# WASTE, RECYCLING AND AIR

## Principal findings

- Around 10% of Gisborne's total waste stream is sent to landfill – and the aim is to reduce this further
- Kerbside recycling celebrated six very successful years of operation, and now averages 222 tonnes per month
- Four more very successful Second Hand Sundays were held
- Waste surveys at all the rural transfer stations were undertaken in 2005/06
- Rural transfer stations are now fully staffed for the hours they are open
- Gisborne's Waste Management Plan is complete
- The 'Green Team' once again wowed the school children of the District with their environmental performances
- Gisborne's achievements were featured in a 2005 report "Waste Management in New Zealand – a decade of progress"
- We believe Gisborne is one of the leading districts in innovative and sustainable waste management
- During 2005/06, 83 classes attended educational sessions at the Rethink Environmental Education Centre
- Bokashi Buckets, introduced in August 2006, are in use in 7% of households already
- Our air quality remains high
- A district-wide emissions inventory has been completed.

## How well are we tackling rubbish in Gisborne District?

Gisborne is a 'zero waste' Council. This means we are putting systems in place that are designed to minimise waste to landfill, and encourage the reuse and recycling of resources that used to be thrown away as 'rubbish'.

Environmental Health (a section of the Gisborne District Council) has undertaken solid waste surveys since 1995, and collected recycling data since 2000, so we have reliable information on the changes to our waste stream that have occurred in the past eleven years.

The amount of city refuse collected at the gate is 59% lower than in 1999, the year before kerbside recycling began. An average city household rubbish bag now weighs about 5kg.

Kerbside collection of recyclables has been in operation since 2000. Following regular increases over five years, 2006 revealed a plateau. This is because volumes are restricted to what fits into the household bins.

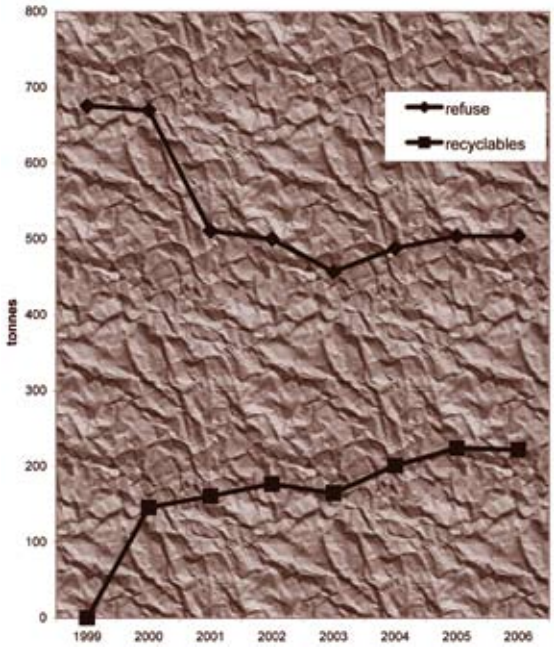
**Recycling is standard practice for the generation who've grown up with it!**

The total measured 'waste stream' for 2006 was 137,000 tonnes, of which only 13,700 tonnes, or 10%, ended up in a landfill. This is despite continued economic growth within our region, and an increased number of large-scale events such as the Wine and Food Festival and 'Rhythm & Vines'.

By far the largest component of the total waste stream in Gisborne District is organic, a result of vegetable, fruit and timber processing. Most of this is now diverted as stock feed, spread onto land as compost or mulch, or used to generate energy.

Gisborne is therefore steadily progressing towards our goal of zero waste and is well on the way to meeting the targets for waste set out in the NZ Waste Strategy of 2002.

**Monthly kerbside recycling and refuse collection tonnages**




### Major upgrades of rural transfer stations

Since 2004, our rural transfer stations have been upgraded to provide recycling and diversion facilities (with the exception of Tikitiki). They are open, fully supervised, for restricted hours.

Having staff present during opening hours has solved many problems, and the staff encourage people dropping off waste to 'shop' for items they may be able to use from the diversion areas.

A survey of waste dropped off at the rural stations revealed that between 182 and 917kg per local resident was delivered each year. This means that in some rural areas residents are generating more waste per person than city folk (at 353kg per annum).

The rural transfer stations are maintained in a neat, tidy condition, and are not at all offensive to the eye (or nose). When containers or fadges are full they are transported to AllBrites central depot in Gisborne (or to other dealers).

**Above: Matawai transfer station has areas for greenwaste, recyclable materials, whiteware and tyres.**

In 2005, 350 tonnes of recyclables were collected from the rural transfer stations, and 368 tones in 2006. Crushed metal (including cars) totalling 402 bales was compacted and collected by a contractor.

