

# RESOURCEFUL COMMUNITIES

## A Guide to Resource Recovery Centres in New Zealand



*envision new zealand*  
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**ZERO WASTE**  
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## ABOUT THIS REPORT

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Most current knowledge on establishing and running Resource Recovery Centres (RRCs) in New Zealand is held with local practitioners and council waste managers. The authors have used their experience in waste reduction and establishment of resource recovery enterprises to gather and make available as much of this knowledge as possible, and also to promote a vision for the development of Resource Recovery Centres of the future.

### ***The report was written with the following objectives:***

- To provide an overview of current best practice for planning, building and operating Resource Recovery Centres
- To present a vision for the future of RRCs as part of a complete materials management system for communities of all sizes

It has been written to assist council waste managers, recyclers and community groups planning waste reduction initiatives - and for decision-makers in regulatory and funding authorities.

This report does not attempt to:

- Give specific technical advice on equipment, processes and technologies
- Give detailed advice on day to day operating practices and management

Support for this guide has come from the Ministry for Economic Development, the Ministry for the Environment and Zero Waste New Zealand. Views in this report are those of the authors and not necessarily those of the sponsor organisations.

MED's funding support for the production of this guide does not in any way reflect MED support or otherwise for its content or views, but merely reflects a commitment to support wider contributions to the range of recovery and recycling options available for small communities.

### ***Acknowledgements***

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They also thank David Bentham Gary Kelk, Sarah Roberts, Russ Loudon, Simone Annis and Gordon Stewart for their contributions, and Graham Mannall for reviewing the final document.

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Warren Snow, Julie Dickinson - July 2003

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**"A big enough pile of anything is worth something"**

**Dan Knapp, Urban Ore.**

## 1.0 RESOURCE RECOVERY FACILITY DEFINITIONS

There is a lot of confusion around the terminology for resource recovery facilities. As the language evolves, new terms will be used and become accepted. In the meantime, in this report, 'resource recovery facility' refers to any discard facility that falls within the following three categories:

- **Recycling Drop-off Centres:** Usually unmanned facilities for the public to drop-off recyclable commodity materials (glass, paper, plastic, clothing etc). Drop-off centres can be sited at schools and shopping centres or can be located at larger Resource Recovery Centres.
- **Resource Recovery Centres (RRC):** Usually facilities that combine recyclable materials drop-off with collection and resale of used goods. They can also include composting operations, building materials recycling and sometimes an education centre. Most New Zealand examples fall into this category. In the UK RRCs are also called Civic Amenity Centres
- **Resource Recovery Parks (RRPark):** Much larger and more complex facilities that combine all the functions of a Resource Recovery Centre on a larger scale. A RRPark will also aim to attract and foster business development around recovered materials flowing into the site and become in effect a business development cluster, supporting new enterprises that may not otherwise have been viable without the synergies and support of the RRPark structure. Gary Liss, a US Zero Waste consultant, makes the following cautionary comment: "Not every community will need to develop a Resource Recovery Park. Communities with a strong diversity of reuse, recycling and composting businesses already may find that the Serial MRF (Materials Resource Facility) concept of Urban Ore is more appropriate, to build upon the public and private investments already made in the community".



Other names that have been used, mainly overseas, to describe RRParks include Recycling Parks or Estates, Discard Management Centres, Discard Malls, Discard Trading Centres, Resource Trading Parks, Eco-Industrial Parks and Sustainability Growth Parks. There are currently no RRParks in New Zealand, although the Recovered Materials Foundation in Christchurch runs facilities in separate locations that together have all the ingredients of a RRPark. (see Case Studies. Three overseas examples in the USA, Australia and UK are also profiled in this section).

### 1.1 Material Recovery Facilities (MRFs)

The expression MRF (pronounced Murf) is usually used to describe a purpose built resource recovery facility that has sorting lines where materials are hand picked from a continuous moving conveyor and separated for further processing. A MRF could be a component of an RRC or RRPark.

There are two main types of MRF:

**Dirty MRFs** take unsorted (usually municipal household) mixed waste streams and usually result in high contamination rates, lower acceptance and prices from end users, and health and safety risks for operators.

**Clean MRFs** take cleaner and/or pre-sorted streams collected from:

- Kerbside recycling schemes (householder pre-sorted)
- Industrial or commercial waste collections, with high levels of recoverable materials
- Building and demolition projects.

MRF is also used, although less commonly, in two other ways:

**Serial MRFs.** Dan Knapp from Urban Ore in Berkeley, California (see Case Studies) has coined the expression “Serial MRF” to describe a loose association of recycling businesses closely located (as exists in the Berkeley area<sup>1</sup>) within existing high-density commercial areas but not within the same property. Through trading and proximity, the cluster of businesses share features of purpose built MRFs and RRParks. These include:



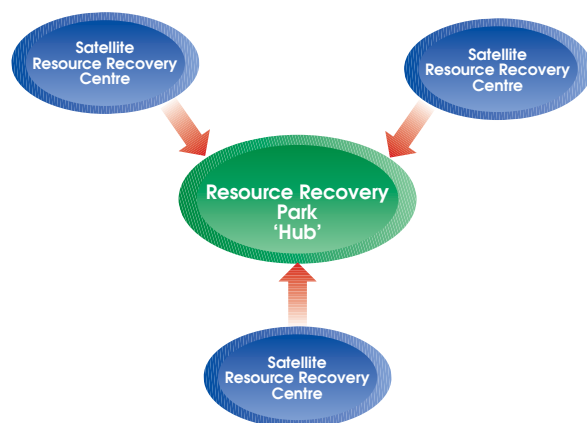
- Acting as a general location for people to trade in used goods and materials
- Inter-trading of materials and commodities between recycling and secondary materials businesses
- Business synergies from clustering with similar businesses.

It might be more accurate to call the Berkeley recycling cluster a Serial Resource Recovery Park.

**Mobile MRFs** –A vehicle or trailer used to sort recyclables at the kerbside (as opposed to co-mingling and sorting at a central MRF).

## 1.2 Networked Recycling Drop-off Centres

Networked recycling drop-off centres have been proposed in a number of places in an attempt to raise the profile and efficiency of public recycling. The idea is to create a uniform visual identity for drop-off centres in the same way that petrol stations are easily identified. The previous Western Sydney Waste Board (now part of Resource NSW) has proposed a network of drive-through recycling drop-off centres across the city for people to drop off recyclable and reusable materials that would feed into a central RRPark. For more details see [www.resource.nsw.gov.au](http://www.resource.nsw.gov.au)



Western Sydney Waste Board

In California, recycling company Tomra Systems ASA has launched a chain of about 210 ‘rePlanet’ kiosks that it hopes to spread across the U.S. All are brightly lit, clean and convenient alternatives to traditional neighbourhood recycling centres that abound across the US. They can be operated either as private facilities that buy cans and bottles for their commodity value, or as state-required drop-offs for consumers to get back their recycling deposits. Although about two-thirds of Californians put their recyclables out at the kerbside with the rest of their residual waste, forgoing redemption, the rePlanets are gaining in popularity. The volume of recycled containers has shot up 60% at locations where the kiosks replaced the old centres. Tomra’s aim is to market recycling as “an experience,” as its executives term it, rather than an unsavoury chore. For more details see [www.replanetusa.com](http://www.replanetusa.com) or [www.tomra.com](http://www.tomra.com)

<sup>1</sup> Opportunities in Neighbourhood Technology to Improve the Environment and Create Jobs. Reuse, Recycling, Refuse and the Local Economy. A Case Study of the Berkeley serial MRF. Urban Ore 1994.

Whatever the type of facility - Drop-off, RRC, RRPark or MRF, all compete with other disposal facilities for resources. Just as landfills and incinerators are sinks for wasted resources so are resource recovery facilities. Whereas landfills and incinerators mix and destroy resources for short term convenience and long-term liability to the community, resource recovery facilities process and release materials back into the community, creating local jobs, wealth and opportunity.

**A Resource Recovery Park is a focal point for human, natural and financial resources, where entrepreneurial and innovative activity can combine with commercial forces to create jobs and businesses whilst reducing waste disposal costs, environmental impacts and the costs of importing new materials into the community.**

## 2.0 INTRODUCTION

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Unsustainable patterns of production and consumption are depleting the Earth's finite natural resource base. Those involved in the search for sustainable solutions to environmental problems realise that many of the solutions must come from the local level. Resource Recovery Centres (RRCs) are a tangible way for local people to work together to preserve natural resources and stem unsustainable material flows.

### 2.1 The Concept of Zero Waste

As a means of dealing with some of the problems involved with waste over half of New Zealand's Local Authorities have adopted the Zero Waste concept including the development of Resource Recovery Centres. The vision of the New Zealand Waste Strategy of 2002, "Towards Zero Waste and a Sustainable New Zealand", has also added support. The Zero Waste vision is clear and uncompromising - to aim for a society that has no waste and to achieve this by a target date.

Zero Waste seeks to redesign the way resources and materials flow through society taking a 'whole system' approach. It is both an 'end of pipe' solution that maximises recycling and waste minimisation and a design principle which ensures that products are made to be reused, repaired or recycled back into the marketplace or nature.

In the future it is likely that resource recovery features will be incorporated into the design of products, services and all aspects of daily living as a matter of course. Every home, business, school and community could then become a potential collection point for used materials and products so that when discarded the opportunity for these to flow back into the economy, or harmlessly to nature, is maximised.

Many of these materials and products will be channelled through purpose built Resource Recovery Centres for processing, dismantling and remanufacturing and what was once termed waste will be turned into jobs, businesses and new products.

### 2.2 The Future

The vision for the future is for each town or city to have a network of resource recovery facilities all feeding either directly into large Resource Recovery Parks or private businesses in ways that reduce waste and improve the efficient use of resources. These larger Resource Recovery Parks will act as trading hubs for recovered materials, products and businesses. Satellite centres and drop-off points will feed materials and products into the Resource Recovery Parks for processing, repair, dismantling and reselling. Resource Recovery Parks will trade with each other, the recycling sector, industry and the public in each community.

The concept of a central hub fed from outlying facilities is already occurring in some smaller centres such as Opotiki and Kaitiaia, and in larger cities such as Christchurch, Adelaide, Canberra and Sydney<sup>2</sup>.

<sup>2</sup>A National Network of Drive- Thru Recycling Centres, Western Sydney Waste Board.

## 2.3 From Scavenging to Resource Recovery

Waste dumps have always attracted what are often disparagingly called scavengers. In the past, the dump was a place where people gathered and sorted through discards for useful materials and products.

Modern waste disposal facilities discourage or ban scavenging so many valuable products and materials that were once informally recovered and put back into the human economy are now lost to landfill.

Resource Recovery Centres enable these products and materials to be stored and displayed to create markets for buyers and sellers.

## 2.4 The Problems with Inorganic Collections

The annual 'inorganic collections' operated by many councils give clear evidence of the demand for used goods and materials. But they also have disadvantages:

- Inorganic collections are expensive<sup>3</sup>
- Goods are damaged by the elements and by people hunting through discarded material for treasures
- Reusable items are often wrecked when parts are removed from working appliances - or pieces taken from furniture
- Although a lot of valuable reusable material is picked up within days, a vast amount of recyclable material is left behind to be landfilled.<sup>4</sup>
- There are health and safety risks when materials spill over onto roads and footpaths
- They are messy, creating a public eyesore which is particularly unwelcome in tourist areas

As a result of damage people are sometimes reluctant to place good reusable products at the kerb. One Auckland based RRC sent out leaflets prior to the inorganic collection, asking residents whether they'd prefer to have reusable goods picked up. They found that people are much more prepared to donate valuable items, because they know goods will be handled properly and not wrecked on the roadside.



An RRC provides a central facility where goods can be stored and displayed until the right buyer comes along – just like normal retailing. RRCs are the next step in the evolution of resource recovery systems.

## 2.5 The 'Plus Economy' and the 'Minus Economy'<sup>5</sup>

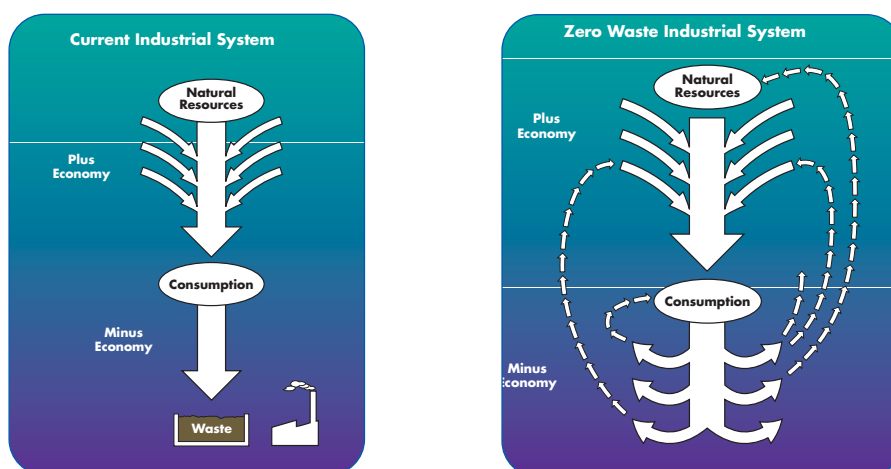
It takes a huge range of skills, expertise and technology (design, manufacturing, retailing, marketing, supply chain management, transport infrastructure, etc), to make sure that goods and materials flow into and through society in the most efficient way possible. This is the 'plus economy'. Now we need to design similar systems and infrastructure to return goods and materials productively back into the market or nature - the 'minus economy'. The infrastructure for the minus economy will not spontaneously occur; it must be properly planned and built.

<sup>3</sup>The cost of Auckland's bi-annual inorganic collection and disposal has risen to over \$1million

<sup>4</sup>In Auckland City roadside scavenging is illegal presenting a further risk to collectors

<sup>5</sup>The concept of the plus and minus economies was first proposed in an article in Eco-Cycle magazine

At present the 'minus economy' is controlled by a narrow range of professional disciplines – predominantly engineering and transportation - but this is beginning to change. We are learning and building the skills and disciplines that will progress the 'minus economy' to enable the human economy to mimic and integrate with natural systems – which don't have waste.



RRCs and RRParks are reverse logistics and retail centres. They require many of the skills of the 'plus economy' - including logistics, supply (or discard) chain management, retailing, customer services, marketing, procurement, human resource management, manufacturing, business development, general recycling, hazardous waste handling, remanufacturing dismantling and deconstruction.

## 2.6 Emerging and Future Trends

Industrial materials efficiency has been improving for some time, but now the principles of Cleaner Production must extend outside the factory gates into the whole of society. This requires a life cycle approach supported by the principles of EPR (Extended Producer Responsibility).

There are many examples of this shift taking place. Ricoh, 3M, Fisher & Paykel and Xerox are all investing in product take-back systems and redesigning processes to enable disassembly, reuse and remanufacturing. And starting in October 2003, Japanese residents will be able to drop-off obsolete computers for recycling at any one of 20,000 post offices nationwide or have postal carriers pick up computer at home - all paid for by Advance Disposal fees<sup>6</sup> of between \$17 and \$37 per computer.



*Fisher and Paykel*

Two rapidly emerging trends support the development of RRCs and RRParks:

- Design for Environment (DFE) - a new discipline that ensures products are designed for reintegration into the industrial or natural environments at the end of their lives. Part of DFE is the concept of design for disassembly where products are designed for ease of dismantling or recycling at the end of their life. For instance, small electronic equipment with fastenings and adhesives which loosen when microwaved, for easy disassembly. Fabrics are also being designed to allow garments to be composted when they've outlived their usefulness.

<sup>6</sup>Resource Recycling Journal reports that Japan Post has linked up with an industry group representing 21 major computer producers, including Apple, Dell, Sony and Toshiba. The alliance represents about 95% of the Japanese computer market. Japan Post will sort the computers by brand and send them to the appropriate recycling facility. Apparently, consumers can expect to see a collection fee added to the cost of new computers of around US\$37 - 46 per desktop unit and US\$17 - 21 for a laptop. The action follows a new federal law mandating consumer computer recycling. Warner Bulletin News #13 (April 14, 2003)

- Extended Producer Responsibility (EPR) is a concept that is evolving in a number of ways, including voluntary initiatives and mandatory requirements. As a policy tool it extends manufacturer's responsibilities to include the life cycle costs of their products and packaging. EPR promotes 'cradle to cradle' responsibility and encourages producers to 'take back' their end-of-life products, creating a closed loop system that prevents pollution and the inefficient use of resources. British Columbia is a leader in EPR. Its Industry Stewardship Agreements between government and industry groups, ensure their products have a clear and defined pathway back to the producer at the end of their lives to be recycled or remanufactured in an environmentally sustainable manner. Advance disposal fees placed on products at purchase are often used to pay for these schemes<sup>7</sup>. In the case of drink containers a deposit is put on the product at purchase and refunded when the container is taken back to an approved depot. For information see the British Columbia Government website [www.gov.bc.ca/epd/epdpa/ips](http://www.gov.bc.ca/epd/epdpa/ips) or for detailed definitions of EPR; [www.grrn.org/epr/epr\\_principles.html](http://www.grrn.org/epr/epr_principles.html)



Poster for Alberta container deposit program

## 2.7 The History and State of Play in New Zealand

### The pioneers

A number of communities in New Zealand have built what could be termed early or first generation RRCs. One of the trailblazers was Devonport Borough Council which in 1977 set up a recycling scheme consisting of a kerbside recycling collection, promotion of home composting and establishment of a Resource Recovery Centre at the local landfill.

Attempts to recover resources from landfills have been made by people with informal permission from councils, some very successfully. But without proper set-up funding and support these have often failed. The trend to closing informal tips and dumps and the use of transfer stations has largely ended the colourful era of 'scrappies' and dump recyclers. Their efforts were not often recognised or appreciated by councils whose main objective was 'sanitary disposal' with little or no emphasis on resource recovery. However these early attempts proved that there was a market for wasted resources – if access to them could be gained.

### The current state of play

The current generation of RRCs scattered throughout New Zealand vary in size, function and ownership patterns. Although none could yet be held up as the comprehensive model, they have gone a long way to proving the case for developing purpose-built RRCs as part of an integrated waste reduction programme. Twelve examples are profiled in Section 4.

### The next generation

The potential for RRCs is being recognised and it is likely that several sizeable, purpose built facilities will be established in New Zealand in the near future incorporating features taken from the best local and international models. Integrated resource recovery is a young and evolving discipline in New Zealand with improvements to function and design developing rapidly.

## 2.8 Natural Principles

A RRC helps a community to model materials flows along the following natural principles.

### The Proximity Principle

Simply stated, the proximity principle means: "The greatest number of needs met within the shortest possible distance". More and more industries in the Western world are migrating to countries with lower production costs, and the means of production are becoming increasingly centralised and controlled from distant capitals. Resource recovery and recycling on the other

hand, like nature favour the local. Shorter distances and higher added value mean more local opportunities and profits stay in the community, and just as importantly, require less energy inputs and have less environmental impacts.

### ***The Diversity Principle***

A fundamental principle of nature is that 'diversity lends stability'. Natural and economic systems that are diverse and complex are also more stable and robust. Resource recovery facilities are, by their very nature, complex, and act as hubs for diverse activities, with lots of different materials being treated in different ways, by different people and organisations. Landfills on the other hand are simple operations, generally involving one or two organisations that treat wasted resources in the same way, no matter how valuable, reusable or toxic. And these days landfills are seldom locally owned.

## **3.0 PLANNING AND DEVELOPING A RESOURCE RECOVERY CENTRE**

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There is no definitive recipe or system for building Resource Recovery Centres – the concept is still young and evolving. Even so, a growing number of RRCs in New Zealand are proving that they create jobs and reduce waste as well as providing a focus for changing attitudes. RRCs are the cornerstone for a "whole-system" approach to reduce, and eventually eliminate waste. Each community must decide for itself the best size, location, variety of functions and level of investment for its situation.

The impetus for establishing a RRC may come from different quarters. In many cases it will be Council that drives and instigates the planning process. In this case community input and consultation will need to be sought for a successful result. The steps outlined in this guide may be too prescriptive for a small drop-off centre or RRC and too light for a major RRPark – either way they should be seen simply as a resource to help the planning process.

### **3.1 Concept proposals and feasibility reports**

Feasibility reports or concept proposals require considerable care and attention to be effective. Quality information is the key to creating a good report. Where commitment is high with land and resources already available, it might be possible to go directly to producing a working business plan.

A concept proposal or feasibility report will:

- Ensure that each aspect of the viability of the project has been considered
- Give potential partners confidence to invest or participate in the project
- Act as a marketing tool for the project
- Identify opportunities and potential threats that initially may not have been identified
- Identify legal and planning hurdles
- Help involve and bring the community on board.

Compiling a feasibility study simply requires the ability to gather information and produce a credible report on a proposed project, including the stages of development, suggested size and layout as well as costs and income projections. Refer to Section 3.15 – Checklist for Writing a Concept Proposal.

### 3.2 Key drivers for establishing a Resource Recovery Centre

It helps in making the case for a RRC to explain the problems with current waste management systems and the role that RRCs will play in sustainable waste reduction programmes of the future. Some key issues to cover are:

- **Rising waste volumes**

Despite countless successful recycling and waste minimisation programmes all around the world, waste is increasing as consumption increases.

Resource Recovery Centres combined with policies to encourage Extended Producer Responsibility (EPR) and personal responsibility within a total Zero Waste framework provide the way forward for the maximum waste reduction outcomes.\*

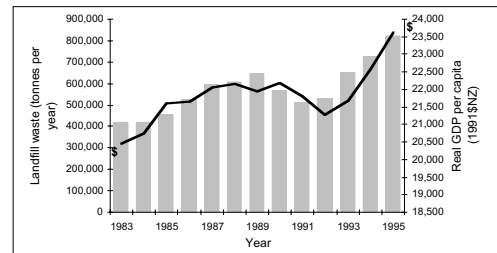


Figure 3.1.3 Economic growth and waste disposal at Auckland landfills [Auckland Regional Council, unpublished; Statistics New Zealand, 1996].

- **Toxicity of waste**

Although a number of highly toxic materials have been phased out of production, society is producing an increasing quantity and variety of toxic materials and products that don't break down safely in landfills. These pose risks to the environment and human health. For example a computer monitor contains as much as 2kg of lead. In landfills, organic materials mix with highly toxic materials, and other products creating chemical reactions and toxic leachate<sup>8</sup>. Many of these materials present resource recovery business opportunities that will in turn reduce the toxicity of landfill.

- **Landfills are not safe**

Despite assurances by landfill proponents and waste companies, landfills are not safe. For example the US EPA<sup>9</sup> states that all landfill liners will eventually leak. Most aftercare requirements expire around 30 years post-closure with ongoing costs and liabilities returning to the community. The community therefore has the greatest vested interest in the safety of landfills and the greatest incentive to create safer resource management systems.

- **Destruction of natural resources**

Even if landfills and incinerators were safe they destroy vast quantities of valuable reusable resources and as such are not sustainable<sup>10</sup>. We have to start designing industrial systems that utilise the full value of natural resources and the full utility of products and materials.

- **Increasing costs of landfills**

Landfills are the most valuable real estate in any community and as communities gradually increase landfill charges to reflect the full cost of landfilling, resource recovery becomes a more attractive option. Waste disposal charges range in New Zealand from \$25 to \$90 per tonne. In Europe landfill charges can be as high as \$200 per tonne.

- **Difficulty in finding new landfill sites**

It is getting more and more difficult to find new landfill sites because of public disapproval and the huge cost. Finding and creating a new landfill site costs millions of dollars. A recent UK report<sup>11</sup> shows an average reduction of £5,500 in the value of houses lying within the zone of 0.25 miles of an operational landfill. The report calls this the disamenity cost of landfill and suggests a total disamenity cost to UK homeowners of £2.4 billion. There is also mounting evidence showing that human health is jeopardised by close proximity to landfills<sup>12</sup>

<sup>8</sup> Brown, K and K.C. Donnelly, An estimation of the risk associated with the organic constituents of hazardous and municipal waste landfill leachates. Hazardous Waste and Materials, 1988 5(1):p. 1-30

<sup>9</sup> US Environmental Protection Agency, 53 Federal Register 168, 1988, p33344-33345

<sup>10</sup> Wasted Opportunity, A Closer Look at Landfills and Incineration, Zero Waste New Zealand (2002)

<sup>11</sup> "A Study to Estimate the Disamenity Costs of Landfill in Great Britain", Department for Environment and Rural Affairs, February 2003

<sup>12</sup> Wasted Opportunity, A Closer Look at Landfills and Incineration, Zero Waste New Zealand (2002)

\* First National Waste Data Report. Ministry for the Environment. 1997

- **Stricter regulatory environment**

Increasing pressure is coming on businesses and local municipalities to reduce waste going to landfills and incinerators. The New Zealand government is yet to introduce legislative measures such as waste levies, landfill bans and product stewardship programmes, but these are signalled as future options in the New Zealand Waste Strategy – “Towards zero waste and a sustainable New Zealand”.

- **Increasing public expectation**

The public is increasingly looking to local government to provide better recycling services and facilities. Public awareness of services available in other parts of the country and overseas, plus an increasing desire to do the right thing environmentally, is helping to drive this demand. Local Government can also benefit from being able to source support from relevant Government programmes, (e.g. Department of Labour, Regional Development etc.) as well as reducing landfill costs and risks.

### 3.3 Community benefits

This section provides information on the social, environmental and economic benefits that Resource Recovery Centres will bring to both the public and private sectors of the community.

- **Resource conservation**

There’s growing understanding of the need to conserve natural resources and to protect land, water and air from the impacts of waste. Communities are demonstrating that they want to be involved and that they can make a huge contribution to resource conservation if given the opportunity and the right infrastructure.

- **Job creation and local economic development**

Studies around the world show that the recycling and recovered materials industries are becoming major new areas of employment and economic development. Resource Recovery Centres play a part by providing a training pathway from low to medium end skills into more developed and sophisticated operations, organisations or firms. At the same time they offer an opportunity to lower the costs of waste management by providing an income stream from the sale of recovered materials and also by reducing reliance on increasingly expensive landfill options, as operating standards and requirements for these continue to rise.

The basic knowledge of materials and use of handling equipment that many New Zealanders have forms a valuable foundation for RRCs. Similarly the wide range of activities and related skills that RRCs become involved with will result in employees being presented with a matrix of opportunities to progress from relatively basic materials handling or transport to organisational responsibilities and management.

Because resource recovery initiatives are by their very nature local, these positions cannot be lost to bigger towns or overseas. Wages stay in the town, circulating in the economy. Once materials have been recovered there are more jobs created by processing, disassembly, deconstruction and remanufacturing.



**‘Recycling is an economic development tool as well as an environmental tool. 10x as many jobs just sorting recyclables 25x as many jobs remanufacturing from recycled materials.’ Neil Seldman, President, Institute for Self Reliance**

'Recycling is an engine of urban job creation' - "Reinventing Waste – Towards a London Waste Strategy". Ecologika August 1998

A survey of just 64 recycling businesses in Auckland in 1998, carried out by Waste Not Ltd, found that: the 64 businesses collected 641,649 tonnes of material for reuse and recycling; 69% of the tonnage collected was post consumer materials; gross annual turnover of the 64 businesses was at least \$132 million, and at least 1,736 people were employed. The average wage was \$12 per hour (well above the national average at the time).

A study by R.W. Beck Inc in 2002, prepared for the USA National Recycling Coalition showed that there are currently 56,000 recycling businesses operating in the country. These businesses operate in 26 recycling and reuse categories. They employ over 1.1 million people. They generate an annual payroll of \$US37 billion and gross annual revenues of \$US236 billion. (By comparison the total annual revenue of the US waste industry is less than \$US50 billion.) This clearly shows that the recycling industry is a value-added business, generating much higher revenue than the waste industry – with only a fraction of the volume of material handled.

