

Canterbury Region  
Waste Data  
Addendum Report  
(2001-2006)  
**Report No. U07/10**

**Prepared by  
Sarah Tammik  
and Darren Patterson**

**March 2007**



## Report No. U07/10

58 Kilmore Street  
P O Box 345  
**CHRISTCHURCH**  
Phone: (03) 365 3828  
Fax: (03) 365 3194



Website: [www.ecan.govt.nz](http://www.ecan.govt.nz)  
Customer Services Phone 0800 324 636

75 Church Street  
P O Box 550  
**TIMARU**  
Phone: (03) 688 9069  
Fax: (03) 688 9067

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## 1. Introduction

Environment Canterbury collects waste data from the Canterbury territorial authorities to enable reporting on Canterbury's waste amounts and waste management systems. This addendum report to the Canterbury Waste Data Technical Report (1998 to 2005) provides an update of Canterbury's information for the 2005/06 financial year.

Waste data and information were collected from the territorial authorities using the waste data collection spreadsheet. The use of this standard reporting tool helps to ensure that the information reported from each territorial authority is consistent. All Canterbury territorial authorities provided waste data and information for the 2005/06 financial year.

## 2. Correction of error

Last financial year, Environment Canterbury (ECan) was told that Bank Peninsula district's waste data were not included in Christchurch City's data. Therefore, they were added to the total waste figures separately. This financial year, Christchurch City Council informed us that the Banks Peninsula data are included in Christchurch City's data and were in previous years. To correct this error, Banks Peninsula's waste data were removed from previous year's total waste figures.

To get an accurate reflection of trends in Christchurch, as it includes Banks Peninsula's waste figures, the population of Banks Peninsula has been added to Christchurch City's.

This financial year, ECan was also informed that the Christchurch City reuse store amounts provided in previous years were incorrect. This has slightly altered the diversion rates and the total measured waste amounts for Christchurch City that were reported in the Canterbury Waste Data Technical Report (1998 to 2005). The corrected amounts are included in this report.

## 3. Methodology

The waste data collection spreadsheet was used to collect data from all Canterbury territorial authorities. Territorial authority staff were emailed a copy of the spreadsheet which they filled in with the appropriate information and returned to us. Some data had to be converted to allow for comparisons to be made (e.g. from litres to tonnes). Further information and clarification on the data was sought through emails and phone calls.

A spreadsheet was compiled which contained all the completed worksheets for the districts. The district waste data were summed to provide the total measured waste amount for the Canterbury region. These data were combined into a regional worksheet. From this, trends in the amount of waste measured and its categories could be seen at a regional level.

The data were analysed to update the trends included in the Canterbury Waste Data Technical Report (1998 to 2005). This was done at both the district and regional level.

Some waste categories have been added to the waste data collection spreadsheet to gain a more accurate picture of the waste stream. These additions and other changes are described in the following section.

### 3.1 Changes and new categories

The Canterbury Waste Data Technical Report (1998 to 2005) assessed the trends in waste data from 1998 to 2005. However, this addendum report concentrates on just the last five years of waste data from 2001/2002 to 2005/2006. This is because we have greater confidence in the data for this period as most

districts contributed waste information. Table 2 in Canterbury Waste Data Technical Report (1998 to 2005) provides further information on which years territorial authorities contributed data.

To clarify trends in waste amounts we have included calculations of relative increases over five years for Canterbury. Relative increases over five years have also been calculated for some of the districts where we have enough reliable data to do so.

While Waitaki's data were collected last year they were not included in the report. This year Waitaki district's waste information has been added to the district comparisons. However, it is still not included in the regional data<sup>1</sup>.

Banks Peninsula District Council is not included separately in the district analysis. This is because Banks Peninsula merged with the Christchurch City Council in March 2006. Banks Peninsula's data are reported as part of Christchurch City's district data.

Christchurch City and Timaru have the largest and second largest populations in Canterbury respectively. Not surprisingly, it is these centres that were shown to contribute the greatest percentage of waste to the Canterbury waste stream in the Canterbury Waste Data Technical Report (1998 to 2005). However, these districts contribute a higher percentage of the waste stream than their populations indicate. This may be due to the location of industries and major businesses in these urban centres. This year, we attempted to remove the influence of industry and major business waste in the urban centres by collecting information on the amount of kerbside collected residual waste and recycling.

Waste exchange<sup>2</sup> data were recorded this year. However, due to current differences in the method of reporting, the waste exchange volumes and weights cannot be compared between facilities. In June 2006, WasteBusters Trust Ashburton were contracted to develop a conversion chart of common waste exchange items from cubic metres to kilograms. This was distributed to the Canterbury Waste Exchanges and they are now required by their contracts to report waste diversions in kilograms. This information will be included in waste diversion figures in future years.

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<sup>1</sup> It is difficult to separate the waste that is disposed of in the Canterbury part of the Waitaki District from the Otago part. As approximately 90% of Waitaki's population live in the Otago part of Waitaki it was decided to exclude these data to avoid over reporting the waste disposed of in the Canterbury Region

<sup>2</sup> Community groups and district councils run 6 waste exchanges within the Canterbury region. The waste exchanges work with local businesses to identify wastes that could be diverted for reuse and maintain a database of wastes wanted or available.

## 4. Results and discussion

### 4.1 Total measured waste

FINANCIAL YEAR					
WASTE COMPONENT (TONNES)	2001/02	2002/03	2003/04	2004/05	2005/06
Residual Waste	283,989	289,360	327,008	340,554	354,282
Hazardous Waste	90	139	215	293	619
Recyclables	18,056	21,383	27,809	33,525	44,746
Reuse stores	1,918	2,402	2,264	3,182	3,375
Organics	37,739	42,618	37,305	39,815	43,590
Hardfill	16,477	10,043	11,621	11,947	12,202
<b>Total Measured Waste<sup>3</sup></b>	<b>358,270</b>	<b>365,946</b>	<b>406,222</b>	<b>429,317</b>	<b>458,814</b>
Cleanfill <sup>4</sup>	61,539	45,242	372,607	826,745	648,541
<b>CONTRIBUTING POPULATION</b>	<b>479,797</b>	<b>486,347</b>	<b>508,399</b>	<b>515,759</b>	<b>532,608</b>

**Table 1:** Total tonnes of measured waste recorded in Canterbury in each financial year

Table 1 shows the amount of all measured waste (tonnes) recorded in Canterbury in each financial year for the last 5 years. These figures are not adjusted for population increase. In order to get a clear picture of everything that is discarded in Canterbury, it is important to include all waste streams, including material that is diverted from landfills for reuse or recycling.