Residual waste from the Te Karaka, Whatatutu, Matawai and Tolaga Bay transfer stations is taken to the city resource recovery centre, and is baled for trucking, along with city waste, to the Paeroa Landfill. The total amount from the rural transfer stations was 1,402 tonnes in 2005 and 1,272 tonnes in 2006.

Residual waste from Coast transfer stations goes to Waiapu Area Landfill. Tikitiki dump site has an area for car bodies and whiteware, but no other material can yet be diverted.

## Waiapu Area Landfill

Currently, residents in Ruatoria can have an unlimited number of rubbish bags collected.

However, a weighbridge was installed at the Waiapu landfill in 2006, making it possible to assess the amount of domestic rubbish, and a one-bag per household limit can now be considered through the LTCCP process.

Extrapolation of the waste landfilled at Waiapu for the last quarter of 2006 in fact reveals the actual annual quantity will probably be less than a third of the amount that had been originally projected.

## Second-Hand SUNDAY

The concept continues to grow: Residents can register interest in participating, then on the prescribed Sunday, unwanted items are placed at the gate before 10am for people to take away.

These days were held in February and October each year (attracting participation from around 300 households each time).

Not only was around 50 tonnes of material diverted from landfill, publicity of Second-hand Sundays keeps the topic of waste management fresh in the minds of Gisborne people.

**All sorts of items appear on the kerbside for Second-Hand Sunday.**

## Packaging materials

Council is obliged to provide data on the amount of packaging materials collected at the kerbside and transfer stations (under the Packaged Goods Accord, 2004).

In 2005: A total of 1,785,830 kg of plastics, cans and glass were collected (these were mixed on arrival), and 902,060 kg of paper and cardboard.

In 2006: 1,521,130 kg of cardboard, paper, tins and plastic and 1,144,870 kg of glass were collected kerbside.

Transfer stations received 260,120 kg of glass, plastics and cans, plus 107,880 kg of cardboard and paper.

## Resource recovery

AllBrites resource recovery facility in the city received 80 tonnes of dropped-off material a month in 2006, up from 60 t/month in '05.

Metal and (degassed) white ware is diverted to Simms Pacific in Auckland, as are crushed car bodies, collected by two private operators.

Green waste is diverted to Matokitoki Restricted Waste Disposal Facility for composting.

## 'Bokashi Scrap-ing System'

The average Gisborne domestic rubbish bag still comprises 50% organic waste, and 36% of waste handled at the resource recovery depot is organic. This material can be put to much better use.

The Council has been promoting this $20 kitchen-scrap system, and subsidising sales of the kits since August 2006. By the end of the year a pleasing 900 systems had been sold, representing 7% of Gisborne households.

The kit comprises and inner and outer bucket with fitting airtight lid. Food scraps are added to the bin, sprinkled with bokashi (effective micro organisms) and will ferment (with no odour). When full, the bin contents can be added directly to the garden without the need for composting, simply by digging it into the soil. The material will have fully decomposed within three weeks and is a rich fertiliser.

The microbe-rich liquid collected in the outer bin can be diluted then watered onto the garden or lawn, or added to a septic system, where it will enhance efficiency.

**Above: Bokashi buckets use a culture of "good" microbes to turn kitchen scraps into odour-free garden compost – which can be added directly to the soil without the need for a compost bin or heap.**

## Green waste collection

A number of operators now offer garden waste collection from residents, or will chip waste on site, so it can be spread back on the garden.

The bulk of separated garden waste is mulched, mixed with bark and made into compost at D B Judd's in MacDonald Road. This is available as a bagged garden product, and much is exported out of town in commercial quantities.

The Matokitoki 'restricted waste disposal site' accepts mainly (clean-fill) construction and demolition waste, but also accepts green-waste from contractors and the city resource recovery transfer station. This is composted and incorporated into soil used on top of the clean-fill as a 'cap'.


**.....the Rethink Environmental Education Centre, composting workshops and static displays (this one is promoting energy-efficient light bulbs).**

## Where does residual rubbish go?

There is no longer a Gisborne City landfill. Residual waste that is not otherwise diverted, recovered or recycled is sent by truck and trailer to Paeroa to be landfilled. The amount is around 2 truck-and-trailer loads per day, or 13,700 tonnes per annum in 2006 (down from 14,225t in 2005).

## Further reductions planned

Gisborne District's waste management contractor (TPI/AllBrites) is obliged to present draft strategies, one year in advance of each target year, on how continued reduction in waste-to-landfill can be achieved. Council initiatives will be complementary, with the aim of achieving the following targets:

- 2008: 12,000 tonnes
- 2011: 8,000 tonnes
- 2013: 4,000 tonnes
- 2015: Our ultimate goal - zero waste

## Educating on waste management

There is an abundance of innovative environmental eduction happening in Gisborne.