- **Economic benefits**

Resource Recovery Centres can provide economic benefits to a community – not only through job and business creation, but in reduced waste disposal charges.

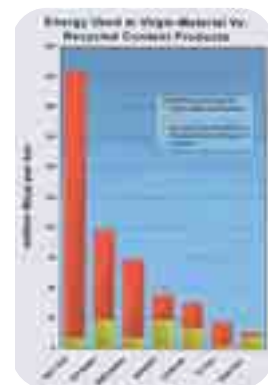
A report based on a three-year study of the Kaitiaki Recycling programme comparing the costs and benefits of recycling over landfilling<sup>13</sup>, showed that based on daily operational costs (without including the savings from avoided disposal costs), the cost of recycling was \$7.37 per cubic metre compared to \$12.28 per cubic metre for refuse.

More recently, Opoitiki District Council has built a central Resource Recovery Centre with two manned, satellite drive through recycling centres. It has spent \$460,000 on these facilities but is saving \$300,000 per annum in avoided disposal costs. The landfill is closing shortly and waste will have to be transported to another town at a cost of over \$100/tonne. The community has saved itself the cost of a new landfill (\$2 million+), has created seven full time and four part time jobs, and now owns significant new community assets.

- **Greenhouse gas emissions**

Organic matter buried in landfills produces methane, a potent greenhouse gas. The solution is simple - keep kitchen, garden, paper and wood waste separate so that it can be composted or worm-farmed and returned to the land.

It is often argued that recycling inorganic materials increases carbon emissions because of transportation. This argument overlooks the energy used and emissions produced to extract and process virgin materials in the first place<sup>14</sup>. If these are included in the equation recycling is by far the better option<sup>15</sup>. For every tonne of waste diverted from landfill, 0.8 metric tonnes of carbon equivalent are saved<sup>16</sup>, which is also four times as much as by incineration<sup>17</sup>.



Source: [www.grrn.org](http://www.grrn.org)

<sup>13</sup> "Recyclanomics", Cliff Colquhoun, Warren Snow for Ministry for the Environment

<sup>14</sup> Jeffrey Morris, Recycling vs. Incineration: an Energy Conservation Analysis, Journal of Hazardous Materials 47 (1996), pp 277-293.

<sup>15</sup> United States Environmental Protection Agency, Climate Change and Waste: Reducing Waste Can Make a Difference. 1999, Solid Waste and Emergency Response.

<sup>16</sup> Murray, R., Zero Waste. Greenpeace Environmental Trust, 2002. Pp: 213

<sup>17</sup> Murray, R., Creating Wealth from Waste. 1999, London: Demos. pp171

- **Tourism protection**

New Zealand's tourism industry is balanced precariously on international perception of New Zealand as being 'clean and green' and '100% Pure'. Establishing resource recovery facilities in every community is a practical way of supporting New Zealand's 'clean' credentials.

- **Social factors**

Besides encouraging job and business creation, RRCs provide communities with publicly owned meeting places that fulfil a social function. In places like Hurunui and Ashburton, community - run RRCs provide retired citizens with the opportunity to contribute to their communities in a volunteer capacity while at the same time meeting social needs. From a different angle, EcoCycle, a large RRC in Boulder Colorado, won an award for being the second best places in town to find a date!

- **Public approval (and ownership)**

There is almost always very high public support for councils to provide recycling facilities and programmes. In almost every case, staff at RRCs that the authors visited said that public support was high and in most cases demand was greater than expected. People love exploring and finding bargain second hand goods and used materials. Visit any of these facilities and people from all socio-economic backgrounds can be seen browsing. "One person's trash is another's gold".

### 3.4 Consultation

A consultation process will help identify stakeholders and draw feedback and ideas from the community. There is wide knowledge and experience within the existing secondary materials economy. The pool of knowledge does not necessarily lie in the conventional sources of technical advice that councils look to for assistance. In his book 'Creating Wealth from Waste', Robin Murray talks about 'distributed intelligence' where a wide number of people across the recycling and community sector possess significant but not necessarily formalised or recorded information. He points out that these networks use and apply technology in a different way and that often "The technology is in the logistics". This knowledge is essential when bringing together a RRC project. Groups that might be interested in co-locating to a potential RRC site or being involved in some way include;

- Local businesses (demolition yards, scrap stores, second hand building yards, etc)
- Local recycling and waste contractors
- Community organisations (scouts, schools, community groups, etc)
- Government agencies (WINZ, CEG, MfE, etc)
- Local community businesses involved in job creation, environmental issues, housing, etc
- Private funders.

### 3.5 Information Gathering

Market analysis sounds a little daunting but is part of the information gathering process that will help back up the case for a RRC. Answers to the following questions can be included in the concept plan or feasibility proposal.

#### ***What kind of facility for your community?***

There is no formula for deciding on the appropriate size or type of resource recovery facility for each community. The decision will be determined by factors such as population, existing recycling businesses and facilities in the area, local industry and competition for resources from nearby communities.

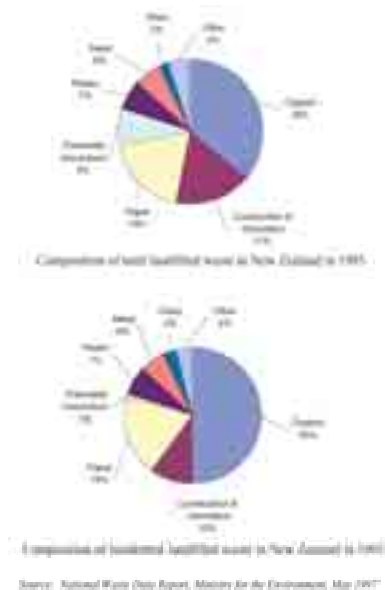


*Kapiti Coast*

A review of the case studies in Section 4 will give an indication of what other communities are doing in terms of size and investment. Some communities such as Kapiti Coast have started with well designed drop-off centres and as a second phase are moving to constructing a Resource Recovery Park.

### Staged development

Most RRCs have evolved and grown to meet demand and several proposed RRCs have been designed in stages. The first stage would usually include a reuse retail store and yard for building materials and a recycling drop off centre. It can grow from there – as long as enough land has been allocated for expansion and new developments. The key piece of advice from most operators to prospective RRC developers is to get more land than you think you'll need – as you'll always need it.



### What is the composition of the waste stream?

Information obtained through waste audits at local landfills and transfer stations can be used to establish what the community is throwing away or wasting. This is the feedstock that the RRC will be competing for. There are other outlets for waste such as back-yard and on-farm private landfilling, clean filling, fly-tipping and waste transported out of the community, etc. These may be harder to quantify and probably not as important in making the case for a RRC.

The Ministry for the Environment provide a manual for solid waste analysis audits (SWAP) which can be accessed from their website – [www.mfe.govt.nz](http://www.mfe.govt.nz). Waste Not Ltd, based in Takapuna, provide auditing services to councils and businesses and have produced a basic manual for waste auditing for businesses – [www.wastenot.co.nz](http://www.wastenot.co.nz).

### Is there an existing collection of inorganic material provided by the local council?

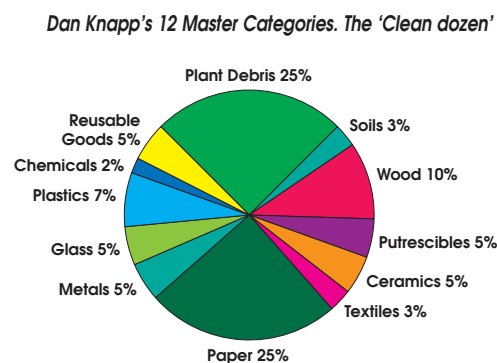
The funds from the inorganic collections could be diverted to establishing a RRC or RRPark. Porirua has a transition strategy for moving from inorganic collections to a new RRC and Auckland City is investigating reallocating the \$1million+ they spend biannually on inorganic collections to fund a large RRPark.

### Where are the materials coming from?

The greater the understanding of local material flows the greater the chance of success. Recycling facilities are, by nature, based on changing material feedstocks, but there are stable flows of many materials and as industry designs more products for recovery some of these will become even more consistent. A survey of local business will identify materials that might be available to the RRC and help identify business opportunities.

### What recycling facilities already exist?

Drawing up a location map of existing resource recovery facilities and businesses will create a picture of the size of the local recycling industry, existing services and end users of recovered materials.



### Where are the service voids?

Establishing which materials are not currently being recovered from the waste stream will help pinpoint recycling services not being provided in the community. One tool to help assess this is Dan Knapp's 12 Master Categories that can be used to identify categories in the discard stream which can then be broken into subcategories. Each category and subcategory can be checked to see if a service void exists and if potential businesses and

services can be developed to fill the service void.

Finding new or existing operators and matching them up with these resources would be a possible role for an RRPark management authority (see section 3.10).

### ***What are the current waste disposal costs?***

A survey of transfer stations, landfills and commercial waste haulers in the area will paint a picture of what competing facilities are charging. Subsidies, landfill replacement costs and downstream environmental mitigation costs are not often factored into charges for waste disposal. There are increasing calls from environmental groups, recyclers and even some waste haulers for governments and local authorities to impose full cost accounting principles to waste disposal and for the instigation of user pays or 'pay as you throw' (PAYT) systems to help discourage waste production.

Other costs that need to be noted include:

- Which recyclers or transfer stations already charge tipping fees or disposal service fees and do any accept recyclables for free?
- Are there any restrictions on charging disposal fees?
- Are there variable tipping fees for different categories of material? (For instance, the charge for disposing of polystyrene at one Auckland landfill is \$1,000/tonne, reflecting its bulkiness and the lack of recycling options.)
- What are the forecasted waste disposal costs over the next ten years taking into consideration population increases, council policy, and consumption trends?

### ***Where are the markets for recovered materials and goods?***

Information on markets for recovered materials will help determine the capacity of local manufactures to utilise materials from the RRC – as well as identify new local business opportunities for materials that are being exported at low prices. A RRC is in itself a market development tool and by its existence will increase markets for recovered materials as new businesses cluster around resources that would previously have gone to landfill.



A database of markets for materials and goods can be developed to gather this information.

Sources of information include:

- Local yellow pages
- Recycling Operators of New Zealand (RONZ) directory – [www.ronz.org.nz](http://www.ronz.org.nz)
- District and Regional Councils
- Other RRCs around the country – particularly neighbouring ones that could be allied with to increase economies of scale and commodity selling prices.
- Zero Waste Community Enterprise Network (ZWCEN) – contact via Zero Waste New Zealand Trust - [mailbox@zerowaste.co.nz](mailto:mailbox@zerowaste.co.nz)
- Survey of businesses that could possibly substitute virgin for secondary materials in their processes.

### ***What factors will have an impact in the future?***

#### **• Policy and Legislation**

Local or central government policies can dramatically change the potential for business development. For example when Vancouver imposed a landfill ban in the mid-1990s on gypsum board, a local business, New West Gypsum Recycling ([www.nwgypsum.com](http://www.nwgypsum.com)) set up to recycle used gib-board into new gib-board. Since 1986 this company has recycled 1.7 million tonnes - in a city the size of Auckland. Other legislative measures such as Canada's industry stewardship programmes – where industry is given responsibility for recovering end of life products, have had similar impacts.

There are also trends in New Zealand for urban landfill operators to be selective about what they will accept. Wellington for example bans used oils and tyres (materials suitable for a number of alternative end uses). These bans can create new business opportunities by providing incentives for alternatives.

RRCs have potential to operate as licensed take-back centres for manufacturer's products. In Nova Scotia and in South Australia, private and community owned RRCs act as container take-back depots for beverage manufacturers. Both of these states have enacted bottle deposit legislation. RRCs combined with take back policies and/or business support from relevant Government or non Government organisations could help the logistics of such initiatives. RRCs coupled with take back policies and business support from organisations such as New Zealand Trade and Enterprise (NZTE), [www.nzte.govt.nz](http://www.nzte.govt.nz), help the logistics of such initiatives.

- **Landfill Levies**

Christchurch City has a landfill levy which is used to fund a range of waste reduction programmes through the Recovered Materials Foundation ([www.rmfmf.org.nz](http://www.rmfmf.org.nz)). Most countries in Europe now have landfill levies ranging from \$20 per tonne (France) to nearly \$130 per tonne (Netherlands). The UK has signalled that their landfill levy will rise via the "landfill tax escalator" until it reaches in the medium to long term about \$100. Closer to home, South Australia recently doubled its landfill tax to \$10/tonne to fund a new agency, Zero Waste South Australia, which will help support community and industry waste minimisation initiatives ([www.environment.sa.gov.au/epa/](http://www.environment.sa.gov.au/epa/)). Sydney also has a waste levy - of \$35 per tonne. The Ministry for the Environment has produced "The Landfill Full Cost Accounting Guide for New Zealand" to help with valuation of true landfill costs (See [www.mfe.govt.nz/publications/waste/](http://www.mfe.govt.nz/publications/waste/)).

- **Waste contracts**

Negotiation with Council will help ensure that waste contracts fit in with the RRC plans. A small community-run RRC recently came close to closing after council launched a new kerbside collection programme causing income from commodities to plummet. There is a place for both kerbside pick-up and a RRC and costs can be reduced and more waste diverted by taking what is sometimes called the "basket approach" – using the higher value products and materials to subsidise lower value ones. Community run operations are well suited to this approach as their prime objectives (usually employment and waste reduction) are aligned with those of the community and the local council.

A new trend that has the potential to impact on the viability of RRCs is long-term 'flow control' contracts (up to 15 years long) between councils and commercial waste haulers. These can effectively lock private and community recyclers out and minimise the potential of the community to achieve real waste reduction outcomes. Where incentives to encourage waste reduction are in place, longer contracts may be practical, but the rapidly changing nature of material flows and recycling systems suggest that shorter contracts will ensure that councils benefit from the improvements in technology and logistics and the community's efforts to reduce waste.

- **Local development initiatives**

New Zealand Trade and Enterprise ([www.nzte.govt.nz](http://www.nzte.govt.nz)), Community Employment Group ([www.ceg.govt.nz](http://www.ceg.govt.nz)) and regional economic development agencies may have local community development initiatives planned or funding available that a RRC project could link in with. There are also a number of private trusts that are keen to promote employment. For information on various sources of funding contact the Funding Information Service ([www.fis.org.nz](http://www.fis.org.nz)).

## **3.6 Effects on existing business**

### **Commercial collectors**

There are many waste collectors (large and small) who are keen to reduce their disposal costs. They may have only one option for the waste they collect – to take good reusable building materials, office furniture and fittings, carpet etc to transfer stations for disposal to landfill. A dedicated facility such as the proposed RRC provides them with the option to divert reusable materials for lower charges than at the transfer station.

Experience from Berkley, California suggests that the existence of a Resource Recovery Centre helps small operators who provide local waste pick-up services. By dropping off used household goods, building materials from house renovations etc, they reduce their final disposal costs and increase the viability of their businesses.

### **Effect on mainstream retailers**

Many of the people whose needs are met from reuse businesses at RRCs and RRParks are in the lower income sector where discretionary spending is often non-existent so it would be fair to say that the effect, if any, on stores that sell new products will be minimal. Additionally these facilities provide opportunities for mainstream retail stores to sell broken and returned merchandise that would otherwise go to landfill.

### **Effect on second-hand dealers**

There may be a perception that the established second hand/used sector will be adversely affected by the activities of RRCs. The most recent indications are however, that RRCs can in fact provide a reliable and steadily increasing source of goods for this sector. Almost every Resource Recovery Centre visited by the authors over the last few years has reported that local second hand dealers are among their biggest customers. They often buy in bulk to obtain lower prices, then take the goods to their own stores to add value, repair or simply display and sell on.

Nonetheless, second hand goods dealers may not necessarily welcome a new RRC in their area and some effort may be needed to be taken to build constructive and sustainable relationships with relevant people already in the business. The SuperShed in Christchurch was initially opposed by second hand dealers because of fears that it would impact on their businesses. Generally though, RRCs will recover materials and goods that would otherwise go to landfill and be missed by the second hand market. In the case of the SuperShed the material is retrieved directly from transfer stations.

## **3.7 Advantages of business clusters**

### **The cluster effect**

Resource Recovery Centres and Parks operate on the cluster principle - the idea that similar businesses developing in a given location create synergies for mutual benefit.

Clustering small with large operators is a well-proven commercial principle, as any visit to a mall will attest. There, specialised vendors of all sizes meet to offer wares and services to crowds of customers, many of them out just to explore the environment and spend a little money. If they were run as isolated businesses, these enterprises might fail. But within the managed competition and co-operation of the mall environment, they thrive. The same forces drive RRParks. Companies will become suppliers to one another to:

- Decrease their disposal costs
- Increase their cash flow
- Build friendly networks in anticipation of beneficial trade to come

Information will pass readily among businesses, and all will enjoy new opportunities to learn from one another the latest and most advantageous techniques. As the combined operation attracts more trade, the presence of so many people will create new niches for support businesses. A business ecology will gradually emerge that feeds on resource flows from the larger economy, adjusts to surges and droughts, and in some cases soaks up wasted resources before they have a chance to become waste.

### Shared resources

An advantage of clustering a number of similar businesses on one site is that many services can be shared to reduce costs to individual businesses. A list of possible shared costs and services at a Resource Recovery Park follow:

- Overall site management (The Site Management Authority)
- Central administration and communication services.
- Promotional and marketing services
- Security services
- Temporary staffing support or labour pool
- Education centre for schools and locals
- Small conference centre and meeting rooms
- Café, children's play area and possibly crèche for site workers
- Sustainable technology and recycling products display area
- Warehousing space and stockpiling areas
- Weighbridge and verification services
- Truck and equipment washing area
- Operating equipment (forklifts, balers, shredders, loaders, trucks and vehicles).
- Ecological restoration area.

Gary Liss sums up the way that clustering synergies will develop over time:

"A Resource Recovery Park also helps participating businesses by matching wastes from one company to be used by another as a resource. A Resource Recovery Park is an innovative, supportive and fertile ground for new ideas on how to expand reuse, recycling and composting in an area. Resource Recovery Parks could even simplify the expansion or start of new recycling services by developing and getting approval in advance for a Master Environmental Impact Report to cover most anticipated park activities".

Dan Knapp from Urban Ore adds: "In managing a RRPark, it is important to let the market determine the details of where, how, and to whom materials move. Source separation principles should govern, along with convenience, cleanliness, and satisfying the customer. The more materials are separated into discrete sub flows, the more money there is in the system. As the RR Park succeeds in its mission to attract and nurture businesses that add value to discarded materials, the number and variety of such businesses can and will grow".

### 3.8 Resource recovery parks - potential business

#### Second hand store

In many ways the second hand or re-use store, will be the heart of the Resource Recovery Park. It will be a major attraction for people to visit and has the potential to be a solid revenue earner. The second hand store could initially be one of the businesses run by the RRPark management authority. It may have a number of

departments in the same way that

department stores do, and may initially be linked to the electrical store and building yard. Larger or specialist departments such as

appliances and electronic equipment could be run by department managers or even owner operators. The SuperShed in Christchurch has an average turnover of more than \$20,000 per week.



Christchurch SuperShed



Napier



Whangarei

### **Recycled commodities drop-off**

Paper, steel and aluminium cans, plastic and glass containers etc. The site will potentially capture significant amounts of recycled materials for on-site processing or for off site processing by local end users.

### **Recycled commodities processing**

Material sourced from on-site public drop-off bins, commercial collections and local kerbside recycling schemes could be processed on site. Light industrial sites can be made available for recyclers and end users such as manufacturers who require a consistent supply of a given material such as glass, timber or plastic.



### **Plastic remanufacturing**

Once materials start to be collected and stored, opportunities arise for businesses to set up using the recovered materials to make new products, such as pipes, household items, safety matting, wooden toys and furniture, sculpture etc.



### **Electrical store**

The electrical store could be part of the second hand store or a separate unit. It may also be linked to a disassembly centre. The electrical store would have access to an electrician who would ensure that all repairs to appliances were approved and certified up to standard.

### **Electronics and appliance disassembly**

Due to international pressure and because of cost savings, appliance and electronics manufacturers are beginning to take responsibility for the whole life cycle of their products and are implementing "design for disassembly" techniques where products are made to be easily recycled. Parts are coded and made to be compatible with recycling systems so that they can either be reused in new products or recycled into new materials<sup>18</sup>. Franchised plants where goods are disassembled to manufacturers' specifications and parts returned or recycled could operate at RRP.



### **Repair shops**

The demand for second hand appliances and other used goods can support small repair businesses. The large quantities of used furniture and appliances put out at the kerb for the inorganic collections demonstrate that the feedstock for repair businesses will be readily available. In the US and UK a number of organisations are developing significant businesses recovering and refurbishing old mattresses. US non-profit, St Vincent de Paul, targets items that have sufficient volume in the waste stream and are easy to pick out. Mattresses, accounting for 1-2% of the waste stream are salvaged from the landfill and sent to a factory where ticking, batting and foam are stripped and replaced. The rebuilt product is marketed through thrift stores or donated to the needy. They are aiming to save more than 600,000 mattresses from landfill each year.<sup>19</sup>



### **Crafts and cottage industries**

Crafts and cottage industry operators will come to the RRP to collect materials – but some may also want to locate at the RRPark to take advantage of the business facilities and retail opportunities. Small incubator facilities are ideal to help start-up cottage industries where an element of trial and error may be required to determine whether a product will sell or whether feedstocks are reliable. Artists can also use the RRP as a source of material and as a space to display and sell their works. This happens in Nelson where an artists gallery has been established, and in Waiheke and Berkeley (see case studies).



<sup>18</sup>Mitsubishi makes a washing machine that can be fully disassembled with only a screwdriver. Fisher and Paykel operate a successful and profitable used appliance disassembly plant at their South Auckland manufacturing plant.

<sup>19</sup>'Waste Not'. Oregon Quarterly Spring 2000

### **Glass Processing**

Glass is an ongoing problem in New Zealand because of the cost of transporting it to the sole re-processor in Auckland. Processing on site eliminates this cost and turns a potential cost into profit.

Businesses can co-locate on site and use the glass to make sandblasting aggregate, swimming pool filter material, ceramic tiles and 'glassphalt' (see the Recovered Materials foundation website [www.rmf.org.nz](http://www.rmf.org.nz)). Bottle washing plants can also set up to supply clean, reused bottles to local manufacturers. A good

example of a successful craft business using recovered glass can be found in Arcata, California. Distance to markets meant costly transport and a dilemma for a town that prides itself as being environmentally conscious. A small business, 'Fire and Ice', began to use the glass in the manufacture of glass bowls, plates and bathroom tiles. The company now sends product all over the USA and has an annual turnover of approximately \$US2million. Instead of transporting glass for hundreds of miles at a loss, the recycling centre simply carts it 20 metres to the neighbouring property where Fire and Ice operates.



*Arcata Tiles*

### **Building materials yard**

Various assessments indicate that vast amounts of building materials end up in landfill when 50% to 80% is recyclable<sup>20</sup>. This could be the most profitable part of the RRP as there is a constant and steady demand for used building materials. Demolition companies and second hand building yards will benefit from increased materials and trading opportunities.



*Canberra*



*Canberra*

Construction and demolition waste

can be around 40% of a city's waste stream illustrating the immense potential for diversion if the right facilities are in place<sup>21</sup>.

### **Deconstruction**

There have always been experts at demolition of old buildings, but developers seldom take the time to reap the value from used materials in old buildings that they want cleared to make way for new projects. Deconstruction of old buildings is proving to be a source of jobs and profits for businesses that understand the intricacies of professional dismantling - rather than demolition.

Deconstruction could feed materials directly into the building materials yard at an RRPark. It has been reliably demonstrated in many cities that there is a constant and steady demand for used building materials.

At least one RRPark is patronised by a number of fix-it men who carry out renovations for people on pensions and lower incomes – ensuring ongoing work and the ability to carry out repairs and improvements for a sector of society that may otherwise have not been able to afford it. Several RRC operators report that second hand doors are one of their largest sources of income.

### **Pallet recycling and repair**

Large quantities of broken and unwanted pallets currently go to landfill. Space could be set aside for a small business or community group to receive and repair pallets for resale. Second Time Resource Recovery Centre run by Nga Whare Watea in South Auckland has proven the demand for this service.



*Second Time*

### **Gib-board recycling**

A business could be set up to collect gib-board from demolished buildings and remanufacture it back into new board. A successful business in Vancouver, New

<sup>20</sup>A survey of the contents of over 100 bins of waste from construction sites within Auckland carried out over four weeks during April 1997, found that sorting construction bin waste out has the potential to reduce the quantity of waste going to landfill by 50 to 55% using current material outlets and recovery technology. This could increase to 65 to 80% or even higher if new technology that is available and being developed overseas is used.

<sup>21</sup>Citation Homes, a US house building company, carried out an experiment with recycling construction waste on 95 homes in Union City. They recycled 86% of their waste and significantly reduced waste disposal fees. They also discovered additional benefits such as cleaner, safer sites and the ability to employ more labour to assist with further reductions on their other projects

West Gypsum, diverts over 70,000 tonnes from landfill each year and provides a valuable feedstock for industry as well as creating many new jobs. There are virtually zero waste outputs from the plant, which operates without subsidy. The company has built its first mobile plant, which can process as much as a fully-fledged plant (60,000 + tons per year) and can do this in an area of 5,000 square feet plus some storage area. Staffing requirements depend on tonnage – four staff can handle 60,000 tons per annum with the help of a maintenance person and a scale clerk. Operating costs are approximately \$CA25/ ton. For further information see [www.nwgypsum.com](http://www.nwgypsum.com)

In New Zealand there has been talk of a similar operation for over five years but it has not come to fruition. Had we had the enabling legislation we could also have developed a new viable industry and reduced landfill by a similar tonnage to that of Vancouver.

### **Hazardous waste collection**

A well designed drop-off point, open to the public on a continuous basis will enable the community to reduce the amount of toxics going into landfills and into drains. Important information about ways to reduce and handle hazardous wastes at the on-site education centre could be available for the public and visiting school groups.

### **Paint recycling**

Old paint doesn't need to die – it can be mixed, tinted and resold. A small business recently set up in Otaki, Enviropaints ([www.enviropaints.co.nz](http://www.enviropaints.co.nz)), is producing quality recycled paints. A paint drop-off point within the hazardous waste area will provide significant amounts of raw material for producing a range of recycled paint products.

### **Concrete and aggregate recycling**

A large area could be set aside to process, store and market a variety of aggregates that can be produced from recycled inert materials such as concrete, bricks, paving stones etc. An offsite operator might operate a crushing operation on-site or alternatively set up a receiving area for off-site crushing.

Regardless of where crushing and screening is carried out it would be a good addition to other on-site retail activities to have various grades of aggregates for sale. Bunkers with landscaping, paving and construction grade aggregates would add another reason for customers to visit the RRPark.

### **Scrap metals**

Scrap metals will flow to the RRPark in significant quantities. The facility can provide a drop-off point for scrap metals that will be transferred on a regular basis to a local scrap metals merchant yard for further processing.