These totals include waste amounts from all Canterbury territorial authorities that contributed data with the exception of Waitaki<sup>5</sup>. For information on which territorial authorities contributed data in 2001/02 to 2004/05 see Table 2 in the Canterbury Waste Data Technical report (1998 to 2005).

Definitions of the waste categories can be found in the Glossary of terms on page 2 of the Canterbury Waste Data Technical Report (1998 to 2005).

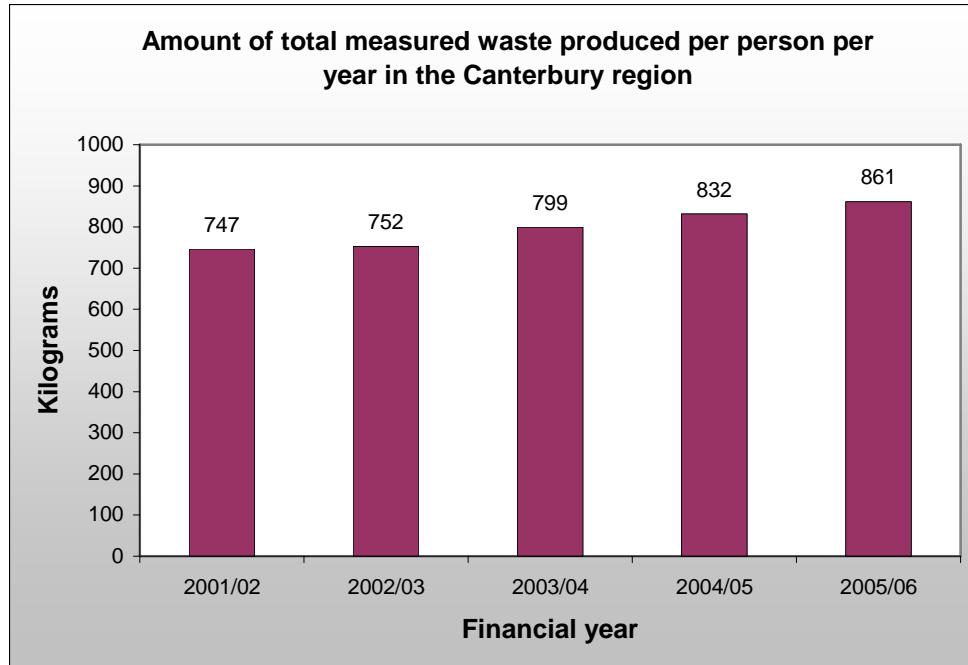
The main trends that can be seen in Table 1 are:

- Residual waste has been steadily increasing over the last five years
- Hazardous waste collected continues to increase. As discussed in the Canterbury Waste Data Technical report (1998 to 2005), this may be due to better separation by the public due to increased awareness and the additional collection facilities available in some districts
- Recyclables collected continues to increase

<sup>3</sup> Timaru District's hardfill amounts are not included in the total measured waste figure. They are included in the cleanfill figure. Some of the hardfill at Redruth landfill is disposed of, but >90% is used for engineering or as fill material.

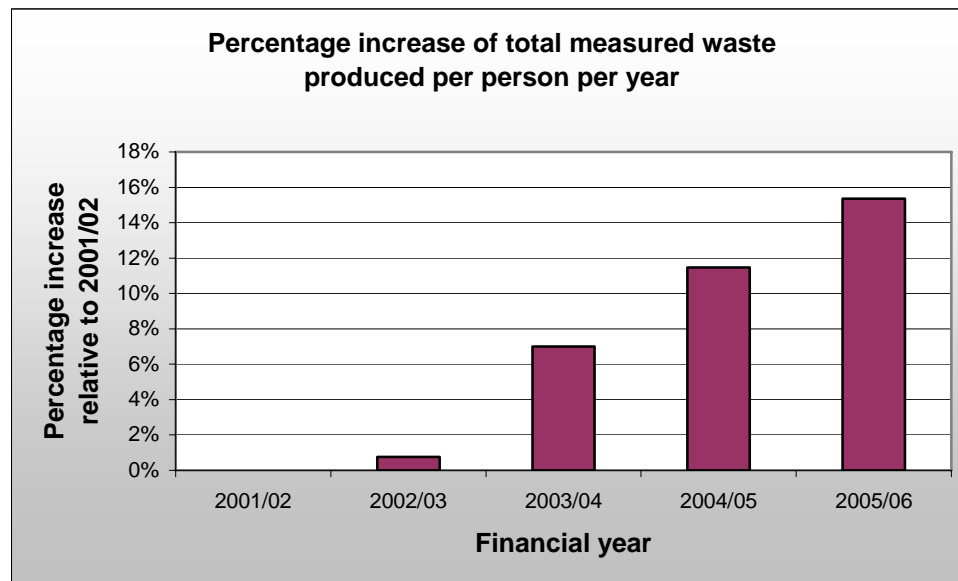
<sup>4</sup> The total measured waste figure does not include cleanfill waste. The reasons for its exclusion are stated in the Canterbury Waste Data Technical Report (1998-2005).

<sup>5</sup> Waitaki District's waste data were collected but are not included as part of this report for the reasons stated in footnote 1. However, Waitaki's waste amounts are reported separately in the district analysis.



