CHAPTER 9

WASTE

Photo: Rob Tucker

WASTE

The term 'waste' describes materials or substances that are no longer needed or have lost their economic value and require disposal. In our increasingly consumer driven society, with its throwaway philosophy, the management of waste is a major issue, with the challenge being to find new uses for materials no longer required (i.e. recycling) or to find ways of cutting down on the quantity of materials that end up being discarded (i.e. minimising the amount of waste generated). There is also a need to ensure that large volumes of waste can be safely disposed of. In Taranaki:

- the whole region is now serviced by just one landfill, at Colson Road in New Plymouth, maintained to 'best practice' standards, with a future site secured;
- this compares with the situation 15 years ago when the region was serviced by about 20 sites, some of them just 'dumps';
- the quantity of waste discharged to the landfill has increased by 20%, between 1996 and 2008;
- suitable wastes are increasingly discharged to cleanfills, which have grown in number from 13 (in 2003) to 23;
- approximately 70,000 used tyres are produced per year, but demand for uses such as silage pit covers and culverts, is matching supply;
- council kerbside recycling collections have expanded in the region with a kerbside green waste collection now being offered in South Taranaki;
- since 1991, the Taranaki Regional Council has collected and disposed of more than 40 tonnes of redundant, unknown or hazardous wastes; and
- waste minimisation and recycling is being promoted in the region and increasingly businesses are taking up the challenge.

The *Regional Waste Strategy* has been prepared and adopted by all four councils in the region. The strategy provides specific waste minimisation and management goals for local authorities, industry and the community on matters relating to waste minimisation, hazardous wastes and waste disposal.

The regional landfill at Colson Road, New Plymouth.

OUR WASTE

Waste can be defined as any material – solid, liquid or gas – that is unwanted and/or unvalued, and has been discarded or discharged by its owner[1] .

Solid waste is more than just post-consumer rubbish. It may also include substances that are a by-product of one manufacturing process that can be reused in the same process, or recovered and used as raw material for another process. It can also include materials that do not currently have an alternative end use.

In past years, the focus was on addressing the adverse environmental effects of solid waste disposal in dumps (e.g. odour, seagulls, pollution leaching to groundwater). However, over the past two decades, most environmental issues associated with solid waste disposal have been addressed through measures such as the closure of almost all small municipal landfills, and through improved landfill engineering and management practices at remaining or new sites. Fifteen years ago the Taranaki region was serviced by about 20 sites, some of them were just 'dumps'. The focus has shifted from better waste disposal, to reducing the amount of waste disposed of. Reducing the volume of waste generated in the first place, or reusing materials that might otherwise be discarded, is far more efficient than trying to manage the waste once generated.

To manage wastes, the principles of minimisation, recovery, and recycling have been adopted, in order to both minimise environmental problems associated with solid waste disposal, and also avoid the depletion of critical resources. This means all sectors of our community must be engaged in waste management awareness and implementation. It is no longer a case of leaving it to the local council rubbish truck crew.

9.1 WHAT IS THE CURRENT STATE OF WASTE IN TARANAKI?

(a) GENERATION AND DISPOSAL

While other regions are finding it difficult to provide security of access to landfill capacity for municipal wastes in the medium term, in Taranaki the Colson Road landfill in New Plymouth serves as the regional landfill and has an estimated seven years capacity left at current filling rates (as of January 2008). It is classified as a Class A landfill, one of 11 in the country (as of 2002) that are considered to meet good current practice in its design and management [2].

The quantity of wastes generated annually in the New Plymouth District, both total tonnages and amounts per person is illustrated in Figure 9.1. Reliable figures are not available for this period for the region as a whole.

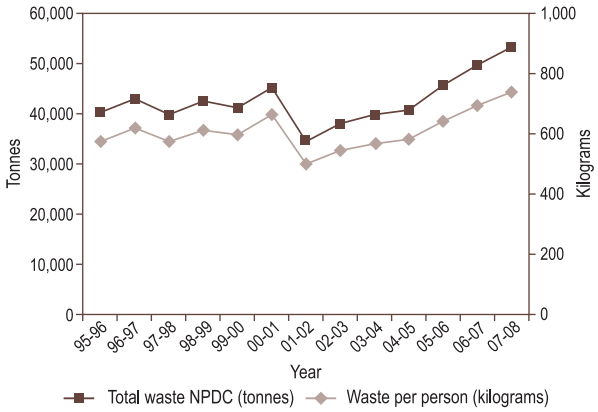

Figure 9.1: Trends of waste to landfill from New Plymouth District.

The majority of these wastes was disposed of in the Colson Road landfill. The significant drop in the 2001-02 year was due to the opening of the New Plymouth Transfer Station, associated price increases for disposal, and restrictions on access to the Colson Road landfill. Quantities gradually increased after this, taking approximately five years to return to the 2000-01 level of 45,300 tonnes. The largest volume to date has been during the past year for which there was complete data, 2007-08, with 53,200 tonnes discharged to the landfill. This was a 20% increase over the 12 years since 1995-96 (using the moving three-year average).

