

# Christchurch City Council

## 2019 Waste Assessment

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## 1. Background

This waste assessment has been prepared in compliance with the requirements of the *Waste Minimisation Act 2008*. During the second half of 2018 preparations for a new waste minimisation and management plan commenced with two rounds of refuse waste audits.

The waste assessment is prepared against a backdrop of an existing comprehensive suite of Council controlled services, facilities and programmes as indicated in the list below. The Council therefore has a substantial platform in place to fulfil its functions relating to materials recovery, waste minimisation and the general management of solid wastes.

Current services, facilities and programmes:

- *The current 2013 Waste Management and Minimisation Plan including an Implementation Plan.*
- *Bylaws successful in regulating waste management, waste handling facilities and cleanfill sites and data collation.*
- *A rateable domestic kerbside collection service providing wheelie bins for organic materials, recyclables, and refuse waste.*
- *The Target Sustainability service provides resource efficiency and greenhouse gas emission reduction advice to Christchurch businesses.*
- *A user pays collection service for recyclables and refuse waste from premises in the inner city area.*
- *Three transfer stations in the city, one each at Birdlings Flat and Barry's Bay, and eleven community collection points in the rural area of the Peninsula.*
- *Co-ownership of a modern landfill operating to the highest international standards.*
- *The Burwood Resource Recovery Park (BRRP) to deal with the recovery of any remaining post-earthquake demolition materials.*
- *Extraction of landfill gas for both Burwood and Kate Valley landfills.*
- *Ongoing monitoring of closed landfills.*
- *A modern enclosed materials recovery facility.*
- *A modern enclosed organics processing plant.*
- *Waste education programmes for communities and schools.*
- *Cooperation with other territorial authorities to advance regional waste minimisation programmes in Canterbury through jointly funded waste minimisation projects.*
- *Public Place recyclables and refuse provisions.*
- *Council event 3 waste stream sustainability programme.*

In the below table are the trends in tonnages over the last 10 years relating to core waste components.

WASTE COMPONENT	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Refuse Waste	222,691	167,500	220,874	192,712	203,715	228,472	238,266	234,242	223,525	217,504
Recycling	43,489	45,367	43,403	43,020	41,203	41,702	39,505	38,591	35,818	36,159
Organics	34,842	69,606	56,902	68,880	69,912	74,091	65,165	69,726	74,267	78,911
Cleanfill	694,893	183,284	436,559	-	-	-	-	-	-	-
Special Waste	-	11,707	12,293	14,774	21,788	38,820	71,268	62,906	78,799	64,643
BRRP Landfill Waste	-	-	-	-	3,938	91,430	149,486	71,749	185,930	

There is a number of elements e.g. Council's introduction of the wheelie bin service, act of god (earthquake), economic spend, etc, which shows a clear impact on each waste components.

The Council's three wheelie bin service started February 2009. This included the introduction of an organics household kerbside collection. This is reflected in the large increase of organics in 2009/10. The change from a recycling crate to a 240 litre wheelie bin also increased the amount of recycling received. The refuse waste dropped that year.

Christchurch experienced a number of earthquakes with the two major ones occurring in September 2010 and February 2011. This is evident in the jump in refuse waste and special waste going to landfill. Also BRRP was set up to take construction waste relating to the earthquake.

## 2. Summary

The purpose of the waste assessment is to enable the Council to review the appropriateness of its current waste management plan, and whether a new plan should be developed. In order to determine this, the waste assessment summarises the current situation regarding all solid waste related services, support services and facilities; looks forward to what the future demand is likely to be, and provides direction as to how the future demand will be met in an environmentally responsible and sustainable manner.

Waste audits of the refuse kerbside collection services and Council owned transfer stations was done in July and October 2018 and the summary results are included (see paragraph 5).

With the services already provided the city provides a leading role in waste minimisation and management, and is well placed to continue doing so.

The future demands of Christchurch City's projected population increase on the waste minimisation and management services will continue to be met.

## 3. Services provided by or on behalf of the Council

### 3.1 Kerbside collection services

The Christchurch City Council has provided a kerbside wheelie bin collection service for the last 10 years to the entire Christchurch City area including Lyttelton Harbour basin and Port Levy, as well as other selected areas on Banks Peninsula. The standard service includes:

240 litre recycling bin (collected fortnightly)

140 litre rubbish bag (collected fortnightly)

80 litre organics bin (collected weekly)

Residents may apply to have three 80 litre bins as a 'downsized' service. Approximately 150,000 households are serviced by a wheelie bin collection. The kerbside collection contract expires on 31 March 2029.

Residents and businesses may also opt to pay for additional capacity as follows:

