed and recorded separately.
Clean plastic bottles #1,2,& 5	Only empty plastic bottles, including coloured #1, 4 litres or less
Clean plastic food containers #1,2,& 5	All clean (no food residue) plastic food containers, 4 litres or less
Clean glass bottles & jars	Empty, rinsed, bottles & jars, 4 litres or less
Clean steel & aluminium cans	Empty, rinsed cans, 4 litres or less
Paper coffee cups	Includes coffee cups and other waxed paper drink cups
Non-recyclable paper & cardboard	Shredded paper, plastic-wrapped newspaper, food contaminated paper & cardboard, Tetra Paks, milk/juice cartons, paper take-away cups (excluding coffee cups), contaminated pizza boxes, serviettes, dirty and food contaminated paper
Dirty plastic bottles #1,2,& 5	Plastic bottles containing liquid or larger than 4 litres
Dirty plastic food containers #1,2,& 5	Plastic food containers with food residue
All other plastics	Non-food plastic containers, polystyrene, soft plastics
Dirty glass bottles & jars	Bottles & jars that are not empty or contain food residue or larger than 4 litres
Other non-recyclable glass	Pyrex, window glass, mirror glass, candle jars, porcelain, light bulbs, and drinking glasses.
Dirty steel & aluminium cans	Cans with food or drink residue or larger than 4 litres
Food	Loose food that is not wrapped or packaged
Potentially hazardous	Batteries - count then weighed in 'All other items'
	Vape pods with batteries - count then weighed in 'All other items'
All other items	Any item that doesn't fit into one of the other classifications, including all items in bags or other packaging.

Appendix 4 - Visual survey classifications

Primary category	Secondary category	Description
Paper	Recyclable	Newspapers, magazines, office paper, etc.
	Cardboard	Kraft cartons
	Multimaterial/other	Multimaterials, building paper, contaminated paper
Plastics	Recyclable	Containers with recycling logo 1-7
	Multimaterial/other	Other types of plastic and primarily plastic multimaterials
Organic	Food waste	Food and food preparation waste
	Compostable greenwaste	Tree branches up to 400 mm, small tree stumps
	Other greenwaste	Leaves, lawn clippings, broom, flax, gorse, cabbage tree, weeds
	Multimaterial/other	Organic matter such as meat processing waste
Ferrous metals	Primarily ferrous	Items made primarily of steel
	Multimaterial/other	Ferrous items containing a sizable proportion of other materials
Nonferrous metals	Primarily Nonferrous	Items made primarily of nonferrous metal
Glass	Recyclable	Bottles and jars
	Multimaterial/other	Other items made primarily of glass, includes pane, TVs, and computer monitors
Textiles	Clothing/textile	Items made primarily of cloth or textiles
	Multimaterial/other	Items containing some textile and other materials, such as carpets, shoes, backpacks, suitcases
Sanitary paper	None	Sanitary materials such as nappies, paper towels, feminine hygiene products
Rubble	Cleanfill	All materials suitable for cleanfill disposal
	New plasterboard	Off-cuts of new plasterboard
	Other	Other materials such as soil, fibreglass, ceramics, plasterboard
Timber	Reusable	Lengths of timber and pieces of sheet suitable for reuse
	Unpainted & untreated	Unpainted and untreated lengths of timber
	Other timber	Sawdust, construction and demolition debris, CCA treated wood
Rubber	None	All items made primarily of rubber such as tyres, latex foam mattresses
Potentially hazardous	None	Material with potentially toxic or ecotoxic properties or having properties requiring special disposal techniques.

Appendix 5 - Types of waste vehicles

FRONT-END LOADER TRUCKS

Front-end loaders are top-loading compactors that use forks mounted to the front of the vehicle to lift bins over the cab and tip the contents of the bin into the compactor unit at the rear. Front-end loaders work primarily in urban areas, regularly servicing medium to large-scale industrial, commercial, and institutional customers. In general, a business using front-end loader bins would be serviced at least weekly, but can be serviced several times a day for a business like a large supermarket. Front-end loaders vary in size, and may carry loads from 4 to 10 tonnes. A single load may contain waste from ten to fifty customers.

The potential for the recovery of materials from waste transported by front-end loaders is limited. The waste load is compacted by the truck, and the loads tend to be large and heterogeneous. This restricts significantly the potential for manually separating recoverable materials when the load is discharged on a tipping floor. There are usually not significant quantities of easily-separable materials other than cardboard packaging in front-end loader refuse.

