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FOREWORD

Last century saw unprecedented improvement in the material wellbeing of people around the world, including New Zealand. But change came at a cost: rapid development meant more waste, which polluted the environment and often put stress on the natural systems supporting life.

This generation is working towards a better understanding of how to live sustainably — how to meet our own needs without compromising those of future generations. We are making good progress in managing waste disposal but little in reducing waste. Forging a path towards sustainability means finding ways to break the link between development and environmental degradation.

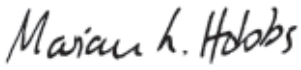
Reducing environmental stress means not only reducing the waste we generate but also changing the way we think about our use of resources. We must recognise the value of all resources, including the land, air and water we still use as dumping grounds. We must also recognise that we have no right to squander these resources — they are crucial life support systems for this generation of human and non-human species, and for generations to come.

The New Zealand Waste Strategy presents a new vision for minimising waste and managing it better. It sets out a practical programme of large and small actions for the medium term, as well as some far reaching, longer-term commitments.

The strategy's origins lie in government's commitment to reducing the waste stream, and local government's desire for more effective and efficient waste management and minimisation. Wider public concern about our growing waste problem has also motivated development of the strategy.

In May 2000, *Local Government New Zealand* and the Ministry for the Environment together began developing and implementing a strategy for change. The Working Group on Waste Minimisation and Management was formed and gave its initial advice in December 2000 in the discussion paper *Towards a National Waste Minimisation Strategy*. This was followed in early 2001 by public consultation and submissions. The Working Group gave its final advice in August 2001, capping off an invaluable contribution to the strategy.

The results of this process are before you now. The strategy sets ambitious new goals requiring us to be smarter about environmental protection, social wellbeing and economic development. This challenge is also a wonderful opportunity to shift investment and resources from managing waste disposal, to more efficient use of materials and resource recovery. The strategy's success lies in all our hands — in what we do individually and jointly — and we ask you to play a part in making it happen.



HON MARIAN L HOBBS
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BASIL MORRISON
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EXECUTIVE SUMMARY

The way we handle waste is crucial to our capacity to live sustainably. Waste is a significant risk to human health and the environment, and tangible evidence that we are making inefficient use of resources. Reducing New Zealand's waste is a cornerstone of government's commitment to sustainable development. Local government is crucial to putting this into effect, and all New Zealanders must take responsibility for reducing waste and managing it better.

This strategy covers solid, liquid and gaseous waste, and recognises that moving *towards zero waste and a sustainable New Zealand* is a long-term challenge. It has three core goals:

- lowering the social costs and risks of waste
- reducing the damage to the environment from waste generation and disposal
- increasing economic benefit by more efficient use of materials.

New Zealand's waste problem is large, and growing. Reducing waste cannot succeed without a system that manages waste from the point of generation through to disposal. A more effective, integrated approach to material and resource efficiency is needed at every stage of production and consumption.

Up to now, waste policies have tended to focus on *end of pipe* solutions by dealing with disposal rather than prevention. Yet there is a direct link between the amount of waste we produce and our rate of economic growth. The long-term challenge is to break this link and achieve sustainable growth by learning how to use resources more efficiently — to produce more with less.

This strategy sets challenging but achievable national targets for:

Waste minimisation, with specific targets set for:
- organic wastes
- special wastes
- construction and demolition wastes

Hazardous wastes, with specific targets set for:
- contaminated sites
- organochlorines
- trade wastes

Waste disposal.

Core policies

Five core policies form the basis for action:

A sound legislative basis for waste minimisation and management
New Zealand has no specific waste legislation. The strategy suggests changes necessary for an effective legal foundation, clarifies the function of key players, including central and local government, and recognises the Crown's responsibilities under the Treaty of Waitangi.

Efficient pricing
Pricing policies that, as far as practicable, reflect the full costs of waste disposal are crucial. Progress is underway on more efficient pricing policies, but further development and application of those policies is a cornerstone of the strategy.

High environmental standards
High standards are essential to protect the environment and public health. Implementation and monitoring of environmental performance standards is a strategy priority.

Adequate and accessible information
Lack of good information hampers effective waste minimisation and management. The strategy recognises that information is vital, and that central government can set up national information systems and facilitate public information and education programmes.

Efficient use of materials
More efficient use of materials will have the biggest long-term impact on waste reduction. Greater efficiency will not only reduce material use but offer more re-use and recycling options.