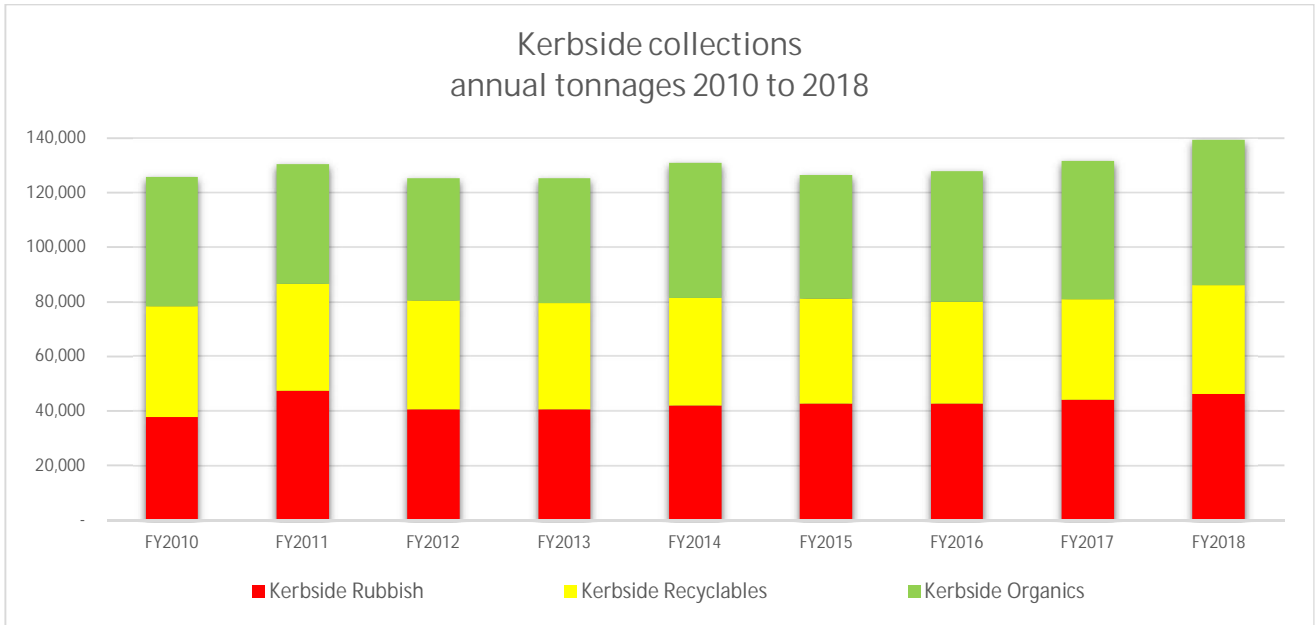
- Additional 240 litre recycling bin

- Upsize the organics bin from the standard 80 litre bin to a 240 litre bins

These charges are listed under Council's annual fees and charges

Additional rubbish bins are not offered as commercial operations are available to handle larger waste operations. Council's policy is targeted at decreasing and diverting waste from landfill.





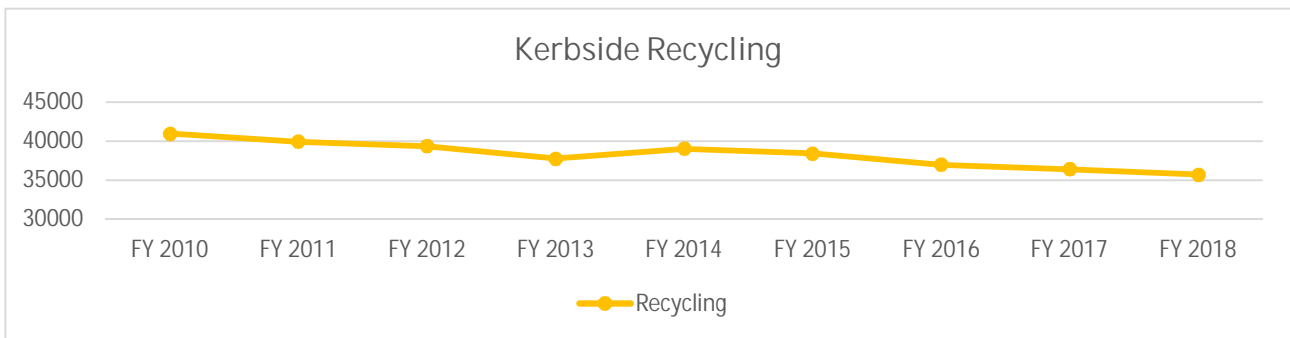
The areas on Banks Peninsula that are not serviced by the kerbside wheelie bin collection are provided with Community Collection Points. Eleven recycling and nine rubbish drop-off facilities are provided.

Council provides a user pays recycling bag and rubbish bag service for the inner city. Currently this is being reviewed.

#### 3.1.1 Kerbside recycling

Approximately 36,000 tonnes of recyclables are collected at kerbside per annum. This material is taken to the Materials Recovery Facility (MRF) on Parkhouse Road for processing.

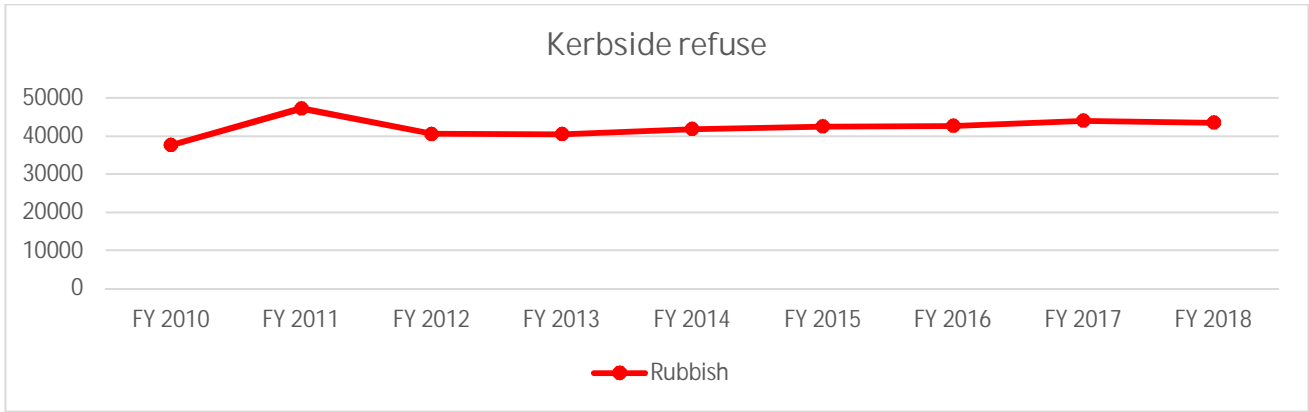
Council has a KPI target of >108kg/per person/per year.



