

# The Zero Waste South Island Bus Tour Report



***From March 22<sup>nd</sup> – March 26<sup>th</sup> 2004, the tour covered:***

1. Dunedin City Council
2. Central Otago Wastebusters, Alexandra
3. Robbie Dicks Worms Farm, Central Wormworx, Cromwell
4. Wanaka Wastebusters
5. Mackenzie District Council, Twizel
6. Mike Lindsay's Bio Digester
7. WasteBusters Trust Canterbury, Ashburton
8. Rakaia Community Recyclers
9. Hurunui Recycling, Amberley
10. Innovative Waste Kaikoura
11. Recovered Materials Foundation, Christchurch
12. Timaru District Council
13. Waitaki Resource Recovery Trust, Oamaru



## Section One – An outline of the tour

Monday 22<sup>nd</sup> March

1. The tour started in **Dunedin** with a presentation from the City Council about the implementation of their city-wide kerbside recycling scheme one year ago which services 47,000 households.

Dunedin City Council adopted Zero Waste in 1999. Since then they have developed a transfer station, green waste recovery facility and Recover store at Green Island Landfill. The resource recovery operation and landfill is run by two different companies and this arrangement tends to bring about communication difficulties.

Envirowaste has a 5 year contract with Dunedin City Council as the recycling and refuse collection contractors. Envirowaste also recently introduced wheelie bins at a cheaper price to residents versus the user-pays rubbish bag and 45L recycling crate (paid for through rates) system.

Dunedin City Council introduced a Solid Waste bylaw which gives Council the power to ensure that those residents who don't deal with their rubbish in the right way can be fined \$100.

They have used celebrities as part of their kerbside recycling education campaign. DCC believe they have 89% participation rates from residents doing kerbside recycling.

Fig. 1



Fig. 2



Fig.3



Fig.4



2. We moved on to **Central Otago Wastebusters**, a community group operating in Alexandra, servicing 6000 households and 80 businesses. They provide a kerbside recycling collection, and operate a resource recovery centre and



several drop off facilities throughout the district and a thriving reuse shop which generates \$2500 per month.

They use an export baler for cardboard, paper and plastics. Metal is sold to a scrap metal buyer, batteries are collected regularly and tyres are sold to local farmers for silage cover.

They have developed a low-tech green waste processing operation, spreading green waste into windrows and running over it with a bulldozer. It becomes easier to compost as the surface area and volume of green waste is reduced. This is very low cost as the material was not put through a mulcher. The material is spread over gold field tailings with virtually little nutrient value. They are 'eco-banking' glass because of economic and contamination issues.

Fig.5



**3. Central Wormworx** in Cromwell is a small private enterprise that uses worms to process a range of local organic waste (can convert 25 tonnes/ week) on one hectare of land. The worms love to feed on organic waste from local fruit growers, abattoirs, freezing works, garden contractors, livestock truck manure, and households. They turn it into high quality and valuable vermicast (worm castings). 90% of the vermicast is returned locally to orchardists, vineyards and private gardeners to improve the quality of the soil and hence plants.

Fig.6



Fig.7



**3. Wanaka Wastebusters** operate a non-profit community resource recovery centre where residents can drop off any recyclables and unwanted household goods for the reuse shop (Gold coin donation). They also work with local businesses collecting their recyclables. Their well-organised reuse shop generates, on average, \$8500 per month. Approx. 500 tonnes resources are diverted from landfill per annum and in 2002/3 sale of recyclables generated \$22,525.

No kerbside recycling service is offered to residents at the moment. Glass cannot be recycled in Wanaka due to economic constraints.

Fig.8



On Monday night we listened to the story of district-wide resource recovery activities: Wakatipu Recyclers (Tamiti Wiringa and business partner, Sheila) from Queenstown, Sally Middleton, Deputy Mayor of QLDC, Linda Wright, the new Waste Minimisation officer for QLDC and Jude Battson, Trustee of Wanaka Wastebusters and a member of the Wanaka Community Board. The Queenstown-Lakes district has recently adopted Zero Waste – Linda is keen to involve and support the two successful resource recovery operations in the area as well as develop the infrastructure to provide a comprehensive resource recovery service for residents district-wide.