### **Tyre processing**

There are a number of new technologies being developed to utilise old tyres. Rubber from old tyres is being used for playground equipment, road surfaces, decorative planters, industrial matting and, in the future, new tyres. The Tire Recycling Management Association of Alberta is an industry run organisation that receives and distributes a \$3 per tyre levy paid by the purchasers of new tyres. The Director of Operations, Kevin O'Neil pointed out recently that the levy has enabled the association to support the development of a tyre recycling industry, which in turn has resulted in almost 100% of all tyres being recycled in Alberta. For further information see [www.trma.com](http://www.trma.com)

### **Green waste and composting**

The site could contain drop-off facilities and a sales area for a range of products, possibly in conjunction with an existing operator. On site in-vessel composting units (high tech as in Waitakere City and MacKenzie District or low tech, as in Kaikoura and Rakaia) could be used to process kitchen



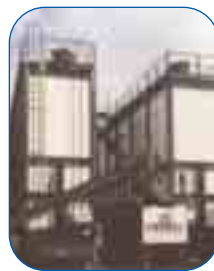
Christchurch



'Earthmaker'

waste from households and restaurants. An exhibition area showing the merits of various composting and worm-farming methods could be installed to educate commercial operators and householders.

"It isn't waste until it's wasted".  
Dan Knapp, Urban Ore



'VCU'



'Hot Rot'

### **3.9 Business incubation**

Resource recovery facilities can provide opportunities for business incubation, although small community RRCs will provide fewer than at full scale Resource Recovery Parks. The key is to provide access to materials and working space and business skills mentors and training.

In Canberra, plots of land are made available at low rent to businesses using recovered materials. A new Resource Recovery Estate is being developed that will provide additional facilities. On smaller sites a small space with a lock-up shed may be all that's required – or in the case of one Auckland enterprise, simply allowing access for scavenging at the tip face.

### **3.10 Ownership and management models**

There are several different ownership/management models for Resource Recovery Centres. Almost all of the successful models in New Zealand have strong council input. Most also have a community group or trust managing some aspect, sometimes all, of the site. As a general rule of thumb, unless there is strong input and/or collaboration with council, a Resource Recovery Centre won't reach its full potential. The same applies if there is no community input.

Five main types of ownership/management models currently predominate, with variations on each theme.

#### ***Community Group run – Council in supporting role***

These RRCs are the most common and can have lots of character, capturing the spirit of their communities. They are also often the most under-resourced and can look at times chaotic if there is lack of capital investment in buildings and equipment. With good council support though, they can provide effective services to the community.

In many places around New Zealand, councils have supported these facilities by providing land and buildings and letting contracts for resource recovery, operation of a transfer station, kerbside collection, or education programmes. These provide the community group with a core cash flow to enable them to build their business and recover the less profitable parts of the waste stream. (See Kaitaia and Amberley case studies.)

#### ***Joint Council - Community Group***

The advantage of this partnership model is that both parties provide input and work together from the start. If sufficient resources can be provided, the RRC can be set up from the beginning with proper facilities to avoid the piecemeal approach that has been the limitation of some community run facilities. A number of examples exist in New Zealand where siting and design has been undertaken jointly by a community group and council, then the contract for operation given to the community group or Trust. In Kaikoura, council and the local community group formed a joint venture to manage the town's entire waste stream. (See Kaikoura, Porirua, Nelson, Christchurch, and Revolve-Canberra case studies.)

#### ***Council built and operated***

This type usually has the advantage of being properly designed and resourced from the start. There are a number of variations on this model - from full council operation to council running part of the operation (such as commodity recycling) and subcontracting other parts (such as the reuse activities, to a community group). The advantage to a council of this type of facility is that it can maintain full control of the site. Opotiki is a good example of this approach, which has been designed as part of a whole strategy for the district including a kerbside recycling scheme and outlying drive-through recycling centres. (See Opotiki and Dunedin case studies.)

### Privately owned and operated

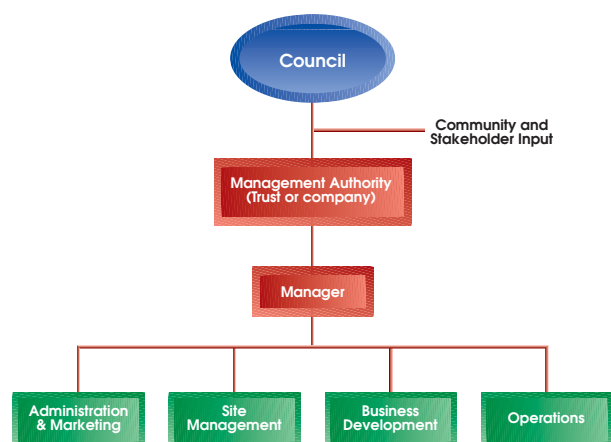
There are only a small number of privately owned and operated Resource Recovery Centres around the country. Two examples are Materials Processing Ltd's facilities in Cambridge and Rotorua (see [www.recyclenz.co.nz](http://www.recyclenz.co.nz)) This is because across the range of commodities resource recovery may not currently give sufficient return on investment for private businesses. Materials and goods that have high value may be recovered, but there is little incentive to recover low value materials and goods. The advantage of private business is that owner operators have a stake in the success of the venture and like community sector groups (although possibly for different reasons) will put in the extra effort to succeed. The interests of large waste companies may not, however, always align with those of the council and/or community and job creation or high waste diversion outcomes may be sacrificed for the sake of efficiency. (See Urban Ore case study.)

### Council built, privately operated

There are only a couple of examples of this model that the authors are aware of although some components of a full RRC may be operated in this way. Paper Reclaim for example operates a large recycling drop-off centre at the Pohe Island landfill near Whangarei. (See Whangarei case study.) Aussie Junk in Canberra is another example of a Council built and privately operated facility. (See Canberra - Aussie Junk Case study.)

### Management Authority

There are no full-scale Resource Recovery Parks established in New Zealand yet and only a few operating around the world. However a number are either being planned or built and interest in the concept is very high as the understanding of the science of integrated resource management develops and cities start to develop infrastructure.



A management body of some sort is needed to manage the establishment and running of the complex, promote its activities and provide day to day administration of the site. The Management Authority will lease space and provide support and services to various tenants, businesses and initiatives.

The Authority could be a business unit of council or a separate not-for-profit business with representation on the board from council and contributors and tenants. The authority itself could also be the key 'anchor' tenant, to ensure the project achieves critical mass and control over the site. If the Management Authority was a not-for-profit business it may be eligible for

a range of financial support mechanisms and incentives.

Questions that need to be explored prior to establishing a RRPark include:

- Who will own the site?
- Who will design the facilities and oversee construction?
- Once facilities are built, who will recruit compatible tenant businesses, fill service voids, write and finalise the leases, take care of facility maintenance, collect rents, do public relations and education, trouble-shoot, and handle integration and permitting issues with the surrounding community?

## 3.11 Operational Issues

### Staff Training and Development

Recycling and reuse facilities are labour-intensive and a range of responsibilities come with

employing people. Some recycling and reuse facilities have not focused on ensuring that as well as providing people with jobs they must also ensure that staff are supported in their personal growth and skill development. People are the number one resource and businesses that support staff with opportunities to grow and learn will have the most success. The Zero Waste Academy (established as a joint venture between Zero Waste New Zealand, Massey University and Palmerston North City) offers relevant training courses (for more info see [www.zerowaste.co.nz](http://www.zerowaste.co.nz))

Wage rates vary considerably in the recycling and recovered materials industry and between different jobs within businesses. Research into comparable wage rates for the different jobs in the resource recovery sector will help establish running costs over time for a RRC.

### ***Customer Service and Safety***

The success of any RRC is very much dependent on the 'experience' customers have when buying, selling, and dropping off goods and materials. Many RRCs fall down badly in this area. A good way to help keep customers happy and ensure a consistent standard of service is to put staff through customer service training – for example the Zero Waste Academy's Resource Recovery Management course run by Innovative Waste Kaikoura (for more information [www.zerowaste.co.nz](http://www.zerowaste.co.nz)).

### ***Environmental and Social Reporting***

RRC's and RRParks should demonstrate that they are 'walking the talk' in their environmental and community relations. An environmental and community policy should be written in conjunction with key stakeholders and reviewed regularly. The annual accounts should also provide a report on the environmental and social performance of the facility – and for a large facility these should be independently audited. Tenants can be encouraged and assisted to write their own environmental policies.

A standard operating and customer service manual should be written and agreed to by all tenants of a RRPark which could include overall safety policies. It should also include site maintenance standards to ensure the RRC is an attractive place to visit.

## **3.12 Legal issues and requirements**

There are a number of legal requirements that need to be considered when planning and operating a RRC or RRPark.

### ***Resource Management Act***

The Resource Management Act's (RMA) purpose is to promote the sustainable management of natural and physical resources. The RMA sets out how we manage our environment, including air, water, soil, biodiversity, the coastal environment, noise, subdivision and land use planning in general and focuses on effects in the environment. (From the Ministry for the Environment's website [www.mfe.govt.nz](http://www.mfe.govt.nz)).

Where an activity or the effects from an activity are not permitted under the District and Regional Plans, then a Resource Consent will need to be applied for through the appropriate council(s). This consent application will then be processed to determine whether the activity and effects will be permitted.

What does this mean for a Resource Recovery Centre? Generally city and district councils (through district plans) control issues such as land zoning, building structures and siting, traffic management etc. Regional councils are generally responsible for emissions to air, land and water. So siting of the RRC, appropriate selection of site activities and consultation with neighbours are important choices to make in that they can reduce the consent process substantially. To operate, the RRC and effects from the RRC must be fully permitted either under the appropriate plans or via the resource consent process.

Plans should be taken to the local district and regional council offices to determine the process that will need to be followed.

### ***Health and Safety***

An essential focus of managing the RRC should be to ensure that both employees and users of the site are able to undertake relevant on site activities in a healthy and safe environment. The

Health and Safety in Employment Act (1992), with recent amendments passed in 2002, seeks to achieve this from a legal perspective. Under this law, the standard to be achieved is that of having taken all reasonably practicable steps to make work safe – what can reasonably be expected given the circumstances, state of knowledge, resources, etc.

This requires a systematic but flexible approach. There are essential common elements to sites that operate as safe work places. These include (but are not limited to):

- Development of a Health and Safety Plan
- Active and proactive management of the Health and Safety Plan.
- Active employee and employer participation

While a Health and Safety Plan and Management System will be site specific, the frameworks for developing these can be adopted and then adapted to suit from other organisations. There is a wealth of advice and support available. A great place to start is by contacting the Occupational Health and Safety Service (website -[www.osh.govt.nz](http://www.osh.govt.nz)).

### **Legal Structure**

One of the first decisions to make when establishing a RRC or RRPark is what sort of financial structure will be used for the venture. If one of the parties involved in the operation is the Local Authority, then it is essential that discussions are held with Council officers about what type of structure they require and what involvement they will have. Will Council provide a contract for the entity to carry out certain work e.g. operate a transfer station, or will they guarantee a set amount of money to cover any shortfall that may occur in the operation, or will they provide a suitable building for a peppercorn rent, or will they be a full partner?

The main types of structures are Company, Sole trader, Partnership, Joint Venture, or Trust. It is also possible for a Trust to own a company. In this case profits after paying wages and expenses are passed to the Trust to use for the purposes outlined in the Trust Deed.

Many recycling businesses are owned by not-for-profit organisations. In the UK for example, the Community Recycling Network (CRN) has over 200 locally owned community businesses providing services to around 4 million people each week. The group collectively markets recycled product to give member organisations the highest possible returns. These groups, which range in size from sole operators to groups with multi million dollar revenues, operate a range of projects including 'scrapstores', furniture recycling businesses, civic amenity centres (RRCs), appliance disassembly/recycling operations and education programmes. For more details see [www.crn.org.uk](http://www.crn.org.uk) or contact [twp@crn.org.uk](mailto:twp@crn.org.uk)

In New Zealand there are around 50 local groups carrying out a similar range of initiatives with many operating waste and recycling contracts for their local councils. A number of these groups run businesses that, apart from their ownership structure, are no different to private businesses. For more details see [www.zerowaste.co.nz](http://www.zerowaste.co.nz)

### **Other Legal Requirements**

**Second hand goods license:** If goods are purchased for resale, the manager of the operation will require a second hand goods licence. Local authorities issue these licenses.

**Hazardous goods license:** If hazardous goods are to be stored at the site a Hazardous Substances Officer at the Local Authority should be contacted to ensure that proper procedures are in place.

**Building permits:** The local authority is responsible for issuing building consents.

**Insurance:** Insurance cover is required for a range of accidents or other things that could go wrong. One group advised that this includes director's liability cover, especially if large contracts with other parties are involved.

### 3.13 Financial issues

#### **Costs of Establishment**

Where appropriate, economic analysis of the costs of establishing a RRC should factor in the savings or avoided disposal costs of materials that would otherwise have been landfilled. Including these savings helps demonstrate the economic viability of a RRC – especially when there are high landfill charges. Even with a landfill charge of as little as \$15/m<sup>3</sup>, resource recovery has shown to compete favourably with landfilling as can be seen from the Innovative Waste Kaikoura example (see section 4). There might also be savings if recycling staff can also operate the transfer station or if the inorganic collection can be reduced or eliminated. These may not provide income for the venture but they will help provide economic justification for council to support the proposal by way of a contract, premises, land, plant etc at little or no cost.

The money required to establish a business falls into two categories. Capital and operational.

#### **Capital Expenses**

Capital expenses are the expenses required to acquire the assets that enable the entity to operate. These include land, buildings, plant and vehicles. Each of these items may need to be financed using different sources. Whichever means is used, there will be some cash requirement.

Capital costs for RRCs, can create barriers to their establishment. Many successful community based initiatives would not survive if they had to pay market rates for land or all of their capital requirements. The exceptions are where they win mainstream council contracts. There are a number of examples where councils have made investments in RRCs because of the wider public good - creating business and employment opportunities as well as protecting landfill space, conserving resources and the environment. The fact is that traditional waste contracts do not factor in these concerns and lead to low value, large volume disposal at the cheapest price. Subsidies or the provision of land at little or no costs can make the difference between success and failure.

**Land and buildings:** If it is necessary to purchase these then finance is usually available for up to 80% of the value with 20% provided by the borrower. When a venture is starting it is usual for the premises to be rented or leased. Alternatively an investor may build suitable premises and lease them. The investor will need to be satisfied that the venture will succeed - or if it fails he or she can re-lease the building. Graham Mannall, Manager of Policy and Planning at Canberra's ACT NoWaste makes the point that "There needs to be flexibility in the provision of land to reflect the value of the activity and process/product value e.g. some products have a very low value and the costs to reprocess are high - in such cases expecting the operator to pay full costs for land may make this unviable and reduced land cost and/or other assistance may be provided in such instances".

**Plant:** This includes the plant and machinery needed on the premises to enable the business to operate. For a RRC it will include presses, fork hoists, perhaps a weighbridge, display counters, testing equipment, computers and software, buildings not part of the existing property and maybe some landscaping. It will also include the installation of telephones, lighting and office equipment.

These can be purchased new and if a proper business plan and cash flow are available, financed through a finance company. The most likely scenario will be that any plant will be second hand and acquired from dealers, auctions, borrowed, or made on site. It is most likely that cash will be needed to buy this plant and machinery but finance companies will lend if there is security in the value of the plant and they are satisfied that they will get paid. They will of course charge interest on any lending.

#### **Operational Expenses**

The shortage of operational cash is the element that causes the most stress in the operation of an enterprise. This is the cash needed to pay wages, power, electricity, rent, hire purchase payments, stock, vehicles expenses, licences, and other day to day expenses.

To pay these expenses the stake holders will need to put in some cash. The rest of the running operational costs may be able to be covered by means of a bank overdraft. The bank will only lend if they can be convinced that the business is viable and that they will be paid if the venture fails. This means that a credible partner is part of the venture or the group has a proper contract.

Banks are really the only source of operational cash.

Before using finance companies to acquire fixed assets it is worthwhile discussing the venture with the bank as they may also finance these assets. As a general rule banks will lend up to one month's cash flow but this is a maximum and they will expect the overdraft to reduce each month.

There are a number of organisations that might assist with the establishment or operation of a RRC.

For example:

- Local Councils could provide a contract
- Government sources could consider employee assistance
- Private funders might assist in setting up or preliminary planning.

### ***Budgets and cash flow***

These are different. A budget shows what sales are made in a period – usually one month – and what expenses are incurred in making those sales in that month. The difference is either profit or loss.

A cash flow shows how and when those expenses are paid and when the sales are paid. For instance, wages are paid weekly, PAYE the following month, stock purchases may be on delivery or may be paid the following month, telephones, power, may be paid the following month and rent is paid in the current month. Sales may be cash - which is preferable, or they may be credit sales in which case some will be paid the following month and the balance over the following two months. A RRC will be almost totally a cash business which makes a huge difference to cash flow.

Every enterprise must prepare a budget and a cash flow. It is usual and preferable for both a budget and a cash flow to be shown monthly for the current year. It is acceptable for the following year to be shown on a quarterly basis and the year after that as the full year.

## Budget Projection Table

### Operating Budget

Each venture will have trading income and expenses that are peculiar to the conditions of the district. Listed below are some suggested sources of income and expenses that may be used to enable a trading budget to be prepared.

It's a good idea to summarise the budget information in a simple table projecting 3 to 4 years (example follows) so that interested parties can get a snapshot without the confusion of too much detail. A detailed budget showing monthly income and expenses for say two years could be included as an appendix.

| <b>INCOME</b>                   | <b>Year 1</b> | <b>Year 2</b> | <b>Year 3</b> | <b>Year 4</b> |
|---------------------------------|---------------|---------------|---------------|---------------|
| Reuse sales                     |               |               |               |               |
| Recycling commodity sales       |               |               |               |               |
| Compost and associated products |               |               |               |               |
| Transfer station contract       |               |               |               |               |
| Rents                           |               |               |               |               |
| Educational contract            |               |               |               |               |
| Recycling collection contract   |               |               |               |               |
| Building site collections       |               |               |               |               |
| Commercial collections          |               |               |               |               |
| Wage subsidy                    |               |               |               |               |
| Tip fees                        |               |               |               |               |
| Equipment hire                  |               |               |               |               |
| Grants                          |               |               |               |               |
| Other income                    |               |               |               |               |
| <b>TOTAL INCOME</b>             |               |               |               |               |
| <b>EXPENSES</b>                 |               |               |               |               |
| Purchase of stock               |               |               |               |               |
| Advertising                     |               |               |               |               |
| ACC                             |               |               |               |               |
| Cleaning                        |               |               |               |               |
| Disposal costs                  |               |               |               |               |
| Depreciation                    |               |               |               |               |
| Electricity                     |               |               |               |               |
| Hire purchase of plant          |               |               |               |               |
| Insurance                       |               |               |               |               |
| Interest                        |               |               |               |               |
| Repairs & maintenance           |               |               |               |               |
| Rent & rates                    |               |               |               |               |
| Safety equipment & uniforms     |               |               |               |               |
| Stationery                      |               |               |               |               |
| Staff training                  |               |               |               |               |
| Telephones                      |               |               |               |               |
| Vehicle expenses                |               |               |               |               |
| Wages & salaries                |               |               |               |               |
| <b>TOTAL EXPENSES</b>           |               |               |               |               |
| <b>PROFIT (LOSS)</b>            |               |               |               |               |

### **Additional Sources of Funding**

Most recycling enterprises are self-funded, but others need support to achieve waste reduction outcomes that the market cannot deliver. Community organisations are proving that given the chance they can operate recycling and resource recovery facilities that achieve positive waste reduction, employment and educational outcomes for the community.

Some community operated resource recovery facilities are funded entirely from contracts and/or other services provided. Others would not be viable if it weren't for additional financial support from funding sources such as government employment/social agencies and private philanthropic funds. It's common to see many different funding sources in the annual accounts of some of these groups. One such example follows:

| <b>Income – first year of operation</b> | <b>%</b> |
|---|----------|
| Council Contract                        | 21.23 %  |
| Zero Waste New Zealand                  | 20.25 %  |
| Community Board                         | 1.96 %   |
| Community Employment Group              | 25.21 %  |
| Work and Income NZ                      | 16.33 %  |
| Local Energy Trust                      | 6.53 %   |
| Local Regional Council                  | 8.49 %   |

This group runs an effective operation that by normal accounting principles might not stack up. They are able to attract other financial resources because of the perceived environmental and social value they contribute to the community.

A RRC will act as a focus for other businesses and groups that will bring their own financial resources and support arrangements. Their motives might be quite different but the combined impact can create synergies and added impetus that will assist the RRC.

For example:

- Larger commercial recyclers might be attracted to the potential to acquire raw materials
- Local councils might want to assist initiatives that reduce waste and extend landfill life
- Other agencies might want to develop work skills and training and employment creation opportunities.

Experience has shown that the market alone will not create the waste diversion and other desired outcomes without the right mix of coordination, range of players, external funding and community involvement.

### **3.14 Siting and design issues**

#### **Site selection**

Site selection can be critical to the success of a RRC. While it's not always possible to have the luxury of selecting a site (there may already be an existing one), the following should be taken into account:

- There are advantages in siting an RRC before a transfer station or landfill. By providing recycling options before landfilling at a lower cost, the public along with commercial operators are encouraged to utilise the facility. A key advantage of this approach is that a steady stream of potential customers is already visiting the site. On the other hand some practitioners believe that we need to get away from the dump mentality and that RRCs should be sited near shopping districts to be part of the retail mix. The RMF SuperShed is a good example. The authors believe that there is still a case for dedicated RRCs near existing disposal facilities with a mix of retail, processing and manufacturing business.

- Social issues - how will the neighbours be affected? Consult with neighbours of the site to ensure that their concerns are listened to and integrated into the development. The reality is that a RRC will have effects such as noise, dust, traffic and a visual impact.

### **Design issues**

The key “anchor” functions of the RRC will dictate many of the overall design features, but flexibility must be built into areas for additional tenants and niche players. It will be important to engage designers who have a good understanding of the philosophy and practice of resource recovery and the role of RRCs as hubs for the future materials efficient economy. For ongoing updates on RRC design see [www.envision-nz.com](http://www.envision-nz.com). Material flows are at the core of the sustainability issue, but wider issues must be taken into account. This means designing for economic, social and environmental potential and outcomes.

- **Site Groupings**

There are many categories and subcategories of waste but for the purposes of designing a Resource Recovery Centre or Park it’s helpful to think in terms of 3 to 5 business groupings or areas, such as Recycling (drop-off and processing), Reuse (drop-off and sales to the public of reusable goods and materials – including second hand building materials), Organics (drop-off and processing), Hazardous Materials drop-off, Light Industrial (remanufacturing, dismantling, and manufacturing new products from recovered materials) and Heavy Industrial (processing of steel, tyres, concrete etc). The site also needs to be designed to keep the public interface separate from processing and industrial areas and wherever possible to avoid conflict between retail customers and processing activities.

- **Material flows**

RRC layout has a huge influence on the amount of materials recovered from private individuals’ trailer loads and commercial users’ truckloads. Russ Louden of Waste Works Ltd has had considerable experience developing logical material drop-off sequences to maximise resource recovery and avoid traffic conflicts ([russlouden@optusnet.com.au](mailto:russlouden@optusnet.com.au)). While the sequence will change according to the type of RRC, the site and the functions on-site, his key recommendation for all sites is to put residual waste disposal at the very end of the sequence after all opportunities for resource recovery have been exhausted. Dave Reece, the Engineering and Services Manager at Opotiki District Council, has taken this concept one step further, ensuring that ‘wasting’ is also physically a more difficult proposition than recycling. At the Opotiki RRC trailers have to be backed up a ramp to allow waste dumping, whereas recycling is handled on the level inside the RRC building.

- **Safety**

It is common to see potential public safety hazards at RRCs, caused through poor design. One of the major areas of concern is where large equipment such as fork hoists and trucks are working in areas where the public have access. Traffic conflicts between site equipment and private vehicles should also be avoided. Ideally the public should have no foot or vehicle access to any processing area or where large vehicles are working on a continual basis.

- **Ease of public access**

A fully operating RRC will have many people arriving on a daily basis. It is important to ensure ease of access to all public drop-off facilities and purchasing areas. Well operated RRCs become destination and entertainment centres in their own right where people can not only drop off unwanted goods and recyclables, but also browse through the retail outlets, swap advice on DIY projects and generally keep an eye out for treasures and bargains in the constantly changing flow of materials. Offering customers good road access, easy parking, clear signage, tidy premises and clear pricing enhances the shopping experience and draws customers in who might not otherwise use the facility. Just as garden centres have redefined their function from simply selling plants to offering a destination weekend ‘gardening/outdoor living’ experience, successful RRCs can offer a destination weekend ‘recycling/bargain and treasure hunting’ experience. Some are now, like garden centres, incorporating cafes to encourage people to linger and to attract new customers on site.

- **'Workspace' and small business incubation**

It is impossible to accurately predict what kind of business will locate at a RRC and design for their requirements. Many will be small niche players that will only set up once there is a constant supply of materials. The workspace principle is to provide space and/or facilities where people can set up and trial new businesses with low start-up costs and without the risks associated with long-term leases and outlays. This may involve simply the provision of land (as Canberra has done with its new Resource Recovery Estate) or provision of low cost lock-up facilities where tools and materials can be stored. Rent may be subsidised in the first instance, with the tenant only paying after one or two months of residence. If the venture goes well they can be moved to a more permanent site that better fits their purpose. If the idea obviously isn't going to work they can give a week's notice and leave without incurring ongoing costs. For many people the opportunity to trial an idea and have it fail is actually a success from which they can learn and take a new route. Some will be happy to stay in the temporary spaces for up to a year or more and others will move on to full rent paying situations either within or even outside the RRC as their businesses grow.

- **Stockpiling**

Some materials will need to be stockpiled due to changing end market demand and commodity price fluctuations. Stockpiling has proven to be a good strategy for managing price fluctuations, but it does require space – preferably out of public sight as tidiness is an important issue with RRCs. Land needs to be set-aside for this in the initial planning process.



*Tyre trench in Canberra which is covered regularly and divided into cells*

Robin Murray observed<sup>22</sup> the enormous demand for storage in places he visited in Germany and suggests strategies for what he calls 'distributed stockholding', utilising cheap storage to allow materials to gradually slip down the 'value hierarchy' until there is finally a market for it – or no market. In some cases more economic stockpiling or storage capacity may be secured from short term rentals or other arrangements made using surplus sites or buildings awaiting redevelopment or sale. A successful RRC should have the land area to store materials of all sorts for various lengths of time and may in time start to fan materials for storage out into the wider community.

- **Public Education**

A RRC is an ideal facility to offer public environmental education programmes and material. Some are already aligned with environmental education centres such as Kaikoura and Porirua.