#### 3.1.2 Kerbside rubbish

Approximately 43,000 tonnes of refuse waste is collected at kerbside each year. This material is taken to one of three Council-owned transfer stations – Parkhouse EcoDrop (Sockburn), Metro EcoDrop (Bromley) and Styx Mill EcoDrop (Styx Mill) ready for transportation to a regional landfill at Kate Valley in the Hurunui District.

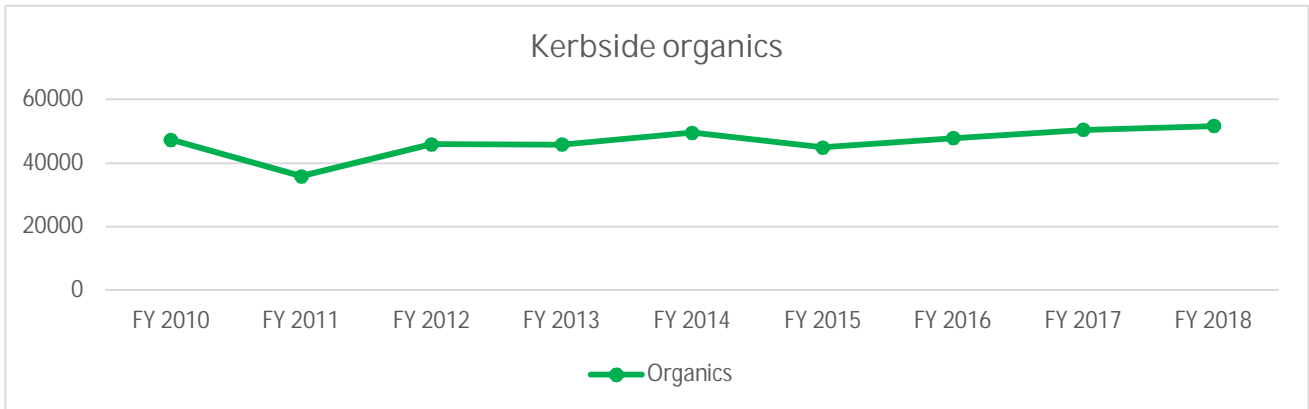
Council has a KPI target of <120 kg/per person/per year to landfill.



### 3.1.3 Kerbside organics

Approximately 51,000 tonnes of organic material is collected at kerbside each year. This material is taken to the Organics Processing Plant in Bromley. The material is composted in tunnels for 6-8 days and then put out on hardstand to mature. The site operator is required to find markets for this material and are currently selling all the product they receive to the rural market.

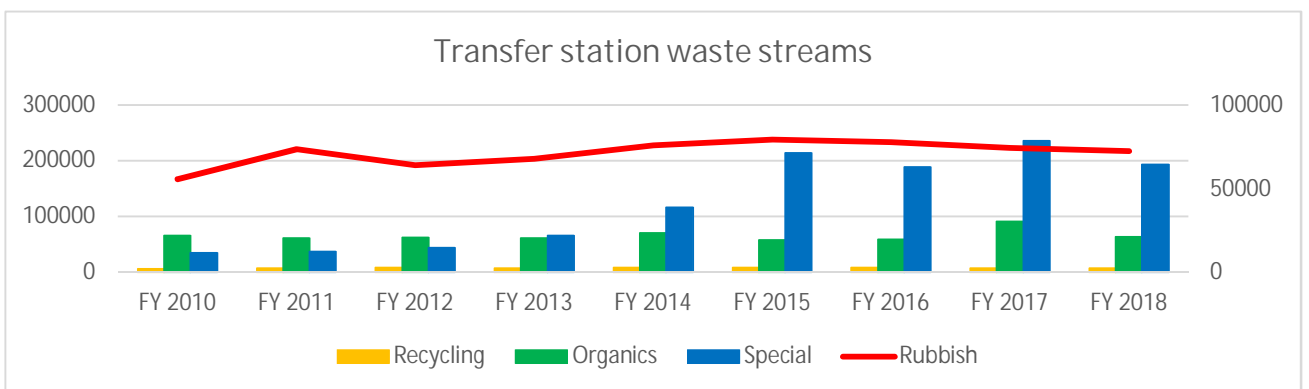
Council has a KPI target of >190kg/per person/per year



### 3.2 Transfer stations

There are three Council-owned transfer stations for the urban area – Parkhouse EcoDrop (Sockburn), Metro EcoDrop (Bromley) and Styx Mill EcoDrop (Styx Mill).