GANTRY TRUCKS

Gantry trucks are used to transport gantry bins (skip bins) from customers' premises to a disposal facility. Gantry truck services are used by industrial, commercial, institutional, and residential customers. Some large-scale commercial waste generators use gantry bins as their regular disposal system. Residential customers and business customers both use gantry bins for one-off large-scale refuse removal. Some commercial customers, such as hotels and supermarkets, use portable, stationary refuse compactors that are transported for disposal by gantry trucks. Gantry bins are often used for special wastes, such as sludges, asbestos, and animal by-products

Typical gantry truck loads weigh from 0.5-3 tonnes. As most refuse transported in gantry bins is not compacted, there is often opportunity for manually recovering materials from gantry bins when discharged onto a tipping floor. Gantry bins often contain significant quantities of recoverable materials, such as timber and packaging and reusable items can be recovered intact from residential loads.

KERBSIDE COLLECTION COMPACTORS

Side-loading and rear-loading compactors are commonly used for the kerbside collection of residential and small business refuse. They can be designed to service bagged refuse collections, wheelie bin refuse collections, or both. Side-loading compactors can be used for bag collections or fitted with hydraulic arms for emptying wheelie bins without the driver leaving the vehicle. Rear-loading compactors can also be used for bag collections or fitted with hydraulic arms for emptying bins.

As kerbside collection vehicles collect small quantities of refuse from a large number of customers and the refuse is heavily compacted, there is little opportunity for manually recovering materials from the refuse.

OTHER TRUCKS

Other truck types commonly used for the transport of waste include tip trucks, box trucks, and flat decks. Tip trucks are most commonly used for the transport of waste from landscaping, earthworks, and construction and demolition activity. Box trucks are rarely used as dedicated waste transport vehicles, but are often used for waste transport by businesses that also use them for goods pick-up and delivery. Flat decks are used for the transport of bulky waste items, or by general carriers for the disposal of stackable items, such as pallets.

Appendix 6 - Wānaka RTS - Composition - Nov-23

Wānaka RTS General and overall waste streams November 2023 visual survey		General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
		% of total	Tonnes per week	% of total	Tonnes per week
Paper	Recyclable	1.2%	2 T/week	2.0%	5 T/week
	Cardboard	3.2%	5 T/week	2.2%	5 T/week
	Non-recyclable	0.6%	1 T/week	1.3%	3 T/week
	Subtotal	**5.0%**	**8 T/week**	**5.5%**	**13 T/week**
Plastics	Recyclable	0.4%	1 T/week	0.9%	2 T/week
	Non-recyclable	10.7%	17 T/week	9.7%	24 T/week
	Subtotal	**11.0%**	**18 T/week**	**10.6%**	**26 T/week**
Organics	Food waste	2.7%	4 T/week	13.4%	33 T/week
	Compostable greenwaste	1.7%	3 T/week	8.3%	20 T/week
	Other greenwaste	1.4%	2 T/week	1.7%	4 T/week
	Organics other	0.6%	1 T/week	1.5%	4 T/week
	Subtotal	**6.3%**	**10 T/week**	**24.9%**	**61 T/week**
Ferrous metals	Primarily ferrous	4.3%	7 T/week	3.0%	7 T/week
	Steel other	2.3%	4 T/week	1.9%	5 T/week
	Subtotal	**6.7%**	**11 T/week**	**4.9%**	**12 T/week**
Non-ferrous metals		**0.3%**	**1 T/week**	**0.6%**	**2 T/week**
Glass	Recyclable	0.3%	1 T/week	0.9%	2 T/week
	Non-recyclable	1.4%	2 T/week	1.2%	3 T/week
	Subtotal	**1.7%**	**3 T/week**	**2.1%**	**5 T/week**
Textiles	Clothing/textiles	1.7%	3 T/week	2.0%	5 T/week
	Multimaterial/other	5.0%	8 T/week	3.9%	10 T/week
	Subtotal	**6.7%**	**11 T/week**	**6.0%**	**15 T/week**
Sanitary paper		**0.9%**	**1 T/week**	**3.1%**	**8 T/week**
Rubble	Cleanfill	2.9%	5 T/week	1.8%	5 T/week
	New plasterboard	6.5%	10 T/week	4.2%	10 T/week
	Other	14.7%	23 T/week	10.3%	25 T/week
	Subtotal	**24.0%**	**38 T/week**	**16.4%**	**40 T/week**
Timber	Reusable	5.8%	9 T/week	3.8%	9 T/week
	Unpainted & untreated	8.0%	13 T/week	5.2%	13 T/week
	Other timber	21.8%	35 T/week	14.8%	36 T/week
	Subtotal	**35.6%**	**57 T/week**	**23.7%**	**58 T/week**
Rubber		**1.2%**	**2 T/week**	**1.0%**	**2 T/week**
Potentially hazardous		**0.6%**	**1 T/week**	**1.2%**	**3 T/week**
TOTAL		**100.0%**	**159 T/week**	**100.0%**	**245 T/week**