**Figure 1:** Amount of total measured waste produced per person per year in the Canterbury region

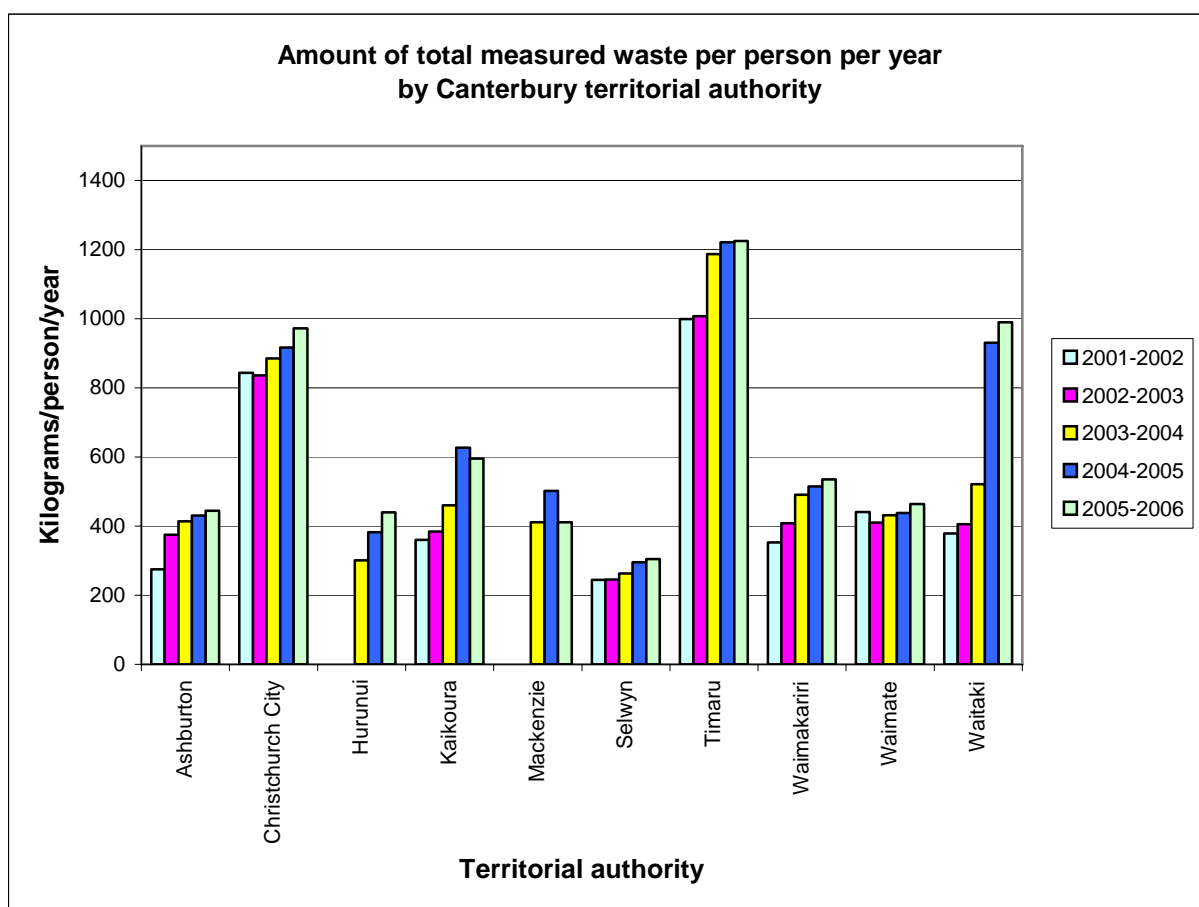
Figure 1 shows that the amount of total measured waste<sup>6</sup> produced per person in Canterbury has been steadily increasing since 2001. We have calculated this on a per person basis to eliminate the effect of population increases.



**Figure 2:** Percentage increase of total measured waste produced per person per year in the Canterbury region relative to 2001/2002

To clarify the trend shown in Figure 1 we have calculated the increase in relative terms. Figure 2 shows a 15% increase in total measured waste produced per person in the last five years.

<sup>6</sup> Total measured waste is as defined in the Glossary of Terms in the Canterbury Waste Data Technical Report (1998-2005).



**Figure 3:** Amount of total measured waste produced per person per financial year by Canterbury territorial authority

Figure 3 shows that, while the amount of total measured waste varies by district, most have had an increase over this period<sup>7</sup>. Mackenzie may be the exception; it is hard to tell given only 3 years of data.

Ashburton	Christchurch City	Kaikoura	Selwyn	Timaru	Waimakariri	Waimate	Waitaki
62%	15%	65%	25%	23%	52%	5%	161%

**Table 2:** Percentage increase in the amount of total measured waste produced per person in 2005/06 relative to 2001/02

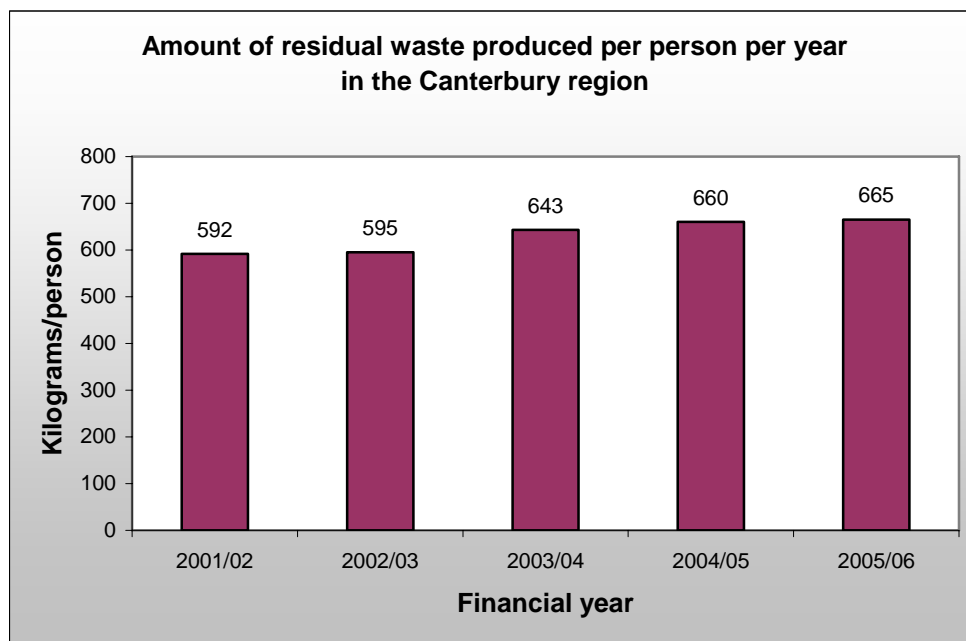
To clarify this trend, we have calculated these increases in relative terms. Table 2 shows the increase in total measured waste produced per person in 2005/06 relative to 2001/02. Hurunui and Mackenzie's trends have not been calculated. Only three years of data are available for these districts and it is difficult to assess the trend over only three years.