### 3.15 Checklist for writing a concept proposal

The following headings are provided as a checklist to ensure that all the necessary information is included when writing a concept proposal or feasibility report – and to indicate where some of this can be found in this report.

| Concept Proposal or Feasibility Report Headings         | Section                    | Check                    |
|---|----------------------------|--------------------------|
| <b>1.0 Executive Summary</b>                            |                            | <input type="checkbox"/> |
| 1.1 Mission   |                            | <input type="checkbox"/> |
| 1.2 Overview of project                                 |                            |                          |
| <b>2.0 Definition and explanation of RRCs and Parks</b> | <b>1.0, 2.0</b>            | <input type="checkbox"/> |
| <b>3.0 Key drivers and community benefits</b>           | <b>3.2, 3.3</b>            | <input type="checkbox"/> |
| <b>4.0 Market analysis</b>                              | <b>3.5, 3.6</b>            | <input type="checkbox"/> |
| 4.1 Industry analysis                                   |                            | <input type="checkbox"/> |
| 4.2 Markets for recovered materials and goods           |                            | <input type="checkbox"/> |
| 4.3 Customers   |                            | <input type="checkbox"/> |
| 4.4 Competing disposal facilities                       |                            | <input type="checkbox"/> |
| 4.5 Emerging trends                                     |                            | <input type="checkbox"/> |
| 4.6 Legislative overview                                |                            | <input type="checkbox"/> |
| <b>5.0 Implementation (establishment)</b>               | <b>3.14, 3.7, 3.8, 3.9</b> | <input type="checkbox"/> |
| 5.1 Siting and design                                   |                            | <input type="checkbox"/> |
| 5.2 Stages of development                               |                            | <input type="checkbox"/> |
| 5.3 Co-locating businesses                              |                            | <input type="checkbox"/> |
| <b>6.0 Governance</b>                                   | <b>3.4, 3.10</b>           | <input type="checkbox"/> |
| 6.1 Organisational structure                            |                            | <input type="checkbox"/> |
| 6.2 Involved parties                                    |                            | <input type="checkbox"/> |
| 6.3 Advisors  |                            |                          |
| <b>7.0 Operational management summary</b>               | <b>3.11, 3.12</b>          | <input type="checkbox"/> |
| 7.1 Staffing  |                            | <input type="checkbox"/> |
| 7.2 General operational issues                          |                            | <input type="checkbox"/> |
| 7.3 Health and Safety                                   |                            | <input type="checkbox"/> |
| 7.4 Legal issues  |                            | <input type="checkbox"/> |
| <b>8.0 Financial analysis</b>                           | <b>3.13</b>                | <input type="checkbox"/> |
| 8.1 Projected profit and loss                           |                            | <input type="checkbox"/> |
| 8.2 Projected cash flow                                 |                            | <input type="checkbox"/> |
| 8.3 Financial partners or contributors                  |                            | <input type="checkbox"/> |
| <b>9.0 Recommendations</b>                              |                            | <input type="checkbox"/> |
| <b>10.0 Appendices</b>                                  |                            | <input type="checkbox"/> |
| 10.1 Site Plans   |                            | <input type="checkbox"/> |
| 10.2 Examples of New Zealand<br>and overseas operations | <b>4.0</b>                 | <input type="checkbox"/> |
| 10.3 Supporting information                             |                            | <input type="checkbox"/> |

### 3.16 Tips from the coalface

Following are tips gleaned from many years of combined experience – from the experts working at the coalface.

#### Customers

- *“High value goods such as antiques and collectibles will attract higher prices if displayed well and in a special area.”* Mike Gregory, Nelson Environment Centre
- *“Customer Service is the key to repeat sales – but it won’t happen on its own. Staff need training in this area.”* Anon
- *“Most people come to the dump on weekends – so be open on weekends, even if it means not opening during the week.* Anon (This tip probably applies more if the RRC is located near or at the transfer station or landfill.)
- *“One problem area is attracting people onto the site for the first time. After they’ve been once they’re hooked but the challenge is getting them there in the first place.”* Allison Lewin, Development Manager, Mana Community Enterprises & Helen Schafer, Zero Waste Coordinator, Porirua City Council
- *“Provide a friendly marketplace.”* Dan Knapp, Urban Ore.

#### Site

- *“Cover, space and organisation are viewed as being essential to encourage sales and provide a pleasant shopping experience.”* Staff at Revolve, Canberra.
- *“Layout is an important issue. Drop off facilities for recyclables should be at the front of the site, with good signage and plenty of open space. Residual waste disposal should be the farthest away and more difficult to do than recycling. When a customer leaves they should pass by the retail shop and there should be both a fast track and a slow loop to cater for customers in a hurry and those who want to browse. Whichever route is taken everyone should have a positive recycling experience.”* John Ransley, Manager Innovative Waste Kaikoura.
- *“Think of how much space you need and then double it – because that’s how much you’ll really need.”* Dan Knapp, Urban Ore.

#### Staff

- *“Sales people must be identifiable, by uniform, bright coloured overcoat or overalls, and name tags.”* Russ Loudon, Waste Works Ltd.
- *“There are skills required and management is the one of them. You can’t expect people that haven’t developed these skills to suddenly be able to run a complex facility and make an instant success of it.”*  
Cliff Colquhoun, Manager, CBEC.

#### Equipment

- *“Exercise great care in buying used machinery or budget for high maintenance costs.”* Gordon Hodson, Trustee WRT.
- *“Shelving and layout and display of merchandise are often neglected – but are very important.”* Anon.

## Social

- *"Good reporting back to the community is essential for strong community support."* Cliff Colquhoun, Manager CBEC.
- *"RRC projects provide huge economic benefits to society, because steering just one person clear of the prison system saves society up to a million dollars (when the cost of keeping someone in prison and loss of productive working life are calculated)."* John Ransley, Manager Innovative Waste Kaikoura.
- *"We get regulars here daily – and four or five of them are local second hand dealers who buy in bulk."* Anon.

## Operation

- *"Don't make rapid changes – wait until you have developed an appropriate solution to a problem before adjusting anything, to minimise disruption."* David Reece, Engineering and Services Manager, Opotiki District Council.
- *"It's important to make sure that customers exit past the till and have no other means of leaving the site to prevent loss of goods."* Anon.
- *"Have a dedicated receiving area for incoming goods with sufficient space for storage until the goods are priced."* Mike Gregory, Nelson Recycling Centre.

## Income

- *"Do not let valuable items such as brass and copper be given away for free by staff as these can be valuable contributors to the RRC's income."* David Reece, Engineering and Services Manager, Opotiki District Council.
- *"Find new opportunities by identifying service voids or gaps in the market."* Dan Knapp, Urban Ore.
- *"Respectful presentation raises the perception of value which establishes value."* Dan Knapp, Urban Ore.
- *"The pricing should be consistent – if one person is seen as a softie customers will quickly learn this."* Mike Gregory, Nelson Environment Centre.
- *"Turnover is the name of the game, so price accordingly, wholesale generously to existing dealers within the industry and at times it is best to throw another item into the sale if the customer enters into the bartering mode."* Russ Loudon, Waste Works Ltd.

## Relationship with Council

- *"It is important to get the nature of the relationship with the council right. It has to be a long-term, healthy partnership that is constantly refreshed."* Mike Gregory, Nelson Environment Centre.

## 4.0 Case studies

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There are around 50 community organisations working on waste minimisation initiatives around New Zealand - many operating Resource Recovery Centres. On top of this there are a growing number of councils that are investing heavily in major resource recovery infrastructure for their communities.

The table below lists Resource Recovery Centres and Drop-off facilities operating around New Zealand. The list isn't exhaustive - it includes only the larger facilities and those known to the authors.

Twelve of these facilities, representing a range of different styles, management models and sizes were visited in early 2003 to gather information for this report. Their case studies follow. A number of outstanding facilities were not able to be visited due to time constraints. Those profiled should not be viewed as the 'top twelve' - rather a representative sample of facilities being operated around New Zealand. Five large overseas facilities were also visited and profiled to provide an international perspective and to show the type and scale of operations that could be established in New Zealand.

| LOCATION         | ORGANISATION                                     | RRC ACTIVITIES      |            |        |                     |            |                  |           |
|------------------|--|---------------------|------------|--------|---------------------|------------|------------------|-----------|
|                  |  | Recyclable drop off | Processing | Re-use | Kerbside collection | Greenwaste | Transfer station | Education |
| Kaitia           | CBEC   |                     |            |        |                     |            |                  |           |
| Whangarei        | Scavengers Too                                   |                     |            |        |                     |            |                  |           |
| Whangarei        | Whangarei District Council/ Paper Reclaim        |                     |            |        |                     |            |                  |           |
| Manukau          | Second Time Recovery Park                        |                     |            |        |                     |            |                  |           |
| Beachlands       | Beachland's Resource Trust                       |                     |            |        |                     |            |                  |           |
| Waitakere        | Waitakere City Council                           |                     |            |        |                     |            |                  |           |
| Devonport        | North Shore City Council                         |                     |            |        |                     |            |                  |           |
| Waiheke Island   | Cleanstream Waiheke                              |                     |            |        |                     |            |                  |           |
| Cambridge        | Materials Processing Ltd                         |                     |            |        |                     |            |                  |           |
| Huntly           | Huntly and Ngaruawhaia Recyclers                 |                     |            |        |                     |            |                  |           |
| Raglan           | Xtreme Waste                                     |                     |            |        |                     |            |                  |           |
| Tokoroa          | South Waikato Achievement Trust                  |                     |            |        |                     |            |                  |           |
| Rotorua          | Materials Processing Ltd                         |                     |            |        |                     |            |                  |           |
| Kawerau          | Kawerau District Council                         |                     |            |        |                     |            |                  |           |
| Tauranga         | Tauranga District Council                        |                     |            |        |                     |            |                  |           |
| Opoiki           | Opoiki District Council                          |                     |            |        |                     |            |                  |           |
| Hastings         | Hastings District Council                        |                     |            |        |                     |            |                  |           |
| Palmerston North | Palmerston North City Council – Fergusson Road   |                     |            |        |                     |            |                  |           |
| Porirua          | Porirua City Council/ Mana Community Enterprises |                     |            |        |                     |            |                  |           |
| Kapiti Coast     | Kapiti Coast DC District Council Drop off        |                     |            |        |                     |            |                  |           |
| Masterton        | Masterton CC District Council                    |                     |            |        |                     |            |                  |           |
| Nelson           | Nelson Recycling Centre                          |                     |            |        |                     |            |                  |           |
| Tasman           | Kahurangi Employment Trust                       |                     |            |        |                     |            |                  |           |
| Kaikoura         | Innovative Waste Kaikoura                        |                     |            |        |                     |            |                  |           |
| Amberley         | Hurunui Recycling                                |                     |            |        |                     |            |                  |           |
| Christchurch     | Recovered Materials Foundation - SuperShed       |                     |            |        |                     |            |                  |           |
| Ashburton        | Wastebusters Trust                               |                     |            |        |                     |            |                  |           |
| Rakaia           | Rakaia Community Recyclers                       |                     |            |        |                     |            |                  |           |
| Otematata        | Ahuriri Resource Trust                           |                     |            |        |                     |            |                  |           |
| Mackenzie        | Mackenzie District Council                       |                     |            |        |                     |            |                  |           |
| Central Otago    | Central Otago Wastebusters                       |                     |            |        |                     |            |                  |           |
| Oamaru           | Waitaki Resource Trust                           |                     |            |        |                     |            |                  |           |
| Wanaka           | Wanaka Wastebusters                              |                     |            |        |                     |            |                  |           |
| Dunedin          | Dunedin City Council                             |                     |            |        |                     |            |                  |           |
| Invercargill     | Habitat for Humanity                             |                     |            |        |                     |            |                  |           |

## 4.1 New Zealand Case Studies

### Case Study 1: Kaitaia

#### MILESTONES

**1989** – CBEC (Community, Business, Environment Centre) established

**1990** – Starts kerbside recycling, recycling centre and outlying drop-off facilities

**1999** – Far North District Council adopts a Zero Waste policy

**2001** – CBEC forms joint venture with Waiheke Resource Trust to manage and reduce Waiheke Island's waste

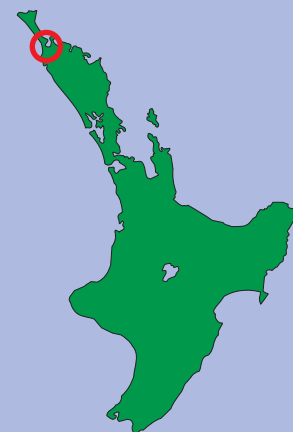
#### ORGANISATION PROFILE

The Community, Business and Environment Centre (CBEC) holds a special place in the history of resource recovery in New Zealand. It was founded 14 years ago in response to concern at the growing level of unemployment in Kaitaia. The vision of the organisation was to develop an economic model that created real local jobs and new business opportunities in a way that did not compromise the environment.

Since its establishment it has employed over 500 people, created many new business ventures and is one of the larger employers in Kaitaia. CBEC was one of the first community groups to prove that if the community can take control of its waste stream, it can use the resource to create jobs, while at the same time reduce waste costs and provide new services to the community. Currently CBEC runs a plant and forestry nursery, garden centre, labour pool, kerbside collection service in Kaitaia and Ahipara, the Kaitaia recycle centre and transfer station and outlying resource recovery facilities in Russell, Keri Keri, and Te Hapua. In the past it has also run an energy efficiency programme and ecological restoration projects. CBEC is also a partner in a joint venture company, Cleanstream Waiheke, with Waiheke Resource Trust that has a 7 year waste and recycling contract for Waiheke Island. (see Waiheke case study).

#### People

CBEC currently employs over 30 people, 9 full time equivalents involved in the waste reduction and resource recovery activities. Many staff have been long term unemployed or even may have never held a job before, which means on-job training is required. The Manager, Cliff Colquhoun, reports to a Board of Directors comprised of community representatives and there are two managers below him – for Site and Collection and Systems and Accounting.



#### KEY STATISTICS

**Population serviced:**  
10,000

**Staff employed:**  
9 full time equivalents

**Establishment cost:**  
\$100,000 (not incl. land and roadworks)

**Annual income:**  
\$355,000

**Annual operating costs:**  
\$350,000

**Land area:** 1.2 hectares

**Reuse shed:** 220 m<sup>2</sup>

**Residual waste charges:** \$22 / m<sup>3</sup>

**Management:**  
Community business

## RESOURCE RECOVERY FACILITIES

The Kaitaia Recycle Centre is the hub of CBEC's recycling and waste minimisation activities. CBEC holds council contracts to operate the Kaitaia site, the Russell recycling facility and the Te Hapua refuse and recycling facility. Recyclables from the Kaitaia and Ahipara kerbside collection (one of the few user pays schemes in the country) come back to the centre, along with recyclables picked up from collection points in Ahipara -10 km away, Te Hapua – 100km away, Russell –120km away and Keri Keri - 60 km away. Some of these drop-off facilities are modified sea containers. Pick ups are made in a recently acquired compactor truck - materials are loaded sequentially, compacted, and sorted upon arrival at the Recycle Centre. Transportation is a major issue for the Far North with small towns scattered over a large area.



### Site information

The recycle centre is located at the Council-owned transfer station that is on an old landfill. Because they handle transfer station activities and collect charges, as well as recycling, CBEC staff have the opportunity to encourage people to use the recycling facilities before they drop off residual waste. CBEC own the buildings and equipment on site and designed the site - although existing features such as the refuse bay had to be worked around.



A 'recycling wall' and processing area handle the recyclables. A 220 m<sup>2</sup> building was erected in 2001 to house the 2nd Time reuse shop. Initially this was operated independently by a local person who returned a percentage of the donations to CBEC. The shop is now operated by CBEC but is still a relatively minor focus of the operation. It is currently only open weekdays which is not ideal as more people visit the site in the weekend.

A 130 m<sup>2</sup> building houses production, office and staff facilities.

Things that could be improved on the site include:

- The tarsealed working surface could be extended further into processing areas
- A larger site would enable the reuse shed and processing areas to be extended
- More covered areas for storage are required
- The refuse bay could be located in a less prominent position (currently it's in the middle of the site).
- A wider overhang on the processing side of the recycling wall would give workers better sun and rain protection
- Better separation of public areas from processing areas



Having a large amount of storage space has been very useful. For example 700 tyres were accumulated over 4 years and recently 400 were sold. CBEC has demonstrated many times that stockpiling is a successful strategy to gain best prices for materials.

### Operations

The site is open Monday to Friday 7.30am to 5pm, and Saturday and Sunday 9am to 5pm.

Materials accepted include paper, cardboard, glass bottles, aluminium and tin cans, plastic containers (1,2,5), plastic film, cotton cloth, batteries, whiteware, metals and reusable items. Greenwaste was accepted and composted on site until 12 months ago but this is on hold while council reviews overall waste contracts. Residual waste is charged at \$1.50/bag, \$6/bootload, \$13.50/trailer-load and \$22/ m<sup>3</sup>. Recycling at the RRC is free, kerbside collection costs 70 cents/week.

Customer service is a priority at the RRC. The goal is for customers to have priority from the time they arrive till the time they leave. Staff show them where the drop off points are for whatever they have on board and what the charges are – and encourage them to use the recycling facilities. All staff undergo a customer service induction process before they start working with the public. They also have first aid, health and safety and operational skills training.

### **Marketing**

The recycling/waste reduction message is promoted through the Slash Trash campaign which operates throughout the district. Flyers are also sent out to the community to encourage participation. School visits are also very helpful in getting the message across to households.

Community buy-in and support for CBEC's waste minimisation activities is extremely high. Local Iwi, Police, Watch Dog groups and the Community Board are all highly supportive. The Police in particular have praised CBEC's activities as being exemplary in helping divert youth offenders from crime.

### **Equipment**

- 8 m Compactor truck
- Box truck with tail lift
- Forklifts (2)
- Paper press
- Tip trailers (2)
- Cage trailers (2)

Wool bales and other storage containers and small equipment

Obtaining an export press would help considerably, saving 1 -2 days labour baling

## **FINANCIAL INFORMATION**

Establishment costs for the site in 1989 were around \$100,000 plus \$72,000 for equipment. Operating costs are around \$350,000 annually - most of this being wages.

Income (\$355,000 per annum) is derived from Council contracts (\$200,000), sale of materials (\$70,000), collection services (\$70,000) and wage subsidies (\$15,000).

The RRC puts \$170,000 in wages back into the community every year.

Over a three year period (1992-95) CBEC and council engineering staff did a thorough study of the cost of recycling vs waste disposal and found that:

- The recycling programme was handling 20% of the waste stream for 12.7% of total waste costs at \$7.37/ m<sup>3</sup>.
- The waste disposal system was handling 80% of the waste stream for 87.3% of the total costs at \$12.28/ m<sup>3</sup>.
- Direct savings in landfill disposal attributable to the recycling programme were at that time \$4.01/ m<sup>3</sup> which, when taken off the recycling cost of \$7.37/ m<sup>3</sup> leaves a cost to recycle of \$3.36/ m<sup>3</sup> - compared to \$12.28/ m<sup>3</sup> to waste
- The total volume of material processed by the recycling programme was 11,341 m<sup>3</sup>. This has now increased to over 20,000 m<sup>3</sup>.

(This information can be found in Recyclanomics, published by CBEC for the Ministry for the Environment)



## SUMMARY OF KEY ISSUES

### Main Problem Areas

- Glass –3 loads from CBEC were recently rejected by ACI this year despite none having been rejected over the last 12 years. The problem is oversupply and a monopoly buyer.

### Contracts

- Contractors should be being paid on volume diverted from landfill
- Contracts need to be split (transfer station, waste hauling etc)
- A service payment should be included
- Sufficient time needs to be given for contractors to price contracts properly
- Danger of long-term global contracts that lock small players out of the market.

### Key drivers

- Job creation
- Local economic development
- Environmental protection

### Main reasons for success

- Vision and determination of the founders
- Staff dedication
- Community support – good reporting back to the community essential for this
- Persistence
- Recognition of CBEC's achievements from around the country
- Lobbying
- Never getting into negative public relations
- Having the right equipment
- Well designed and costed proposal accepted by Council in 1990

### Mistakes to learn from

The danger of under-capitalisation – resulting in piece-meal establishment

- Not anticipating increasing volume increases – this year alone there has been a 25% increase in glass and cardboard. Increases in volume mean increased costs for the same return.
- No matter how successful you are you will be judged on your PR
- It is important to ensure that there is a balanced mix of skills and experience including motivational aspects in each workplace
- Criteria need to be set up for the system: Production targets, weekly monitoring, production systems
- Site needs to be run like a factory with inwards and outwards goods – time in motion etc.

### The Future

- Potential expansion of services throughout Northland
- Refuse collection contract
- Development of Zero Waste Community Enterprise Network

### What's needed most from Government and Council?

- Mandatory targets (with dates) for specific materials that local authorities must reach
- Formation of a working party to advise government on waste reduction – comprised only of groups working specifically in this field.
- Waste levy to generate funds for waste reduction projects.

**Contact:** Cliff Colquhoun, Manager CBEC – admin@cbec.co.nz

## Case Study 2: Whangarei

### MILESTONES

**1996** – Sustainable Whangarei established to promote public education on waste minimisation

**2000** – Scavengers Too established to practically implement waste minimisation initiatives

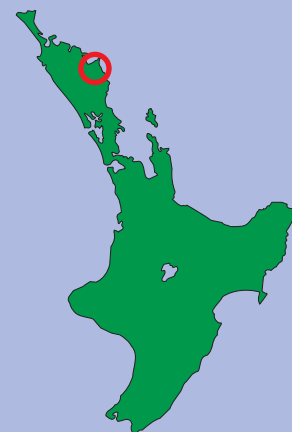
**2001** – Council contract won to run Waste Wise education programme in schools.

### ORGANISATION PROFILE

Sustainable Whangarei was established by Gloria White and Jill Welch to promote conservation and waste minimisation in response to a visit from Mahlon Aldridge from Ecology Action of Santa Cruz in 1996. After four years, Scavengers Too was set up to practically implement the messages that Sustainable Whangarei was promoting. It's motto: "Towards Zero Waste and creating employment".

#### People

Gloria and Jill run the operation on a volunteer basis. A small petrol allowance of \$20/week is provided but otherwise the two women have been running the operation without compensation for the last two years. Up to seven or eight people with mental disabilities work on the site at any one time. Scavengers Too provides them with an opportunity to develop work skills and confidence. They are referred to the facility by mental healthcare providers, however no compensation is provided.



### KEY STATISTICS

**Population serviced:**  
70,000

**Staff employed:**  
7 volunteers plus up to 8 disadvantaged workers

**Establishment cost:**  
\$5,000 to renovate existing building

**Annual income:**  
\$13,500

**Annual operating costs:**  
minimal

**Land area:**  
0.25 hectare

**Building area:** 400 m<sup>2</sup>

**Recycling charges:** nil

**Management:**  
community group

## RESOURCE RECOVERY FACILITIES

Scavengers Too is solely a re-use operation. Commodity recyclables are handled at the Paper Reclaim recycling facility at the top of the landfill 200 metres away. A good relationship has been built up between the Paper Reclaim and Scavengers Too, with Paper Reclaim loaning machinery from time to time.

### **Site information**

The facility is located at the landfill on a 2,500 m<sup>2</sup> piece of land owned by Council. An existing 400 m<sup>2</sup> shed and garage were also made available. The larger building is used to store and display goods and the staff lunchroom, toilets and office are in the garage. The landfill is due to close in 12-18 months but there are no set plans for where Scavengers Too will locate after this. A new transfer station is being built 5 km away and this would be the ideal location.



*Recycling Wall Whangarei operated by Paper Reclaim*

### **Operations**

The site is open from 9am to 4pm every day but will soon move to the same hours as the landfill - 7am to 5.30pm. To cope with this a new roster has been developed to ensure there is a volunteer supervisor on site all the time.

Scavengers Too also run a 'Waste Wise' school education programme on contract to Council.

### **Marketing**

The facility is promoted through mailbox drops of pamphlets and advertising in the local free paper. A 'Sculpture Symposium' held in 2002 also helped to raise profile.

A blitz week has also been held where customers could make an offer on anything.



### **Equipment**

There is no large equipment. Gloria White's own car and trailer are used to transport goods and the rest of the equipment consists of small hand tools.



## FINANCIAL INFORMATION

The site brought in \$13,500 this year – up from \$2,400 the year before. As the site has only been open for two years income is expected to rise at an increasing rate. All income comes from sales of goods, although two grants from Zero Waste New Zealand of \$5,000 and \$10,000 helped in the establishment phase.



## SUMMARY OF KEY ISSUES

### Main Problem Areas

- Uncertainty as to where Scavengers Too will locate after the landfill closes
- Lack of decent facilities for staff.
- Lack of funding to pay supervisor wages

### Key drivers

- Waste minimisation
- Job creation
- Community sustainability

### Main reasons for success

- Get the public behind you
- Try to involve other community groups
- Get the education right
- Support from Zero Waste New Zealand was crucial

### Mistakes to learn from

- Get on side with Council or whatever authority is in charge
- Be careful when vetting volunteers as the wrong attitude can jeopardise the standing of the organisation

### The Future

- If funding for supervisor wages and equipment can be found, a fridge dismantling initiative will be established. Currently Scavengers Too gets no compensation for recovering these from landfill.

### What's needed most from Government and Council?

- Recognition and moral support
- Funding – a certain amount will always be required to make resource recovery work
- Target the consumption ethic
- Shorten the timeframes given in the Waste Strategy

**Contacts:** Gloria White, Coordinator - [sustwhan@igrin.co.nz](mailto:sustwhan@igrin.co.nz)



## Case Study 3: Waiheke

### MILESTONES

**1989** – Waiheke County Council sets up extensive recycling and composting programmes in response to pressure to close landfill and reduce costs of disposal of refuse to Auckland landfills. Diversion programmes deteriorated after amalgamation with Auckland City Council (ACC).

**1998** – Waiheke Resource Trust (WRT) formed by local residents to encourage and promote community responsibility for conserving and improving the Island's resources

**1999/2000** – Auckland City Council produces Waiheke Waste Management Plan with input from the community (including members of the WRT)

**2000** – WRT does domestic waste survey to find out whether recycling could be economically viable – and shows that it is. Follow-up community attitude survey shows residents have a strong preference for recycling

**2000** – WRT and CBEC (see Kaitia case study) make joint proposal to ACC to run a pilot project to manage Waiheke's waste collection, recovery and minimisation programme. ACC rejects proposal and tenders all the Island's waste management as three separate contracts.

**July 2001** – Clean Stream Waiheke Ltd (CSWL) a joint venture between WRT & CBEC wins collection and transfer station contracts for the next 7 years, valued at \$7-8 million. CSWL did not tender for the disposal contract.

### ORGANISATION PROFILE

Waiheke Island is located in the Hauraki Gulf just 20km from Queen Street. Being an island community it faces unique environmental and transportation constraints that affect waste disposal. The island's landfill is closed, so waste has to be compacted and barged back to Auckland, then on to landfill at an estimated cost of \$150/tonne. Theoretically this should make resource recovery an extremely attractive proposition, but currently waste contracts do not fully reflect the opportunity to reduce this cost.

Clean Stream Waiheke Ltd (CSWL) successfully tendered for kerbside collection and transfer station contracts for the next 7 years worth \$7 - 8 million. These contracts have been running for 2 years and the amount of waste diverted from landfill has substantially increased. As well as fulfilling the Trust's goal to increase community recycling, the programme has provided sustainable local employment benefits. The Trust itself employs three part-time staff who concentrate on community education initiatives, including running an education centre which features a waste to art gallery.

#### People

CSWL employs an additional 17 full time and 5 part time people through its kerbside collection service, transfer station and resource recovery programmes. Currently only 3 employees are WINZ subsidised. This is in contrast to the 3 fulltime and 2 part-time staff employed by the previous contractor to simply haul waste to landfill. CSWL, ploughs at least \$500,000 annually back into the local economy through wages, while the WRT contributes another \$65,000.



### KEY STATISTICS

**Population served:**  
Winter - 8,000. Summer  
- 22,000 + up to 1,000  
visitors per day

**Staff employed:**  
17 fulltime and 5 part  
time

**Establishment cost:**  
\$370,000 (not incl. land  
or permanent  
buildings)

**Annual income:**  
\$1,067,000

**Annual operating costs:**  
\$1 million

**Annual avoided  
disposal costs:**  
\$420,000 (est)

**Land area:** 0.8 ha

**Recycling charges:** nil

**Refuse charges:** \$20/m<sup>3</sup>  
assumed equivalence  
\$33 tonne

**Management:**  
Community business

## RESOURCE RECOVERY FACILITIES

Central to the WRT & CSWL's objectives is the development of the transfer station to a full Resource Recovery Centre. Auckland City Council (ACC) is currently investigating the potential of developing the transfer station site into a purpose built facility which would improve conditions for customers and staff and enhance the potential to separate recoverable materials and goods from the waste stream

### **Site information**

The transfer station site is owned by ACC and operated by CSWL under the transfer station contract. At 0.8ha the site does not have the space to fully operate as a RRC. If the adjacent council reserve, some of which is subject to Waitangi Treaty claims, can be used the site could double in size.