## Tuesday 23<sup>rd</sup> March

5. After a blustery night at Lake Hawea we made our way to Twizel in **Mackenzie** Country to hear how the District Council has approached implementing Zero Waste. The first piece of information to bear in mind is that Mackenzie District has the most widely dispersed population in New Zealand (3700 spread out in three towns in an area of 7450km<sup>2</sup>).

This has not stopped the District Council from having implemented a comprehensive resource recovery strategy, incorporating a three bag collection system (for organic waste, dry recyclables and residual waste), a resource recovery park in each of the three townships, a Vertical Composting Unit to process residents and commercial businesses' organic waste (kitchen and garden waste = 47% of the waste stream). A higher than usual proportion of the waste stream is organic waste because they are servicing the second largest kitchen in New Zealand, the Hermitage at Mt Cook. The VCU cost \$380,000 to install. The composting process takes 10-30 days depending on the time of year. They produce approximately 400m<sup>3</sup> of high quality compost per annum.

Glass is collected at the kerbside; currently there is 18 months worth of glass stockpiled. Once again, it is uneconomic to transport the glass to Auckland for reprocessing.

The RRC's accept construction and demolition waste; there are stockpiles of timber as it is difficult to extract treated from untreated timber.

An extensive education programme has been an integral part of ensuring high participation rates in this programme.

The driver for this came as five out of eight local landfills had to be closed from 1996 – 2001 and landfilling became too expensive. An in-depth financial analysis was conducted prior to the Zero Waste strategy being launched in the District.



The result is a maintained figure of 76% diversion of waste from landfill.

Fig.9



Fig.10



6. On our journey through Mackenzie Country we stopped for lunch in Lake Tekapo and heard an interesting presentation from farmer, Mike Lindsay, who has designed and built a **bio digester** that can convert silage slurry into biogas (55% methane and 45% carbon dioxide when crops are used) using bacteria. The gas is pumped through a compressor and water pump therefore dissolving the CO<sup>2</sup> and the methane passes through to a storage bag. This compressed methane can then be used as a fuel for vehicles.

7. We arrived at **Wastebusters Trust Canterbury** in the late afternoon and were treated to an introduction to the education centre which forms an important part of the Resource Recovery Centre. Wastebusters is an inspirational example of a community resource recovery operation, employing 30 local people.

Fig.11



The organisation works closely with three local District Councils and as a result run the following contracts:

- A kerbside recycling collection for Ashburton District Council servicing 8000 households, a resource recovery centre (with a reuse shop and excellent education centre) and twice-weekly recycling pickups for the business area of Ashburton
- Recently took over the green waste contract in Ashburton



- Deliver education programmes to Ashburton, Mackenzie and Selwyn District Councils
- Waste Exchange Services in Ashburton & Selwyn (under contract to Environment Canterbury)

Wastebusters have also been doing some research into the use of secondary materials:

- Crystal sand made from crushed glass to make a beach around a local lake
- Marvel glass – a technology that could be imported into New Zealand, using broken glass bottles heated at a relatively low temperature to make pounamu-like benchtop tiles
- Plastic wood that could be used in the viticulture industry instead of treated timber posts
- Effective Micro-Organisms- another method of processing organic waste
- Green Bag, the long life reusable alternative to the disposable plastic bag.

*Fig.12*



In the evening we were welcomed to Ashburton by Mayor Murray Anderson and joined by local businessman, Richard Ashford (who runs a Zero Waste business, Ashford Handicrafts, making Spinning Wheels. He won the Clean Green business award from Environment Canterbury/ Wastebusters Trust Canterbury), Trustees and staff from Wastebusters Trust Canterbury. Sheryl Stivens made a presentation to the group about the environmental, social and economic achievements of Wastebusters Trust since their inception. Ket Bradshaw made a presentation about the Packaged Goods Accord 2004.