On a per person basis, waste to landfill has increased 17% over the same 12 years (again using the moving three-year average), with per person quantities following the same trend as overall waste to landfill (also illustrated in Figure 9.1).

Analysis of the data indicates that the change over the entire 12-year period was not statistically significant, but there was a statistically significant trend over the past seven years from 2001-02 to 2007-08.

Economic activity in the New Plymouth District over this period increased 35% (National Bank regional economic activity index). It is generally considered that refuse volumes reflect economic activity. This is because more economic activity means more manufacturing with more waste produced, and more consumption so more products discarded at the end of their life. In Taranaki the amount of waste disposed has not increased by the same amount as has economic activity. Reasons for this have not been analysed, and could include limited manufacturing industry in Taranaki, the introduction of kerbside recycling collections in the New Plymouth District in 1992, diversion of compostable wastes to other facilities, the proliferation of cleanfills to receive inert wastes such as soil, gravel, and concrete, and more efficient use of raw materials in manufacturing processes.

1 Ministry for the Environment, 2000. *The New Zealand Waste Strategy.*
2 Ministry for the Environment, March 2003. *The 2002 Landfill Review and Audit.*

An analysis of the nature, source and type of waste disposed of to the Colson Road landfill was carried out in April 2005. Five primary waste categories were separated and measured: organic, cardboard/paper, timber, construction and demolition, and residual waste.

Results showed the waste from the municipal kerbside collection was 38% organic, 19% cardboard, and only 4% construction and demolition and timber waste. Waste collected from the transfer station was 32% timber and 15% construction and demolition materials, and only 9% organic.

The results show that there is considerable scope to reduce the quantity of materials currently being discharged to landfill, through recovery and recycling of materials such as the composting of organic wastes.

(B) CLEANFILLS

Engineering and managing landfills comes at some considerable cost. Cleanfills are sites where inert material can be disposed of in a way that will not affect the environment or people when left unmanaged. Materials appropriate to dispose to cleanfill include natural materials such as clay, soil and rock as well as other inert materials such as concrete or brick. With increasing costs of landfills, cleanfills are being used as an alternative for these 'inert' or stable waste types. This then frees up space in engineered sanitary landfill for materials more likely to affect the environment.

A cleanfill is not simply a cheap or second-class version of a landfill or a small old-fashioned rubbish dump. As cleanfills provide no engineered barriers or safeguards for the environment it is critical that the types of wastes discharged are carefully controlled.

There are currently 23 consented cleanfills in the region. The *Regional Fresh Water Plan for Taranaki* also allows some cleanfilling activities to proceed without a consent, as long as they meet stringent restrictions on the types of wastes that are accepted.

Cleanfills operate under less comprehensive controls than landfills because of the restricted types of waste they can receive. Therefore less information is available on volumes of wastes diverted to them. In some cases cleanfill operators may be receiving only wastes they themselves generate (e.g. earthmoving contractors). In other cases they may also receive wastes from others. Sites used for cleanfilling may include the rehabilitation of former quarries and the conversion of gullies into pasture.

Most cleanfills in the region operate to a good to high standard. Others, however, have been found, through monitoring, to accept prohibited wastes. The Council instigates enforcement action in these cases, including successful prosecutions and requirements for closure.

Sorting waste for analysis at Colson Road landfill, 2005.

(C) SPECIAL WASTES

The Taranaki Regional Council undertook a study into the management of used tyres in Taranaki[3]. It found that each year the region produces approximately 70,000 used tyres. With the closure of retreading services in New Zealand, the high number of used imported cars, and the import of partially worn tyres for resale, disposal of tyres elsewhere in New Zealand has become a major issue. However, the survey showed that generally this has not occurred in Taranaki. Demand still matches the supply of old tyres, for uses such as silage pit covers and culverts. No tyre dealer identified disposal as an issue.

The capacity to re-process glass collected for recycling into bottles in New Zealand is strictly limited, due to large volumes of glass being imported and high rates of recycling, so that there is effectively an over-supply of recovered glass. Local councils are exploring alternative end-uses for glass in the region, such as sand blasting or incorporation into roading materials. Issues include long-term liability, health and safety concerns, and added handling expense. Experiments with a mobile crusher at Taranaki's largest recycling depot, and feasibility evaluations are being pursued.

The use of used tyres on farms means their disposal is not yet an issue in Taranaki.

3 Taranaki Regional Council. 2004. Memorandum to Policy and Planning Committee. 4 February 2004.

Simone, Janet and Geoff Genner and their car powered by used vegetable oil.

AFTER THE FRIES, THIS CAR FLIES

When it comes to individual environmental initiatives, never under estimate the value of a well-publicised trail-blazing exercise.

In 2006, alternative fuels enthusiast James MacDonald drove from Bluff to Cape Reinga in a car powered by used vegetable oil – and New Plymouth woman Janet Genner followed the media coverage with growing interest and excitement.

"What a cool idea. We could easily run a car on used vege oil," she told husband Geoff and daughter Simone.