The Rethink Environmental Education Centre continues to host school and community groups (83 classes and 6 community groups attended sessions there in this reporting period).

The "Willy on Waste" programme provides teachers' resource kits on waste minimisation, and the class programme now includes a session at Rethink.

Environmental Health works with local schools on an ongoing basis to establish worm farms and recycling stations.

Since 2000 Council has facilitated drama as a very successful method of raising environmental awareness amongst school children. The "Green Team" from Ilminster Intermediate annually writes and performs a show to primary aged children under the direction of Keren Rickard.

In 2005 primary schools were treated to "Grass Green and the Seven Dorks" and in 2006 "The Three Super Rs".

Secondary schools took part in the "Great Litter Hoax" in 2006.

**Above: Exciting and diverse examples of environmental education include dramatic performances by "The Green Team", wearable art.....**

Director Ruth Dudding coopted a teacher and a small group of students from each school, who were involved in spreading a rumour that a major litter offensive was underway. The rumours intensified over the week and on Friday the 'culprits' (actors) were humiliated at each school's assembly by the 'environmental police'. Finally, the hoax was revealed with a music and dance performance.

The "Sort Yourself Out" column in the local Eastland Trader magazine features waste reduction information and sustainable living tips. Gisborne District Council's web pages have been updated with the latest waste information.

Environmental Health now has several purpose-built displays covering recycling, composting and energy conservation. These were put to good use at events including the Environmental Extravaganza, Home Show and A & P shows.

## Hazardous substances

These include substances that may be oxidising agents, explosive, flammable, corrosive, toxic or ecotoxic. Examples include chemicals used for electroplating, spray painting, swimming pools and agriculture/horticulture. There may be problems with storage, use and eventual disposal of waste products.

Council maintains an inventory of premises, 674 in all, with hazardous materials on site. These are inspected regularly.

Educational material has now been produced on what can and can't be disposed of in the sewer or stormwater systems, at transfer stations, and by landfilling.

## Hazwaste storage site

There has been a delay in setting up a site for short-term storage of unwanted hazardous substances. Resource Consent has been granted but is now subject to appeal by the dog pound facility on the same site. Some planned programmes are therefore on hold, and storing some chemicals for reuse is not currently an option.

Many businesses have been asked to continue to store unwanted chemicals in the mean time. Alternatively Council staff can advise on companies specialising in hazardous waste packaging, transport and disposal.

## Agrichemical collection

A very successful collection of unwanted, obsolete and banned/restricted agrichemicals was carried out in 2005. A total of 7,138 kg of chemicals were collected from rural properties in the region. Transport and disposal of this waste was funded by the Ministry for the Environment.

### Contaminated Sites

There are several sites in Gisborne where hydrocarbons, solvents, chemicals used for timber treatment and heavy metals have entered the soil.

Resource consent has been issued for remediation of the former Gas Works site, which will span five years.

Historical photographs and interviews with past club members have enabled contaminated areas at the former Gun Club site to be defined. An independent report outlined further work and investigations needed.

Remediation of the former Caltex Kaiti Beach bulk fuel terminal commenced in 2006, and two former petrol stations await remediation by fuel companies.

### Pollution incidents

Environmental Health staff attended 49 pollution incidents in 2005 and 66 incidents in 2006. The majority of these involved spills onto road surfaces, particularly of fuel after vehicle accidents. Other spills comprised paint, fat and sewage.

There were 12 discharges into water in 2005 and 14 in 2006.

### A commercial worm farm

The worm farm processes organic waste supplied by Bay Waste Services as a result of their waste collection and dewatering operation.

Waste from city grease traps used to go to landfill together with most other liquid wastes. Since 2000, the de-watered organic waste has fed a one-hectare worm farm at Matawhero, where several million worms work at turning organic waste into vermicast, a plant fertiliser and soil conditioner.

This operation has reduced the disposed volume of liquid waste by over 75%.

### Other liquid waste

There are four septage sites, located north of Te Puia, and a number of campervan disposal points within Gisborne, plus one at Te Araroa. An additional campervan dump site is planned for Tokomaru Bay.

There is however still only one effluent disposal site for stock trucks.

A national Liquid and Hazardous Waste Code of Practice has now been developed, and is expected to be mandatory for councils and liquid waste contractors by 2008.

## Noise

Noise is unwanted or undesirable sound that could cause annoyance and adverse health effects; in other words - pollution in our acoustic environment. *Noise* is of course subjective, *sound* is a physical, measurable phenomenon.