Appendix 7 - Wānaka RTS - Composition - Mar-24

Wānaka RTS General and overall waste streams March 2024 visual survey		General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
		% of total	Tonnes per week	% of total	Tonnes per week
Paper	Recyclable	2.9%	4 T/week	3.1%	7 T/week
	Cardboard	6.5%	9 T/week	4.2%	10 T/week
	Non-recyclable	1.4%	2 T/week	1.9%	4 T/week
	Subtotal	**10.8%**	**16 T/week**	**9.2%**	**21 T/week**
Plastics	Recyclable	0.6%	1 T/week	1.1%	3 T/week
	Non-recyclable	17.3%	25 T/week	13.8%	32 T/week
	Subtotal	**17.9%**	**26 T/week**	**14.9%**	**35 T/week**
Organics	Food waste	6.6%	10 T/week	16.4%	38 T/week
	Compostable greenwaste	1.1%	2 T/week	8.3%	19 T/week
	Other greenwaste	0.9%	1 T/week	1.4%	3 T/week
	Organics other	1.4%	2 T/week	2.1%	5 T/week
	Subtotal	**9.9%**	**14 T/week**	**28.2%**	**65 T/week**
Ferrous metals	Primarily ferrous	2.7%	4 T/week	1.9%	4 T/week
	Steel other	1.5%	2 T/week	1.4%	3 T/week
	Subtotal	**4.2%**	**6 T/week**	**3.3%**	**8 T/week**
Non-ferrous metals		**0.7%**	**1 T/week**	**0.9%**	**2 T/week**
Glass	Recyclable	1.1%	2 T/week	1.4%	3 T/week
	Non-recyclable	0.7%	1 T/week	0.7%	2 T/week
	Subtotal	**1.8%**	**3 T/week**	**2.1%**	**5 T/week**
Textiles	Clothing/textiles	1.9%	3 T/week	2.2%	5 T/week
	Multimaterial/other	4.5%	7 T/week	3.5%	8 T/week
	Subtotal	**6.4%**	**9 T/week**	**5.7%**	**13 T/week**
Sanitary paper		**4.1%**	**6 T/week**	**5.3%**	**12 T/week**
Rubble	Cleanfill	0.5%	1 T/week	0.3%	1 T/week
	New plasterboard	1.4%	2 T/week	0.9%	2 T/week
	Other	6.2%	9 T/week	4.8%	11 T/week
	Subtotal	**8.1%**	**12 T/week**	**6.0%**	**14 T/week**
Timber	Reusable	2.2%	3 T/week	1.4%	3 T/week
	Unpainted & untreated	5.5%	8 T/week	3.5%	8 T/week
	Other timber	26.8%	39 T/week	17.5%	41 T/week
	Subtotal	**34.5%**	**50 T/week**	**22.4%**	**52 T/week**
Rubber		**0.8%**	**1 T/week**	**0.8%**	**2 T/week**
Potentially hazardous		**0.7%**	**1 T/week**	**1.3%**	**3 T/week**
TOTAL		**100.0%**	**146 T/week**	**100.0%**	**233 T/week**

Appendix 8 - Wānaka RTS - Composition by activity source - Both visual surveys combined