Facilities consist of a small administrative office, recently installed staff facilities, a large open shed where recyclables are processed and a concrete pad for the refuse tipping and loading into mobile compactors for transport to Auckland landfills (operated under a different contract by Waste Management Ltd). There is also a small open shed (around 50 m<sup>2</sup>) for storage and sale of reusable household goods, a large area at the back of the site for greenwaste drop-off and composting, a recycling area for public drop off of designated recyclables located in the centre of the site and various storage areas for recovered whiteware metals, tyres and processed recyclables.

Although ACC has had the heavy traffic area sealed the remainder of the site is muddy in wet weather and dusty in dry weather.

Despite these limitations CWT is diverting significant quantities of recyclable materials from landfill. In Feb 2002 128 tonnes were processed and it is projected that at least 1,000 tonnes will be diverted this year – plus 2,000 tonnes of greenwaste sold locally as composted mulch.

The advantage of the site is that it is located on a main road, providing relatively easy access to the public – who have been using the site for 14 years. There are no other facilities on the island competing for materials other than second hand dealers and charitable op-shops. The local supermarket recycles its own cardboard. There are also a few small mobile greenwaste shredders dealing with garden waste.

### **Equipment**

CSWL has \$200,000 tied up in fixed assets:

- 4 trucks
- 3 trailers
- excavator
- forklift
- frontend loader
- press leased from Paper Reclaim.

All machinery was purchased as used equipment and the maintenance costs have been much higher than expected. WRT Trustee Gordon Hodson's key piece of advice to any community group considering a similar venture would be to exercise great care in buying used machinery or to budget for high maintenance costs.

## Marketing

The waste minimisation programmes are undertaken predominantly by WRT supported by funding from CSWL, Auckland City Council and Zero Waste New Zealand. Three part-time employees focus on:

Running an education centre located in the middle of town where the public can interface directly with staff on environmental and recycling issues. Local artists display artwork created from recovered materials here also.

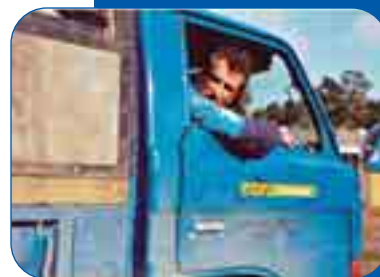
- School education programmes including three Enviroschools projects
- Regular newspaper articles and radio programmes
- Organic waste reduction assistance for local small businesses such as restaurant and homestays
- Waste reduction assistance for larger businesses like Fullers ferry services - which has already achieved 40% waste reduction
- Waste reduction assistance for residents contacted through the 100+ community organisations operating throughout the island
- Workshops on waste minimisation, home composting and worm farms
- Reward programmes such as monthly “best recycler” awards
- Promotion campaigns with sector groups e.g “Junk to Funk” a wearable arts competition for school age children. Christmas Parade Float promoting waste reduction etc

## FINANCIAL INFORMATION

CSWL collects on behalf of Council an annual total of \$200,000 for refuse deposited at the transfer station. The charges are not weight related but assessed depending on the type of vehicle or volume estimate. The true cost of disposal in terms of transportation off the island and into an Auckland City landfill is \$150/tonne.

CSWL’s anticipated costs for this financial year including cost of collection of domestic and public bin refuse, kerbside recycle collection, purchase and distribution of official refuse bags and management of the transfer station including sorting, processing and marketing of recycled and recovered materials will be marginally over \$1,000,000. The anticipated value of diverted materials will be approximately \$200,000.

It is estimated that although 5,800 tonnes of waste will be deposited to landfill this year, 3,000 tonnes will be diverted.



## SUMMARY OF KEY ISSUES

### Main Problem Areas

- Lack of space
- Lack of capital investment for the site facilities– which may lead to legal and enforcement issues
- Tensions between CSWL and ACC associated with site development and refuse disposal strategies

### Key drivers

- Cost of waste haulage from Waiheke to Auckland
- Employment outcomes
- Environmental outcomes

### Main reasons for success

- Commitment of key individuals
- Persistence
- Funding support from ethical lending agencies
- Community recognition and support
- Supportive staff working under trying conditions
- Technical assistance from the recycling industry

### The Future

#### Short term

- Investigating the opportunity to tender for the waste haulage contract
- Improve ability to sort and divert construction and demolition waste
- Investigate a better sorting system to achieve a higher resource recovery
- Investigate obtaining a larger press to create export size bales of recyclables
- CBEC gradually reducing its shareholding in CSWL and full ownership will be taken up by WRT

#### Long term

- Negotiating with Council to establish a purpose-built RRC expanded transfer station and reviewed fees system

**Contact** : Gordon Hodson, Trustee WRT - [hoddo@ihug.co.nz](mailto:hoddo@ihug.co.nz)

## Case Study 4: Opotiki

### MILESTONES

- 1997** - Opotiki faces imminent landfill closure
- 1998** – Opotiki District Council becomes the first council in New Zealand to adopt a Zero Waste target (target date 2010)
- 1999** – Charges imposed at landfill
- 2000 (July)** – Kerbside collection established
- 2001** - Council reduces residual rubbish bag from 75 litres to 25 litres
- 2001 (June)** - satellite RRC at Waihou Bay opened
- 2002 (April)** - main RRC in Opotiki township opened
- 2002 (June)** temporary RRC site at Te Kaha opened

### ORGANISATION PROFILE

Opotiki District Council was the first council in New Zealand to adopt a Zero Waste policy. The main driver for this decision was economic as the Opotiki landfill was nearing capacity and huge waste cost increases loomed with either the establishment of a new landfill or transporting waste out of the district. Adopting a Zero Waste policy gave Council a new perspective on the problem – it started looking for solutions to eliminate rather than manage waste. A secondary driver was the potential to create new, self-supporting local jobs and businesses. Three key individuals were pivotal in taking up the challenge and implementing what at the time was a revolutionary vision: Mayor Don Riesterer – later Trustee of Zero Waste New Zealand, Engineering and Services Manager Dave Reece – an initially reluctant but ultimately staunch Zero Waste ‘convert’ and Australian consultant Simone Annis, who proposed the idea to Council.

Council took the leadership role and set about implementing a comprehensive programme that put the necessary incentives and infrastructure in place. This included establishing a kerbside recyclables collection, reducing the capacity of residual rubbish bags from 75 litres to 25 litres and investing in a major RRC in Opotiki plus two smaller satellite drop-off centres in outlying rural areas. Since adopting Zero Waste in 1998 Opotiki has reduced the amount of waste it landfills from 10,000 tonnes per annum to 1,500 – an 85% reduction. This is well ahead of its own projections for attaining zero waste by 2010. A goal of 90% by June 2004 has been set.

#### People

Five staff are employed by Council at the central RRC plus four part time positions at the satellite RRCs in Te Kaha and Waihou Bay. Another two jobs have been created at the central site by the greenwaste contract and more for the kerbside collection. None of these positions are subsidised.



### KEY STATISTICS

**Population serviced:**  
9,200

**Staff employed:**  
5 council staff + 2  
contractors + 4 part-  
timers at outlying RRCs

**Establishment cost:**  
\$460,000 (3 facilities)

**Annual income:**  
\$120,000 (yr 1)

**Annual operating costs:**  
\$310,000

**Annual avoided  
disposal costs:** \$230,000

**Land area:** 2 ha

**Building area:** 950 m<sup>2</sup>  
(main facility)

**Recycling charges:**  
\$4/trailer-load

**Residual waste  
charges:** \$12/trailer-  
load

**Commercial residual  
waste charges:**  
\$20/tonne – going up  
to \$100/tonne with  
landfill closure

**Management:** Council  
owned and operated

## RESOURCE RECOVERY FACILITIES

The Opotiki RRC is central to Council's whole Zero Waste programme. It acts as the central drop-off point for recyclables and residual waste picked up at kerbside by the local contractor, and for public drop off of household goods, recyclables and residual waste. It also provides an effective platform to communicate to the community how well it is doing. A large graph on the side of the building shows actual waste reduction alongside projected waste reduction on the way to Zero Waste by 2010 – giving the community a real sense of pride and achievement.



The two outlying RRCs (one on a temporary site) provide resource recovery and residual waste disposal facilities for Waihou Bay - 107 km from Opotiki and Te Kaha - 65km from Opotiki. Recyclables and compacted residual waste are picked up weekly by the local waste contractor and brought back to the central facility.

### Site information

In 2002 Council bought a former kiwifruit pallet factory to use as its main RRC. The 950 m<sup>2</sup> building sits on a 2 hectare site - 1.5 ha fenced with another 0.5 ha unfenced, but available for future use. A tarsealed driveway, parking area and storage area keep the site clean and tidy in all weather conditions. Clearly painted arrows help direct traffic flows and prevent confusion and congestion at busy times.



Fortunately very little reconstruction needed to be done to make the building suitable for use as a RRC. Main features of the building include:

- A two lane system for driving into the RRC - one lane for recycling and one for residual waste.
- Easier access to recycling services than residual waste disposal. Trailers have to be backed up a ramp to offload into skip bins. Council already had 2.6 m<sup>3</sup> capacity bins so designed facilities around these. Every 2 days a compactor comes to the site to empty the bins and take waste to landfill.
- A mezzanine floor for storage of baled plastics and paper.
- A small second hand shop near the entrance of the RRC.
- Greenwaste chipping and composting takes place on land outside the main fenced area.
- Scrap metals and cars are accepted on site and processed by a scrap metal dealer

### Equipment

- 3 pallet trucks with small hydraulic lifts
- Electric hoist to move bales to mezzanine floor
- Compactor for steel cans
- Vertical press for cardboard and paper
- Horizontal press for plastics

### Marketing

Council supports the resource recovery programme with radio advertising, a community education programme run by Tauranga based EERST (Environmental Education for Resource Sustainability Trust - [eerst@xtra.co.nz](mailto:eerst@xtra.co.nz)) and by working with small local businesses such as camping grounds.



## FINANCIAL INFORMATION

Council's investment in the three RRCs will come to around \$460,000. \$300,000 of this is for land, buildings and development of the central site, \$80,000 for the Waihau Bay satellite facility and another \$80,000 for the Te Kaha satellite RRC.

The annual operating cost for these facilities is \$310,000 with annual income around \$120,000 in year one. When avoided disposal fees are included the balance changes markedly. If Council had not made the investment in resource recovery it would have transported 6,000 extra tonnes of waste out of the district over the last 2 years at a cost of around \$100/tonne – a total of \$600,000. In effect Opotiki District Council has saved \$230,000 per year for the last 2 years through its resource recovery programme and does not face the enormous costs of finding and developing a new landfill site (in excess of \$2 million). On top of this the community now owns significant land and building assets and has created 9 new jobs.

Because of the success of the resource recovery programme the landfill is still operational but it will be closed within the next year. When that happens the steadily reducing amount of residual waste (projected to reduce to 1,000 tonnes per annum by 2004) will be trucked to Kawerau or Paeroa and landfill charges will go up from \$20/tonne to \$100/tonne, increasing the financial incentive to recycle.

Current charges for public residual waste disposal are \$12/trailer-load and \$4/trailer-load for a clean load of recyclables, with a scalable fee for mixed residual waste and recyclables. Greenwaste is charged at \$6 m<sup>3</sup> and the local contractors are paid \$18.50 m<sup>3</sup> to process this. They can then sell the compost to the public or to commercial orchards (quality control is a critical issue for the latter).

So far there are no other co-located businesses, however Council sees opportunities for future development in furniture repair and dismantling businesses.



## SUMMARY OF KEY ISSUES

### Main Problem Areas

Dave Reece reports no major problems with the operation or facilities of the RRC. His philosophy is not to make rapid changes – but to wait till he has developed an appropriate solution for a problem before adjusting anything to minimise disruption. The only area that he would advise caution with is in letting valuable items like brass and copper be given away for free by staff as these can be valuable contributors to the RRC's income.

### Key drivers

- Imminent landfill closure
- Local job creation

### Main reasons for success

- Leadership from Mayor, Don Riesterer
- Clear focus by Council engineer Dave Reece in applying the necessary resources to make it happen

### The Future

The next step for council will be to complete the third RRC in 2004 which is currently in a temporary location

### Potential projects:

- Investigate getting a community group or small business to run the second hand shop which at present has a fairly low profile
- Investigate helping a small business set up a repair shop for bikes, furniture etc. This could potentially employ 3 to 4 people
- Investigate kitchen waste collection and wormfarming

**Contact:** Dave Reece, Engineering and Services Manager, Opotiki District Council - [daver@odc.govt.nz](mailto:daver@odc.govt.nz)

## Case Study 5: Porirua

### MILESTONES

**1996** – Mana Community Enterprises (MCE) starts providing mental health day services to the Porirua community

**1999** – Alison Lewin, Manager of MCE approaches Council to see what opportunities there are to get involved in recycling in Porirua.

**2000** – Porirua adopts a Zero Waste policy

- Porirua City Council (PCC) Solid waste Management plan written
- recommendations made to investigate the potential of establishing a RRC
- MCE produces feasibility study for setting up a recycling business in Porirua
- Helen Shafer (PCC Zero Waste Coordinator) and Alison Lewin investigate options and put the concept of a purpose-built facility incorporating an education centre to Council

**2001** – Concept approved

**2001** – Junky Funk opens

**2002** – Trash Palace opens

### ORGANISATION PROFILE

Trash Palace was established as a joint effort between local community group Mana Community Enterprises (MCE) and Porirua City Council (PCC). Alison Lewin, the Development Manager of MCE was the initiator, approaching Council after returning from a Churchill Fellowship overseas where she saw first hand how recycling ventures created jobs.

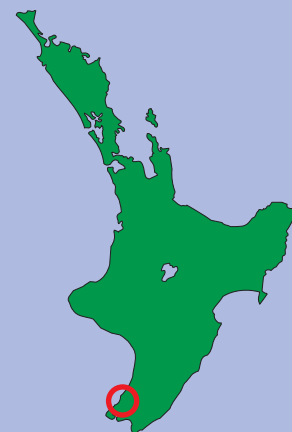
MCE was established to provide rehabilitation with a work skills focus for people with psychiatric and related disabilities. Before branching out into recycling it operated from two sites, one focusing on light indoor factory work and one on garden maintenance and nursery work, with around 75 people a day attending its programmes. About a third of MCE's clientele had expressed interest in moving to paid employment. For a number of reasons including the limited opportunities in the immediate area, this step was made difficult if they did not have some relevant work skills and experience.

Recycling offered a way to mitigate these difficulties and also to ensure that contracts with organisations such as Porirua City Council were picked up by local businesses.

MCE started its recycling services by obtaining a contract from a national retailer sorting waste from 9 of its stores, then set up a small facility, Junky Funk, in Porirua town centre to store and display materials recovered from local industry and businesses. Junky Funk is used by teachers, artists and craftspeople looking for cheap art materials. The opening of the Trash Palace RRC has cut patronage so this activity will probably close and relocate at the Trash Palace.

#### People

A Board of Trustees oversees the operation of Trash Palace. Alison Lewin, the Development Manager oversees a full time supervisor and part time



### KEY STATISTICS

**Population serviced:**  
50,000

**Staff employed:** 2 + up to 15 part-timers

**Establishment cost:**  
\$320,000

**Annual income:**  
\$172,000 (yr 1)

**Annual operating costs:**  
\$170,000

**Land area:**  
0.36 hectare

**Building area** 430 m<sup>3</sup>

**Recycling charges:** nil

**Residual waste charges:** \$6/car-load, \$12-16/trailer-load

**Commercial residual waste charges** - \$42/tonne

**Management:** Council owned, community group operated

supervisor. Part-time workers are employed 4 days per week on a roster. An additional 15 staff are employed for 3 months for the inorganic collection. One or two volunteers also work on the site 3 or 4 days a week. There is never any problem getting volunteers. They are usually paid in goods they have selected for themselves.



## RESOURCE RECOVERY FACILITIES

Trash Palace is owned by Council but was designed and built in close cooperation with Mana Community Enterprises. MCE has a 3 year contract to operate the facility and the inorganic collection services – which provides a source of saleable goods. 246 tonnes of materials were recovered from the inorganic collection in 2002. MCE keeps all income from sale of materials.

Recently MCE ran a 'free weekend', putting goods out in the courtyard for people to take away. Around 500 people came, helping create awareness of the facility – and increasing sales.

Recyclable materials (glass, plastics and paper etc) are accepted at Trash Palace but removal is covered by a separate contract – the same one that covers the operation of recycling drop-off centres in the City. MCE does not make any income from recyclables or incur costs for providing drop off facilities. Council is currently considering establishing a large recycling drop off centre in the vicinity of Trash Palace to take advantage of the synergies. This would be an opportunity for MCE to work in co-operation with the commodity recycling company.

Commodity recycling is currently part of the same contract as household refuse collection so MCE does not influence this. To make a bigger impact on the waste stream they would need to arrange with the landfill operator to get materials out at that point. This is possible as the landfill is Council-owned. The other option will be to have a compulsory unloading area that all domestic traffic must pass through.



### Site information

Trash Palace is located just inside the entrance to the Porirua landfill, providing recycling opportunities to anyone going to the transfer station. The main consideration for choosing the site was that the land was already owned by Council so funds were not required to buy additional land. Despite being less than 500 metres from the landfill the RRC is a very attractive place to visit as it offers a panoramic view down a bush-clad valley to Porirua. In the future paths in an adjacent reserve will link the RRC to a scenic walkway. It is expected the RRC will become a tourist attraction and a meeting place for environmental and community groups.

The site is approximately 3,600 m<sup>2</sup> which limits the activities it can undertake - but there is room for expansion in the future.

The building itself was architecturally designed with the vision of it becoming a model for environmental education and resource recovery. Low impact and recycled materials were used in its construction and energy efficiency and water conservation features were included in the design. In the future it will have a composting toilet and will divert grey water into reed ponds that are being built to deal with stormwater runoff using permaculture principles.

The RRC consists of three distinct areas – unloading, retail and education. The unloading area is a flexible space that can be developed further. Depending how use patterns develop, and as budgets allow, some of it may be closed in to increase shop space. Currently the shop area is around 80 m<sup>2</sup>, the education area is 55 m<sup>2</sup>, offices and bathroom facilities 42 m<sup>2</sup> and sorting and storage around 175 m<sup>2</sup>. The drop off area is only semi enclosed but there is potential to develop old sheds across the road where goods could be dropped off. Dismantling and repairing is still being developed but this is expected to happen on site in a covered area.



signage and parking to ensure people stop off before driving up to the transfer station.

### **Operations**

The site is open the same hours as the landfill – Monday to Saturday 7am – 5pm, Sunday and public holidays 9am – 5pm.

Reusable items are dropped off by the public or collected from private properties in Porirua City.

A free pick up service for Porirua residents (two per year) has recently started to replace the inorganic collection. Residents phone in and book a pick up. The advantages of this are that MCE maintains control over when and where they collect, goods are in better condition, there are fewer health and safety issues and education is enhanced because MCE gets an opportunity to talk to residents. The next stage will be to introduce an incentive for people to bring their goods into Trash Palace – one idea being to provide a voucher redeemable for goods.

Collections are scheduled to coincide with other work that MCE undertakes with existing vehicles. Items are generally sold on site, though occasionally large items such as pianos may be picked up and delivered straight to a customer – as Trash Palace keeps a record of customers looking for specific items. A contractor has been collecting all whiteware and appliances for recycling and other dealers take bulk electrical appliances and computer equipment. Scrap metal is likewise collected by a dealer and MCE receives payment for this.

Categories of materials accepted include: scrap metal, appliances, bric-a-brac, windows and doors, plumbing and lighting fittings, furniture, linen, books, tools, timber, paint, car batteries, computer-electronic equipment, toys, clothing, rags, some commercial waste – eg large cardboard cores. Basically if it can be reused or recycled it will be accepted.

### **Marketing**

Word of mouth is the major form of marketing, but MCE has also produced flyers that are handed out at the landfill ticket box and does some newspaper advertising. They are also considering Garage Sale Days and looking at a special offer coupon for discounted landfill entry.

Media releases and ads in local papers advertise that residents can drop off materials for free or can phone in for a free collection.

Trash Palace already has quite a few visitors for educational purposes and the philosophy is to continue involving as many groups as possible - including landscaping/permaculture groups, school children doing murals, artists contributing works –and later holding art exhibitions in the education centre and use of the facility as an event centre.

A strong focus is put on customer service and stock is moved around regularly to maximise interest and make sure items get sold. Specials and free goods help move stock and bargaining is welcomed. Strong relationships develop with regular customers who end up being treated as friends.

Quite a few second hand dealers come to Trash Palace to buy goods for resale at markets and other outlets.

A play area and sandpit is provided to keep children occupied while parents shop and public toilets are provided. MCE are looking at



developing a café area to entice people to come up to the RRC to have a cup of coffee and linger – as they do in garden centres.

An Environmental Centre is also being established in the education space in partnership with a Trust that has gained environment centre funding from the Ministry for the Environment.

So far public feedback on the facility 5 months after opening has been overwhelmingly positive. People love the building, the views and the atmosphere and MCE have had lots of offers of help from people wanting to work there.

MCE is currently working with an ad agency to develop a marketing strategy and produce new ads and signage. Although there will be an initial cost it is important that the marketing is effective.

### **Equipment**

- 3 vans and trailers (shared with other parts of the MCE organisation)
- Truck – leased for 3 days per week for another contract
- 2 hand trolleys
- Pallet lifter

## **FINANCIAL INFORMATION**

The establishment cost of the facility was in the vicinity of \$370,000, \$320,000 for the building and \$50,000 for asphaltting and roading.

Operational costs run at around \$133,000, \$60,000 for wages (likely to increase), \$3,000 for transport and \$70,000 for the inorganic collection.

Annual income for the first year of operation was around \$172,000, \$120,000 Council contract, plus sales of \$52,000 (\$1,000/week). Grants have also been received from groups like Community Employment Group and Zero Waste New Zealand – which provided the first \$2,000 to do the feasibility study.

## SUMMARY OF KEY ISSUES

### Main Problem Areas

- Finding creative solutions to move goods after they've arrived on site. Because Trash Palace accepts everything, including appliances, it's important to develop relationships with people and other organisations that can help move the material.
- Attracting people on site for the first time. After they've been once, "they're hooked" but the challenge is getting them there in the first place.
- Contractual issues. Ironing out the anomalies between the landfill and Trash Palace contracts. There is currently little incentive for the landfill contractor to pull recoverable material out of the waste stream – or to allow Trash Palace to do so. This happens but is totally reliant on goodwill between the parties. There need to be incentives in every contract to reduce waste.

### Key drivers

- Cost of inorganic collection which was around \$120,000 annually. MCE proposed that they could operate the RRC and carry out the inorganic collection for the same cost.
- Council's Zero Waste policy
- Council's strategic goals of economic development and employment
- Unique opportunity for Council to partner with a well established and stable community organisation - MCE

### Main reasons for success

- Committed individuals – particularly Alison Lewin and Helen Schafer
- Supportive council who saw the big picture and invested for success
- Inclusion of MCE in the design of the building
- Flexibility in building design
- Designing and siting the facility to be a drawcard for visitors and tourists

### Mistakes to learn from

When using recycled building materials it's important to specify to contractors the level of work that may be required to prepare them for use. This was underestimated.

### The Future

- Introduce to Council the idea of compulsory drop-off, developing the adjacent site to make this feasible.
- Co-location of associated business enterprises isn't really viable because of the size of the site. Focused effort will be required to get this going at a different site, which would involve a person dedicated to do this.
- The financial outlook is very bright and MCE believes there is potential to triple the current income if more people can be attracted on site
- Ongoing development of the Environment Centre as a local and regional asset in modelling sustainability

### What's needed most from Government and Council?

- More legislation to put pressure on businesses to reuse and recycle – eg take back packaging
- Funding to develop larger facilities and employ more staff to do a wider range of activities

### Contacts:

Helen Schafer, Zero Waste Coordinator, Porirua City Council - [hschafer@pcc.govt.nz](mailto:hschafer@pcc.govt.nz) Alison Lewin, Development Manager, Mana Community Enterprises – [wwise@xtra.co.nz](mailto:wwise@xtra.co.nz)





## Case Study 6: Nelson

### MILESTONES

**1976** – Nelson Environment Centre (NEC) established to promote conservation and waste minimisation

**1992** – Nelson Recycling Centre established by NEC at the Nelson Transfer Station

**1993/4** – Shift to new site co-designed by Council and NEC

**1995** – Contract signed with Council to run resource recovery operation

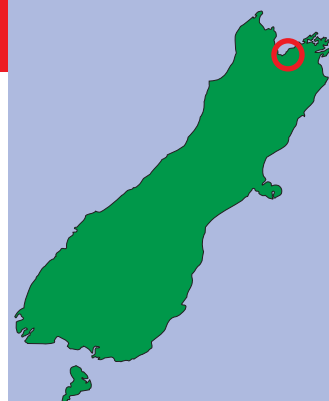
**1999** – Council adopts a Zero Waste policy

### ORGANISATION PROFILE

Two committed environmentalists, Mike Gregory and Willi Borst, established the Nelson Recycling Centre (NRC). They started without support, donating their own time and covering their own expenses initially. Later the organisation relied on subsidised labour to keep the site running. In the early days there was no funding for capital costs – so workers had to work in the rain sorting bottles and flattening cardboard. Eventually a contract with Council and a purpose-designed site allowed them to function with proper support and facilities.

#### **People**

The Nelson Recycling Centre employs 15 people, many of whom have been long term unemployed. There are currently no volunteers working on the site though there have been a lot in the past. A woman is also paid to take school tours around the site.



### KEY STATISTICS

**Population serviced:**  
40,000

**Staff employed:** 15

**Annual income:**  
\$350,000

**Annual operating costs:**  
\$280,000

**Land area:** 0.4 hectare

**Building area:** 650 m<sup>2</sup>

**Recycling charges:** Nil

**Management:**  
Community group

## RESOURCE RECOVERY FACILITIES

The Resource Recovery Centre is the sole focus of Nelson Environment Centre's income generating activities and uses its profits to support other environmental activities.

### Site information

The site is located next to the transfer station which gives NRC an opportunity to retrieve materials from people who have come to drop off waste. There is no compulsory drop-off of recyclables which would enhance resource recovery. Though the site and buildings are owned by Nelson City Council there was strong design input from NRC. NRC have an ongoing contract with Council to run the site and recover specified materials

The site is around 0.4 hectares and the buildings around 650 m<sup>2</sup>. Three lanes pass by the building – the closest for drop off of reusables, the farthest for drop off of recyclables and the middle, straight through to the transfer station. NRC separate the commodity recycling function of the site from the re-use function as they attract different client bases. People who come in to recycle generally want convenience – to drive in, drop off and leave, while people visiting the reuse shop generally come to browse and linger.



### Operations

The site is open Monday to Saturday - 8am to 4.30pm and on Sunday 10am to 4.30pm.

A designated drop-off point is used to receive reusable goods that are then placed in a holding room to be assessed and sorted. A tender system is used for collectable or high value items to ensure fairness. Customers fill out a slip of paper with their contact details and offer price, then put it in the tender box. If a reasonable price is reached the highest bidder is notified at the end of the week. This system ensures second hand dealers are accurate in their valuations because they have to bid against other dealers as well as the public. Second hand dealers are

regular customers at the centre. The customer base also includes builders and DIYers who come in looking for old furniture to fix up. Complaints are sometimes made if the goods are too tidy.

There are no charges for dropping off goods – apart from whiteware. Nelson City Council charges this fee, and then NRC handles the recycling.

No payments are made for goods, even though the quality and value of items can be very high. People are quite happy to donate high quality goods because they are happy to support NRC.