All Canterbury districts included in Table 2 show increases in the amount of total measured waste produced per person per year, relative to 2001/02.

<sup>7</sup> No waste amounts were reported for Mackenzie and Hurunui in 2001/02 and 2002/03.

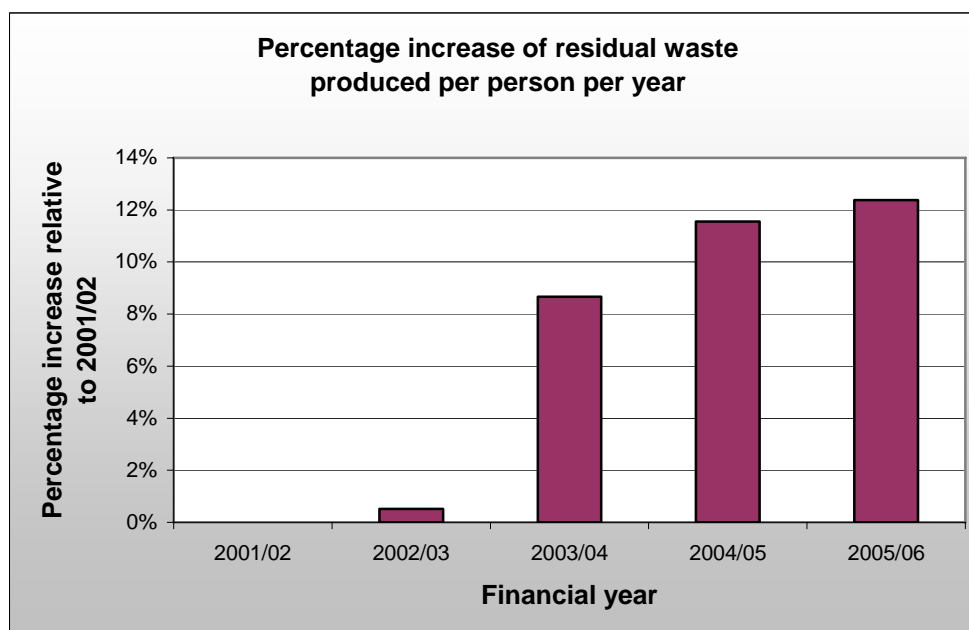


## 4.2 Residual Waste



**Figure 4:** Amount of residual waste produced per person per year in the Canterbury region

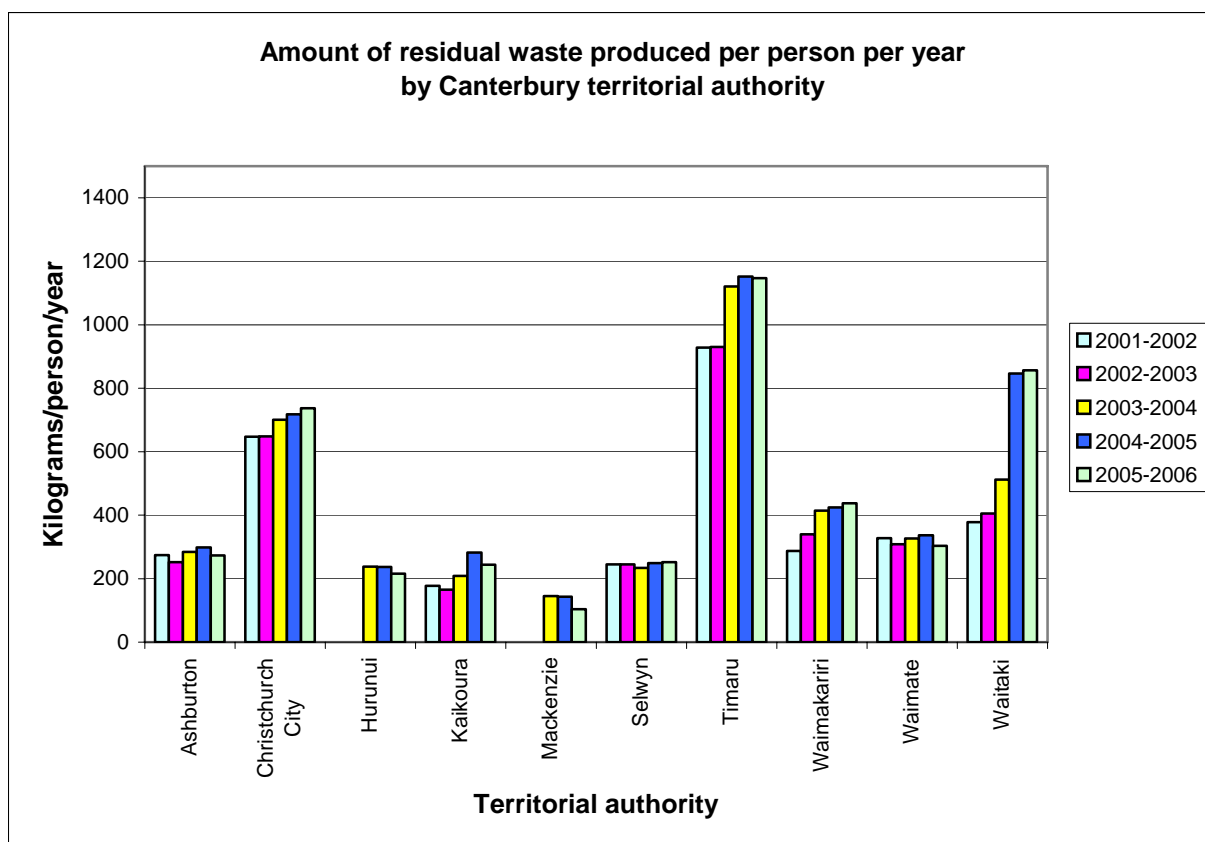
Figure 4 shows that the amount of residual waste<sup>8</sup> produced per person per year in Canterbury has increased from 592 kgs per person per year in 2001/02 to 665 kgs per person per year in 2005/06.