Wānaka RTS - General waste stream - By activity source of waste load - Nov-23 and Mar-24 visual surveys combined		C&D	ICI	Landscaping	Residential
Paper	Recyclable	0.1%	4.0%	0.0%	2.0%
	Cardboard	3.3%	6.4%	0.0%	4.8%
	Non-recyclable	0.5%	1.7%	0.0%	0.7%
	Subtotal	**3.8%**	**12.1%**	**0.0%**	**7.5%**
Plastics	Recyclable	0.2%	0.7%	0.0%	0.8%
	Non-recyclable	5.2%	24.3%	1.4%	8.8%
	Subtotal	**5.4%**	**24.9%**	**1.4%**	**9.6%**
Organics	Food waste	0.0%	9.2%	0.0%	5.7%
	Compostable greenwaste	0.2%	1.5%	25.9%	3.2%
	Other greenwaste	0.1%	0.4%	45.7%	3.9%
	Organics other	0.0%	2.1%	0.0%	0.3%
	Subtotal	**0.3%**	**13.3%**	**71.6%**	**13.2%**
Ferrous metals	Primarily ferrous	5.0%	2.6%	0.0%	1.6%
	Steel other	1.3%	2.2%	0.0%	3.8%
	Subtotal	**6.3%**	**4.8%**	**0.0%**	**5.4%**
Non-ferrous metals		**0.1%**	**1.0%**	**0.0%**	**0.5%**
Glass	Recyclable	0.2%	1.3%	0.0%	0.4%
	Glass other	0.2%	1.9%	0.0%	2.0%
	Subtotal	0.3%	3.2%	0.0%	2.4%
Textiles	Clothing/textiles	0.1%	2.8%	0.0%	5.3%
	Multimaterial/other	1.9%	6.0%	0.0%	13.3%
	Subtotal	**2.0%**	**8.8%**	**0.0%**	**18.6%**
Sanitary paper		**0.0%**	**5.2%**	**0.0%**	**1.8%**
Rubble	Cleanfill	3.1%	0.3%	0.0%	1.9%
	New plasterboard	8.8%	0.1%	0.0%	0.1%
	Other	17.3%	5.8%	0.0%	2.2%
	Subtotal	**29.1%**	**6.2%**	**0.0%**	**4.2%**
Timber	Reusable	7.8%	0.8%	0.0%	1.8%
	Unpainted & untreated	6.6%	5.8%	13.1%	11.9%
	Other timber	37.9%	10.8%	14.0%	21.6%
	Subtotal	**52.2%**	**17.4%**	**27.0%**	**35.3%**
Rubber		**0.1%**	**2.0%**	**0.0%**	**1.1%**
Potentially hazardous		**0.2%**	**1.2%**	**0.0%**	**0.4%**
TOTAL		**100.0%**	**100.0%**	**100.0%**	**100.0%**
Tonnes per week		**69.4 T/week**	**66.9 T/week**	**1.8 T/week**	**14.5 T/week**

Appendix 9 - Wānaka RTS - Composition by activity source - Nov-23 visual survey

Wānaka RTS - General waste stream - By activity source of waste load - November 2023 visual survey		C&D	ICI	Landscaping	Residential
Paper	Recyclable	0.1%	3.0%	0.0%	2.0%
	Cardboard	1.3%	6.0%	0.0%	4.9%
	Non-recyclable	0.3%	1.1%	0.0%	0.8%
	Subtotal	**1.8%**	**10.1%**	**0.0%**	**7.7%**
Plastics	Recyclable	0.1%	0.6%	0.0%	0.9%
	Non-recyclable	5.5%	22.0%	0.0%	9.5%
	Subtotal	**5.6%**	**22.6%**	**0.0%**	**10.5%**
Organics	Food waste	0.0%	6.8%	0.0%	5.6%
	Compostable greenwaste	0.3%	3.5%	0.0%	3.6%
	Other greenwaste	0.0%	0.9%	100.0%	4.5%
	Organics other	0.0%	1.8%	0.0%	0.4%
	Subtotal	**0.3%**	**13.0%**	**100.0%**	**14.2%**
Ferrous metals	Primarily ferrous	5.5%	3.9%	0.0%	0.8%
	Steel other	2.0%	2.0%	0.0%	4.2%
	Subtotal	**7.5%**	**5.9%**	**0.0%**	**5.1%**
Non-ferrous metals		**0.2%**	**0.6%**	**0.0%**	**0.6%**
Glass	Recyclable	0.1%	0.8%	0.0%	0.4%
	Glass other	0.2%	3.4%	0.0%	2.4%
	Subtotal	**0.3%**	**4.2%**	**0.0%**	**2.8%**
Textiles	Clothing/textiles	0.2%	2.3%	0.0%	6.1%
	Multimaterial/other	1.5%	9.1%	0.0%	10.7%
	Subtotal	**1.7%**	**11.4%**	**0.0%**	**16.8%**
Sanitary paper		**0.0%**	**2.3%**	**0.0%**	**1.8%**
Rubble	Cleanfill	3.9%	1.0%	0.0%	2.3%
	New plasterboard	11.2%	0.2%	0.0%	0.2%
	Other	21.5%	8.3%	0.0%	1.0%
	Subtotal	**36.7%**	**9.6%**	**0.0%**	**3.4%**
Timber	Reusable	9.0%	1.4%	0.0%	2.2%
	Unpainted & untreated	7.3%	6.2%	0.0%	14.4%
	Other timber	29.3%	8.3%	0.0%	18.9%
	Subtotal	**45.6%**	**15.8%**	**0.0%**	**35.5%**
Rubber		**0.2%**	**3.3%**	**0.0%**	**1.3%**
Potentially hazardous		**0.2%**	**1.4%**	**0.0%**	**0.4%**
TOTAL		**100.0%**	**100.0%**	**100.0%**	**100.0%**
Tonnes per week		**90 T/week**	**44 T/week**	**1 T/week**	**24 T/week**