*Fig.13*



Wednesday 24<sup>th</sup> March

Fig. 14



We spent the morning continuing the tour of Wastebusters Trust watching the kerbside truck, 'Recycling Russ', unload recyclables and gaining a clear visual impression of how a tidy resource recovery operation works.

Fig. 15



Fig. 16



Fig. 17



Kevin Cameron, Operations Manager for Wastebusters, gave us the run down on how the operation works and how he has developed and streamlined systems on site to improve efficient recovery rates.

Rob Rouse from Ashburton District Council made an excellent presentation about the refuse and recycling contract for the Ashburton District.

Resource recovery costs the Council \$1.94 million per year. Materials collected from the kerbside account for 22% of the waste stream. 77-78% of recovery costs are funded through user charges (gate fees and bag sales: \$1/ bag, due to increase to \$1.25/ bag). Also supported through rates (UAC).

The new regional Kate Valley landfill in Christchurch will be more expensive: \$50/tonne gate fees plus \$40/ tonne trucking costs with a \$20/tonne equalization credit at the end of the financial year (net costs \$70/tonne). This will affect bag costs and disposal fees and will be another incentive to reduce waste and recycle.

8. Next stop was **Rakaia Recyclers**, a small community resource recovery operation mainly run by local volunteers. 900 households have access to a two-bag kerbside recycling service and both dry recyclables and organic waste are collected. Once brought back to the depot the recyclables are emptied onto a conveyor belt and sorted by hand.

Fig. 18



Fig. 19



The organic waste is fed onto a separate conveyor belt taking it to a chopper where the materials are finely chopped and then loaded into a large concrete mixer. After several weeks of churning the full partially decomposed load is spread onto the ground into one metre wide, 40cm deep beds where worms are added and the pile is covered with carpet or black polythene and left to decompose further. The finished product cannot be sold as the quality cannot be verified. The group have found it expensive to properly test the compost.

Fig. 20



Fig. 21



On average they process 20m<sup>3</sup> of recycling and only one m<sup>3</sup> of residual waste per week.

Plastics #3-7 are being stockpiled, glass is sent to the RMF in Christchurch.

Fig. 22



Fig. 23



**9. Hurunui Recycling** employs 8 staff and has 12 volunteers to help run the resource recovery centre, operate the kerbside collection and reuse shop. One reusable bag is given to residents each year. These bags can be washed and reused.

They are paid \$80,000/ year by Council and the site is rent free. The reuse shop generates \$2000 per week which pays for half of the wages. Another arm of the organisation has been looking at the secondary use of materials, specifically turning plastic into diesel.

Fig. 24

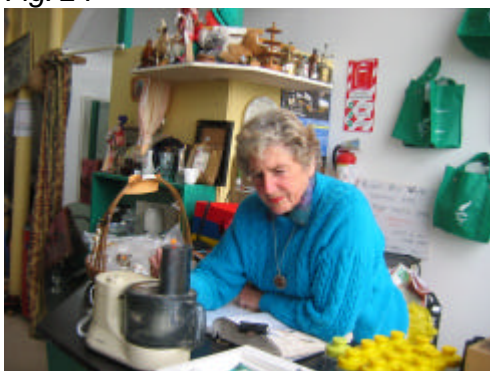


Fig. 25



## 10. Innovative Waste Kaikoura

We arrived late afternoon at the Zero Waste Academy training building, managed by Innovative Waste Kaikoura. John Ransley gave us a brief run-down on the overall resource recovery operation being managed by this Council-Community joint venture.

We hosted an evening dinner at Kaikoura Winery and were welcomed by Mayor Jim Abernathy. Also joining us were Stuart Grant, CEO of Kaikoura District Council, Ian Challenger, Environmental Planner for KDC, Cllr Barbara Woods, local businessman Gerald Nolan (both Trustees of IWK) and John Ransley and Josie Uren from IWK.

### Thursday 25<sup>th</sup> March

We spent the morning at **Innovative Waste Kaikoura**. They are in a unique situation as they have control of the whole waste stream managing both the RRC and landfill.