**Figure 5:** Percentage increase of residual waste produced per person per year in the Canterbury region relative to 2001/02

Figure 5 clarifies the trend shown in Figure 4. In Canterbury, there was a 12% increase in the amount of residual waste produced per person in 2005/06, relative to 2001/02.

<sup>8</sup> Residual waste is as defined in the Glossary of Terms in the Canterbury Waste Data Technical Report (1998-2005).



**Figure 6:** Amount of residual waste produced per person per financial year by Canterbury territorial authority

Figure 6 shows that the amount of residual waste produced varies amongst the districts. Christchurch City and Timaru produce more residual waste per person than the rural districts with the exception of Waitaki in the last two years.

Of note is the relatively low amount of residual waste produced per person in Mackenzie district.

Ashburton	Christchurch City	Kaikoura	Selwyn	Timaru	Waimakariri	Waimate	Waitaki
-1%	14%	38%	3%	23%	52%	-8%	126%

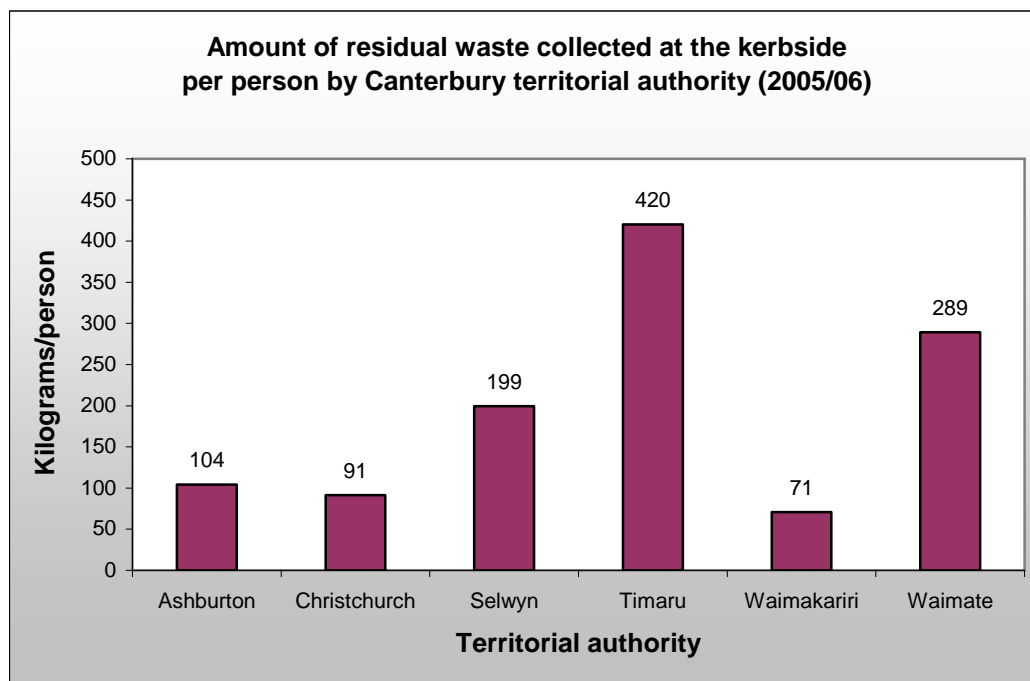
**Table 3:** Percentage increase in the amount of residual waste produced per person in 2005/06, relative to 2001/02

Table 3 shows that Waitaki district had by far the greatest increase in residual waste produced per person relative to 2001/02. Waimakariri and Kaikoura districts also showed significant increases. Increases in these two districts may be due to increased levels of building activity in these districts.

Only Waimate district showed any true decrease in the amount of residual waste. This is most likely due to the introduction of kerbside recycling in July 2005.

Hurunui and Mackenzie's trends have not been calculated. Only three years of data are available for these districts and it is difficult to assess the trend over only three years.

#### 4.3 Kerbside collected waste



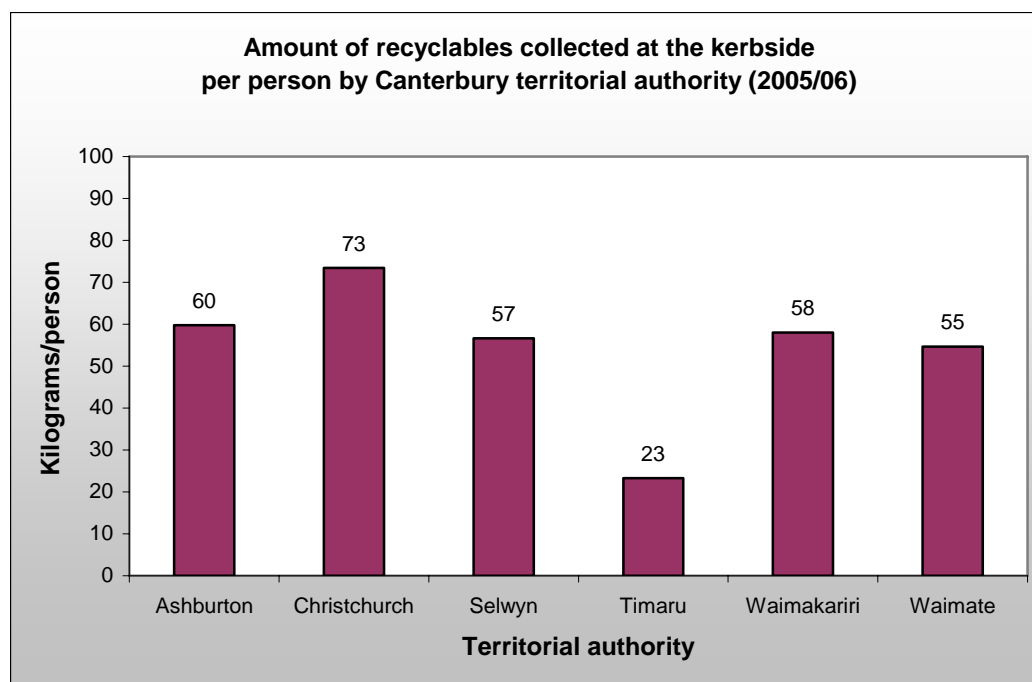
**Figure 7:** Amount of residual waste collected at the kerbside per person by Canterbury territorial authority (2005/06)

In an attempt to eliminate the effect of industry and large businesses waste on the urban waste streams, this year we collected the amount of residual waste collected on the kerbside from residential dwellings. This information was not available from all districts. Figure 7 includes kerbside data from the TAs that provided it.