Appendix 10 - Wānaka RTS - Composition by activity source - Mar-24 visual survey

Wānaka RTS - General waste stream - By activity source of waste load - March 2024 visual survey		C&D	ICI	Landscaping	Residential
Paper	Recyclable	0.0%	4.6%	0.0%	2.0%
	Cardboard	6.9%	6.5%	0.0%	4.7%
	Non-recyclable	0.7%	2.0%	0.0%	0.2%
	Subtotal	**7.6%**	**13.0%**	**0.0%**	**6.9%**
Plastics	Recyclable	0.5%	0.7%	0.0%	0.2%
	Non-recyclable	4.5%	25.4%	1.7%	5.3%
	Subtotal	**5.0%**	**26.1%**	**1.7%**	**5.5%**
Organics	Food waste	0.0%	10.4%	0.0%	6.2%
	Compostable greenwaste	0.2%	0.5%	32.3%	1.5%
	Other greenwaste	0.2%	0.3%	32.5%	0.8%
	Organics other	0.0%	2.2%	0.0%	0.2%
	Subtotal	**0.3%**	**13.4%**	**64.7%**	**8.7%**
Ferrous metals	Primarily ferrous	4.0%	2.0%	0.0%	5.3%
	Steel other	0.2%	2.2%	0.0%	1.6%
	Subtotal	**4.2%**	**4.2%**	**0.0%**	**6.9%**
Non-ferrous metals		**0.0%**	**1.2%**	**0.0%**	**0.2%**
Glass	Recyclable	0.3%	1.6%	0.0%	0.3%
	Glass other	0.1%	1.1%	0.0%	0.2%
	Subtotal	**0.4%**	**2.7%**	**0.0%**	**0.5%**
Textiles	Clothing/textiles	0.0%	3.0%	0.0%	1.6%
	Multimaterial/other	2.6%	4.5%	0.0%	25.5%
	Subtotal	**2.6%**	**7.5%**	**0.0%**	**27.1%**
Sanitary paper		**0.0%**	**6.6%**	**0.0%**	**1.7%**
Rubble	Cleanfill	1.6%	0.0%	0.0%	0.0%
	New plasterboard	4.2%	0.0%	0.0%	0.0%
	Other	9.4%	4.5%	0.0%	8.0%
	Subtotal	**15.2%**	**4.5%**	**0.0%**	**8.0%**
Timber	Reusable	5.5%	0.5%	0.0%	0.0%
	Unpainted & untreated	5.2%	5.6%	16.3%	0.1%
	Other timber	53.7%	12.0%	17.4%	34.2%
	Subtotal	**64.4%**	**18.2%**	**33.6%**	**34.2%**
Rubber		**0.0%**	**1.3%**	**0.0%**	**0.2%**
Potentially hazardous		**0.1%**	**1.1%**	**0.0%**	**0.2%**
TOTAL		**100.0%**	**100.0%**	**100.0%**	**100.0%**
Tonnes per week		**49 T/week**	**90 T/week**	**3 T/week**	**5 T/week**

Appendix 11 - Wānaka RTS - Composition by vehicle type - Both visual surveys combined