They operate a kerbside recycling collection for residents and businesses but do not pick up residual waste. Residents must drop this off at the centre. (Incidentally there has not been an increase in fly tipping due to this policy.)



Innovative solutions to the waste problem include:

- A refuse press which compacts residual waste at a rate of 6:1. This has contributed to extending the life of the landfill by five times. The  $1/2\text{m}^3$  bales (equivalent to 400kg) are then neatly stacked in the landfill and packed in with earth.

Fig. 26



Fig. 27



- A Horizontal Composting Unit designed and built by them, costing \$30,000. Process  $1800\text{m}^3$  green waste per year. The composting process takes 30 days.

Fig. 28



- Landbanking of materials that currently have low/ no market value (such as glass). This picture represents four months worth of stockpiled unbroken glass).

Fig. 29



IWK supplements their income through programmes such as 'Trees for Travellers' which was set up to encourage tourists/ travellers to the region to help provide a lasting carbon sink and help offset CO<sup>2</sup> emissions in the area and prevent soil erosion. Tourists can buy a native tree or shrub which will be planted in a heritage reserve in Kaikoura. The trees are numbered and the location of the tree can be checked on the website via GPS.

The compost made on site is used to propagate and on-grow native trees, shrubs, ferns and ground covers in selected reforestation areas around Kaikoura.

This project also provides valuable employment and life skills to 'at-risk' young people and income generated from the sale of trees will enable further waste stream diversion towards Zero Waste.

IWK employ 14 full time staff. It is estimated that \$230,000/ yr is returned to the community through wages.

**11.** We arrived at the Supershed, a reusable goods retail outlet run by the **Recovered Materials Foundation** in Christchurch.

This Trust was set up by Christchurch City Council to increase the diversion of waste from landfill. The population of Christchurch is 330,000.

The RMF:

- Manage all the sorting and processing of materials recovered by Christchurch City, Waimakariri and Selwyn District Councils. Manage recycling centres at the transfer stations and the waste exchange. (Onyx are collection contractors)
- Manage the Supershed and Retrosheed, two major retail outlets for reusable goods. The Retrosheed focuses on antiques and collectables and complements the activities of the CRC Salvage Yard located next door. The Supershed accepted 415 shipping containers worth of goods in 2001/2 with a combined net weight of 1,267 tonnes.
- Manage a Business Development Fund to assist in the development of local ventures utilising recovered materials. The fund of \$0.5 million is derived from the landfill levy charged to each tonne of material that goes to landfill.
- A new by-law in Christchurch prohibits recyclable materials going to cleanfill sites. This and an accompanying levy have encouraged some positive recycling and resource recovery initiatives. Planned initiatives already underway include: a commercial C&D sorting yard, crushing concrete for a range of applications, timber and gib recovery, looking at the value of waste gib as a soil conditioner for clay soils and a plant that processes timber for industrial boiler fuel.

Fig. 30



Fig. 31



Fig. 32



Our grand finale night was held at the Sign of the Takahe in Christchurch. We were joined by Mike Ward, Green Party MP, Sally Buck, Christchurch City Councillor and new Zero Waste Trustee, and Jim Forsman from RMF. Also Tony Moore, CCC, Rob Miller and Gary Guylas. We also treated guests and diners in the restaurant to a brief belly dancing performance led by Emma Manhart from Tasman District Council who had given the bus tour troupe a quick lesson earlier that day.

### Friday 26<sup>th</sup> March

#### RMF

We spent the morning looking around the RMF's resource recovery facility. Of particular interest were the methods they have been developing looking at secondary uses of materials such as glass. They have found ten local uses for glass recovered at the kerbside. Examples include wine bottle reuse, crushing glass to use as a filtration medium, in sand blasting, 'glassphalt' (an asphaltic concrete, used in roads) and glass flooring tiles (these have the potential to divert half the glass collected in Christchurch and reduce the amount of money (\$1 million) spent each year on trucking glass to ACI in Auckland).