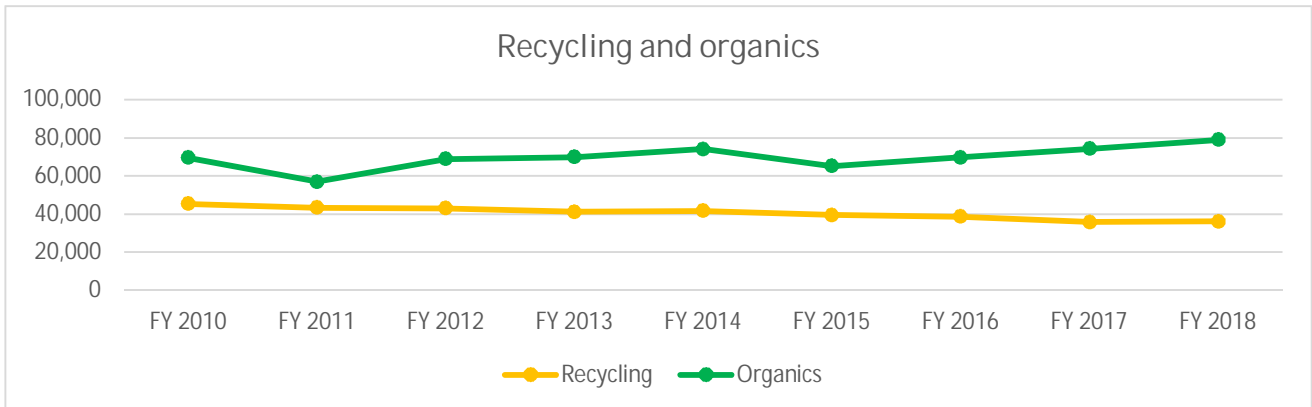
For the Banks Peninsula area there are two transfer stations, - Birdlings Flat and Barry's Bay.



Metro EcoDrop is the only Council station that accepts asbestos (special) waste. There is in place strict acceptance requirements (see paragraph 4.2)

### 3.3 Recovery Services

Council has two main recovery services from kerbside collection to transfer stations. They are recycling and organics materials.



### 3.4 Target Sustainability Services for Christchurch businesses

The Activity Management Plan provision relating to commercial and industrial waste minimisation provides for the delivery of programmes of work that assist businesses to be resource efficient.

The Target Sustainability services provide free resource efficiency consultancy to Christchurch businesses to assist them to reduce solid waste and to be energy and water efficient and to reduce greenhouse gas emissions.

There are different levels of Target Sustainability consultancy services available depending on the size of the business and the potential to reduce solid waste and to be energy and water efficient and to reduce greenhouse gas emissions.

### 3.5 Raising waste awareness and community education: Learning through action

The Christchurch City Council offers a range of environmental and city infrastructure programmes that are free to schools including learning about waste minimisation. The programme provides relevant and authentic learning experiences through hands-on activities.

The waste programmes are based at different sites in Christchurch and cater for students from new entrants to year 13. They are linked to the school curriculum and fit with the focus on sustainability. *Learning Through Action* is supported by the Ministry of Education as a Learning Experiences Outside The Classroom (LEOTC) provider.

Other free waste programmes currently being run include:

*Casting Magic with Worms* is a programme aimed at Year 0 – 4 for children to discover the important role worms can play in the waste management system. Students search the area for worms and create their own worm farm to take back to school.

*A Waste of Time* is a programme for Year 5-13 where school children gains an insight into the Reduce, Reuse, Recycle aspects of the waste management hierarchy. Highlighted by visits to the EcoSort, EcoDrop and the EcoShop.

*Fertilising For the Future* is a programme aimed at school children from Year 4 to 13 where they learn the science behind reducing and utilising organic waste as a resource by turning it into natural fertilisers.

The *Education and Promotions Team* is an in-house education and promotions team with representatives from Solid Waste, Marketing and Communications teams. The team works within the scope of a five year marketing and communications strategy, with an annual communications and marketing plan. The Plan identifies regular seasonal messaging as well as key operational issues and allocates budget and timeframes. It also works to achieve behaviour change through education and produces educational material in various languages. The team also looks after waste messaging on websites, and utilises different communication methods to reach a wide audience.



### 3.6 Avoiding landfilling through the beneficial use of wastewater bio-solids and screenings

Christchurch City Council annually disposes of 3,600 tonnes of dried bio-solids. Bio-solids are a by-product of the wastewater treatment process, where sludge collected by the treatment process is anaerobically digested to reduce its organic matter (with the gas harvested and used to generate electricity to power the site) and dried to remove the majority of water and sterilise the product to a class A standard. The final bio-solids are transported to the Stockton Mine or Atarau to help rehabilitate former mine sites, or to Burwood closed landfill for beneficial use as landscaping capping. This means it does not have to be landfilled.

The disposal method chosen was one of the first fully publically consulted processes of its kind, where community workshops, facilitated by University of Canterbury, identified beneficial reuse as the preferred disposal method.

A relationship has been developed with Solid Energy to use the bio-solids to assist with the rehabilitation of former mine areas at Stockton Mine. This has the benefit to Christchurch City Council of reducing the disposal cost by half of that of landfilling.

Screenings are collected at the first stage of wastewater treatment and usually comprise large inorganic detritus materials. Improvements in screening technologies at the Christchurch Wastewater Treatment Plant have allowed for a greater capture rate, thereby preventing their release into the environment. Currently some 1400 tonnes of screenings are disposed of in landfill and this has increased over previous years as improvements in technology have been installed.