When calculating the amount of waste collected per person, some district populations were adjusted. This was to reflect that in some districts not all households have kerbside collection of refuse. For example, in Selwyn district only 85% of households have kerbside collection for refuse. Therefore, only 85% of the population figure was used to calculate the amount collected per person.

The amount of residual waste collected at the kerbside in Christchurch is low compared to the other large urban centre, Timaru. However, it must be considered that Christchurch City also has commercially collected kerbside wheelie bins. The figures for Christchurch only include territorial authority collected black bags.

Figure 7 shows that Timaru has the largest amount of residual waste collected at the kerbside per person. This could be due to large amounts of recyclable material or greenwaste being disposed in general refuse as no kerbside collection of recycling was widely available in 2005/06. To assess whether this is the complete explanation, the amount of kerbside recyclables collected per person per district was calculated.



**Figure 8:** Amount of recyclables collected at the kerbside per person by Canterbury territorial authority (2005/06)

Figure 8 shows the amount of recyclables collected from the kerbside per person in 2005/06.

When calculating the amount of recyclables collected per person, some district populations were adjusted to reflect that in some districts not all households have kerbside collection of recyclables. For example, in Timaru district only 6% of households have kerbside collection for recyclables. Therefore, only 6% of the population figure was used to calculate the amount collected per person.

Figure 8 shows that the largest amount of recycling collected per person from the kerbside was in Christchurch (73 kgs). In Timaru, only 23 kgs of recycling per person was collected from the kerbside.

The amount of recyclable material collected separately at the kerbside only accounts for, at the most, 73 kilograms of the difference between Christchurch City's and Timaru's kerbside collected residual waste figures. Therefore, the amount of potentially recyclable material contained in the bins in Timaru is not the only explanation for the large amount of residual waste collected at kerbside.

In 2005/06, households in Timaru district were provided with large wheelie bins for all domestic waste. This may have allowed people to discard more of their household and garden waste at the kerbside. For example, large amounts of greenwaste may have been disposed of in the large wheelie bins in Timaru. However, households in other districts could not fit large amounts of greenwaste or other large items into bags. This would need to be dropped off separately at transfer station/resource recovery parks.

To explore this idea further we collated the collection methods used in the districts that contributed kerbside waste data. These are shown in Table 4.

<b>Waste disposal options available to households in 2005/06</b>		
	Bags	Wheelie bin
Ashburton	Compulsory \$1.25 each	
Christchurch City	Compulsory \$1.00 each	
Selwyn	Optional \$1.00 each	Optional \$260.00 per annum
Timaru		Compulsory \$104.00 per annum
Waimakariri	Compulsory \$1.30 each	
Waimate	Optional \$1.00 each	Optional \$150.00 for rural areas \$135.00 for urban areas

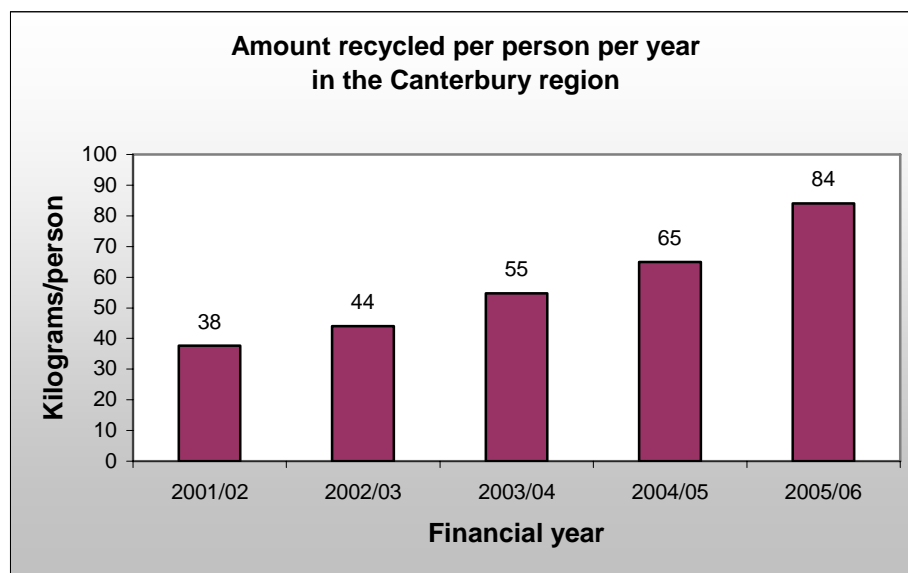
**Table 4:** Waste disposal options available in 2005/06 to households in districts that provided kerbside residual waste data

Table 4 shows the different waste disposal options available to households in districts that contributed kerbside waste data for 2005/06.

Table 4 shows that Timaru provided a wheelie bin, and Waimate and Selwyn provided optional wheelie bins, for household residual waste collection. The proportion of households in Selwyn on the collection route with a wheelie bin was 59% in December 2005. In Waimate, 70% of urban collection areas opted for a bin. These three districts record a greater amount of residual waste disposed of per person at the kerbside than the districts that only offered bags.

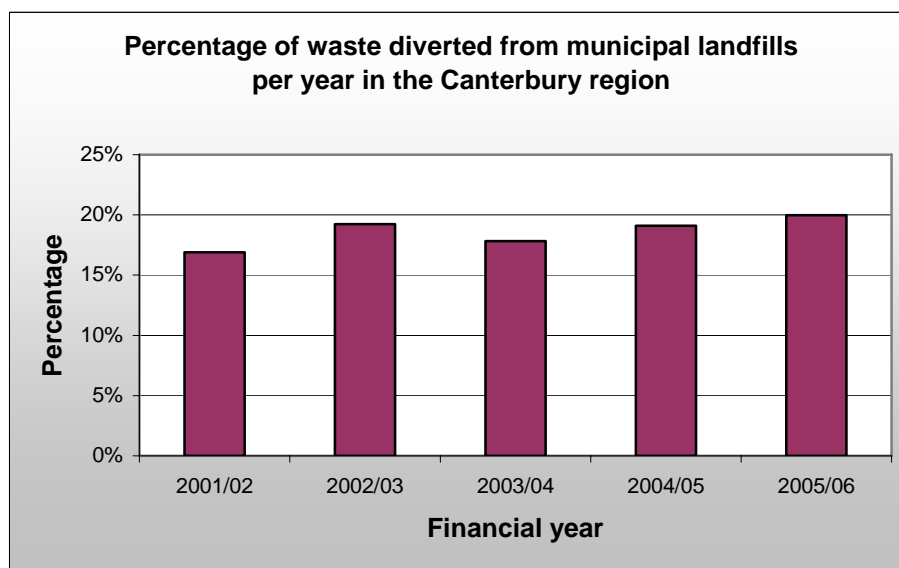
Therefore, it appears that districts that provide wheelie bins to households, either compulsory or voluntarily, record greater amounts of residual waste disposed of at kerbside.