Fig. 33



Fig. 34



Fig. 35



## 12. Timaru District Council

Timaru District Council has a number of challenges on their hands with a population of 43,000 already receiving a wheelie bin service and residual waste is trucked into the District's landfill from surrounding areas.

Currently:

- Separate garden waste for composting 3000 tonnes/ year – not high quality so using it to rehabilitate land around landfill.
- Operate a number of recycling drop off stations
- Operate a scrap metal and car disposal site
- Kerbside recycling collection in small town of Geraldine for 1000 households
- Waste Exchange for businesses
- Education officer working with schools throughout the District.
- Part of the AgChem initiative running throughout Canterbury region.
- Landfill charges do not reflect the true cost of landfilling: \$40/tonne. Residual waste from Mackenzie and Waimate District Councils is trucked here.

Fig. 36



Planning:

- “Crows Nest”, a reuse shop, is due to open in June. To be used as reuse, repair area, for arts & crafts, to sell eco-friendly products. To be run by Aoraki Wastebusters Trust

Fig. 37



Fig. 38



Investigating:

- Three-stream kerbside recycling collection, for households and businesses. Looking at a split-wheelie bin system as has been used in South Australia.
- Looking at a range of composting methods

**13. Waitaki Resource Recovery Trust, Oamaru**, was the last place visited on the bus tour and it was an inspiration to see how this community venture has steadily developed over the last year.

- Resource consent for the Oamaru's Resource Recovery Park was granted in August 2003 and it opened in January 2004. They use an old Council works site which has a number of suitable buildings for processing and storage and there is also room for expansion.

Fig. 39



- Started with opening once a week on Sundays, now twice a week for residents.
- Open Monday – Friday for commercial businesses who are charged \$5/ m<sup>3</sup>.
- Employ seven permanent staff, a number of IHC workers and have a team of 13 in total.
- Plans developing for a kerbside recycling collection and composting operation next year.
- Use a mobile baler to bale the recyclables collected. (This is available at any South Island site)

Fig. 40



- Great Southern Oamaru operates a small workshop on site transforming waste wire into coat hangers. Two small jigs were built from designs donated by a local man. Not only does the reuse of the waste wire mean a resource is saved from going to landfill and trucking and disposal costs are saved but also training and employment opportunities are created for long-term unemployed from the area.

Fig. 41



Fig. 42



## Section Two - Areas of Discussion

### 2.1 Organic Waste

A range of organic waste processing operations were visited. These varied from low tech to high tech and highly controlled systems.

Ranked in order of increasing sophistication, they are:

- Central Otago District Council spreads green waste into windrows and runs over it with a bulldozer. It becomes easier to compost as the surface area and volume of green waste is reduced. This is very low cost as the material was not put through a mulcher. The material was spread over gold field tailings with virtually little nutrient value.
- WasteBusters Trust Canterbury have a number of composting and worm farm displays, are trialling the EM Bokashi method of breaking down organic material and have recently taken over the green waste contract for Ashburton District Council. They are presently moving large areas of windrowed organic matter. They are in the process of setting up a worm farm at the freezing works.
- Central Wormworx has turned one hectare of land into rows of worm farms. The worms process organic waste from local orchardists, freezing works, stock truck manure, dairy shed waste and household waste. They can process 25 tonnes of organic waste per week. This is low tech and low risk. This is a commercial business selling worms and castings. The castings have a good uptake in the vineyards.
- Rakaia Community Recyclers process putrescible kitchen waste and green waste in an old cement mixer, turning it occasionally. The partially decomposed material is then fed to worms to produce a finished product, which is used on community projects. Low tech, small input and smaller output.
- Innovative Waste Kaikoura designed and built a Horizontal Composting Unit (HCU). This cost \$30,000, including the purchase of the backhoe which drives beside the container turning the organic matter each day. The HCU processes 1800m<sup>3</sup> greenwaste per year. Organic material stays within the HCU for 30 days, however the finished product is removed each day at one end and new mulched organic matter added at the front end so there is a continuous production.
- Mackenzie District Council uses a Vertical Composting Unit (VCU) from VCU Technology. The equipment cost the Council \$380,000 and processes a mixture of kitchen (putrescible) and garden wastes (half of the waste stream.) The machine has encountered a number of problems with the proportion of green waste to putrescible waste being very high. The process can take 30 days and produces very high quality compost.
- A biodigester built by farmer Mike Lindsay to produce and bottle gas from farm effluent. A real possibility in stationary uses and in farming areas.