Indeed they could. As New Plymouth franchisees for McDonald's, the Genners have plenty of used cooking oil literally on tap.

First they had to find a suitable vehicle – a diesel motor is needed but Janet didn't fancy anything too big and certainly didn't want an SUV. Finally they settled on a 2001 Peugeot 307 hatchback.

Bluff-to-Cape driver James MacDonald, who lives in Palmerston North, did the fuel conversion job for $2,500, though Geoff Genner says off-the-shelf conversion kits are now available for around $2,000.

Then it was simply a case of 'fill 'er up'. In 18-plus months of running, the Genners are delighted with the car and have had no major problems. "Performance is no different from a normal car."

Diesel is used to start the car and warm the engine up before switching to vegetable oil, stored in a 20-litre tank at the back. They're getting around 250 km per tank, with the car used mainly by Janet.

Geoff is so pleased that when his own car is due for replacement in 2009, he's likely to go the vege oil way. "We're just thinking about what we will do."

A couple of other Taranaki motorists are fuelling vehicles with used oil from the busy McDonald's restaurant, the rest is recycled through a tallow operator.

The 'McVege car' is decorated with bright sunflower decals drawing attention to its motive power – though Geoff says the best fuel has proved to be cottonseed oil. "But pictures of fluffy cotton plants wouldn't get the same idea across."

The Genners concede that not everyone has such easy access to used vegetable oil. But all the same, their initiative is seen as a good example of a family seeing and acting upon a sustainability opportunity within their own particular lifestyle circumstances.

(D) AGRICULTURAL WASTES

The Council surveyed the rural sector in 2004 to determine waste management practices and issues[4]. The survey showed that most farmers used a mix of burning and burying wastes for disposal on farm, while a surprising number (23%) used off-farm options such as occasional or regular use of waste management contractors to remove rubbish. There was considerable waste re-use (e.g. of empty plastic containers or building materials). On-farm inspections and conversations indicated that those surveyed had only small amounts of agrichemicals, and little or no quantities of unwanted or redundant agrichemicals. All participants knew of the regional hazardous waste collections carried out previously. There was a high level of willingness for a farm plastics collection service if provided, even if it required some small levy.

Over three quarters of all farms surveyed were using bale silage. The discarded plastic wrap was burned (70%), buried (14%), or disposed of to landfill (16%). Burning was also the main method of managing empty agrichemical containers (56% of all farmers).

The Council has supported (both financially and through staff time and advice) the development of a national agrichemical container recovery programme (AgRecovery). Progress toward its commencement has been slower and less comprehensive than anticipated, but by mid-2008, two sites were in operation, at a Transfer Station in Waitara and at a private waste and recycling business in Hāwera. An agricultural spray contractor in Stratford is also acting as a depot for contractors' containers.

A New Zealand pilot programme has been run for Agpac by the Central Taranaki Employment Trust in Stratford which collected 10.5 tonnes of plastic wrap by late 2007, over the first two years of operating. Following this programme, the collection of used silage wrap is now being offered commercially throughout Taranaki via four rural contractors and a private enterprise recycling centre, with 47 bins deployed in the region. These initiatives address an issue identified as a priority in the rural wastes survey.

4 Taranaki Regional Council. 2005. Memorandum to Planning and Policy Committee 17 March 2005.

Sharemilker Greg Topless stores plastic wrap to be recycled.

RAPT OVER WRAP SOLUTION

When the question is disposing of silage wrap, the answer for sharemilker Greg Topless is not blowing in the wind – and he couldn't be more pleased.

Greg's on a Toko property that's been signed up for the Agpac scheme, under which a large bin and liners are supplied to contain the plastic wrap until it is picked up for recycling.

"The whole thing is great. It means you don't have all this plastic blowing around the farm, getting dirty, being buried or burned, or worse," he said.

Burning or burying have been the traditional methods of disposing of silage wrap but both cause environmental damage.

Under the Agpac system, farmers are urged to bin their plastic immediately after it comes off the bale instead of leaving it to lie around and become excessively contaminated with manure, dirt and other material.

The bin liner is made of the same material as the silage wrap, so the whole unit needs no further processing before being presented at a recycling plant.

The scheme operates two streams. The first includes baleage wrap, silage pit covers, small feed and fertiliser bags, plastic packaging and shrink wrap. The second includes bulk feed or fertiliser bags that have woven PP outer bags and LDPE inner bags.

Bins have gone on to around 50 properties in Taranaki since 2005 and upwards of five tonnes of wrap a year has been collected for recycling.

Farmers can buy a bin ($480 + GST) and liners ($10 + GST), then either drop off the full liner ($20 + GST) or arrange to have it collected ($40 + GST).

The scheme operates nationally and in Taranaki it is delivered through four contractors: Ken Moratti in Inglewood,
Mark Hinton or Barry Taunt in Stratford,
and Michael Silson in Kaponga.