Background environmental noise data is available from 21 sites around the district, measured in the last four years.

Traffic noise is most significant in Gisborne city, and in fact ranks as "medium" to "high" by national standards – consistent with any other city in New Zealand. Industry and trade activities, wind and surf also contribute to noise in the city.

Resource consents are now commonly issued with conditions pertaining to noise. Periodic visits are sometimes all that is necessary to monitor compliance with conditions; in other cases formal measurements are required.

In 2005, 68 consents were monitored for noise, and 42 in 2006.

Stereos, as usual, were the subjects of the vast majority of after-hours noise complaints: 1,455 complaints in 2005 (resulting in 38 stereos being impounded) and 1,492 in 2006.

## Air quality in Gisborne District

Residents of Gisborne District enjoy a generally high standard of air quality.

Pollutants that may be present in our air include vehicle fumes, smoke, industrial emissions, landfill gases, odours,

| | Mean $PM_{10}$ monitoring results* (micrograms per cubic metre air) | |
|---|---|---|
| | 2005 | 2006 |
| Residential fringe | 10.6 | 10.3 |
| Rural/industrial | 14.2 | 10.3 |
| MfE guidelines | 50 | 50 |

*Regular monitoring is carried out at nine sites.

emissions from farm animals, spray drift and dust (or $PM_{10}$, which refers to respirable particulate matter, less than 10 microns in size). Monitored pollutants, as measured in 2005 and 2006, fell well within national environmental standards.

The Council monitors 53 businesses and sites that have resource consent to discharge to air. Half are minor sources including boilers, incinerators and spray paint booths. More significant emitters include timber and food processing plants, quarries, bitumen manufacturers, grain drying and waste management processes.

Odour and smoke, from backyard burning of rubbish, and dust from earthworks and subdivisions, are by far the most common causes of complaint. There were 190 air quality complaints in 2005 and 133 in 2006. Complaints about spray drift normally comprise 10% of complaints.

## 2005 air emissions inventory

MfE recommends a district-wide emissions inventory be carried out every 3 to 5 years with particular emphasis on air pollutants for which there are national standards. These include $PM_{10}$, nitrous oxide ($N_2O$), sulphur dioxide ($SO_2$) and carbon monoxide (CO). Other substances quantified include carbon dioxide ($CO_2$) and VOCs (volatile organic compounds emitted from vegetation -such as methane - but also including the likes of gasoline, paint, solvents, carpets and vinyls, photocopiers, cleaning chemicals and others).

The previous survey was carried out back in 1996. Since then it is estimated that:

- Carbon dioxide ($CO_2$) emissions increased by just 4.2%. (Rural fires were a significant source in 1996, however vehicles were underestimated in 1996). Industrial emissions have probably increased
- Carbon monoxide (CO) emissions increased by 26.6% (for the same reasons as above)
- Emissions of nitrous oxide ($N_2O$) decreased by 50.7% (rural fires again being the main source in 1996). Other sources are fertilisers, animal excretions and crop residues
- Sulphur dioxide ($SO_2$) emissions were up by 76.6% (due to underestimation of vehicle emissions in 1996)
- VOC emissions decreased by less than one percent.

Other findings are that:

- $PM_{10}$ trends were not identified because in 1996 total suspended particles were measured
- Transportation and industry are responsible for the majority of $CO_2$ emission
- Natural vegetation is the largest source of VOC emissions
- Juken Nissho is the largest industrial emitter.

**Total estimated emissions for Gisborne District 2005 (tonnes/yr)**

| | $CO_2$ | CO | $PM_{10}$ | $N_2O$ | $SO_2$ | VOC |
|---|---|---|---|---|---|---|
| **Transport[1]** | 167,718 | 4,865 | 60 | 811 | 76 | 744 |
| **Industry[2]** | 152,700 | 748 | 96 | 264 | 10 | 15 |
| **Natural and agricultural[3]** | 1,417 | 1,357 | 22 | 797 | n* | 71,357 |
| **Area[4]** | 24,105 | 1,459 | 104 | 75 | 8 | 715 |
| **Total** | 345,940 | 8429 | 283 | 1,947 | 94 | 72,831 |

*1. Includes road motor vehicles, aircraft, major scheduled shipping and harbour-working vessels. 2. Combustion and process emissions. 3. Wild fires, geothermal emissions, emissions from soil, grassland, forests, wetlands and ruminant animals. 4. All other emissions, including domestic and commercial fuel combustion, surface coatings and thinners, aerosol and solvent products, service station refuelling losses, lawn mowing and off-road vehicles (including farm vehicles). *n: negligible*

Te Rau Print, Gisborne