In summary, organic waste was seen as important because it constitutes a large proportion of the waste stream and is a significant producer of greenhouse gases and leachate if landfilled. Backyard composting and worm farming on a community level are a partial answer, however large scale composting, while minimising smells and flies in urban areas, demands a higher technical response.

The big lesson gained was that communities need to deal with organic waste in a manner which suits their particular community and should carefully investigate and evaluate what is the most appropriate method before investing too much money in infrastructure. Another major result that came out is that the compost (if that was the



end product) needs to be of high quality and free from any 'nasties' that will harm crops or soil in which it is placed.

## **2.2 Legislative Areas**

It became increasingly clear that many councils made poor use of contractual provisions, bylaws and government legislation. There is a lack of knowledge and clarity in this area which is endangering waste reduction initiatives in some areas. An example is one city where the kerbside and rubbish collection contract is let to a large waste firm. The same firm is competing against the council income for sale of the rubbish bags and aggressively marketing its wheelie bin service in the market. This firm has reportedly taken 40% of the market. Clarity and guidelines in this area of what is possible within the law would be a great assistance to the local bodies.

## **2.3 Council/Community/Company**

A range of initiatives were visited.

- Community groups such as Wastebusters Trust Canterbury, Hurunui Recycling, Central Otago WasteBusters, Waitaki Resource Recovery Trust and Rakaia Recyclers had inspired Council and were leading the waste minimisation process within their local communities. All either collect recyclables from the kerbside or provide drop off facilities and process the materials.
- Innovative Waste Kaikoura is a unique initiative, being a joint Council/ Community venture and has total control of the waste stream, collecting and processing all recyclable materials as well as dealing with the residual part of the waste stream.
- Some Council-led initiatives were working particularly well, such as Mackenzie DC. Dunedin City use private contractors to collect and process their materials. Christchurch City Council has contracted the RMF to sort and process collected materials. Timaru DC operate several recycling drop off facilities district wide and a private waste management company collects and transports residual waste from wheelie bins to the local Redruth landfill.
- One private enterprise was visited: Central Wormworx who provides a service to local businesses taking their organic waste and through using worms processes it into vermicast.

In conclusion several points were reinforced.

- That councils are by law responsible for dealing with waste
- That waste was a resource and councils must retain control over the waste stream
- That community groups tend to be under-funded, and struggle
- That community groups, councils and commercial operators were often in competition and that where there was good cooperation the results were excellent.
- The bigger and more successful community groups were winning and maintaining contracts with the councils on the open market.
- That councils in contracting community groups should take into account the other community benefits that well-run community groups offer the wider community.
- That regional groups of councils cooperating allowed a more strategic approach and that South Island-wide there was potential for this with materials such as glass and waste plastic at the very least.



## 2.4 Kerbside Recycling Collection

Kerbside recycling services were provided in many areas visited, collecting a variety of recyclable materials (see table below). Generally paper, cardboard, aluminium & steel cans and plastics 1 & 2 were collected. Where possible glass was collected and in most cases stockpiled.

Some operations employed various methods of source separation such as a wet/dry recycling system where one bag contained dry recyclables including clothing and wood, the other organic materials (kitchen waste).

The viability of kerbside pickups was threatened in areas where significant private operators competed for materials.

Some collections were funded through a user pays system whereas others charged a uniform fee incorporated in the rates bill (Uniform Annual Charge).