### 3.7 Cleanfill sites

The only Christchurch City Council owned cleanfill facility is a closed site at Birdlings Flat which was used for the disposal of roading slip material from Banks Peninsula. Other cleanfill sites around Christchurch are owned and managed by private contractors, see par. 4.4 below.

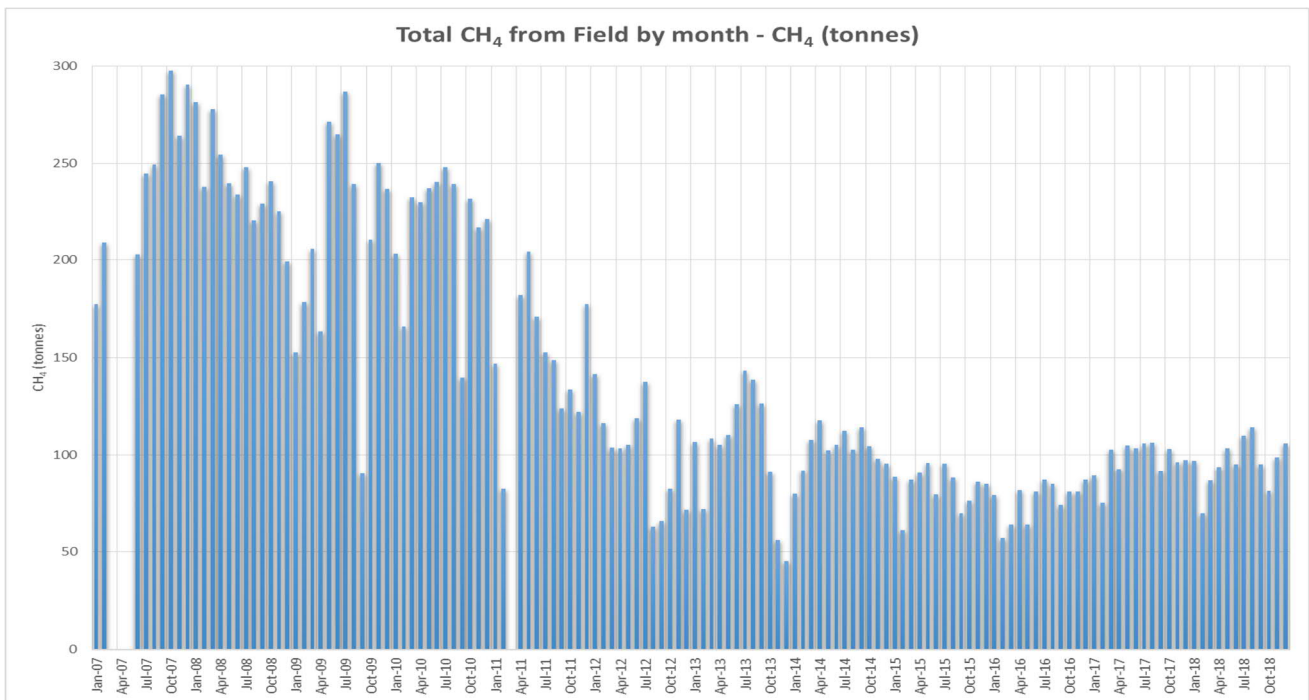
### 3.8 Closed landfills (excluding Burwood closed landfill)

There are 57 known closed landfill sites which are located on Council land. A survey of these site identified nine which were considered to have the highest potential to cause adverse environmental effects and monitoring programmes were set up to check the environmental performance of the sites. These nine closed landfills are considered indicator sites to provide information on what may be occurring in other closed landfills across the city. They have discharge consents, and are subject to annual monitoring of ground water and are managed in an environmentally acceptable way that meets resource consent conditions.

### 3.9 Burwood closed landfill: Gas extraction and use

Burwood landfill closed as a site for residual disposal of waste in June 2005 when Kate Valley landfill opened. As part of the closed landfill aftercare programme at Burwood a landfill gas extraction system was installed for odour control in 2003 and initially gas was flared. The Burwood Landfill Gas Utilisation Project, a scheme to utilise the gas for energy recovery at the QEII Recreation Facility was installed in 2007 with extracted gas used for heating the pools and also for electricity generation.

In 2009 the gas utilisation scheme was extended to provide gas to the biosolids drying plant at the wastewater treatment plant and provide heating, cooling and power generation at the Civic Offices and Christchurch Art Gallery. The project was a Track 1 Joint Implementation Project under the Kyoto Protocol and an approved emission reduction project under the New Zealand Government Ministry for the Environment "Project to Reduce Emissions" (PRE) programme. Emission Reduction Units (ERU's), or carbon credits, were earned under this project and sold on the open market until the programme terminated in 2012.