Wānaka RTS - General waste stream - By vehicle type - Nov-23 and Mar-24 visual surveys combined		Cars	Front-end loaders	Gantry trucks	Other trucks	Trailer
Paper	Recyclable	2.3%	5.1%	0.6%	0.0%	0.4%
	Cardboard	10.5%	7.4%	2.6%	0.0%	4.1%
	Non-recyclable	2.7%	1.2%	0.7%	1.4%	0.7%
	Subtotal	**15.5%**	**13.7%**	**3.9%**	**1.4%**	**5.2%**
Plastics	Recyclable	0.5%	0.8%	0.3%	0.1%	0.3%
	Non-recyclable	9.5%	24.1%	9.5%	13.0%	7.9%
	Subtotal	**10.0%**	**24.9%**	**9.8%**	**13.1%**	**8.2%**
Organics	Food waste	9.7%	11.7%	1.0%	0.0%	0.9%
	Compostable greenwaste	2.3%	2.2%	0.4%	0.0%	2.2%
	Other greenwaste	8.5%	0.3%	0.1%	0.0%	3.1%
	Organics other	0.7%	2.9%	0.1%	0.0%	0.0%
	Subtotal	**21.2%**	**17.1%**	**1.6%**	**0.0%**	**6.2%**
Ferrous metals	Primarily ferrous	1.7%	1.5%	6.7%	1.8%	1.2%
	Steel other	2.2%	2.9%	1.3%	2.1%	1.9%
	Subtotal	**3.9%**	**4.5%**	**8.1%**	**3.9%**	**3.1%**
Non-ferrous metals		**0.4%**	**1.2%**	**0.2%**	**0.1%**	**0.2%**
Glass	Recyclable	0.4%	1.4%	0.4%	0.1%	0.3%
	Glass other	0.1%	1.7%	0.2%	0.5%	2.3%
	Subtotal	**0.5%**	**3.0%**	**0.6%**	**0.6%**	**2.6%**
Textiles	Clothing/textiles	1.0%	3.1%	0.3%	28.8%	0.6%
	Multimaterial/other	4.3%	4.6%	1.7%	28.6%	8.6%
	Subtotal	**5.3%**	**7.7%**	**1.9%**	**57.4%**	**9.2%**
Sanitary paper		**3.0%**	**6.1%**	**0.6%**	**0.0%**	**0.4%**
Rubble	Cleanfill	8.9%	0.3%	2.7%	1.6%	1.5%
	New plasterboard	1.8%	0.1%	7.7%	0.2%	4.3%
	Other	4.4%	4.6%	17.0%	0.6%	10.5%
	Subtotal	**15.1%**	**5.0%**	**27.3%**	**2.4%**	**16.3%**
Timber	Reusable	0.1%	1.1%	7.0%	1.8%	4.0%
	Unpainted & untreated	14.9%	3.2%	5.6%	5.1%	13.2%
	Other timber	9.7%	7.9%	32.8%	13.8%	30.7%
	Subtotal	**24.7%**	**12.3%**	**45.5%**	**20.7%**	**47.9%**
Rubber		**0.1%**	**2.8%**	**0.2%**	**0.4%**	**0.5%**
Potentially hazardous		**0.3%**	**1.6%**	**0.3%**	**0.1%**	**0.1%**
TOTAL		**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Tonnes per week		**7 T/week**	**27 T/week**	**64 T/week**	**4 T/week**	**50 T/week**

Appendix 12 - Queenstown RTS - Composition - Nov-23

Queenstown RTS General and overall waste streams November 2023 visual survey		General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
		% of total	Tonnes per week	% of total	Tonnes per week
Paper	Recyclable	1.0%	3 T/week	2.1%	12 T/week
	Cardboard	4.8%	16 T/week	3.0%	17 T/week
	Non-recyclable	1.2%	4 T/week	1.7%	10 T/week
	Subtotal	**7.0%**	**24 T/week**	**6.8%**	**38 T/week**
Plastics	Recyclable	0.6%	2 T/week	1.1%	6 T/week
	Non-recyclable	7.6%	25 T/week	7.7%	44 T/week
	Subtotal	**8.2%**	**28 T/week**	**8.9%**	**50 T/week**
Organics	Food waste	0.8%	3 T/week	13.9%	78 T/week
	Compostable greenwaste	1.5%	5 T/week	9.3%	52 T/week
	Other greenwaste	11.7%	39 T/week	7.9%	44 T/week
	Organics other	0.1%	0 T/week	1.3%	8 T/week
	Subtotal	**14.0%**	**47 T/week**	**32.4%**	**182 T/week**
Ferrous metals	Primarily ferrous	1.6%	5 T/week	1.2%	7 T/week
	Steel other	0.7%	2 T/week	0.9%	5 T/week
	Subtotal	**2.3%**	**8 T/week**	**2.1%**	**12 T/week**
Non-ferrous metals		**0.3%**	**1 T/week**	**0.6%**	**4 T/week**
Glass	Recyclable	0.3%	1 T/week	0.9%	5 T/week
	Non-recyclable	1.0%	3 T/week	0.9%	5 T/week
	Subtotal	**1.2%**	**4 T/week**	**1.8%**	**10 T/week**
Textiles	Clothing/textiles	0.3%	1 T/week	1.2%	7 T/week
	Multimaterial/other	2.9%	10 T/week	2.5%	14 T/week
	Subtotal	**3.2%**	**11 T/week**	**3.8%**	**21 T/week**
Sanitary paper		**0.4%**	**1 T/week**	**3.1%**	**18 T/week**
Rubble	Cleanfill	1.0%	3 T/week	0.6%	3 T/week
	New plasterboard	2.4%	8 T/week	1.4%	8 T/week
	Other	13.7%	46 T/week	9.1%	51 T/week
	Subtotal	**17.2%**	**58 T/week**	**11.2%**	**63 T/week**
Timber	Reusable	1.8%	6 T/week	1.1%	6 T/week
	Unpainted & untreated	3.7%	12 T/week	2.2%	12 T/week
	Other timber	38.7%	129 T/week	23.7%	133 T/week
	Subtotal	**44.2%**	**148 T/week**	**27.0%**	**152 T/week**
Rubber		**1.8%**	**6 T/week**	**1.3%**	**8 T/week**
Potentially hazardous		**0.2%**	**1 T/week**	**1.1%**	**6 T/week**
TOTAL		**100.0%**	**334 T/week**	**100.0%**	**563 T/week**