Area	Group Responsible	What Collected at Kerbside
Dunedin	Dunedin City Council and Private Wheelie Bin Operators	Glass, Plastic, Cardboard, Paper and residual waste Waste including green waste was also collected by a private operator.
Central Otago	Central Otago Waste busters	Glass, Plastic (1 & 2) , Paper and Cardboard and aluminium and steel cans.
Wanaka	No domestic Kerbside collection except commercial pick up for some businesses	
Mackenzie	Mackenzie District Council, private contractor collecting materials, council staff sorting and processing.	3 bag kerbside collection for recyclables, residual waste and organic waste.
Ashburton	Wastebusters Trust Canterbury under contract to Ashburton DC	Glass, Plastic, Paper, Aluminium and Steel cans. and residual waste
Rakaia	Rakaia Resource Recovery Group	Wet/Dry recycling system. All dry recyclables collected in clear blue bag, all wet recyclables collected in clear green bag.
Hurunui	Hurunui Recycling	Paper, cardboard and plastics 1-7 in reusable area bags.
Kaikoura	Innovative Waste Kaikoura A joint Community/Council venture	Glass, paper, cardboard, plastics 1 & 2. IWK does not collect residual waste.-a private contractor does this
Christchurch	RMF – Onyx is the collection contractors, RMF sort and processes the materials.	Glass, paper, cardboard, plastics 1 & 2 and residual waste.
Timaru	No kerbside collection	
Oamaru	No kerbside collection	Bins purchased

## **2.5 Glass**

The collection and recycling of glass in the South Island is an issue for many areas. The huge distances travelled to collect and transport this material to the only large-scale reprocessor, based in Auckland, as well as issues of contamination, make the recycling of glass prohibitive for many areas. Where there is space, depots are stock piling the resource with the hope that markets will be found.

Innovative ways for utilising recycled glass are also being explored (eg. RMF, WasteBusters Trust 'Marvel glass').

Certain areas with denser populations, where economies of scale make collection less prohibitive, are successfully collecting glass for processing in Auckland (eg Christchurch).

Small scale local recycling projects are being developed. For instance, a bottle washing plant at the RMF enables re-use of wine glass bottles for a New Zealand vineyard based in Nelson. One solution is to introduce Container Deposit Legislation. No coordinated South Island strategy has been developed to address the issue and therefore mountains of glass continue to accumulate, both above and below the ground.

## **2.6 Re-use Shops**

Re-use shops operated at most centres and proved to be a valuable asset both financially and educationally. The profits of many of the shops, or in one case warehouse, contributed a significant amount to the wages of employees and some were self sustaining. The location of re-use shops and the groups operating the facilities varied widely. Generally a shop operated on any reasonable scale at all turned a profit and lent support to the rest of the enterprise.

## **2.7 Resource Recovery Centres**

Most of the resource recovery operations visited had called their facilities 'Resource Recovery Centres' (RRC's) and there were road signs directing the public to such centres. This replaces the term 'transfer station' and even 'recycling centre', placing emphasis on waste as a resource.

The RRC's provided the public with an opportunity to drop off recyclable and reusable materials for resale, and in some instances, green waste for composting. They also incorporated space (although limited) for sorting and processing of materials. Occasionally education centres formed a part of these facilities.

One city still operates a transfer station facility where residents can dump trailer loads of residual waste. There are few incentives offered to ensure as much recoverable material is removed before the final dumping stage.

## **2.8 Education**

All areas visited have developed public education campaigns; however some would appear to be more successful than others.

Methods used included brochures, fridge magnets, information on residual waste sacks and recycle bins and radio and television adverts.

Particular circumstances such as a transient student population or an influx of holiday makers required a more flexible information strategy.

Community based facilities, particularly with re-use shops (generally accessed easily), have the added benefit of engaging and educating the local population.

Many groups are involved in education in the schools as well; this was often an important part of the communication plan as operations got underway in the



community. Two groups had built a dedicated education centre that provided a small classroom type facility as well as a centre that other community groups could access. One group built a dedicated training room where they run a Resource Recovery Management training course. Another group runs a Schools and Businesses Zero Waste Education course. Both of these courses are part of the Zero Waste Academy initiative.



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