Four programmes will help central and local government put these policies into practice. These address:

1. institutions and legislation
2. waste reduction and materials efficiency
3. information and communication
4. standards and guidelines.

Many of the strategy's proposals need further consideration and consultation before policy decisions are made. Others build on work being done by government, individuals and organisations throughout the country.

Monitoring and evaluating progress towards targets will be essential, and will be carried out by the Ministry for the Environment, in collaboration with local government. A system will be in place by February 2003, and a first review of national targets is timed for 2003.

Our waste is our responsibility. Those who can and must play a part in moving *towards zero waste and a sustainable New Zealand* include waste generators, central and local government, Maori, the waste industry and its professional bodies, community and voluntary groups, and business. As individual generators of waste, we must acknowledge how much waste we generate, be prepared to pay for it, and stay informed about how best to reduce and manage it.

SECTION ONE

The waste problem

HOW AND WHY WAS THE STRATEGY DEVELOPED?

This strategy is the result of a partnership formed in May 2000 between government and Local Government New Zealand to look for ways to minimise this country's waste and improve its management.

Reducing our waste and managing it better is vital to New Zealand's long-term environmental, social and economic wellbeing. It is a cornerstone of government's commitment to sustainable development,[1] while local government plays a crucial part in planning for and achieving the reduction.

A Working Group on Waste Minimisation and Management was set up to advise on the strategy's content and direction, and its advice[2] released for public submission. Fifteen public meetings were held around the country for discussion of its recommendations, and the group's report prompted 252 submissions.

Both the Working Group and public submissions called for clear national leadership and recognition of the crucial role regional and local government must play in addressing our growing waste problem. There was also widespread agreement that all New Zealanders must take responsibility for waste.

This strategy is a response to that consensus. Its vision, goals and targets all express national and local government commitment to minimise waste and manage it better. The measures the strategy sets out are based on central and local government's assessment of what is important, practical and achievable.

Many of its proposals need further consideration and consultation before specific policies are adopted. Others build on work already being done by government, individuals and organisations throughout the country. While the strategy sets out central and local government's expectations for future waste minimisation and management, it allows policy detail to be settled during the course of implementation.

A monitoring and evaluation system will be in place by February 2003, and the Ministry for the Environment and local government will undertake a first review of progress towards strategy targets in 2003.

WHY DOES WASTE MATTER?

What is waste?

Almost every activity using materials and energy generates waste — from mining to manufacturing to cooking dinner. Waste is not a uniform substance; it is created in many ways and can be difficult to define. Waste takes all forms:

- Solid wastes are those generated as solids or converted to a solid form for disposal. They include common household wastes such as paper, plastic, glass, metals, appliances, and kitchen and garden wastes, as well as a range of industrial and commercial wastes, such as construction and demolition wastes, organic wastes from agriculture and food processing, and mine and quarrying tailings. Most solid wastes are disposed of in landfills or cleanfills. Some solid wastes, such as medical wastes generated by hospitals, are hazardous or potentially hazardous, and require controlled disposal, often through high temperature incineration.
- Liquid wastes are those generated as liquids or disposed of into a liquid waste stream as suspended solids. Wastewater (or sewage) is collected by the sewerage system and piped to public wastewater treatment facilities before being discharged into rivers or coastal waters. This includes domestic food wastes, washing water and toilet wastes, as well as chemical and process wastes from industry. Not all wastewater is collected by the sewerage system. Some domestic wastes go into septic tanks, and some industrial plants have their own treatment facilities. Non-point source discharges include livestock excrement and agrichemicals that are washed from the land by rainwater, and urban stormwater, which collects wastes as it channels rainwater into waterways, and out to sea.
- Gaseous wastes consist of gases and small particles emitted from open fires, incinerators, agricultural and industrial processes, and vehicles. Once gaseous wastes have been released into the environment their effects are very hard to control. If gases are contained through pollution control devices before they enter the atmosphere, they can be controlled more easily.

1 In May 2000, Cabinet agreed that sustainable development meant "meeting the needs of the present generation without compromising the ability of future generations to meet their own needs".

2 Ministry for the Environment, December 2000, "Towards a National Waste Minimisation Strategy".

Defining waste

This strategy defines waste as:

any material, solid, liquid or gas, that is unwanted and/or unvalued, and discarded or discharged by its owner.

This definition recognises that what one person or organisation regards as a waste can be a useful resource when used again for a beneficial purpose. For more information and guidance on identifying waste see the New Zealand Waste List, accessed at: www.environment.govt.nz\NZWLOnline

What wastes does this strategy cover?