#### 4.4 Waste Diversion



**Figure 9:** Amount recycled per person per year in the Canterbury region

Figure 9 shows that the amount of recycling<sup>9</sup> per person increased by over 120% in five years. Some of this increase may be due to provision of new services. However, as 100% of Christchurch's residents had kerbside recycling collection over this period, most of the increase is due to community buy-in.

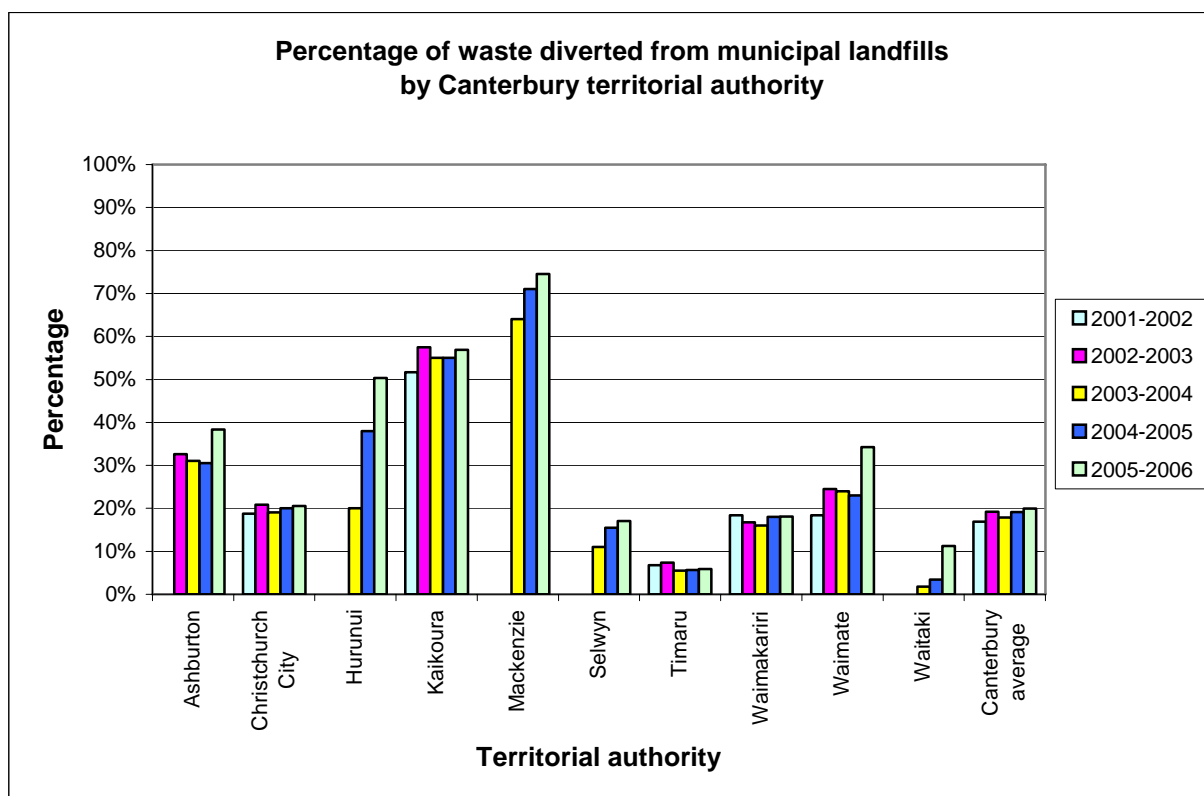


**Figure 10:** Percentage of waste diverted from municipal landfill in the Canterbury region

Figure 10 shows the percentage of waste diverted away from landfill, calculated as a percentage of total measured waste. It includes the same components as Figure 12 in the Canterbury Waste Data Technical Report (1998 to 2005).

The percentage of waste diverted from municipal landfill in Canterbury increased from 17% in 2001/02 to 20% in 2005/06.

<sup>9</sup> Recycling is as described in the Glossary of Terms in the Canterbury Waste Data Technical Report (1998-2005).



**Figure 11:** Percentage of waste diverted from municipal landfills per year by Canterbury territorial authority

Figure 11 shows that the percentage of waste diverted from landfill varies markedly between districts.

Some information is missing or not visible in Figure 11:

- Hurunui and Mackenzie did not provide data for 2001/02 or 2002/02.
- In 2001/02, the diversion rates in Waitaki and Selwyn were zero.
- Diversion in Ashburton in 2001/02 was less than 1% and so does not show on the figure.