(E) HAZARDOUS WASTE MANAGEMENT

The Council has organised hazardous wastes collection for the rural sector driven by concern to safeguard public health and the environment from contaminants. Previous collections in 1991, 1995-1997, and 2001 had been well supported, and showed a trend of a considerable reduction in the quantities of intractable wastes (such as DDT, arsenic treatments, and lindane) gathered in each subsequent collection.

In the 1991-92 collection, Council staff visited each of the 84 farms that had advised they had wastes to collect. Nine tonnes of waste were collected with a high proportion (about 55%) of hazardous wastes such as DDT.

In 2001, farmers were invited to bring wastes to collection centres set up in the main towns of the region. While more than 13 tonnes were collected (from almost 1,000 participants from both urban and rural sectors), the proportion of hazardous wastes was much lower.

The 2004 collection used a mobile unit that visited 10 small rural centres around the region, to maximise convenience of access for farmers. Over 16 tonnes of waste were collected. The greatest quantities collected were paints, waste oil, dairyshed cleansers, and animal treatments, with smaller volumes of various agrichemicals such as weedkillers. The proportion of the most hazardous wastes was very low (500 kg, or about 3%), indicating these have now largely been removed from the region. This was confirmed during the survey into farm wastes discussed above.

In total, the Council has collected and disposed of more than 40 tonnes of redundant, unknown, or hazardous wastes since 1991 (from both rural and urban collections)[5]. It is estimated there could be about two tonnes of residual wastes left (across 4,000 farms), meaning that future specific collections would not be cost effective or efficient. The district councils continue to offer a drop-off service for hazardous wastes through selected transfer stations. A charge applies for commercial quantities.

Council staff collect hazardous waste for recycling or safe disposal. Douglas, April 2004.

5 Taranaki Regional Council/Ministry for the Environment. 2004. *Cleaning Up the Leftovers- Hazardous Waste Collections in Taranaki.*

Kerbside recycling, New Plymouth.

Cardboard sorted for recycling.

(F) MUNICIPAL WASTES

All three districts now provide a kerbside recycling service for urban households, in some cases extending into nearby rural areas. Each district has a different level of service, which is reflected in the quantities collected.

In 1993-94, the New Plymouth District Council began a district-wide kerbside collection service for recyclables, as part of its municipal refuse service. Householders place recyclables out in supermarket bags for a weekly collection. In the first year, 6.76% of the total kerbside quantity collected was recovered for recycling. In 2007-08, the recyclables collected as a percentage of the total volume of materials (recyclables plus wastes) collected in the New Plymouth Council kerbside collections had risen to 17.1% – more than double.

South Taranaki District Council started kerbside recycling in 2001 on a fortnightly basis using 120-litre bins. This was expanded in 2006-07 to give households the option of a green waste collection using 240-litre wheelie bins. In mid-2007 the recycling collection doubled in frequency, from fortnightly to weekly. Taking green waste into account, 39% of all material collected within South Taranaki through the kerbside collection service is recovered for recycling, with the remaining being discharged to landfill.

Stratford District Council began kerbside recycling in 2002. The collection is monthly using 240-litre wheelie bins.

Quantities of waste, recycling and green waste collected per household in council kerbside collections in each district are illustrated in Figure 9.2. The recycling figures for South Taranaki District Council also include school recycling. Figure 9.2 does not include recycling or waste collected at the kerbside in New Plymouth from private contractors as this data was not available. It is estimated that privately contracted waste collections may amount to about 28% of households in New Plymouth.

Figure 9.3 shows the quantities and types of recyclable materials collected from domestic kerbside recycling in the region from July 2007 to June 2008. This highlights that the greatest amount of recyclable materials is paper.

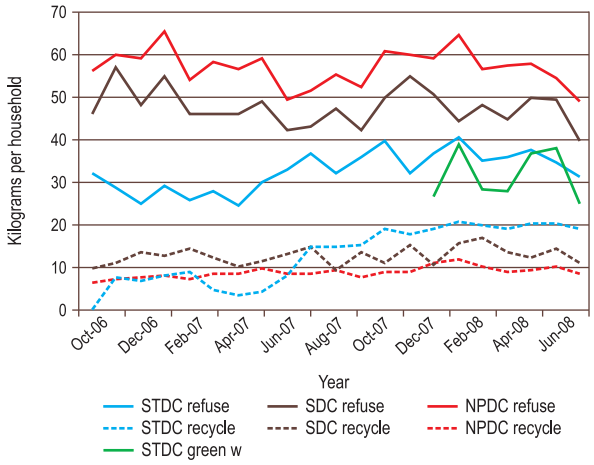

Figure 9.2: Amount of waste, recycled material and green waste disposed per household in council kerbside collections from October 06 to June 08.