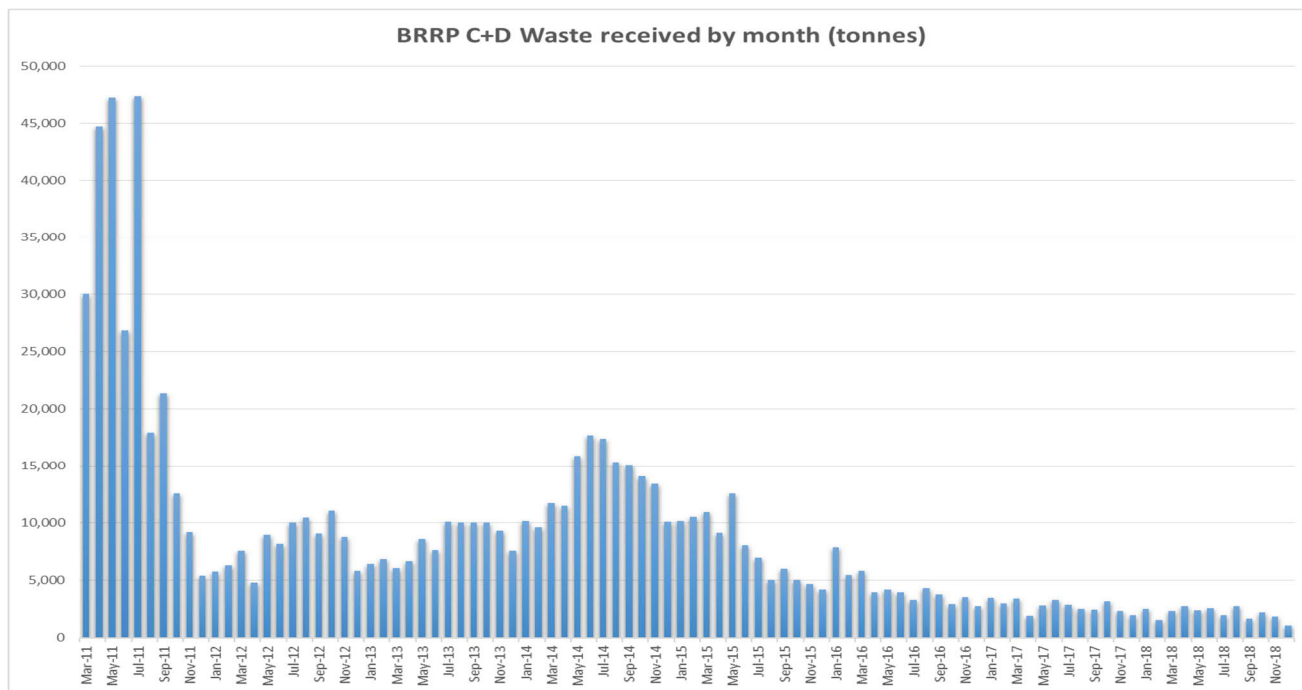
Landfill gas composition is typically 50 to 60% methane and 35 to 40% carbon dioxide. Gas production peaks shortly after the waste is disposed of and once dumping stops there is a steady drop off in gas production. Key to the rate of fall off is the organic content of the waste and the moisture content of the waste. At Burwood the site is relatively dry so the production of usable gas is likely to continue for at least 5 to 10 years. There are currently 32 wells covering less than 50% of the usable gas production so there is potential to increase the gas extraction as necessary. Ten new wells were installed in 2016. Five new wells are planned to be installed early in 2020. At present the methane content of the gas is around 55% compared to 60% when extraction commenced in 2003.

### 3.10 Burwood Resource Recovery Park - earthquake recovery

Following the February 2011 earthquake unprecedented quantities of demolition material have been generated. To deal with this the Burwood Resource Recovery Park (BRRP) was established in Bottle Lake Forest, initially under emergency provisions by the Civil Defence Controller, to receive earthquake waste for sorting and recycling. Quantities of waste received by BRRP to date have been less than originally anticipated and this, plus the low recoverable fraction of the material, has resulted in a decision to dispose



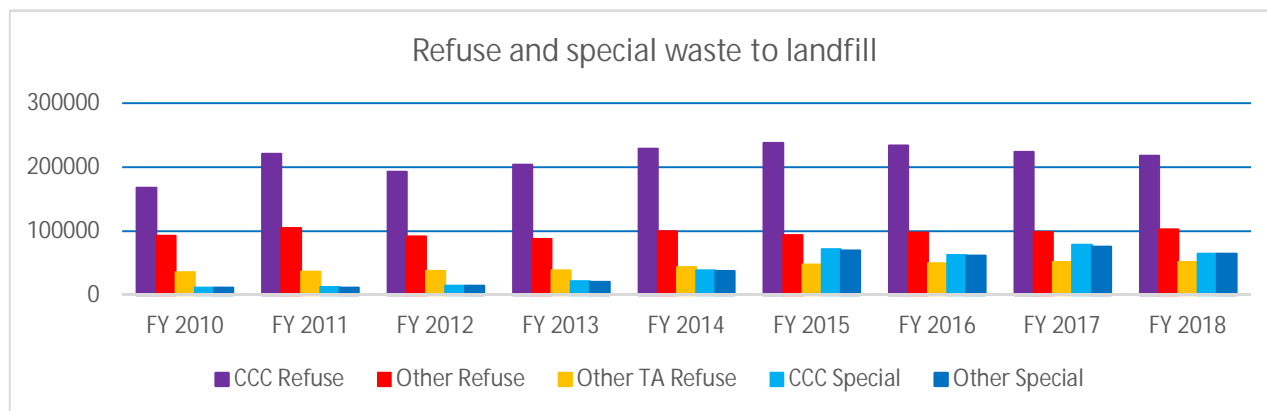
the residual waste from the sorting process to be disposed of a new demolition waste cells at the adjacent Burwood landfill.



The volume of construction and demolition waste disposed of at BRRP has declined over time. It has been recommended the Transwaste Canterbury Board that acceptance of C+D waste cease by 20 December 2019 due to the declining volumes. Contaminated soils will be accepted at Burwood Landfill until 31 December 2020 in line with the existing resource consent expiry date.