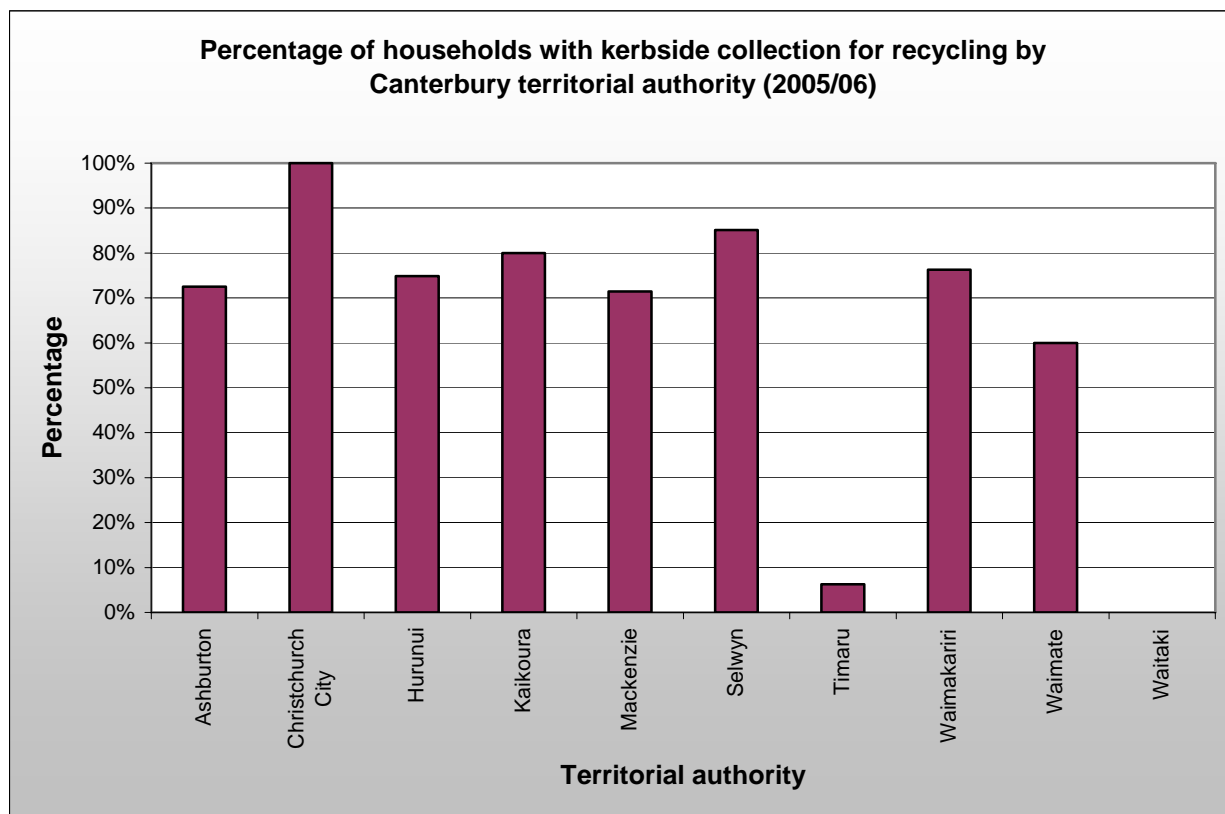
Mackenzie and Kaikoura have high diversion rates due to the collection methods that encourage separation at source described in the Canterbury Waste Data Technical Report (1998 to 2005).

Hurunui district's diversion rates have increased from 21% to 50% over the last three years. This may be due to increased uptake in recycling, possibly due to awareness of waste issues being raised through the Kate Valley landfill debate. It may also be high as waste exchange amounts are included in the 2004/05 and 2005/06 diversion rates. These data can be included as Hurunui already report waste exchange amounts in tonnes.

Of note is the increase in Waimate in 2005/06 due to the introduction of kerbside recycling in July 2005.

Diversion rates are low in Timaru and Waitaki. There was no kerbside collection of recyclables available in Waitaki and Timaru district provided only 6% of households with kerbside recycling during this period.

#### 4.5 Access to waste services



**Figure 12:** Percentage of households with kerbside collection for recycling by Canterbury territorial authority, 2005/06 financial year

Figure 12 provides an update to Figure 16 in the Canterbury Waste Data Technical Report (1998 to 2005).

Overall, access to kerbside recycling in the Canterbury region is good. The changes that should be noted since this information was collected for 2004/05 are:

- Kerbside recycling started in Waimate in July 2005. Waimate now provides 60% of households with kerbside recycling collection.
- Waitaki district has been added to this figure. They do not currently offer a kerbside recycling collection.

Since this information was collected Timaru expanded their kerbside collection in July 2006.



## 5. Conclusion

It is clear from the data collected from the territorial authorities that, while Cantabrians continue to recycle more and divert more waste from landfill, we are also producing more residual waste. As discussed in the Canterbury Region Waste Data Technical Report (1998-2005) this shows inefficiencies in our current systems and an enormous loss of resources in the form of materials and energy.

Environment Canterbury will request waste data from each territorial authority annually. An updated addendum report will be produced in the next financial year and a full waste data technical report will be published in 2008/09.

## 6. Recommendations for future work

For the 2007/08 financial year, work will be undertaken to improve the collation and representation of the waste data. This could include those suggested in the Canterbury Region Waste Data Technical Report (1998-2005) and not undertaken in 2006/07. It could also include:

- Calculating kg/\$100 GDP. The basis for this analysis is that the amount of waste appears to vary with economic activity. To remove the effect of economic activity from the data used to establish the underlying trend in each waste stream, it is necessary to divide the total tonnage of waste disposed of annually by a standard measure of economic activity. Economic activity is measured as gross domestic product (GDP). A similar system is used to report waste trends in Western Australia<sup>10</sup>
- It is difficult to provide comparisons with other New Zealand regions as little published data are available. There are also difficulties due to differences in reporting categories. However, some research into waste amounts in other regions and cities overseas could be undertaken. Perth, for example, collects some data on the amount of waste going to landfill.

These are suggestions for work that could be undertaken and it may be found that this information is not available.

## 7. Acknowledgments

Environment Canterbury would like to acknowledge and thank the following people for their contribution to this report through the provision of data, reviewing and advice:

Tammara McKernan  
Tony Moore, Diane Shelander and David Harris  
Sally Cracknell  
Nicole Sherriff  
John McGartland  
Dave Hock  
Brian Gallagher and Blue Forsyth  
Kitty Waghorn  
Brian Purcell  
Gerard O'Neill

Ashburton District Council  
Christchurch City Council  
Hurunui District Council  
Kaikoura District Council  
Mackenzie District Council  
Selwyn District Council  
Timaru District Council  
Waimakariri District Council  
Waimate District Council  
Waitaki District Council

Please note that the information provided in this report is as the Canterbury TAs provided it. No checks on the validity of the information have been undertaken by ECan staff.

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<sup>10</sup> Summary Report of Waste to Landfill - Perth Metropolitan region Western Australia (1 July 1998 - 30 June 2002), Government of Western Australia, February 2003