Appendix 13 - Queenstown RTS - Composition - Mar-24

Queenstown RTS General and overall waste streams March 2024 visual survey		General waste (excludes kerbside rubbish)		Overall waste (includes kerbside rubbish)	
		% of total	Tonnes per week	% of total	Tonnes per week
Paper	Recyclable	4.2%	13 T/week	3.9%	21 T/week
	Cardboard	5.4%	16 T/week	3.2%	17 T/week
	Non-recyclable	0.8%	2 T/week	1.6%	8 T/week
	Subtotal	**10.4%**	**32 T/week**	**8.7%**	**47 T/week**
Plastics	Recyclable	0.2%	1 T/week	1.0%	5 T/week
	Non-recyclable	6.0%	18 T/week	6.9%	37 T/week
	Subtotal	**6.3%**	**19 T/week**	**7.8%**	**42 T/week**
Organics	Food waste	1.0%	3 T/week	15.0%	81 T/week
	Compostable greenwaste	1.5%	5 T/week	9.9%	53 T/week
	Other greenwaste	9.0%	27 T/week	6.0%	33 T/week
	Organics other	0.2%	1 T/week	1.5%	8 T/week
	Subtotal	**11.7%**	**35 T/week**	**32.5%**	**175 T/week**
Ferrous metals	Primarily ferrous	1.4%	4 T/week	1.0%	5 T/week
	Steel other	1.4%	4 T/week	1.3%	7 T/week
	Subtotal	**2.8%**	**8 T/week**	**2.3%**	**12 T/week**
Non-ferrous metals		**0.3%**	**1 T/week**	**0.7%**	**4 T/week**
Glass	Recyclable	0.1%	0 T/week	0.9%	5 T/week
	Non-recyclable	0.4%	1 T/week	0.6%	3 T/week
	Subtotal	**0.6%**	**2 T/week**	**1.5%**	**8 T/week**
Textiles	Clothing/textiles	0.6%	2 T/week	1.5%	8 T/week
	Multimaterial/other	3.9%	12 T/week	3.0%	16 T/week
	Subtotal	**4.5%**	**14 T/week**	**4.5%**	**24 T/week**
Sanitary paper		**0.5%**	**1 T/week**	**3.4%**	**19 T/week**
Rubble	Cleanfill	3.1%	9 T/week	1.7%	9 T/week
	New plasterboard	4.2%	13 T/week	2.4%	13 T/week
	Other	13.6%	41 T/week	8.7%	47 T/week
	Subtotal	**20.9%**	**63 T/week**	**12.8%**	**69 T/week**
Timber	Reusable	1.5%	5 T/week	0.9%	5 T/week
	Unpainted & untreated	3.2%	10 T/week	1.8%	10 T/week
	Other timber	37.3%	113 T/week	21.8%	117 T/week
	Subtotal	**42.0%**	**127 T/week**	**24.4%**	**132 T/week**
Rubber		**0.1%**	**0 T/week**	**0.3%**	**2 T/week**
Potentially hazardous		**0.1%**	**0 T/week**	**1.1%**	**6 T/week**
TOTAL		**100.0%**	**303 T/week**	**100.0%**	**539 T/week**

Appendix 14 - Queenstown RTS - Composition by activity source - Both visual surveys combined