### 3.11 Regional landfill – Kate Valley

Kate Valley landfill is the landfill co-owned by the council. It replaced Burwood landfill in June 2005 and has been consented for 35 years.



### 3.12 Public place bins and littering / illegal dumping

Council has a number of bins placed in strategic areas around the city and always working on improving this service as the city redevelops.

Littering remains difficult to enforce. In areas outside the central city which is partly closed dumping is increasing, possibly due to movements between residences through earthquake related causes and resulting surplus household effects. If contractors can find evidence of the owners of the waste (i.e. envelopes, etc, from within dumped shopping bags) Council will either issue a warning or prosecute.

### 3.13 Tourism wastes

Due to the increased volume of tourists to the Christchurch and Banks Peninsula region Council has created a webpage (<https://ccc.govt.nz/rec-and-sport/camping/#11/-43.7279/172.6447>) to provide tourists with camping locations and other public services e.g. toilets, waste bins, etc.

## 4.0 Services provided by non-contracted commercial and community service providers

### 4.1 Commercial and community based collectors

There are a variety of commercial collectors of refuse waste, organic materials and recyclable materials, for domestic and for institutional/commercial and industrial users that contract directly with such providers.

### 4.2 Transfer stations / waste handling facilities

There are various facilities within the Christchurch district that are licensed to dispose of refuse waste and/or special waste. The most common types of Special Waste are medical waste and treated industrial waste.

### 4.3 Contaminated and hazardous waste treatment and handlers

As required by the Ministry of Health, specific issues around clinical waste have been and will continue to be referred to it, as and when it arises.

There are a number of operators who specialise in the pre-treatment and transport of special and potentially hazardous wastes to Kate Valley Landfill.

Asbestos handling procedures at transfer stations and Kate Valley landfill are in accordance with Ministry of Health standards. All damaged underground service pipes that contains any asbestos will be disposed of at Kate Valley landfill.

### 4.4 Commercial cleanfill sites

There are commercially owned cleanfill sites in Christchurch all operating under the Cleanfill and Waste Handling Operations Bylaw 2015 which sets out which materials may be deposited at cleanfill sites. Licensed and consented sites are regularly monitored by Council and Ecan staff and remedial action if required.

Illegal disposal, when reported or observed, is investigated by the Regional Council and by the Council.

## 5. The 2018 Waste Audits

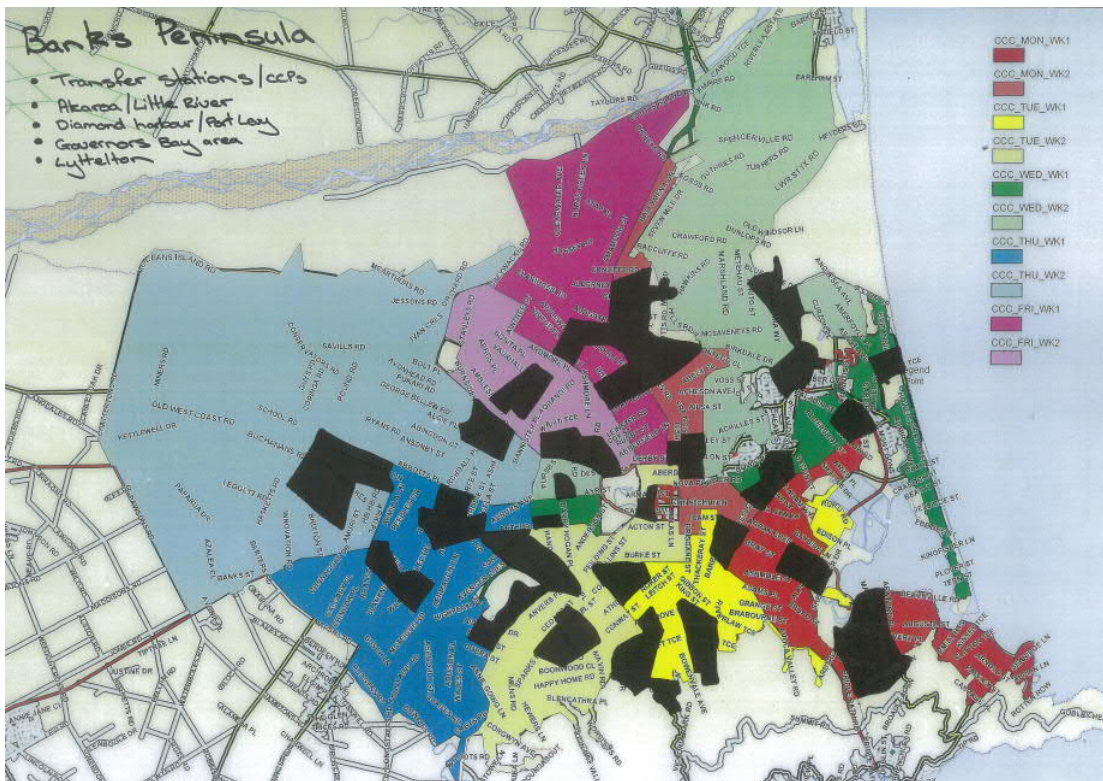
During 2018 two rubbish waste audits took place (July and October). There was two areas of assessment. They were kerbside wheelie bin collection and transfer station material.