NRC operates a policy of not allowing staff to take goods for free. If a staff member wants an item they take it to the site manager and he appraises it and charges 50% of retail. The purchase is written into the staff buying book and a receipt provided.

Two problem materials at NRC are used oil and glass. NRC pays 9c/litre for waste oil to be sent away to 'Ben's Oil', costing them approximately \$100/month. Glass cullet is sent to ACI in Auckland. NRC pays the wages for one person to sort the glass, plus the cost of loading the container. The receipts from sale of the cullet only covers cartage to Auckland.

### Marketing

No formal marketing is undertaken because NRC has a captive audience in the flow of traffic going to the transfer station. Many people going to drop off rubbish end up dropping in to the recycle centre and making purchases.

### Training

Training in hazardous waste handling, first aid, forklift operation and staff management is provided. The main skills that are required are people skills – especially for staff in contact with the public.



Also important is the ability to value goods and price accordingly. Consistency in pricing between staff members can be a problem.

### Equipment

- Forkhoist
- Small truck
- Various containers

## FINANCIAL INFORMATION

NEC receives 80% of the income generated from the site and Council retains 20%. They receive no grants or other subsidies apart from an occasional Taskforce Green or Department of Corrections worker subsidy

## SUMMARY OF KEY ISSUES

### Main Problem Areas

- A deteriorated relationship with council

### Key drivers

- Environmental protection
- Employment
- Revenue earning to support other environmental projects

### Reasons for success

- Passion and commitment of the two founders, Willi and Mike
- Staff commitment – a good team
- Public support
- Supportive Council staff during establishment
- Focusing on re- use – this is where the money is.

### Mistakes to learn from

- Important to get the nature of the relationship with Council right. It has to be a long-term, healthy partnership that is constantly refreshed.
- Care with vetting employees as one poor appointment can prove destructive. NRC employs people on a 6 month trial basis.

### The Future

- Re-establishing a good relationship with Council

### What's needed most from Government and Council?

- Increased leadership and liaison roles to assist groups involved in waste reduction to find local waste solutions.

### Government:

- Need to have the environmental cost of packaging borne by producers and consumers
- A study is required to assess which waste minimisation activities are best environmentally. NRC believes that some recycling initiatives may not be environmentally positive.

**Contacts:** Mike Gregory, Manager NRC – [nelsonrc@ts.co.nz](mailto:nelsonrc@ts.co.nz)





## Case Study 7: Tasman

### MILESTONES

- 1993** – Kahurangi Employment Trust (KET) established
- 1997** – Formalised as a Trust
- 1999** – Nelson City Council adopts a Zero Waste policy.
- 2000** – Tasman District Council adopts a Zero Waste policy
- 2001** – (July) Final KET proposal for RRC goes to Tasman District Council
- 2001** – (March) – ‘The Good, the Bad and The Ugly’ RRC established

### ORGANISATION PROFILE

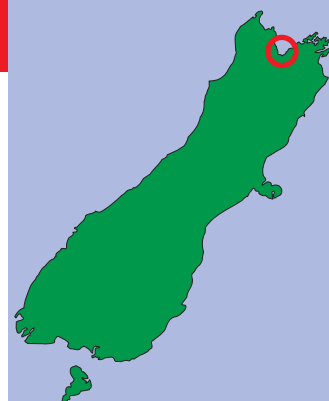
Kahurangi Employment Trust was started by John Soulsby, a local resident with a desire to create employment opportunities in the isolated Tasman/Nelson region. It was formalised as a Trust in 1997 and has run a range of conservation and environmental initiatives for Tasman and Nelson District Councils ever since then, employing people on subsidies. Trust members have always been passionate about recycling so it was a logical step for them to propose to Council that they establish and operate a RRC.

The Trust has traditionally run initiatives such as labour gangs for forestry, possum culling operations and graffiti removing projects (still running). It is moving more into recycling and resource recovery and now that ‘the Good, The Bad and The Ugly Recycling’ is operational, is developing its activities further. KET has recently started a trial providing a recycling service to Nelson City Council offices and is due to expand this to the Nelson/Marlborough Institute of Technology. It has also set up a company to run the Nelson/Richmond kerbside recycling scheme.

#### **People**

Four full-time people are employed at the RRC. These positions are all new, and have drawn people from the long term unemployed register. Six volunteers also work three hours each a week.

The kerbside collection and office recycling projects could create another 8-10 jobs within 6 months.



### KEY STATISTICS

**Population serviced:**  
15,000

**Staff employed:** 4

**Establishment cost:**  
\$90,000

**Annual income:** \$95,000

Annual operating costs:  
\$95,000

**Land area:** 1 hectare

**Recycling charges:** nil

**Waste charges:**  
\$20/tonne

**Management:**  
Community group

## RESOURCE RECOVERY FACILITIES

KET has its main premises in central Nelson but the RRC in Richmond is now a major part of Kahurangi Employment Trust's (KET) presence and operations in the area. Quite apart from its resource recovery functions it is stimulating growth in new areas. For example Manager Andy Budd has recently formed an Artists Gallery at the Nelson premises where a cluster of 12 local artists exhibit art works made from materials recovered from the RRC. KET views the RRC as a springboard for the development of other related projects as it is always looking for ways to create employment.



### Site information

The RRC is sited 20 metres away from the transfer station in Richmond on land owned by Tasman District Council. The site was chosen in consultation with Council, taking into account issues such as traffic flows, pedestrian flows, ease of parking etc. People have to drive by the RRC before they reach the transfer station providing excellent visibility and profile. There is room for some expansion but the shape of this land (a long narrow ribbon) may be difficult to utilise.

Two old houses were moved onto the land at KET's expense to create the RRC. KET set out to build the whole centre from recycled materials to fit in with its sustainability ethos. Council organised the resource consents and is charging only a nominal land rental of \$1/year.



Site operations have been split into reuse and recycling activities. The reuse facility was set up first to generate an income stream. A recycling wall was then built for commodity recycling as KET wanted the public to do as much sorting as possible. There are slots for all recyclables including cardboard, which ensures the public has to do the flattening. If people want to dispose of large quantities and not put it through the wall a small charge is imposed.

There is a covered area for working but the workers prefer to be in the sun. Rain isn't much of an issue in Nelson.

Getting the traffic flows right was a major consideration. There is a double lane for drop-off with a straight through lane as well. All activities happen on the right hand side and there is no pedestrian traffic occurring near vehicles.

### Operations

KET has no access to the transfer station pit as this is operated by another contractor under a different contract. This is a shame as a significant amount of material is still going to landfill that could be recovered. Contracts are currently being reviewed by Council to improve recycling throughout the District – a process that will take several years.



Andy Budd

Some recycled commodities are being backloaded through Christchurch however KET is storing some materials in anticipation of developing a materials processing centre.

Operating hours are 8am – 5pm, 7 days. Materials accepted include glass, plastics (1,2 and 5), cardboard, cans, scrap metals, batteries and reusable goods. There are no charges to the public but a small fee is made for large or commercial loads. KET is about to start a new commercial collection that will charge half the cost of disposing to landfill.

KET is keen to work in with other resource recovery facilities around the region and has already been assisted by the Nelson Recycling Centre in its establishment. Second hand dealers see the RRC as an opportunity and are the facility's best customers. A recycler with a small reuse shop is situated at the gate of the RRC – KET believe he has benefited from the synergistic effects of increased traffic.

## Marketing

The RRC is advertised in Council newsletters and flyers (paid for by Council) are sent to householders. KET also holds regular promotional events to get newspaper coverage – such as recently taking a truck-load of items to give away at the local Polytec which received major coverage. KET also have an arrangement with the local 'buy, sell, swap' paper which they can use for free.

Customer service training is a major factor in helping to attract and keep customers. This is all done in-house currently but KET hope to send staff to the Zero Waste Academy in future.

Public and council reaction to the new RRC has been overwhelmingly positive. The only negative reactions have been from other waste contractors who view the RRC as a threat to their business.

## Equipment

- Truck (5 tonne)
- Forklift
- Glass crusher (hammer mill)
- Hand trucks
- Trailers
- Hand cart
- Wool bales and stands
- Old freezer (locked) for hazardous goods

KET is always on the look out for containers to store materials. They use 44 gallon drums, wool bales and apple bins. Wool bales are ideal because they only take one person to move.

The RRC was established for \$90,000 - \$85,000 of this being covered by grants. Annual operating costs are \$95,000 of which wages are a large proportion.

Annual income for 2002-2003 was around \$95,000 split into -\$13,000 grants, \$15,000 income support and \$67,000 in sales.

\$80,000 is going back to the community in wages. Two employees were employed on Community Enterprise Organisation grants in the first year and are now permanent staff. One staff member is Task Force Green subsidised.

The financial outlook is tight but promising.



## SUMMARY OF KEY ISSUES

### Main Problem Areas

- Conflict with transfer station operation
- The time and perseverance required before being taken seriously by Council.
- CEO subsidies all finishing at the same time

### Key drivers

- Employment
- Environmental outcomes
- Nelson City and Tasman Districts' Zero Waste policies

### Main reasons for success

- Excellent support by Tasman District Council
- Good public relations – include a sense of fun and make every visit an experience
- Can-do attitude and stickability
- Good staff relations
- Not being scared to blow one's own trumpet occasionally
- Professional attitude
- Having councillors from both Councils on the Trust board

### Mistakes to learn from

- Don't allow proposals to be seen by competitors. The greenwaste contract was lost as a result of this. After seeing KET's proposal the competitor realised there was money to be made in greenwaste.

### The Future

- Need to work closely and in a more united fashion with other groups and Councils to get more achieved
- Staff training through the Zero Waste Academy
- Community groups need a national cooperative to market recyclables to ensure constant supply and good prices

### What's needed most from Government and Council?

- Landfill levy
- Support, support, support!
- True recognition of the value of waste reduction and the cost of landfilling

**Contacts:** Andy Budd, Manager KET - ket@paradise.net.nz

## Case Study 8: Kaikoura

### MILESTONES

**1996** – Wastebusters Trust Kaikoura formed

**1999** – Kaikoura District Council becomes 3rd council in New Zealand to adopt a Zero Waste policy

**2000** – Kaikoura waste management contract comes up for renewal

**2000** – Kaikoura Wastebusters Trust and Kaikoura District Council form joint venture company, Innovative Waste Kaikoura Ltd to run landfill and resource recovery centre.

### ORGANISATION PROFILE

Innovative Waste Kaikoura is a council-community group joint council venture, owned 51% by Kaikoura Wastebusters Trust and 49% by Kaikoura District Council through its own Kaikoura Enhancement Trust. IWK was established with the mandate to help the community work towards its 'Zero Waste by 2015' goal, to create sustainable local employment and to protect the environment - which is critical to Kaikoura's economy with its eco-tourism focus.

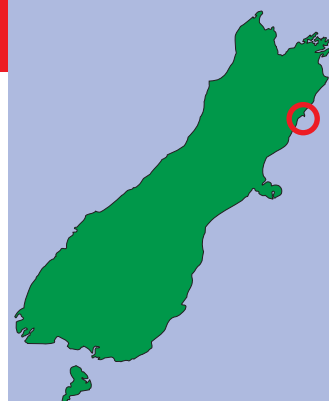
Although Kaikoura only has a population of 5,000 it has over a million visitors a year, most of them driving through on their way from Picton to Christchurch to see the dolphins and whales. The town's narrow rating base means infrastructure is under constant pressure to cope with this influx. Innovation is essential to provide sustainable solutions without huge capital investment.

IWK's key responsibilities are to run the landfill and the RRC. Under the direction of Manager John Ransley, these have expanded to include other projects that meet local employment creation objectives including:

- Youth at Risk project. A WINZ / Employment Catalyst (Mayors' Taskforce for Jobs) supported programme where local youths that are coming to the attention of the police are given training and work experience to help them develop good work habits. The goal is to create full time work for the graduates of this project through the Trees for Travellers project.
- Trees for Travellers. Tourists are encouraged to purchase trees from IWK to plant in Kaikoura reserves. The trees are numbered and recorded for tourists and their families and friends to visit in the future. Compost made from greenwaste processed at the RRC is used to grow the trees.

In addition to these employment projects IWK has developed and is running the first training courses for the Zero Waste Academy – a joint venture between Zero Waste New Zealand Trust, Massey University and Palmerston North City Council. The courses are designed to develop management level skills for workers on RRCs and are run by Josie Uren. The courses are run on the RRC in a purpose built training room to give students practical experience of a working site.

IWK runs the landfill behind the RRC which means it is totally integrated into the Zero Waste policy - there are no conflicts between the interests of landfill and RRC. IWK's mission is to maintain the landfill's life for as long as possible and it has devised a number of innovative ways to do this.



### KEY STATISTICS

**Population serviced:**  
5,000 + 1 million tourists annually

**Staff employed:**  
9 + one part-timer

**Establishment cost:**  
\$100,000 (not incl. land)

**Annual income:**  
\$338,932

**Annual operating costs:**  
\$256,950

**Land area:**  
2.8 ha including landfill  
– plus 4.4 ha of reserve land

**Recycling charges:** Nil

**Residual waste charges:** \$10/m<sup>3</sup>

**Commercial residual waste charges:** \$15/m<sup>3</sup>  
(\$25/ m<sup>3</sup> for construction waste)

**Management:**  
Council/community group joint venture

- Landfill cell storage for those materials that are currently uneconomic to recycle but could have value in the future
- Glass is crushed and used as a filter medium for leachate control.
- After recyclables are removed, residual waste is compacted and baled to maximise space.
- Old parts of the landfill are being mined to extract recyclable material and create more space.



### **People**

IWK employs 9 fulltime staff and one part-timer, none of which are on subsidies. One is handicapped and one has partial sight but places have been found for them to make a useful contribution. There are also four subsidised Youth at Risk employees plus one supervisor. This is in contrast to when there were no resource recovery programmes in place and just 3 people were employed.



## **RESOURCE RECOVERY FACILITIES**

The RRC is the heart of IWK's operations and the community's Zero Waste policy. It provides the collection and processing point for a weekly residential kerbside collection of recyclables and a twice-weekly business collection. There is also a fortnightly recyclable pick up for outlying areas covering most of the district.

Residents must drop off their own residual waste or hire a bin. Pick up points have been set up for groups of houses who arrange to have all materials put in one place for collection. IWK has also recently started up a

skip hire business to help reduce construction waste and again this feeds back into the RRC.

### **Site information**

The RRC is sited in front of the landfill on a scenic promontory overlooking the coast. Total area including the landfill is 2.8 hectares, plus there are 2 hectares of adjacent reserve land that the Zero Waste Academy training room and office are located on and another 2.4 hectares of reserve that will be utilised in the future. Space is not a limiting factor.

When IWK first took over the site the only facilities were a gatekeeper's shed and ramp. These have been built up over time – with some financial assistance from Zero Waste New Zealand. They now consist of a covered drop-off and processing area for recyclables, a 96 m<sup>2</sup> second hand shop, and an amenity block. The office has recently been shifted to the rear of the site alongside the Zero Waste Academy training room. Roads and storage areas are metalled but there are issues with mud and dust. IWK is diverting large amounts of materials from landfill but facilities are basic, and in some cases inadequate. Finding the funds to upgrade and expand these to make the RRC better for staff and customers is a constant battle. The community has been hugely supportive – for example a local builder donated his time to construct the amenity block. Innovation by IWK staff has also been hugely important. For example IWK has designed and built its own horizontal in-vessel composter at a cost of around \$10,500 plus \$22,500 for a digger to do the turning. Commercial in-vessel composting units can cost over \$200,000.



Layout is an important issue and hasn't been resolved yet due to financial constraints. However in John's experience the key is to have drop off facilities for recyclables at the front of any site, with good signage and plenty of open space. Residual waste disposal should be farthest away and more difficult to do than recycling. When a customer leaves they should pass by the retail shop and there should be both a fast track and a slow loop to cater for customers in a hurry and for those who want to browse. Whichever route is taken everyone should have a positive recycling 'experience'

Transportation of recyclables has been a recent issue. IWK used to have a good relationship with a transport company that backloaded recyclables to Christchurch at \$7/tonne but new owners increased this to \$85/tonne. IWK now transport themselves at a cost of \$25/tonne.

### **Equipment**

IWK owns and operates the following equipment:

- Cardboard press
- Light gauge steel baler
- Mower mulcher
- 6" green waste chipper
- Glass hammer mill
- 8 tonne truck with 3 tonne crane
- 2 tandem trailers
- 1 single axle trailer
- 2 Bedford tip trucks for on-site residual baling
- 3 tonne digger
- Refuse baler and vertical press
- Horizontal in-vessel composter

### **Marketing**

Being a small town word of mouth is the main marketing tool. Everyone knows of the centre and 80% + recycle in some way with 40% fully utilising the facilities.

## **FINANCIAL INFORMATION**

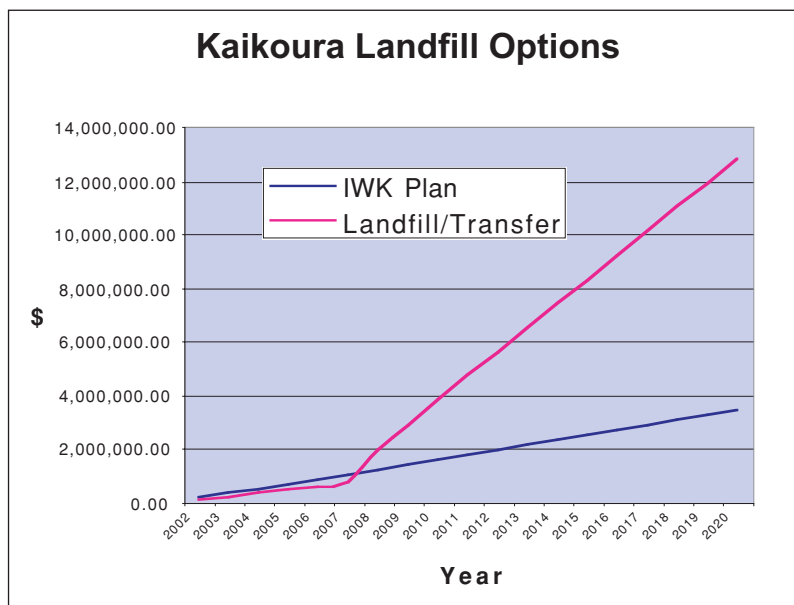
Kaikoura District produces 5,000 tonnes of waste annually and IWK is diverting around 60% (by volume) of this from landfill. Diversion of this waste and disposal of the residual costs the community \$200,000: \$125,000 for IWK's contract and \$75,000 from RRC gate fees.

The RRC charges \$5/m<sup>3</sup> for greenwaste, \$10/m<sup>3</sup> for residual waste, \$15/m<sup>3</sup> for commercial waste and \$25/m<sup>3</sup> for construction waste. There is no charge for recyclables apart from a small charge for large loads and tyres.

IWK's annual operating cost is \$256,950 and annual income is \$338,932. 17% of this comes from recyclables, 44% from gate fees, 8% from WINZ subsidies and 42% from council (residents pay for recycling through rates).



IWK projects that the community's Zero Waste policy will bring savings to the community from avoided waste disposal costs and extended landfill life of more than \$9 million over the 18 year period from 2002 to 2020.



## SUMMARY OF KEY ISSUES

### Main Problem Areas

- Lack of capital investment in facilities.
- Lack of legislative measures to make resource recovery mandatory

### Key drivers

- Landfill space running out
- Council's Zero Waste policy
- Employment
- Environmental considerations

### Main reasons for success

- Passion and commitment of key individuals like John Ransley and Josie Uren and support of the full Council
- Getting the people factor right – common sense management approach
- Good relationship with Council
- Providing excellent customer service

### The Future

- Continue to develop business outside core range to help get to Zero Waste and to lower costs to ratepayers
- Development of the role of Zero Waste Academy courses and ZWCEN (Zero Waste Community Enterprise Network)
- John's big dream is "for people to come to Kaikoura to visit the RRC and then, if they have time, to go whalewatching".

**Contact:** John Ransley , Manager, Innovative Waste Kaikoura - [iwk@xtra.co.nz](mailto:iwk@xtra.co.nz)

## Case Study 9: Amberley

### MILESTONES

- 1960s** – Amberley District Residents Association (ADRA) established
- 1990** – Starts recycling using an old community shed one Saturday per month. This expands to every Saturday.
- 1991** – Council gives ADRA use of a larger shed on the current site.
- 1999** – Kerbside recyclables collections start
- 2000 (May)** – Hurunui District Council adopts a Zero Waste policy

### ORGANISATION PROFILE

Amberley District Residents Association (ADRA) was established to respond to community needs, providing resource recovery services and also working with schools and youth to build facilities such as a skateboard park. It also works with 'Trees for Canterbury' and runs a local information newsheet 'The Hotline' which promotes local events, entertainment and advertises for local businesses – plus of course recycling services.

North Canterbury Community Resources Ltd (Hurunui Recycling), was set up by ADRA as a business to run the RRC and district wide recycling programme. Establishing this business massively increased the scale of ADRA's operations.

The key people behind the recycling venture were (and still are) Mollie Anderson, Belinda Gould and Esmay Ellis who saw the imminent closure of the local landfill as an opportunity to do something beneficial for the community - and to maximise local capital. Community education is a big part of the project. ADRA puts a lot of effort into developing brochures, school material and newspaper articles in addition to operating the site.

#### People

Eight people are employed full time on the RRC. They all started with WINZ subsidies but only one is still subsidised. At any one time there are up to 17 people on site as there is a pool of 12 volunteers. The RRC offers retired people in particular, a way to make a positive contribution to the community. For example two retirees dismantle appliances to remove valuable metals. One is paid for 2 days a week and the other works entirely voluntarily, contributing his specialist metallurgical skills.



### KEY STATISTICS

**Population serviced:**  
10,000

**Staff employed:** 8 + 12  
volunteers

**Establishment cost:** site  
provided by Council

**Annual income:**  
\$221,000

**Annual operating costs:**  
\$200,000 wages + truck  
operating expenses

**Annual avoided  
disposal costs:** \$66,500  
avoided landfill fees

**Land area:** 0.4 hectares

**Building area:** 353 m<sup>2</sup>

**Recycling charges:** Nil

**Residual waste  
charges:** \$20/tandem  
trailer, \$12/single trailer,  
\$10/bootload

**Management:**  
Community business

## RESOURCE RECOVERY FACILITIES

The RRC is the headquarters of the recycling programme and is an important and well patronised part of the community. The overriding impression it gives is of a community meeting place where the social interaction is just as important as the recycling.

### Site information

Council provided the site to the group to use for its recycling operation. It is located on Amberley's main road and is very accessible to residents. Although not planned for its current use the site works surprisingly well. Space is a limiting factor however. There is a need to separate reuse and retail from storage and processing and to make better provision for parking. ADRA is hopeful that Council will give them use of the rest of the site, expanding land area from the current 0.4 ha to 0.8 ha. There are also large buildings on the adjacent land that would expand facilities from the current 353 m<sup>2</sup> to 753 m<sup>2</sup>.

There is a constant stream of locals dropping goods off or coming in to browse at the second hand shop which is a central feature of the site. There is a separate drop off area for recyclables and large materials such as scrap metals, appliances, wood and greenwaste. Traffic flows are quite good considering the lack of space but will improve dramatically if extra land is obtained.

Mollie's husband Andrew is an engineer and has been responsible for solving many of the technical problems on site. Glass, for instance is an ongoing problem, costing \$800/month to ship 40

tonnes to ACI in Auckland. Rather than landfilling it, a glass crusher has been built and will be ready to operate once extra space and consents have been gained for its installation. The end product will be used for sandblasting, pipe laying aggregate, roading and swimming pool filters. From being a cost to the business, glass will make a small return - around \$60/tonne as a sandblasting medium.

A purpose built conveyor system has also been built to handle the sorting of kerbside recyclables that are picked up from 12 townships in the district (a 842 km weekly collection run) and brought onto the site in distinctive green polypropylene bags. Strong winds in the district meant that boxes weren't an option so the ex-fertiliser bags were sourced and are working very well. Some residents even put reusable items in the bags for transportation back to the RRC.



## Equipment

- 3 and 6 tonne trucks
- 3 tonne forklift
- 2 large trailers- one double and one single axle
- Vertical cardboard press
- Sorting conveyor
- Plastics granulator
- Paper shredder
- Glass crusher

## Marketing

Amberley's recycling facilities are marketed through 'The Hotline', as well as through brochures and educational information it produces and distributes.

## FINANCIAL INFORMATION

ADRA does not have an official contract with Council. Instead Council gives it an annual \$39,000 grant and free rental of the site (worth around \$10,000/year). The grant covers operation of the transfer station and kerbside recyclables collection. There are three other waste contracts run by local haulers that ADRA would like to tender for to offer a complete package for the district and increase efficiencies.

Quote from local doctor dropping off recyclable during case study interview:  
"People with few social contacts come along here – it's a social outlet and sometimes they get a bit of money for their efforts. As a Doctor I have actually sent people here. It's not a stretch of the imagination to say that by saving these resources and using previously undervalued people to do it we are improving the health of the community."



## SUMMARY OF KEY ISSUES

### Main Problem Areas

- Lack of communication and cooperation between community group, local authority and government
- Lack of space – for storage and expansion of retail shop
- Council's annual grant would preferably be a proper contract for service
- Lack of investment in the site

### Key drivers

- Passion and commitment of Mollie and the ADRA team
- Landfill closure
- Community development opportunities
- Commitment to the environment

### Main reasons for success

- Community support
- Knowledge
- Enthusiasm
- Started small and haven't gone high tech
- Volunteers
- Persistence!

### What's needed most from government and local authorities?

- More leadership and enthusiasm – the community is currently leading the way but it's time Government did its share
- Legislation is required to convince councils that the Waste Strategy is serious – container deposits for example.

### The Future

- Investigating a kitchen and restaurant food waste pilot project
- Open an additional depot in Hanmer Springs where a kerbside recyclables pick up is already in place
- Continue developing new reprocessing methods for recovered materials. Everything is dependent on further processing in New Zealand to add value and get higher returns.

**Contact:** Mollie Anderson - hurunui\_plastics@xtra.co.nz

## STOP PRESS!

As this report was going to print Hurunui District Council announced that it had just bought the site next door to Hurunui Recycling. The new site will provide street frontage and allow a major increase in Hurunui Recycling's activities. The Council has also approved a 40% increase in funding to further support Hurunui Recycling. This is the culmination of years of hard work and persistence from Mollie and her team and will take the site to a whole new level.

## Case Study 10: Christchurch – Recovered Materials Foundation

### MILESTONES

**1970s** – First recycling facilities set up by Council

**1981** – Resource recovery facilities set up at new transfer station to service southern suburbs

**1984 and 1986** – resource recovery facilities set up at transfer stations in eastern and northern suburbs respectively

**1997** – RMF established

**1998** – RMF secures contract from Council to manage RRCs

**2000** – SuperShed opens

### ORGANISATION PROFILE

The Recovered Materials Foundation (RMF) is a not-for-profit Trust set up by Christchurch City Council (CCC) to develop reuse and recycling opportunities for the City. It now manages all recycling and processing of materials recovered by the Christchurch City, Waimakariri and Selwyn District Councils. The Foundation is run by a Board including representatives from Councils, the local recycling industry, and local business organisations - Canterbury Development Corporation, Canterbury Employers' Chamber of Commerce and Canterbury Manufacturers' Association.

21% of the RMF's income comes from CCC to provide specific services such as the waste exchange and business development. This is funded through the CCC landfill levy. \$2/tonne goes specifically towards a business development fund, managed under a separate contract by the RMF for the CCC.