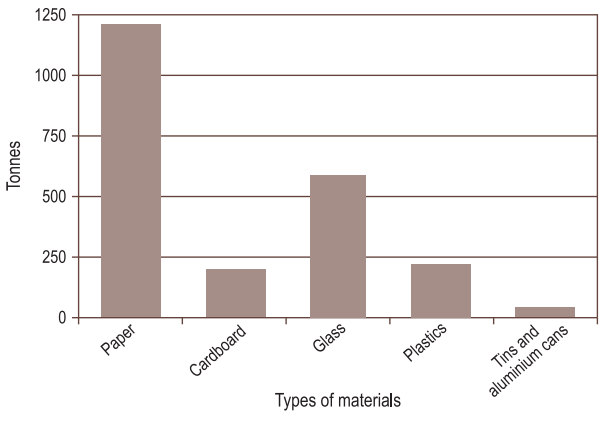

Figure 9.3: Domestic kerbside recyclable materials recovered between July 07 and June 08 for Taranaki.

Students manage the recycling system at St Joseph's Primary School, Hāwera.

RECYCLING MORE THAN JUST THE FOURTH 'R'

An environmental imperative … an educational project … a financial strategy ...

For St Joseph's Primary School in Hāwera, recycling is all of the above.

The school has an award-winning recycling system that grew out of concern at the cost of waste disposal and the level of student apathy about the problem.

A waste audit in 2005, carried out with the help of Taranaki Regional Council staff, revealed it would be possible to recycle much of the material the school was sending to landfill.

Deputy Principal Rik Allen realised that it was time to bring the students on board and he had his class survey the rest of the school to discover the best ways to encourage more students to recycle.

The result: a system that is essentially run and owned by the students. Each class has access to brightly labelled containers for non-recyclable waste, recyclable waste and food waste. And each month, a different class takes responsibility for collection and sorting, with the food scraps made into compost on site.

The children also visited all classes and the school office with advice on reducing waste, such as reusing single-sided paper, turning off lights and computers, efficient use of cardboard, and reusing resources for other purposes.

Rik Allen said that the system was functioning well and the children were even using the compost when planting shrubs and flowers. As well as being enormously educational, the new system has drastically reduced the cost of waste disposal.

The school incorporates environmental education into other teaching programmes and its successes earned it a Taranaki Regional Council Environmental Award for 2008.

9.2 HOW IS WASTE MANAGED IN TARANAKI?

(A) PLANNING

The *Proposed Regional Policy Statement for Taranaki* identifies the minimising of waste and the managing of its disposal as issues, for the region. It includes an objective and policy targeted at encouraging waste minimisation practices and measures to safely manage the adverse environmental effects of waste disposal.

The councils of the region work together through the Regional Solid Wastes Working Party that includes senior executive staff and political representation from the four councils, and a forum made up of operational staff. The forum meets regularly to progress the development and implementation of the *Regional Waste Strategy* and district waste plans.

The *Regional Waste Strategy* was prepared in 2003 and adopted by all four councils in the region. While it was based on the goals and objectives of the *New Zealand Waste Strategy*, the *Regional Waste Strategy* is specific to Taranaki. The strategy provides specific waste minimisation and management goals for local authorities, industry and the community. It includes targets derived from the *New Zealand Waste Strategy* for waste minimisation (particularly for organic wastes, special wastes and construction and demolition waste), hazardous wastes (particularly for contaminated sites, organochlorines and trade wastes) and waste disposal.

In 2005 the district councils collaboratively developed district waste management plans, reflecting the *Regional Waste Strategy*. These set out the services and funding provisions for waste management in each district. Developing them through a collaborative approach has been more efficient and addressed consistency issues between the districts.

(B) WASTE AND RECYCLING SERVICES

Commercial service providers now play a major role in waste management in the region. The kerbside collection of recyclables and residual wastes is by contract to the district councils, as is the operation of transfer stations and the Colson Road landfill. The recovered recyclables are processed by another company. There are a number of waste contractors offering private collection and recycling services for materials such as cardboard, shrink wrap, vehicle batteries, and scrap metal. In some cases contractors will pay for materials delivered to them (scrap metals were in high demand worldwide before the recession hit), while in other cases they may take materials free of charge (e.g. paper and cardboard), or may charge to recover handling and processing costs (e.g. rechargeable batteries).

While involvement of commercial operators puts waste management activities on an economically sustainable footing, it can cause problems with access to reliable data on recycling, as councils then have access to only some of the data on recycling within the private sector.

Large volumes of paint have been recovered from within the region for recycling via the Placemakers/ Enviropaints scheme, promoted by the Council. As noted above, the Council has collected (and subsequently recycled) considerable volumes of paint through its hazardous wastes collections. Useable paint is also put aside at some transfer stations for the public to access. Electronic wastes (computers and cellphones) are recycled within Taranaki through such events as the national e-waste collection programme held in 2008.

(C) INFORMATION, ADVICE AND EDUCATION

The Regional Waste Minimisation Officer position was established in 2003 in order to promote waste minimisation and recycling throughout the region. It is jointly funded by the four councils.

Waste minimisation assessments have been conducted in a number of sites throughout the region: publishing, medical, hospitality (training and retail, especially cafes and restaurants), marae, sports clubs, boat making and joinery, petrochemical, large public events, electricity generation, sporting, retail, and education (primary, tertiary, and outdoor pursuits). Recycling options have been explored including tallow/cooking oils for re-processing, food wastes for stock feed, paper, cardboard, and glass. A total of 52 assessments were prepared over 2006-08.