Queenstown RTS - General waste stream - By activity source of waste load - Nov-23 and Mar-24 visual surveys combined		C&D	ICI	Landscaping	Residential
Paper	Recyclable	0.1%	11.6%	0.2%	2.4%
	Cardboard	2.5%	15.7%	0.3%	6.2%
	Non-recyclable	0.5%	3.3%	0.0%	0.4%
	Subtotal	**3.1%**	**30.6%**	**0.5%**	**9.0%**
Plastics	Recyclable	0.1%	1.7%	0.0%	0.2%
	Non-recyclable	4.3%	18.1%	0.6%	8.5%
	Subtotal	**4.4%**	**19.8%**	**0.6%**	**8.7%**
Organics	Food waste	0.1%	2.3%	0.8%	5.0%
	Compostable greenwaste	0.2%	1.0%	8.3%	3.1%
	Other greenwaste	0.1%	0.6%	81.6%	6.9%
	Organics other	0.0%	0.2%	0.8%	0.2%
	Subtotal	**0.4%**	**4.1%**	**91.6%**	**15.2%**
Ferrous metals	Primarily ferrous	1.8%	1.7%	0.1%	1.7%
	Steel other	0.3%	0.8%	0.0%	12.5%
	Subtotal	**2.1%**	**2.4%**	**0.1%**	**14.2%**
Non-ferrous metals		**0.2%**	**0.6%**	**0.0%**	**0.4%**
Glass	Recyclable	0.0%	0.9%	0.1%	0.3%
	Glass other	0.6%	1.5%	0.0%	0.4%
	Subtotal	**0.6%**	**2.3%**	**0.1%**	**0.8%**
Textiles	Clothing/textiles	0.0%	0.7%	0.0%	5.0%
	Multimaterial/other	1.7%	7.2%	0.3%	15.4%
	Subtotal	**1.7%**	**7.8%**	**0.3%**	**20.4%**
Sanitary paper		**0.0%**	**1.6%**	**0.2%**	**1.3%**
Rubble	Cleanfill	1.9%	1.4%	4.3%	0.1%
	New plasterboard	5.3%	0.0%	0.0%	0.1%
	Other	21.1%	1.6%	0.6%	1.7%
	Subtotal	**28.3%**	**3.0%**	**4.9%**	**1.9%**
Timber	Reusable	2.2%	1.1%	0.1%	1.0%
	Unpainted & untreated	3.4%	6.3%	0.0%	1.5%
	Other timber	52.5%	18.5%	1.5%	24.7%
	Subtotal	**58.1%**	**25.9%**	**1.6%**	**27.1%**
Rubber		**1.0%**	**1.5%**	**0.0%**	**0.6%**
Potentially hazardous		**0.0%**	**0.4%**	**0.0%**	**0.4%**
TOTAL		**100.0%**	**100.0%**	**100.0%**	**100.0%**
Tonnes per week		**199 T/week**	**64 T/week**	**38 T/week**	**17 T/week**

Appendix 15 - Queenstown RTS - Composition by vehicle type - Both visual surveys combined

Queenstown RTS - General waste stream - By vehicle type - Nov-23 and Mar-24 visual surveys combined		Cars	Gantry trucks	Other trucks	Trailer
Paper	Recyclable	2.4%	0.2%	6.7%	0.5%
	Cardboard	7.0%	3.5%	4.6%	3.4%
	Non-recyclable	0.6%	0.7%	0.4%	0.5%
	Subtotal	**10.0%**	**4.4%**	**11.7%**	**4.3%**
Plastics	Recyclable	0.3%	0.1%	0.2%	0.2%
	Non-recyclable	9.4%	7.8%	6.6%	4.6%
	Subtotal	**9.7%**	**7.9%**	**6.8%**	**4.8%**
Organics	Food waste	7.7%	0.6%	0.4%	0.9%
	Compostable greenwaste	2.6%	1.0%	1.9%	2.6%
	Other greenwaste	33.1%	1.0%	11.4%	29.0%
	Organics other	2.4%	0.0%	0.0%	0.2%
	Subtotal	**45.8%**	**2.6%**	**13.7%**	**32.7%**
Ferrous metals	Primarily ferrous	0.7%	2.3%	0.3%	0.6%
	Steel other	2.4%	1.0%	0.2%	1.0%
	Subtotal	**3.1%**	**3.3%**	**0.4%**	**1.6%**
Non-ferrous metals		**0.3%**	**0.2%**	**0.2%**	**0.1%**
Glass	Recyclable	2.0%	0.0%	0.1%	0.2%
	Glass other	0.4%	0.5%	0.6%	1.3%
	Subtotal	**2.4%**	**0.5%**	**0.6%**	**1.5%**
Textiles	Clothing/textiles	2.3%	0.5%	0.0%	0.2%
	Multimaterial/other	10.8%	1.7%	5.7%	5.2%
	Subtotal	**13.2%**	**2.2%**	**5.7%**	**5.3%**
Sanitary paper		**2.2%**	**0.3%**	**0.2%**	**0.5%**
Rubble	Cleanfill	0.0%	2.2%	0.8%	1.9%
	New plasterboard	0.1%	4.5%	1.6%	1.9%
	Other	0.6%	14.6%	29.2%	8.4%
	Subtotal	**0.7%**	**21.4%**	**31.6%**	**12.2%**
Timber	Reusable	0.2%	2.0%	2.3%	1.4%
	Unpainted & untreated	1.6%	4.0%	3.7%	3.2%
	Other timber	9.9%	49.7%	20.7%	32.0%
	Subtotal	**11.7%**	**55.7%**	**26.7%**	**36.6%**
Rubber		**0.7%**	**1.4%**	**2.1%**	**0.2%**
Potentially hazardous		**0.3%**	**0.1%**	**0.2%**	**0.1%**
TOTAL		**100.0%**	**100.0%**	**100.0%**	**100.0%**
Tonnes per week		**10 T/week**	**162 T/week**	**44 T/week**	**101 T/week**