A summary of the audit report follows:

*In July 2018 Christchurch City Council commissioned EcoCentral to undertake audits. The scope comprised:*

- *Kerbside Wheelie Bin Collection - First audit allowed us to cover half the city and banks Peninsula and in the second audit allowed us to complete the coverage.*
- *Transfer Stations - First audit allowed us take one sample from each EcoDrop station and in the second audit we were able to take a few more plus samples from Banks Peninsula transfer stations.*

*A selection of collection trucks from each collection area (areas coloured in black on the below map) within the city was identified and a loader scope was taken from that truck, material weight, hand sorted and each waste category was weighted. The transfer stations had a minimum of one loader scope taken, material weighted, hand sorted and each waste stream weighted.*



All sampled material was transported Metro Place EcoDrop for sorting. The refuse material, in the samples was sorted into 20 separate categories and weighed.

Below is the results of the audit relating to Council's red-lidded refuse wheelie bins.

Waste Category	Percentage of Material	Average Weight of Wheelie Bin
Rubbish	24.28%	27.43
Recyclable Paper & Cardboard	16.75%	18.93
Compostable Greenwaste	11.28%	12.74
Recyclable Plastics	10.60%	11.98
Non-Compostable Greenwaste	8.17%	9.23
Soft Plastics	7.66%	8.65
Non-Recyclable Paper	7.27%	8.21
Clothing & Textiles	5.45%	6.16
Timber	1.90%	2.15
E-Waste	1.63%	1.84
Glass Bottles / Jars	1.45%	1.64
Ferrous Metals (inc steel cans)	1.22%	1.38
Non-Ferrous Metals (inc Ali cans)	0.88%	0.99
Nappies & Sanitary	0.74%	0.84
Concrete, Ceramics, Rubble	0.53%	0.60
Hazardous Waste	0.06%	0.07

Domestic Batteries	0.05%	0.06
Kitchen Waste (Food)	0.05%	0.06
EPS (polystyrene)	0.03%	0.04
Aerosol Cans	0.00%	0
TOTAL	100%	113kg

*Below is the results of the refuse audit relating to Council's Transfer Stations (incl Banks Peninsula).*

Waste Category	Percentage of total	Average weight per person per year
Rubbish	21.37%	156.85
Timber	20.76%	152.38
Recyclable Paper & Cardboard	13.24%	97.18
Recyclable Plastics	9.13%	67.01
Compostable Greenwaste	6.43%	47.20
Non-Compostable Greenwaste	6.24%	45.80
Clothing & Textiles	5.80%	42.57
Soft Plastics	3.99%	29.29
E-Waste	3.50%	25.69
Ferrous Metals (inc steel cans)	2.83%	20.77
Non-Recyclable Paper	2.39%	17.54
Non-Ferrous Metals (inc Ali cans)	1.59%	11.67
Concrete, Ceramics, Rubble	1.21%	8.88
Glass Bottles / Jars	1.01%	7.41
Hazardous Waste	0.21%	1.54
Nappies & Sanitary	0.18%	1.32
EPS (polystyrene)	0.04%	0.30
Kitchen Waste (Food)	0.04%	0.30
Aerosol Cans	0.03%	0.23
Domestic Batteries	0.01%	0.07
TOTAL	100%	734kg

## 6. Forecast of future demand

Pivotal to a forecast of demands for waste services is the projected change in the city's population over time.

	2018	2023	2028	2033	2038	2043
CCC area	403,300	426,900	443,100	457,300	470,300	481,200

## 7. Options available to meet the forecast demand for waste minimisation and management services and facilities

Additional capacity to meet future demand has been addressed in existing contracts for infrastructure based services including kerbside collection trucks, wheelie bins, transfer stations, the organics processing plant, the materials recovery facility and Kate Valley landfill.

Forecast demand will therefore be met by continuing to manage existing long-term contracts for infrastructure provision, as well as funding of support services for business and industry through Target Sustainability services, and raising awareness/education projects for the wider community.

## 8. Council's intended role and proposals for meeting forecast demand and ensuring public health

Capital funding for renewals and landfill aftercare are set out in the Council's 2018 -2028 Long Term Plan which is reviewed annually via the Annual Plan process.

All required infrastructure components for managing the waste minimisation and management services are already in place, and have sufficient capacity to ensure continued high levels of service over this period.

In terms of the Waste Minimisation Act 2008 a levy is imposed on all residual waste, and levy monies are forwarded to the Ministry for the Environment by the operators of Kate Valley landfill. In terms of the Act the Ministry returns a portion of the levies (based on the percentage of New Zealand population) to territorial authorities quarterly.

Council's Solid Waste budget is set based on the assumption that this funding will continue to support the recycling and organics. One third of the levy monies supports the recycling kerbside wheelie bin collection and processing and two thirds of the levy monies supports the organics kerbside wheelie bin collection and processing.

Public health and wellbeing: Council remains in regular contact with Ministry of Public Health's Community Public Health offices regarding any relevant issues including discussions with the Medical Officer of Health on the issue and associated health risks regarding kerbside disposal of medical waste.

The high standard of new infrastructure means that measures are already in place to ensure that public health is adequately protected.

The 2018 Waste Management and Minimisation Plan will set out goals, tasks and implementation projects to promote effective waste management and minimisation.

## 9. Compliance with Section 51(4) of the Waste Minimisation Act 2008

The costs of, and difficulty in, obtaining information for the waste assessment, and the extent of the council's resources, have not impacted materially on the completeness of this assessment.