Adoption of waste minimisation practices by businesses can be slow and variable, due to lack of awareness or willingness, little appreciation of the opportunities to reduce costs, lack of knowledge of resources available or just the day-to-day pressures of running a business. However, responses to the waste minimisation assessments have been positive. Of the 45 followed up to June 2008, nearly half had reduced their waste as a result of either the visit or the follow-up phone calls, mainly by starting recycling or increasing the range of materials recycled. Councils, too, are getting on board with in-house waste minimisation programmes, such as paper re-use and recycling, recovery of canteen wastes for composting, and mulching of vegetation/landscape wastes.

Volunteers sort some of the 39 tonnes of e-waste during the Taranaki eDay collection. New Plymouth, October 2008.

The National Environment Standards for Air Quality (2004) now bans the use of un-consented school incinerators. The Taranaki Regional Council assisted a Ministry for Education review of waste disposal practices carried out by schools in the region, and identified alternative waste disposal options for schools. In the light of this work, all schools in the New Plymouth and South Taranaki districts now have recycling bins and free kerbside recyclable collection services, and schools in Stratford District are provided with recycling bins on request. All schools in

Festival patrons sorting waste for recycling at one of the many recycling stations. March 2008.

WORLD OF MUSIC, ARTS AND DANCE – AND RECYCLING

It's quickly become an event that defines Taranaki almost as much as the mountain does. And now WOMAD is adding status and standards to the zero waste campaign.

Thanks to a year of planning and the efforts of 40 volunteers, three-quarters of the almost 15 tonnes of waste material generated in the three-day festival in 2008 was diverted from landfill for recycling or composting.

Festival food sellers were required to use recyclable or biodegradable packaging and utensils, recycling centres were set up around the Bowl of Brooklands site and the volunteers were busy both behind the scenes and also out the front, helping festival patrons sort their rubbish.

As befitting a festival that promotes harmony, patrons were happy to co-operate and impressed by the resulting cleanliness of the site.

The Taranaki Arts Festival Trust Chief Executive, Suzanne Porter, said the effort was hard work but very worthwhile.

"We were really impressed with the volunteer support. Their enthusiasm was contagious and the concept caught on among everyone at the festival – patrons, artists, traders and staff.

"We're also conscious we've set a benchmark for other large events, locally and nationally. People who were at WOMAD will be expecting to see this elsewhere, so event organisers need to take notice."

The operation was supported by the Ministry for the Environment Sustainable Management Fund, and the success of the Trust and the volunteers was marked with a Taranaki Regional Council Environmental Award.

BENCHTOP COMPOSTING NOT A LOT OF ROT

You've heard of desktop publishing, but how about benchtop composting?

It's an idea whose time may have come, if the results of a South Taranaki District Council trial are anything to go by.

Solid Waste Supervisor Clive Margetts found enthusiastic support during the trial in early 2008, when 40 of his Council colleagues used specially designed benchtop composting units at home for 10 weeks.

The compact "Biobins" are well ventilated and have breathable, biodegradable liners which reduce odour and allow the content to dehydrate, and thus shrink and become less heavy. The bag and its contents can be put straight into the garden compost.

"The trial was a big success," said Clive. "They all liked using the bins and they all wanted to keep on using them."

The 'guinea pigs' included the Council's Environment and Information Services Group Manager, Graham Young, who said the Biobin proved fantastic.

"The capacity of the bin was excellent and the fact that there was no smell whatsoever was also excellent," he said.

A compact 'Biobin'.

Clive is now working on ways to bring the Biobins into wider use, perhaps starting with those who already pay for a fortnightly green waste collection by the Council contractor.

"It would cost us virtually nothing and for each household using them, it would get three to six kilograms out of the waste stream each week," he said. "That's a good return."

Possible future development of a commercial composting facility may allow Biobin bags to be disposed of in greenwaste wheelie bins.

Taranaki have ceased use of their incinerators. Councils have presented workshops and guidelines on waste management to teachers, students and property managers.

(D) RESOURCE CONSENT MANAGEMENT

The past 15 years have seen a staged reduction in the number of operational municipal landfills in the region, so that the days of the local rubbish tip are now well past. In 1992 there were 19 operational municipal wastes disposal sites in the region. By 1998 the number had reduced to eight. In 2008 there are three – one regional facility, and two others with consents allowing only restricted or emergency use (in case of forced temporary closure of the Colson Road landfill facility).

Closed landfills have been rehabilitated, with minimal (and reducing) residual adverse effects on either public health or the environment. Consenting and monitoring at closed sites continue until it is established that any effects are, and will be, negligible. There are currently 18 consented closed sites in the region.