#### **The RMF focuses on 3 core areas:**

- 1) Collecting, processing and marketing recovered materials. This includes processing all materials collected through CCC kerbside collections, managing resource recovery facilities at the three transfer stations, operating a waste exchange for businesses and community groups and operating a retail outlet for reusable items - the SuperShed.
- 2) Business development. The RMF operates a business development fund and acts as a facilitator for individuals, companies and community groups who come up with good ideas but need financial assistance to get them off the ground. The RMF manages the annual Business Development Fund of around \$0.5 million per year, derived from the waste levy, on behalf of Council. Projects are assessed on a case by case basis and funds are disbursed as either grants or low interest loans. Amounts can range from a few hundred dollars to hundreds of thousands of dollars.
- 3) Internal business development. The RMF is focusing on developing its own products and markets within New Zealand for recovered materials to ensure sustainable development of the recovered materials industry. An example of this is the development of BlastGlass and FilterCrystal made from recovered glass.



### KEY STATISTICS SUPERSHED

**Population serviced:**  
330,000

**Staff employed:** 27 full-time, 4 permanent part-time and 10 casual

**Establishment cost:**  
\$100,000 to refurbish leased building + upgrading recycling centre sites

**Annual income:** \$1.08 million

**Annual operating costs:**  
\$1.04 million

**Land area:** 0.3 hectare

**Building area:** 1,500 m<sup>2</sup>

**Recycling charges:** nil

**Commercial residual waste charges:** \$97.50

**Management:** Council established not-for-profit Trust

The RMF operations have all the ingredients of a full Resource Recovery Park, just not all in the same place.

### **People**

49 full-time staff, 4 part-timers and 18 casual temps are employed by the RMF:

Head office – 7 full-time staff, including 2 devoted to education

Materials processing: 7 full-time staff plus one contract worker

Paper processing: 7 full-timers and 8 casuals

SuperShed and recycling centres – 27 full-time staff plus 4 permanent part-timers plus one contract electrician plus 10 casuals

### **Marketing**

The RMF invests heavily in public education programmes and distributes a quarterly newsletter 'Recycling Works' to 27,000 commercial box holders throughout Canterbury. It also produces brochures for distribution to residents, plus a wide range of educational material.



## **RESOURCE RECOVERY FACILITIES**

The RMF has split its resource recovery functions into 4 major operations spread around different sites – resource recovery at the City's 3 transfer stations, commodity materials handling and processing, paper handling and processing and reuse retailing operations.

### **1) Resource recovery at transfer stations**



The RMF manages the Recycling Centres at the transfer stations. Before revamping the centres in 1999 it commissioned research into the public's perception of resource recovery facilities. The results showed that that people didn't understand the term 'Resource Recovery Centre', associating it with an industrial process, so the RMF renamed them 'Recycling Centres'. Appearance of the centres was upgraded and the message 'Sort and Save' used to encourage people to drop recyclable and reusable goods off at the centres before going through to the refuse station. Recovered commodity materials are transported to the processing sites and reusable items to the SuperShed.

### **2) Commodity materials handling and processing**

The materials processing site is the collection point for all recycled materials apart from paper. The facility receives and processes materials from kerbside collection plus materials recovered at the transfer stations. Although the site is not open for public drop-off it is open for educational tours.

The site provides facilities for recyclables sorting, glass crushing, whole-bottle washing and plastic sorting and baling.

The site covers approximately 1 hectare and contains around \$1.5-2 million worth of processing equipment (sorting conveyers, balers etc). It is leased from Council at market rates.

### **3) Paper handling and processing**

Paper and cardboard collected from kerbside collection and transfer stations is processed at a separate operated as a joint venture between the RMF and Carter Holt Harvey.

RMF does the sorting and Carter Holt Harvey does the baling. 9,000 tonnes of paper and cardboard go through the site annually.



### **4) The Supershed**

When the RMF first took over the contract to run Christchurch's resource recovery facilities it commissioned research that came back with two key recommendations:

To focus more on reusable whole goods recovery

To clearly separate the recovery and retailing functions of the recycling centres.

Canberra's 'Revolve' and the 'Logan Recycling Market', south of Brisbane, were used as models for the SuperShed. Goods are dropped off by the public at the Recycling Centres at the transfer stations and trucked in 20 foot shipping containers to the SuperShed.

Two to three shipping containers arrive at the SuperShed every day. In 2001/2002, 415 containers were accepted with a combined net weight of 1,267 tonnes. Projections for 2002/2003 are for 1,500 tonnes.

***The guiding principles of the SuperShed are:***

To increase diversion of waste from the wastestream to viable end users

To develop more sustainable employment opportunities in the recovered materials industry

To operate as a business, to at least break even, and any surplus revenue to be used in furthering reuse and recycling initiatives and services for the city.

When the RMF took over the management of the Recycling Centres 2 people were employed at each of the three transfer stations. Now, 27 full-time, 4 permanent part-time and 10 casual staff are employed at the Recycling Centres and the SuperShed. These positions are all funded by sales at the SuperShed.

Whiteware and electrical goods are tested in an on-site workshop – and resold with a three month guarantee. Furniture items are usually tidied up first before being displayed alongside a huge range of household goods in the main showroom. Durable products such as baths, toilets, windows, doors, motor mowers etc are displayed in a large outdoor area.

***Site information***

Finding the right site was essential. Being a retail outlet, it needed to be accessible to customers by bus and to have plenty of carparking. Gaining resource consents was a long process and was only granted with stringent conditions, the main one being that materials delivered to the site could only come via the transfer stations – there is no public drop-off at the SuperShed.

The 0.3 hectare site with 1,500 m<sup>2</sup> building was already owned by Council. It had 60 carparking spaces and was in the right location. \$100,000 was spent on upgrading the building, plus the Recycle Centres at the transfer stations.

***Equipment***

Equipment consists mainly of forklifts and small machinery and tools. Transportation of goods from the Recycle Centres is contracted out to a private operator.



## FINANCIAL INFORMATION

Before the SuperShed opened in 2000, household goods were recovered and sold through the city's transfer stations. They cost the Council \$130,000 per year to run. After the RMF took over and established the SuperShed with its three feeder Recycling Centres it cost the Council nothing – sales pay for the operation. When the RMF first took over Council put the \$130,000 back into the RMF's contract, but recently the RMF has been able to decline this funding as it is no longer required.

Council leases the site to the RMF at market rates.

Income from sales is now running at around \$20,000 - \$25,000 per week with annual income at around \$1.08 million. Whiteware items sell for between \$60 and \$250 per unit and televisions for up to \$375. These items are a major contributor to sales. Annual operating costs run at around \$1.04 million. Employment creation is a major driver for the RMF - profit is not the main motivator, although a \$40,000 surplus is forecast for this year. \$800,000 of wages go back into the community every month.

### SUMMARY OF KEY ISSUES

- The biggest daily issue is deciding what is realistically reusable
- Customer issues – the same as any retailer faces such as shoplifting, customer complaints, etc
- Requirement for a second hand dealer license. A drawn out issue but on legal advice it has been determined the SuperShed doesn't require one as it doesn't buy goods. People are encouraged to use the 'Buy, Sell and Exchange', garage sales, charity shops etc before taking goods to the RRC at the transfer station.
- Legal requirements such as OSH
- Compliance with retail legislation such as the Consumer Guarantees Act – which means they do not sell items which could be classified as hazardous unless checked by a competent agency such as gas bottles, gas barbeques, prams, cots, diving equipment etc.

#### Key drivers

- A strong history of environmental consciousness in the City
- Determined politicians
- Employment

#### Main reasons for success

- Separated the function of drop-off from retailing
- Promoted the SuperShed as a source of well priced second hand goods rather than promoting the message of waste reduction.
- Promotions targeted women as until then they weren't frequenting the Recycling Centres
- Careful pricing – they divide average daily takings by customer transactions and work out the monthly average. Aim to keep average price per customer transaction to below \$12

**Contact:** Sarah Gordon, Publicity and Information Manager, RMF - [sgordon@rmfchch.co.nz](mailto:sgordon@rmfchch.co.nz)

# Case Study 11: Alexandra

## MILESTONES

- 1999** – Central Otago Wastebusters is incorporated
- 2000** – Central Otago Council adopts Zero Waste policy
- 2001 (February)** – Resource Recovery Centre opens



## ORGANISATION PROFILE

Central Otago Wastebusters (COWB) was established as a result of demand from the community. A group of concerned citizens held a public meeting to gauge local interest in setting a recycling facility up and a steering committee was formed to move the concept along. One of the original goals of the group was to establish a facility that could become a showpiece for the area.

### People

Two full-time and five part-time people are employed on site. In just over 2 years of operation employment has increased by 1 full time position. There is also a list of 50 volunteers who are called on as sorters, runners and drivers.

## RESOURCE RECOVERY FACILITIES

### Site information

The RRC is situated on an old landfill site, next to the transfer station in an industrial part of town. The site is 0.8 hectares with another 10 hectares available for future expansion. No rent is charged for the site.

A prefabricated 216 m<sup>2</sup> steel building was put on the site with a central accessway running through the centre that allows vehicles to unload recyclables into the sorting and processing area. There is also a 36 m<sup>2</sup> office and 36 m<sup>2</sup> shop. There is a further 72m<sup>2</sup> of shop extension funded by Zero Waste New Zealand in 2002

An all-weather lean-to along the full length of the 18 metre long building allows for some external shelter for the public, volunteers and staff.

### Operations

The site is open from 8.30am to 5pm Monday to Friday and 10.30am – 5pm on Saturdays. It handles cardboard, paper, steel, batteries, plastics (1 and 2), aluminium, non ferrous metals and reusable items.

COWB operates the kerbside collection as well as commercial pick-ups and service five drop-offs around the district. Recyclable commodities are backloaded to Dunedin, 200 km away by a local contractor

Last year COWB pulled 750 tonnes of materials out of the waste stream and this year are on target for 900 tonnes. The transfer station next door is run by waste contractors that are paid on a tonnage basis so there is no incentive to reduce waste. The hope is that the RRC will eventually run the transfer station and change its focus to resource recovery.

## KEY STATISTICS

**Population serviced:**  
15,000

**Staff employed:** 2  
fulltime, 5 part-time

**Annual income:**  
\$162,000 (incl grants)

**Annual operating costs:**  
\$188,000

**Land area:** 0.8 hectares

**Building area:** 216 m<sup>2</sup>

**Recycling charges:**  
\$7.50 / m<sup>3</sup> charge for  
commercial pick ups.

**Management:**  
Community group

## **Marketing**

Local print and radio advertising is used to promote the RRCs activities. Promotions are also held at local service clubs, A & P shows etc, as well as open days for the public.

After just over 2 years of operation participation levels for the kerbside collection area is around 25%-40% Public approval in the community is very high.

## **Equipment**

- 7 tonne truck with caged sides
- 2 tonne trailer with caged sides
- Toyota Ute
- 2 year old Deutz Tractor with fork lifting gear
- Horizontal baler (due in late July)



## **FINANCIAL INFORMATION**

Annual income of around \$188,000 comes predominantly from council who in 2003/2004 will be providing \$49,000 in diversion credits for tonnage not landfilled along with the Manager's salary and other expenses. Community Employment Group has also provided support, providing the Manager's salary for the first two years, as have a number of local and national Trusts who have provided grants .

Central Otago Wastebusters are paying back an interest free mortgage to Central Otago District Council who made up the shortfall needed to build the complex. There is no charge for drop-off of recyclables, but a \$7.50/m<sup>3</sup> charge for commercial pick ups.

Capital costs for setting up the facility were around \$100,000 for plant and equipment and \$100,000 for the building.

With new plant and vehicles on the way, coupled with increased Council financial participation, the future is looking positive.

## SUMMARY OF KEY ISSUES

### Main Problem Areas

- Shop area space too small despite last year's extension.
- Shortage of labour in Central Otago

### Key drivers

#### Reasons for success

- Timing was right
- Mixture of kerbside and smaller depots works well
- Community support
- Receiving grants covering upgrade of plant and vehicles
- Local and regional councils on board
- Good staff and volunteers

#### Mistakes to learn from

- Would have been better starting out from day one with better baling press facilities because revenue could have been doubled with this equipment
- In hindsight, instead of having a building with a 6 metre stud height it would have been better to have doubled the floor area and halved the height to 3 metres. As it is a mezzanine floor will have to be built to utilise the height.

### The Future

- Investigation into potential downstream processing

#### What's needed most from Government and Council?

- More teeth for Waste Strategy to encourage resource recovery. Rules need to be introduced to make the generators responsible for their waste as happens internationally
- More Government spend on R&D, for instance to find out whether boutique glass works could be set up in the key wine growing areas

**Contacts:** Andrew Jackson – Director of Publicity –  
theandes@ihug.co.nz





## Case Study 12: Dunedin

### MILESTONES

**1999** – Dunedin City Council adopts a Zero Waste policy

**2002** - Green Island Transfer Station and Resource Recovery Centre opens



### RESOURCE RECOVERY FACILITIES

Dunedin City Council (DCC) had been planning a transfer station facility for several years to replace inadequate recycling facilities at the landfill and overcome health and safety issues arising from commercial and domestic customers using the landfill face. After adopting a target of Zero Waste to landfill by 2015 the focus became stronger on waste minimisation and plans were amended to accommodate a much larger recycle centre and 'Recover' Store. In June 2002 the new facilities were opened.

#### **Site information**

The RRC is situated at the Green Island Landfill - which has been in use since the 1950s. Resource recovery facilities had to be built around existing structures including an entrance booth and weighbridge. The layout accommodated the fact that all traffic has to come through the booth, and ensures that the RRC is the first thing customers come to. A bypass lane allows people to go to the greenwaste drop off area or the transfer station pit if they need to.

Traffic moves in one direction so there is no need to backtrack. Plenty of parking spaces have been provided outside the store as well as a bus park for site visits to minimise disruption to other traffic on the site.

The Recover Store was designed and built on a limited budget but provides a sales area and a workroom where items can be checked before sale. The sales area includes clear roofing panels to make use of natural light and the workroom and sales office have plenty of windows to maximise sun for natural heat. Because the building is not large the space has to be utilised well – and so far it is working well, although it will need to be developed further as demand grows. One modification made to the building after it was built was the addition of a wicket gate to the rear roller door as it was difficult for staff to keep the outdoor area open on windy days, and people always want to investigate, no matter what the weather.

### KEY STATISTICS

**Population serviced:**  
120,000

**Staff employed:** 4

**Establishment cost:**  
\$1.3 million (incl transfer station)

**Annual operating costs:**  
\$100,000 (year 1)

**Land area:** 51 hectares  
(incl landfill and transfer station)

**Building area:** 50 m<sup>2</sup>

**Management:** Council

## **Operations**

The Recover Store is operated by a contractor – though managed by Council on a day to day basis. Having good contract staff has made the job easier as they need to understand retailing principles and have a realistic outlook on what will sell. They also keep an eye out for opportunities to give donated goods to others who may need them – such as Pregnancy Help, the Cancer Society and, in one case, magazines for a seriously ill child.



Staff on the transfer station occasionally recover items although this is not a normal practice. It is felt that it is important to give people privacy for their disposal as there are all sorts of reasons why people throw things away - bereavement, relationship break ups etc and it may be inappropriate for them to see their goods offered for sale.

Making the Recover Store interesting and inviting was important, and because goods change constantly staff have to ensure it looks tidy and presentable. The focus is to create an environment where people feel comfortable no matter what their income, and ensure that no one feels they can't afford things. It operates at garage sale prices, and this has created a good relationship with secondhand dealers – as well as the public.



Branding the facility has been an important part of giving the RRC identity and making it distinct from the transfer station. It also helps to make advertising easier. Providing uniforms for staff and good logos has also been an important part of this.

The Recover Store has a loyal following and has attracted new customers to the complex. Providing a visitor book has been important as it provides DCC with valuable feedback from customers on what they think of the facility. Providing a wish book has also been successful, as customers can request items in the hope that they will come in. It has been important also to react to seasonal themes, such as displaying appropriate goods at Christmas. Also, displaying goods as they might be at home

has been successful - an outdoor furniture display for example.

Operating hours are important. Summer/winter hours are kept, ensuring that the facility closes before the transfer station so end of day operations of the overall site are not disrupted. Store hours are:

Winter: 9.30am – 4.30pm weekdays and 9.30am – 5.00pm weekends

Summer: 9.30am – 5.00pm weekdays and 9.30am – 6.00pm weekends

The Transfer Station is open longer either side of these hours and the recycle centre on the exterior of the store is available until the complex closes. The site is open 362 days each year. Around 100,000 people visit the overall site every year.

Most items are accepted, except anything that has a safety standard on it such as helmets.

## **People**

The contractors run a roster system with a core group of four staff who operate the RRC.

## **Marketing**

Advertising is done on radio and in newspapers at specific times of the year such as the beginning of student year, school holidays, daylight saving etc. Fridge magnets are a relatively cheap and effective means of advertising and are given to customers.

The RRC has had been hugely successful in the short time it has been open. Everyone loves it and it has developed almost a cult following.

## Equipment

Tools and equipment provided by the contract electrician who checks appliances and all electrical items before they are sold. Set up costs included the provision of a till which feeds information back to the office computer each night, a microwave and fridge for the staff. A cordless phone was important as staff can be anywhere in the building as well as out in the RRC and need to be available for inquiries.

## FINANCIAL INFORMATION

The establishment cost for the whole complex (including transfer station) was \$1.3 million. The Recover Store building cost around \$100,000.

Operational costs in the first year of operation were just over \$100,000 with the contract cost at \$50,000. In the first year there have been costs that would not be repeated every year ie uniforms, till etc.

The financial outlook for the future looks good.

Kath Abernathy, Manager Recover Store, Dunedin:  
"It's not just a place to drop off or buy – it's a very much a social gathering place for some people – it's a meeting place"



## SUMMARY OF KEY ISSUES

### Main Problem Areas

- More space is required due to the success of the Recover Store. This will double in size once the back section is covered in.

### Key drivers

- Council's Zero Waste commitment
- Changed public attitude to waste minimisation
- Health and safety issues with previous facilities
- Committed staff

### Main reasons for success

- Being Council owned
- Good relationships with customers
- Realistic prices
- Paved areas and lots of parking
- Providing a safe and 'fun' environment for customers to recycle and 'drop & shop'
- Not making assumptions on how it should be but letting it evolve to meet customer needs
- Ensuring that the public understand the philosophy behind it, and providing them with information on other council waste minimisation activities
- Using retail skills to ensure it is well laid-out and managed and doesn't look like a junk shop
- Branding the store to give it an image.
- Making sure staff understand what their role is and that they can use their initiative.
- Being realistic about the public's expectation
- Have goals but not unrealistic ones that are unattainable
- Understanding the RRC's place in the 'retail chain'
- Solid philosophy of running a socially and fiscally responsible business

### Mistakes to learn from

As this is the first year DCC are still finding their way, however there does not appear to be many things that stand out as mistakes as everything was well researched before starting and the contract is very clear as to the job the contractor is undertaking. Council provides day to day management but this is not a big stick approach and is very flexible

### The Future

With the continued development of waste minimisation initiatives it is hoped the site will still be in use in 25-30 years. There is an old building on site which has been acquired which will at some stage become an education centre – including it is hoped a compost demonstration garden.

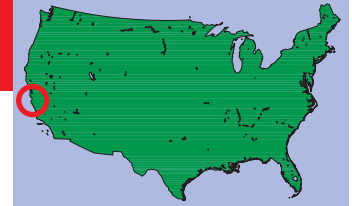
### What's needed most from Government?

Funding to expand the building and continued support for waste minimisation.

**Contact:** Angela McErlane, Waste Minimisation Officer - amcerlan@dcc.govt.nz

## 4.2 Overseas Case Studies

### Urban Ore Eco-Industrial Park, Berkeley, California



#### MILESTONES

**1976** – Waste incinerator proposed for West Berkeley. Recyclers protested and Berkeley voters passed a 'Citizens Initiative' that stopped the proposal - so a recycling and refuse transfer station was built instead. This city-owned property became the epicentre of what has been called the Berkeley Serial MRF (materials recovery facility), a cluster of independent and complementary reuse, recycling and composting businesses situated within a narrow strip of land near a major interstate freeway.

**1979** – Urban Ore established, salvaging reusable goods from the City-owned landfill.

**1980** – Company opens an additional sales area at a different site

**1981** – Urban Ore incorporated and moves to a City-owned transfer station

**1992** – Income surpasses US\$1 million

**1999** – Lease on property is lost. Only one site in Berkeley is suitable to develop the new Eco-Industrial Park but zoning does not permit retail sales. City Council staff and Urban Ore overcome these issues after a unanimous Council vote that calls Urban Ore a 'Berkeley Treasure' and directs staff to work on retaining it in Berkeley. A new zoning ordinance removes zoning barriers and allows Urban Ore to move to the new site.

**2000 (February)** – Urban Ore starts operating at the new site

#### KEY STATISTICS

**Population serviced:**  
300,000 (metropolitan  
area 7 million)

**Staff employed:** 32

**Establishment cost:**  
US \$1.25 million

**Annual income:**  
US\$1.6 million

**Annual tonnage:**  
5,000 tonnes

**Land area:** 1.2 hectares

**Building area:** 4,645 m<sup>2</sup>

**Management:** privately  
owned and operated

#### ORGANISATION PROFILE

Urban Ore Eco-Industrial Park is the brainchild of Dan Knapp and Mary Lou Van Deventer of Berkeley California. It is a private company that has grown over 20 years into a major commercial enterprise. Urban Ore is mainly a re-use operation, specialising in doors, windows, building materials and general household goods. It moved to its current site in 2000 and in the first phase of construction the main building was renovated using substantial quantities of recycled-content materials. In the second phase of development space will be developed to lease to subtenants who will utilise on-site materials to make new products. Urban Ore handles approximately 5,000 tons of materials per annum, of which 700 tons are salvaged from the local transfer station. The rest is purchased or accepted from customers at Urban Ore's retail facilities, or is picked up on request.

Dan and Mary Lou have studied the value of re-usables on a per ton basis. Material from the transfer station salvage is generally lower value than the material picked up with their trucks from homes and businesses. The resale value is from US\$400 per ton to US\$800 per ton. For planning purposes Urban Ore recommend a figure of about US\$400 per ton. Urban Ore trades in dozens of categories of material including collectibles which can be the most profitable for the space they occupy and time it takes to sell them.

**Some of the principles by which urban Ore operates are:**

- 1 Think Globally, Market Locally
- 2 Create a clear picture with accurate language
- 3 Find new opportunities by identifying what they call service voids, or gaps, in the market
- 4 Attract both supply and demand to one marketplace
- 5 Provide a friendly marketplace
- 6 Reward effective recycling behaviour financially
- 7 Prepare to grow



Urban Ore is an icon in Berkeley and has become a destination shopping centre.

**People**

People are the chief resource of Urban Ore. Thirty two people are employed and there is a strong ethical employment ethos. Urban Ore has made sure it meets the requirements of the Berkeley Living Wage Ordinance and all fulltime staff are covered with a health plan that covers themselves and their dependents. Wages begin at US\$9.25/hour and go up to US\$18.00/hour. The difference between the CEO and a new employee is less than 2:1.

**RESOURCE RECOVERY FACILITIES**

**Site information**

The site is 1.2 hectares in area with a 4,645 m<sup>2</sup> building. Urban Ore has spent around US\$1.25 million shifting operations to the new site and renovating the building in an environmentally responsible way. A mezzanine floor is currently under construction to expand floor area. The site is leased at a cost of US\$21,000/month.

Urban Ore is divided into several departments:

- Building Materials Exchange
- Hardware Exchange
- Arts and Media Exchange
- General Store
- The Gallery
- Salvage and Recycling
- Subleases will be organised as space becomes available. Potential subtenants may include:
  - A company that makes cabinets and other furniture from resurfaced timber
  - Artists and craftspeople who use objects found at Urban Ore
  - Repair enterprises

**Operations**

Materials accepted include used building materials including doors, windows, timber, cabinets, tubs, sinks, toilets, bricks, ceramic tile, concrete block, plumbing and lighting fixtures, and hardware. Other materials include household and commercial furniture, small and large appliances, shelving, books, collectibles, rugs and art.

The 'shop floor' is divided up into departments like a normal retail store. A new part to the business is 'The Gallery' where the best of everything from all other departments go such as antiques, collectables and quality home furnishings. This is an area where they put the most effort into presentation to get the best value. It is also where local artists display works they have created from recovered materials. They are presented on behalf of the artists and when sold the artist gets 60% and Urban Ore keeps 40%.

Some customers are resellers who come long distances to buy goods to re-sell. Urban Ore also serves as a wholesaler and volume dealer. Antique and second hand dealers can afford to mark up considerably and make their money in their small businesses. They also repair and restore products to add further value.



## FINANCIAL INFORMATION

Urban Ore's annual income in 2003 is expected to be US\$1.6 million. Set up costs were assisted with a grant from Alameda County Recycling Board of US\$200,000 to help the shift to a new site, a contract with the Californian Integrated Waste Management Board worth US\$200,000 to make the Resource Recovery Park a 'green building materials showcase' and US\$200,000 in low cost loans from the City of Berkeley.

Valuable items are purchased although most goods are simply donated or dropped off. In 2001 Urban Ore paid out US\$155,500 in cash and trade credits – or scrip, which can be used by customers to make purchases at Urban Ore to the public to buy reused materials for resale.

**Contacts:** Dan Knapp and Mary Lou Van Deventer - urbanor@aol.com

### Urban Ore Quotes

" A service void exists for any resources that are still being landfilled."

" Density and variety attract both supply and demand"

"Respectful presentation raises perception of value which establishes value."

"Products without pollution"

"Our purpose: To end the age of waste"



## Overseas Case Study 2: Revolve, Canberra, Australia

### ORGANISATION PROFILE

Revolve is a not for profit organisation that established resource recovery operations at the Mugga Lane landfill in Canberra in 1988. In 1991 it moved to the site it now occupies. The ACT Government built new facilities on the site in 2002 in response to an Infrastructure Action Plan that identified the need for two resource recovery operations to service the city – one in the south (subcontracted by waste management company Thiess Services to Revolve) and one in the north (sub-contracted by Thiess to Aussie Junk). Twenty staff are employed at Revolve. Three other satellite drop off points also operate around the city, one operated by Revolve.

### RESOURCE RECOVERY FACILITIES

Revolve is sited on a one hectare piece of land near the landfill and transfer station. The ACT NoWaste education centre is right next door. Land and facilities are owned by the ACT Government and operation of the site is licensed to Revolve. Although Revolve does not run the transfer station staff are on site to recover materials. There is no compulsory drop-off of recyclable goods at the RRC, though pricing encourages it.



The reuse shop is a 2,500 m<sup>2</sup> building with a separate covered receiving area, departments for different types of goods (electronic equipment, clothing, appliances etc) and large doors on two sides for convenient stock movement. A paved outdoor area at the front provides a display and storage area for durable goods and paved areas surrounding the building keep the site clean and tidy. There are 130 carpark spaces but even so, there is competition for parking with 3,000- 4,000 people visiting every weekend. Supermarket shopping carts provide customers with an incentive to browse

and buy from different departments. An area for repairing goods is currently being developed.

All types of reusable items are sold. Commodity recycling, greenwaste collection and other resource recovery operations are handled by other facilities nearby.



Cover, space and organisation are viewed by staff as being essential to encourage sales and provide a pleasant shopping experience.



### KEY STATISTICS

**Population serviced:**  
200,000

**Staff employed:** 20

**Establishment cost:**  
A\$600,000

**Annual income:**  
\$A1 million

**Land area:** 1 hectare

**Building area:** 2,500 m<sup>2</sup>

**Management:** Site owned by ACT Government, run by community group

## FINANCIAL INFORMATION

The ACT Government has invested A\$600,000 in establishing the site and has given grants totalling A\$30,000 to Revolve to assist in establishment of an earlier infrastructure on the same site. The facility turns over approximately A\$1 million per annum and has a similar level of operating costs (most of these being wages).