The Colson Road landfill is expected to reach capacity around 2015, although this depends on the success of measures such as diversion of organic waste to composting which will extend its life. To secure access to landfill capacity in the future, all consents are in place for a site at Eltham to be opened and operated as a regional facility. This has been achieved since the *2003 State of the Environment Report*. The facility is estimated to have a lifetime capacity of 25 years at current (2007) filling rates for the Colson Road landfill. Before this landfill is committed, a further review will determine whether a regional landfill within Taranaki remains the best option for disposal. By maintaining local authority ownership of landfill facilities now and into the future for the region, the councils have avoided a commercial monopoly control of landfill access in the region.

In the *2003 State of the Environment Report*, the Taranaki Regional Council noted its intention that by 2005 all cleanfills in Taranaki would comply with cleanfill disposal guidelines. This has subsequently been achieved, and there has been a further refinement of best cleanfill consenting and operational practice in 2007. Cleanfill operators are expected to meet best current national practice. In some cases cleanfilling serves also to rehabilitate and landscape old quarries.

Through its regional planning documents, the Council pursues region-wide consistency in siting, management practices, consent conditions and environmental performance for all existing and future landfill and cleanfill facilities. Annual monitoring of consent conditions at all municipal and privately-owned landfills and cleanfills is carried out to assess their environmental effects.

Collette Holgate and her brother Jock Holgate sort waste for recycling.

THE LIFE OF A 'GARBOLOGIST'

By Collette Holgate

My role involves sorting all the waste delivered to the Stratford Waste Transfer Station.

When people think of rubbish dumps or waste transfer stations, they tend to think of big burly men, machines, mud and gross things like rats. Well, I'm female and 5 foot nothing. My shed is clean and tidy and my yard looks like a park. I conduct school tours and give the children puzzles, games and certificates for being helpful.

This is more than 'just a job' to me. I believe that putting a bit of thought into what could be done with 'rubbish' is good for the environment, as well as benefiting the community – particularly people in need.

There are three Rs in my job – reduce, recycle and re-use.

I reduce by separating out material which could be used in other ways – for example, wood which could be used in domestic fires or for building and other purposes.

A lot of the material left at the Station can be recycled – plastic, glass, cardboard and paper. After sorting, this is collected by a commercial waste management company.

I also receive lots of things which can be re-used. I send blankets, clothing, toys and furniture to a variety of charities.

I believe my three Rs are the future. Over the past few years, people coming to the Transfer Station have become much more aware and supportive of what we are doing here.

I have a sign on my desk which says, "Don't be a tosser if it's recyclable." Which are you?

An employee of Waste Management Ltd, Collette has sole charge of the Stratford Transfer Station which is notable for the absence of litter and odour and for its flowers, shrubs and sculptures – all of the latter retrieved from material brought to the station for disposal.

Passionate about her work and about the wider environmental issues it involves, Collette demonstrates how the actions of one person can make a dramatic difference.

She wrote this article for a corporate publication.

(E) SUMMARY OF PROGRESS

Progress implementing regional objectives and policies on solid waste management is summarised in Table 9.1. The material in this table is based on the targets set out in the *Regional Waste Strategy.*

9.3 HOW DO WE COMPARE?

The *New Zealand Waste Strategy* was released in 2002 by the Ministry for the Environment. It set out 30 targets intended to provide improved waste management, minimisation, and resource efficiency. Progress on implementing the *New Zealand Waste Strategy* has been evaluated[6]. The regional progress towards the targets in both the national and regional waste strategy documents was reviewed, and compared with the national report[7].

The review showed a considerable range of waste management activities being undertaken across the region, with good progress towards a better and more effective level of service. It showed that the region is generally doing as well as, if not better than other regions.

The management of 'contaminated land', of cleanfills and landfills, and of waste water treatment in the region, looks to be well ahead of the national scene. Taranaki appears to be at the forefront of certain initiatives such as the completion of several regional hazardous waste collections (particularly emphasising organochlorines such as DDT and dieldrin), the trialing of agricultural plastics recovery, and the established vermiculture industry and application of chicken litter and drilling wastes to land for soil enhancement in the region. Waste tyre disposal is problematic elsewhere but in Taranaki there continues to be a high rate of utilisation on farms and a tyre granulation process recovering crumbed rubber for re-processing is about to become operational. Increased diversion and recovery of organic wastes appear to be viable options to pursue further in Taranaki. There is a high level of co-ordination and joint programming between the four councils of the region.

Mulching green waste.

6 Ministry for the Environment, 2006. *Targets in the New Zealand Waste Strategy. 2006 Review of Progress*
7 Taranaki Regional Council, 2007. Agenda Item presented to the Policy and Planning committee meeting on 30 August 2007.

Table 9.1: Summary of progress: implementing regional objectives and policies for solid waste.

Issue	What do we want to achieve?	What are we doing about it ?	Where are we at ?
Quantities of solid waste	Reduction of the relative quantities of residual waste for disposal, and enhance waste minimisation and resource recovery for the region	• By December 2003 a Regional Waste Minimisation Officer will be appointed to facilitate reaching the targets of the *Regional Waste Strategy.* • Developing waste minimisation and management initiatives with industry in Taranaki including the dairy and petrochemical industries. • District councils will continue to make provision for transfer stations throughout Taranaki that provide cost incentives for the diversion of recyclables and green waste from landfill. • Working with the commercial sector to reduce organic waste going to landfill by 50% of 2002 levels by December 2007. • All councils will develop and implement in-house waste minimisation programmes for the facilities they manage to show lead initiatives toward achieving the targets of the *Regional Waste Strategy.*	• Regional Waste Minimisation Officer (RWMO) position filled since July 2003. • RWMO engages with at least six sectors each year. Dairy and petrochemical initiatives include landfarming and composting of oily wastes, and advocacy for silage wrap and agrichemical container recycling schemes. • Transfer stations provide free or reduced charges for recyclables and green waste. • Commercial schemes for recycling organic wastes in place. Joint STDC-Waste Management proposal for all green waste in South Taranaki under consideration. • All councils have in-house programmes.
Adverse effects of disposal of solid waste	Availability and utilisation of environmentally appropriate disposal options for each type of waste	• By December 2005 it is anticipated that there will only be one operational landfill in Taranaki at Colson Road that will: - continue to meet industry best practice standards; - continue to enforce the policy of non-acceptance of hazardous waste at landfills; and - continue to divert inert material where possible. • District Councils will review their cost pricing policy from time to time • By January 2004 all cleanfill consents will be amended to comply with cleanfill disposal guidelines.	• The Colson Road landfill a regional facility that achieves a 'high' environmental performance rating from the Council in respect of consent compliance, it does not accept hazardous wastes. • District council kerbside collections promote diversion of recyclables. Landfill pricing provides incentive for diversion of inert material. • District council waste services reflect actual costs. • Cleanfill consents reviewed in 2003-04 to reflect MfE guidelines, and again in 2007 to reflect best practice.
Management of hazardous and special wastes	Reduction in volume and improvement in management	• District councils will provide at least one dedicated hazardous waste collection facility per district.	• Regional hazardous waste collections since 1991, current drop-off facilities in each district. Over 40 tonnes removed from region to date (farms, households), estimates of two tonnes left. Electronic waste collection undertaken in 2008. • The Council delivers both RMA and HSNO advice, controls and monitoring.

In other matters such as waste oil, glass, old paint recovery, construction and demolition wastes, and electrical and electronic wastes, the region's dispersed population, small population base, and distance from major processors and markets, impede the development of a sustainable waste recovery industry. However, several smaller businesses operating transfer stations, or otherwise dealing with waste, are extracting increasing amounts of recyclable or reusable materials such as timber. With increased commercial involvement in waste management, local authorities have less direct control of what happens, and have to rely on advocacy, education, and promotion. Uptake of cleaner production principles by commerce and industry remains just as problematic in Taranaki as elsewhere.

Information has been gathered nationally on the siting, design, monitoring and operation of landfills[8]. Data from the census is reported in Table 9.2. The relevant information for Taranaki or specifically for the Colson Road Landfill has been inserted for purposes of comparison.

Some regional comparisons can be made with the national state of waste management [9]. Regionally the amount of wastes landfilled from all sources is equivalent to about 604 kg per person per year. This is 23% lower than the national average of 790 kg per person per year. This could potentially be explained by limited manufacturing industry in the region, lower generation of construction and demolition wastes than some other regions, and the proliferation of cleanfills.

Table 9.2: National Landfill Cenus and the Colson Road information.

National data **Taranaki data**	**1995**	**1998-99**	**2002**	**2006-07**
Total number of operating sites Taranaki	327 8	209 8	115 -	60 1(1)
Sites with consent to operate Taranaki	- 8	157 8	104 1	60 3
Leachate management system				
Engineered liner Colson Rd	- no	4%	20%	54% yes
Leachate collection system Colson Rd	13% yes	35%	47%	77% yes
Stormwater management system				
Stormwater diversion Colson Rd	41% yes	67%	74%	- yes
Stormwater monitoring Colson Rd	- yes	23%	50%	- yes
Stormwater treatment Colson Rd	9% no	27%	36%	- yes
Landfill gas management system				
Landfill gas monitoring Colson Rd	3% yes	11%	27%	- yes
Landfill gas collection (flaring or beneficial use) Colson Rd	- vented (2)	5%	10%	22% vented (2)
Landfill fires Colson Rd	52% no	24%	17%	0% no
Hazardous waste management				
Hazardous waste accepted Colson Rd	33% No (must be rendered non-hazardous)	20%	-	50% No (must be rendered non-hazardous)
Quantifying waste; disposal charges				
Measuring the quantity of waste Colson Rd	39% yes	63%	83%	93% yes
Disposal charges Colson Rd	- yes	45%	82%	93% yes

Notes: – information not requested
(1) one regional landfill, two others with minimal use/emergency use only
(2) re-use considered – not economically viable

8 Ministry for the Environment, 2007. *The 2006-07 National Landfill Census.*
9 Ministry for the Environment, 2007. *Environment New Zealand.*