**Contact:** Graham Mannall, Manager, Policy and Strategy,  
ACT NOWaste - ACT Government -  
graham.mannall@act.gov.au



## Overseas Case Study 3: Aussie Junk, Canberra, Australia

### ORGANISATION PROFILE

Aussie Junk is a privately run business that runs salvage and reuse operations at 12 sites around southern New South Wales. It started business at the ACT Government owned and built site in Mitchell, Canberra in 2002. It has a 5 year sub-contract to run the RRC, obtained via a tendering process from waste management company Thiess.



### RESOURCE RECOVERY FACILITIES

The RRC is situated on a one hectare, fully paved site next to a transfer station. The building is approximately 1,000 m<sup>2</sup> in area and, like Revolve, is set out and run like a department store.

**Contact:** Graham Mannall, Manager, Policy and Strategy, ACT NOWaste - ACT Government - [graham.mannall@act.gov.au](mailto:graham.mannall@act.gov.au)



### KEY STATISTICS

**Population serviced:**  
150,000

**Staff employed:** 5

**Establishment cost:**  
A\$500,000

**Annual income:**  
A\$500,000

**Land area:**  
0.7 hectares

**Building area:** 1,000 m<sup>2</sup>

**Management:**  
Site owned by ACT Government, run by private business





## Overseas Case Study 4: Resource Recovery Estate, Canberra, Australia



### ORGANISATION PROFILE

The Canberra ACT Government is well into the first stage of establishing a major Resource Recovery Estate in Hume, adjacent to the Mugga Lane landfill. The estate will eventually cover 28 hectares with the first stage of development covering 17 hectares.

The Hume Estate will provide a permanent site for co-location of numerous resource recovery businesses. This follows on from a Temporary Resource Recovery Estate that the ACT Government established at West Belconnen landfill, while delays occurred in setting up the Hume Estate. The Temporary Estate is helping encourage the start up of recycling businesses at a low entry point, providing cheap rent and services. There are now 35 operators on the Temporary Estate processing everything from cooking oil to demolition waste. Now that the landfill has closed, the Temporary Estate is planned to expand further over the landfill. Businesses that prove their worth at this site will be encouraged to set up permanent operations at the Hume Estate.

Initial planning of the Hume Resource Recovery Estate started back in 1993, with the first concept drawings being prepared in 1994. In 1996 Canberra's No Waste Strategy identified the establishment of Resource Recovery Estates, incorporating waste minimisation education centres, as being key to meeting the City's targets. In 1997 consultants drew up the Infrastructure Action Plan that suggested rationalising infrastructure for waste acceptance and processing and identified the most suitable location for the Estate. A pre-feasibility study was undertaken in 1999, then a full feasibility study in 2000. Site design was completed in early 2002.



In late 2002 a request for tender was undertaken for construction and operation of a new MRF. This included the option to build the new MRF in the Hume Estate and to establish the initial infrastructure required to

open up the Estate. The tender was won by Thiess Services.

The MRF is likely to be established by the end of 2003 and other business activities will follow from early 2004.

The ACT Government holds a 99 year lease on the land and has already made a A\$2 million investment in infrastructure. A further A\$1.5 million will be invested to ensure roading, drainage, sewer and power connections etc are in place for tenants to move into the first stage of the Estate. An estate management group will be set up to attract business to the site.

#### **For further information see:**

[www.canberraconnect.act.gov.au/cityservices/recycling/strategy](http://www.canberraconnect.act.gov.au/cityservices/recycling/strategy)

**Contact:** Graham Mannall, Manager, Policy and Planning, ACT Government - [Graham.Mannall@act.gov.au](mailto:Graham.Mannall@act.gov.au)



## Overseas Case Study 5: Urban Mines Sustainable Growth Park, West Yorkshire, England

Urban Mines is a not-for-profit company formed in 1995 and employing 30 people. It works towards the twin goals of diverting materials from landfill and creating new jobs.

The core activity of the company is the development of a network of Sustainable Growth Parks (SGPs), supporting a wide range of recycling and secondary materials businesses. The concept has been developed through a process of research, discussion and trial and has now reached a stage where the first of several Parks is ready to commence.

Urban Mines is currently developing a SGP for South and West Yorkshire on the site of a former colliery. The SGP will be a 'clean' high tech industrial estate dedicated to new and existing businesses working with secondary materials and will include central material processing facilities linked with waste management companies and existing or future local authority waste and recycling services. These activities will be supported by a Business Innovation Centre which will incorporate incubation units for new business start-ups; technical assistance linked to the regional universities; and training/conference facilities. This synergistic system provides visionary methods to fast-track waste into recycled products and new uses.

The 12.5 hectare site is located just to the east of Castleford.

Below is a concept drawing detailing the SGP. The concept is designed to provide an engine for economic development, urban renewal and job creation, all within an environmentally sustainable and financially self-supporting framework.

The site will include innovations such as sustainable power sources, alternative transport modes (the site is located on the canal waterway system) and the opportunity for co-locating businesses to benefit in a number of ways including:

- Land availability
- Access to grant resource
- Freehold or leasehold tenure
- Competitive rental levels
- Sympathetic planning policy
- Objective 2 status, giving access to European funding
- Regional Selective Assistance
- Canal access
- Raw material supply of recyclate for reprocessing and manufacture



For further information see [www.urbanmines.org.uk](http://www.urbanmines.org.uk)

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## 5.0 Authors' Recommendations

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After visiting over 20 Resource Recovery Centres and interviewing numerous operators, owners and stakeholders throughout New Zealand, Australia, USA and UK, the authors' have come up with the following key conclusions as to what is needed to establish successful operations.

### ***Invest for success***

Too many resource recovery centres are running on volunteerism and enthusiasm with substandard equipment and inadequate premises. Meanwhile (and often next door), a brand new transfer station starts up with everything in place from day one – shiny new waste compactor, loader, sealed surfaces and brand new compactor trucks.

Resource Recovery Centres must be planned and established with all the care and consideration currently given to establishing landfills, transfer stations and other 'wasting' facilities.

### ***Think big***

Land and building space has in almost every case been insufficient with most groups planning to expand their operations considerably. Most were surprised at the level of patronage of their RRCs once they opened. The lesson is to think big from the start.

### ***Learn from the pioneers***

The early RRC pioneers have learned lessons that will make it easier for communities to set up RRCs. The trick is to learn from their mistakes without making them again.

### ***Build partnerships***

Local Authority involvement is critical, private sector involvement is critical and community involvement is critical. The best examples have a happy mix of all three.

### ***Train staff***

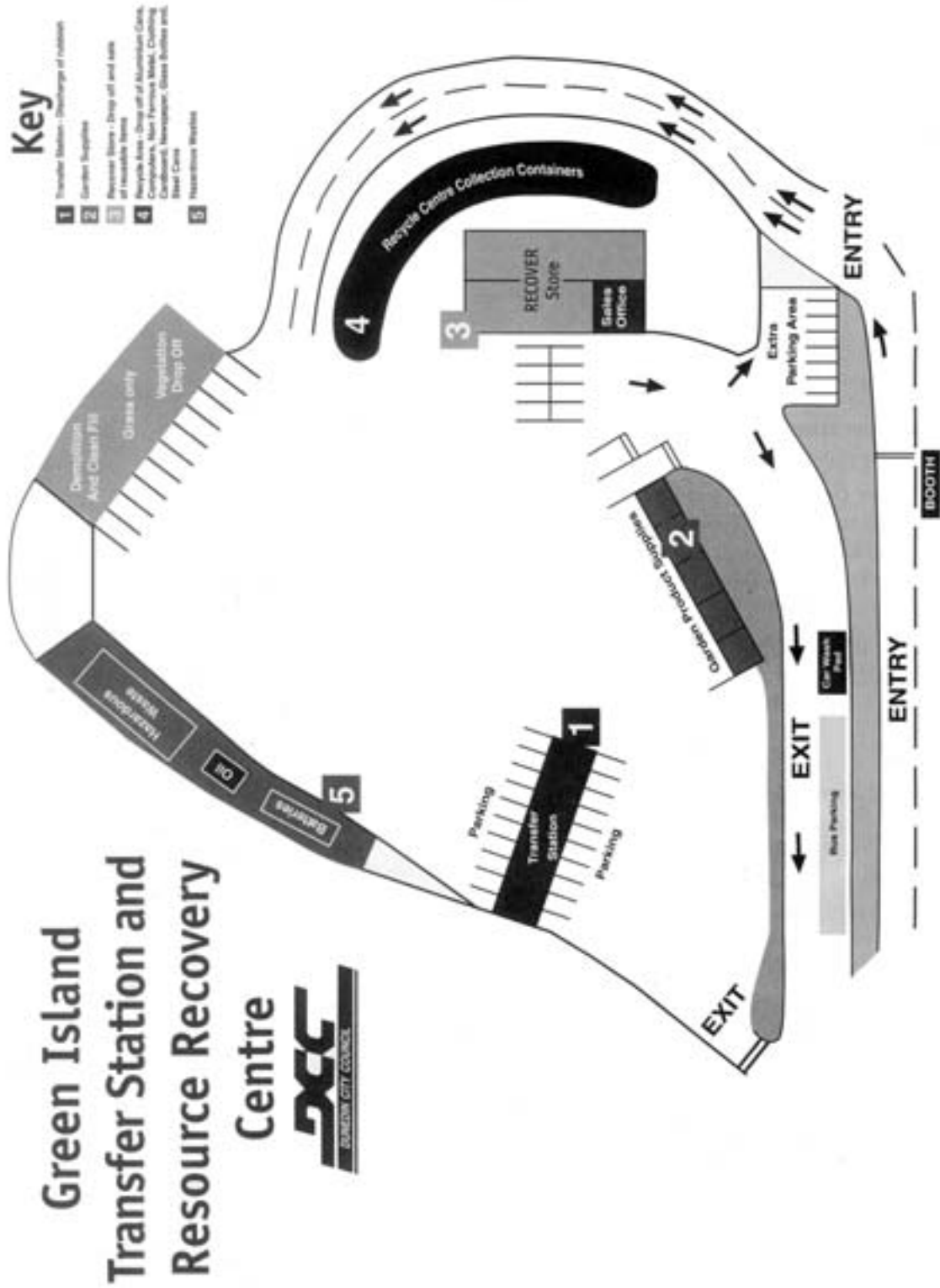
RRCs create lots of new jobs - but don't expect untrained people to be able to operate what is actually a factory with variable inputs and outputs without adequate training.

### ***Empower with legislation***

Many community groups and recyclers are running out of steam as waste companies seek to gain further consolidation and control of the waste stream. The increasing prosperity and dominance of a few large waste companies is a signal that current legislation is not enabling a real move from wasting to resource recovery. Almost without exception managers of RRCs said they urgently want Government to put teeth into the Waste Strategy with legislation.

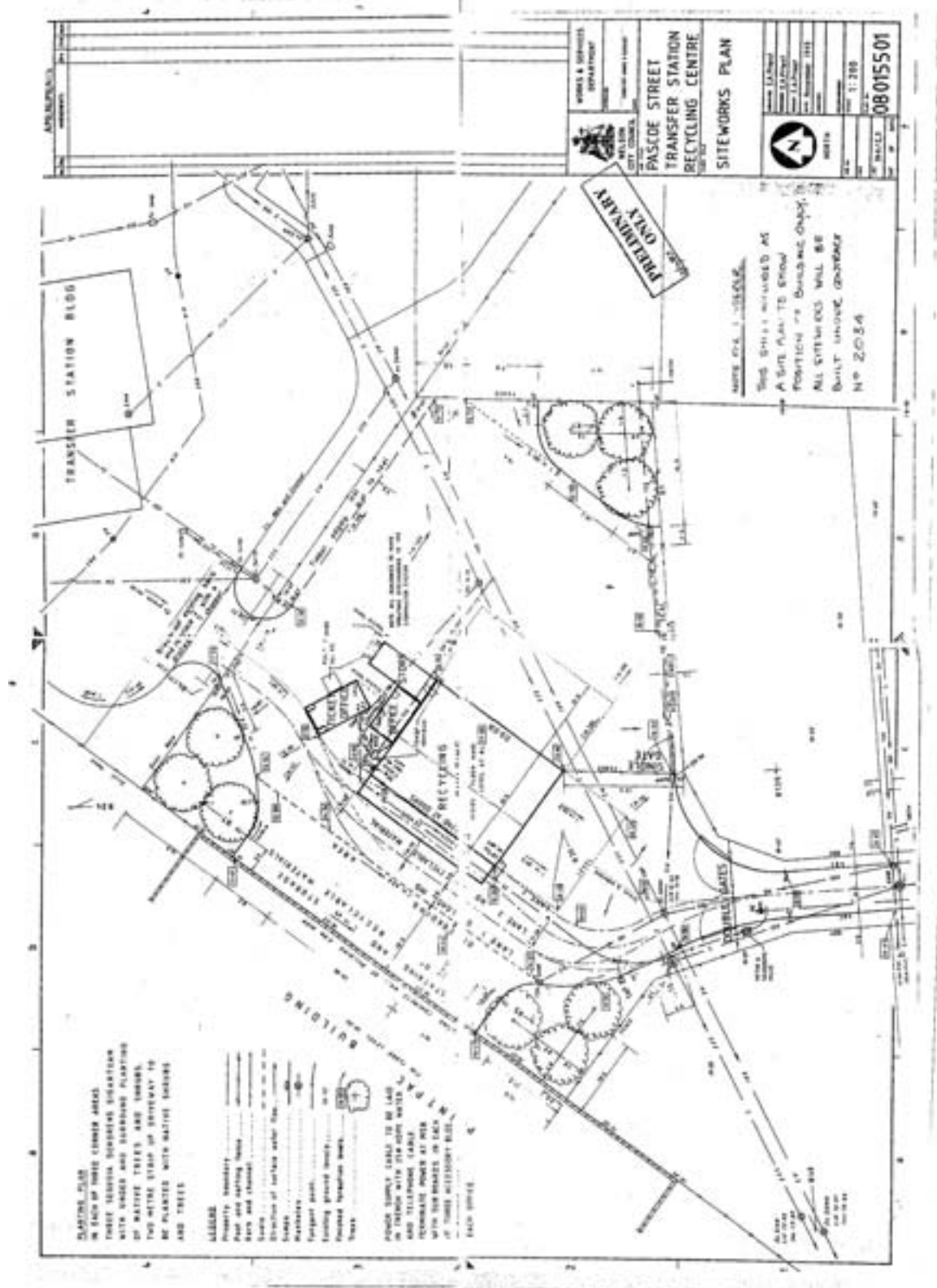


## 6.0 SITE PLANS

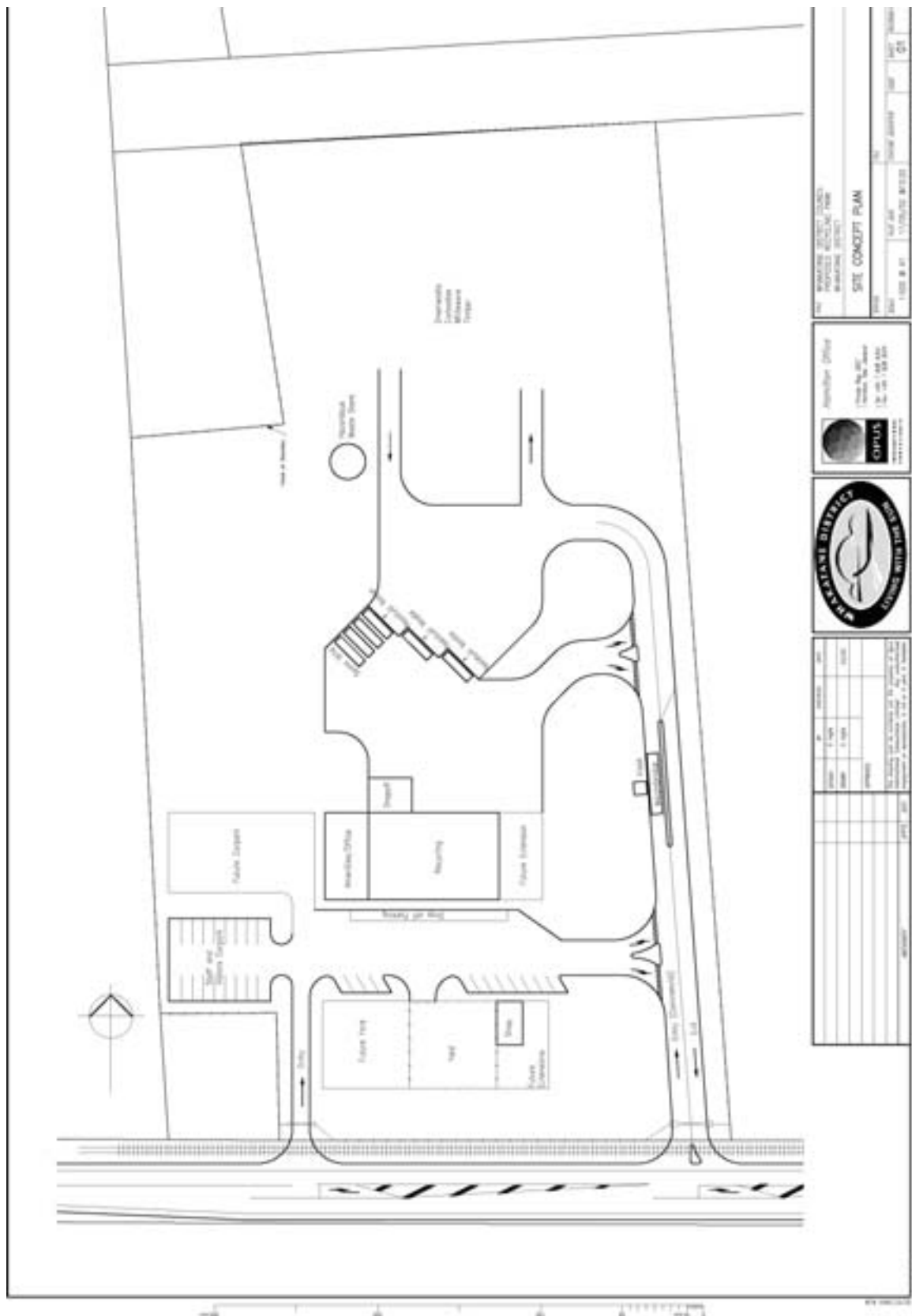


Dunedin Site Plan





Nelson Recycling Centre Site Plan



FOR INFORMATION ONLY: THIS PLAN IS A CONCEPT PLAN AND DOES NOT REPRESENT A FINAL DESIGN. ANY CHANGES TO THE PLAN WILL BE MADE AT THE CLIENT'S RISK.

**SITE CONCEPT PLAN**

DATE: 15/03/2011  
 DRAWN BY: J. BROWN  
 CHECKED BY: J. BROWN  
 SCALE: 1:1000



| NO. | REVISION          | DATE       |
|-----|-------------------|------------|
| 1   | ISSUE FOR TENDERS | 15/03/2011 |
| 2   | ISSUE FOR TENDERS | 15/03/2011 |
| 3   | ISSUE FOR TENDERS | 15/03/2011 |
| 4   | ISSUE FOR TENDERS | 15/03/2011 |
| 5   | ISSUE FOR TENDERS | 15/03/2011 |
| 6   | ISSUE FOR TENDERS | 15/03/2011 |
| 7   | ISSUE FOR TENDERS | 15/03/2011 |
| 8   | ISSUE FOR TENDERS | 15/03/2011 |
| 9   | ISSUE FOR TENDERS | 15/03/2011 |
| 10  | ISSUE FOR TENDERS | 15/03/2011 |

Whakatane Site Plan





Waiheke Site Plan

## 7.0 RESOURCES AND LINKS

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*A National Network of Drive-Thru Recycling Centres.* Western Sydney Waste Board. February 2000

*A Rural Cooperative Recycling Toolkit: Regional Purchasing, Recovery, Processing and Market Development.* Prepared for the Del Norte Solid Waste Management Authority by the Rural Counties Environmental Services Joint Powers Authority. April 2002

*A Study to Estimate the Disamenity Costs of Landfill in Great Britain.* DEFRA, February 2003

*An estimation of the risk associated with the organic constituents of hazardous and municipal waste landfill leachates.* Hazardous Waste and Materials, Brown, K and K.C. Donelly

*Creating Local Recycling Markets.* Tom Martin, Institute for Local Self Reliance. 1994

*Creating Wealth from Everyday Items.* Brenda Platt, Institute for Local Self Reliance, Washington DC, USA. 1997

*Creating Wealth from Waste.* Robin Murray, Demos 1999

*Environmental Guidelines: Resource Recovery and Waste Transfer Depots.* Environmental Protection Agency, Government of South Australia. November 2001

*Envisioning Resource Recovery Parks: Twelve Strategic Imperatives.* Dr Dan Knapp and Mary Lou Deventer, Urban Ore, California. November 2001

*Generic Designs and Projected Performance for two sizes of Integrated Resource Recovery Facilities,* prepared by Urban Ore, Inc., for the West Virginia Solid Waste Management Board, January 1995

*Going Round Again.* News from Waste Management World, November-December 2002.  
[www.jxj.com/wmw/news/2002\\_06\\_02\\_c.html](http://www.jxj.com/wmw/news/2002_06_02_c.html)

*Green Building Materials Showcase.* The Urban Ore Eco-Industrial Park. Prepared for the City of Berkeley, the Californian Integrated Waste Management Board and the Alameda County Source Reduction and Recycling Board by Dr Dan Knapp, Urban Ore. July 2002.

*Manufacturing from Recyclables. 24 Case Studies of Successful Recycling Enterprises.* United States Environmental Protection Agency. February 1995.

*Manufacturing with Reused and Recycled Materials: 50 Small Business Opportunities* by the Future Foundation.

*National waste Data Report.* Ministry for the Environment. 1997

*Opportunities in Neighbourhood Technology to Improve the Environment and Create Jobs. Reuse, Recycling, Refuse and the Local Economy. A Case Study of the Berkeley Serial MRF Documented* by Urban Ore and the Center for Neighbourhood Technology. September 1994.

*Recovery, Reuse, Revenue and Reality – the SuperShed Story.* Waste Awareness Nov-Dec 2002

*Recycling vs. Incineration: an Energy Conservation Analysis.* Jeffrey Morris, *Journal of Hazardous Materials* 47 (1996), pp 277-293.

*Recycling Economic Development through Scrap-Based Manufacturing.* Michael Lewis, Institute for local Self Reliance. 1994

*Recycling: A Case Study.* Warren Snow, Community Business and Environment Centre for the Ministry for the Environment. May 1993

*Reinventing Waste – Towards a London Waste Strategy.* Ecologika August 1998

*Resource Material and Background Information for a Proposed Resource recovery Park at Hazelmere, Perth.* Prepared for the Eastern Metropolitan Regional Council by Warren Snow, Envision New Zealand. January 2002

*Resource Recovery Parks. A model for Local Government Recycling and Waste Reduction.* Gary Liss, Gary Liss and Associates, April 2002

*Reusing Wheels, Not Reinventing Them. A Guide for Developing A Reuse Centre.* Reverse Garbage.Cooperative, Sydney

*Revolve – Job creation through Resource Conservation,* by Revolve, Canberra .

*Social Enterprise Guide to Recycling.* Social Enterprise London. March 2002

*ShaRe-Centres. Waste reduction and Resource Recovery in a Cyclic Economy.* Judy Lipp and Thilo Schafer, Warmer Bulletin November 1997

*Sustainable Businesses and Jobs Through Pallet Repair and Reuse.* Brenda Platt and Jennifer Hyde, Institute for Local Self Reliance. 1997

*Ten Cent Incentive to Recycle.* Container Recycling Institute. 2003

*The Business Case for Drive Through Recycling Centres.* Prepared for the Western Sydney Waste Board by Wright Corporate Strategy. June 2000

*The End of Waste : Zero Waste By 2020.* Zero Waste New Zealand Trust, 2000

*The New Zealand Waste Strategy; Towards zero waste and a sustainable New Zealand.* Ministry for the Environment 2002

*To Evaluate the Feasibility of Resource Recovery As An Approach to Minimise Inorganic Domestic Waste Going to Landfill Within the Auckland City Area.* Prepared for Auckland City Council. By Stephen Lindfield and Lisa Eve, Auckland City Council with consultancy support from Warren Snow, Envision New Zealand. September 2002

*US Recycling Information Study.* Prepared for the National Recycling Coalition by R. W Beck. 2001.

*USA EPA Jobs and Recycling Project.* Prepared by Resource Recycling Systems Inc. February 1993

*Waste Not.* Oregon Quarterly, Spring 2000.

*Wasted Opportunity: A Closer Look at Landfilling and Incineration.* Zero Waste New Zealand Trust, 2002

*Zero Waste.* Robin Murray, Greenpeace Environmental Trust, 2002

*Zero Waste Systems: Rural Transfer/Resource Recovery Park Design/Cost.* Rick Anthony, Dan Knapp and Gary Liss – Principal Authors, assisted by Tedd Ward and Kevin Henrick, California, USA.

## **USEFUL WEBSITES**

ACT Government, Canberra – [www.act.gov.au/nowaste](http://www.act.gov.au/nowaste)

British Columbia Government - [www.gov.bc.ca/epd/epdpa/ips](http://www.gov.bc.ca/epd/epdpa/ips)

Californian Integrated Waste Management Board - [www.ciwmb.ca.gov](http://www.ciwmb.ca.gov)

Community Employment Group - [www.ceg.govt.nz](http://www.ceg.govt.nz)

Community Recycling Network - [www.crn.org.uk](http://www.crn.org.uk)

Container Recycling Institute – [www.container-recycling.org](http://www.container-recycling.org)

Eco-cycle - [www.eco-cycle.org](http://www.eco-cycle.org)

Environment South Australia - [www.environment.sa.gov.au/epa](http://www.environment.sa.gov.au/epa)

Envision New Zealand – [www.envision-nz.com](http://www.envision-nz.com)

Funding Information Service - [www.fis.org.nz](http://www.fis.org.nz)

Grass Roots Recycling Network – [www.grrn.org](http://www.grrn.org)

New Zealand Trade and Enterprise - [www.nzte.govt.nz](http://www.nzte.govt.nz)

Materials for the Future Foundation – [www.materials4future.org](http://www.materials4future.org)

Ministry for Economic Development - [www.med.govt.nz](http://www.med.govt.nz)

Ministry for the Environment - [www.mfe.govt.nz](http://www.mfe.govt.nz)

North West Gypsum Recycling - [www.nwgypsum.com](http://www.nwgypsum.com)

Occupational Health and Safety Service - [www.osh.govt.nz](http://www.osh.govt.nz)

Recovered Materials Foundation - [www.rmf.org.nz](http://www.rmf.org.nz)

Recycling Operators of New Zealand (RONZ) - [www.ronz.org.nz](http://www.ronz.org.nz)

ReDo:Reuse Development Organisation – [www.redo.org](http://www.redo.org)

Tire Recycling Management Association of Alberta - [www.trma.com](http://www.trma.com)

Tomra Systems - [www.replanetusa.com](http://www.replanetusa.com) or [www.tomra.com](http://www.tomra.com)

Urban Mines – [www.urbanmines.org.uk](http://www.urbanmines.org.uk)

Waste Not Ltd – [www.wastenot.co.nz](http://www.wastenot.co.nz)

Western Sydney Waste Board - [www.wswaste.nsw.gov.au](http://www.wswaste.nsw.gov.au)

Zero Waste New Zealand Trust – [www.zerowaste.co.nz](http://www.zerowaste.co.nz)