The strategy covers waste in all its forms — solid, liquid and gas. This comprehensive approach to minimisation and management helps avoid policies that might encourage transfer of waste from one disposal medium to another, rather than reducing or removing the waste problem itself.

The strategy does not cover all environmental impacts of waste, however. Wastes that deplete the ozone layer, and increases in greenhouse gases caused by gaseous wastes are subject to existing programmes and lie outside this strategy. Other important non-point source wastes such as animal wastes and vehicle emissions are addressed by separate work programmes. Stormwater, which receives a range of wastes, is an increasingly important issue for many communities, but is not specifically dealt with here.

Strategy implementation will be coordinated with work programmes already underway.

Why waste matters

Waste management is crucial to our ability to live sustainably. Waste can be bad for the environment, bad for our health and bad for our economy. Numerous adverse environmental and human health effects can be attributed to waste.

Decomposing organic waste in landfills generates methane, a harmful greenhouse gas. Landfills also produce leachate when percolating water and other liquids pick up heavy metals and decomposing organic wastes. Uncollected leachate can escape into the environment, contaminating our water and soil.

Project Reclaim

Every day, Watercare Services Ltd's Mangere treatment plant discharges 290,000 cubic metres of highly treated effluent into the Manukau Harbour. Although unsuitable for drinking, the effluent is safe for use by industry as a low-cost source of water for cooling, washdown and similar purposes.

Project Reclaim is the company's investigation into the industrial re-use of effluent. The concept, which has proven successful overseas, is being discussed with industry in the Onehunga area. Initial studies at the treatment plant indicate that, once treated, the effluent could be dosed with chlorine and piped to local industries. Once the new treatment process is on-line, pilot trials complete, and the commercial viability of effluent reuse is confirmed, Watercare aims to have a recycled effluent scheme in place by early 2004.

Water passing through the final stage of treatment (ultra violet light disinfection) at the wastewater treatment plant.

MIPS and the *ecological rucksack*

Friedrich Schmidt-Bleek has developed a measure of materials efficiency called MIPS — materials intensity per service. Each material used in producing goods and services emerges sooner or later as waste, emission or discharge. MIPS measures each *unit of service* to the consumer from a product or service. A car, for example, delivers transport services, a book delivers information and entertainment services, and a glass of water serves to quench thirst. Producing all these services requires many materials, and the MIPS model measures how many are used in the production of a range of products and services.

The concept of the *ecological rucksack* is used to assess the environmental impacts of various products and services. A kilogram of metal obtained from mining, for example, usually requires the processing of tonnes of ore. When you use a product made from that metal it carries its own *ecological rucksack*. So using the MIPS measure, a ten gram gold ring carries an *ecological rucksack* of three tonnes! The concept can measure all the ecological effects of producing goods.

The longer you use a product, the greater the service it returns. If you recycle a product you've finished with, the materials will be used again, reducing the MIPS or *ecological rucksack*, of the new product. More gains can be made by reducing the amount of material needed to deliver the service to the consumer.

The MIPS model calls for economic, social and technical innovation to satisfy people's needs, along with far less reliance on natural resources to generate the same — or better — value of output.[3]

Burning wastes releases hazardous and toxic substances into the air and leaves a concentrated ashy residue that requires further treatment and disposal.

Domestic wastewater and tradewaste can contain pathogens, heavy metals and hazardous wastes, which can pollute our land and waters. Hazardous wastes can persist in the environment and enter the food chain, harming future generations.

Waste weakens our sense of connection to the environment. If we think of the environment as a dumping ground, it is harder to value its other qualities. For some, this directly affects cultural and spiritual values, and our role as kaitiaki, or stewards, of natural resources.

Waste incurs substantial economic costs. Producing unnecessary waste means we are not using resources sustainably. Studies show we use most resources very inefficiently and generate far more waste than durable, useful products. Approximately 93 percent of the materials we use never end up in saleable products at all but are discarded during the production process; approximately 80 percent of what we produce is discarded after a single use.[4]

Inefficient resource use stems from a failure to count environmental and social costs in resource use, waste production and disposal.

One of the best ways to reduce such costs is to reduce resource inputs by being smarter in our use of raw materials. The environmental benefits of greater efficiencies can be significant. One American study found a $US170 environmental benefit for each ton of solid waste eliminated from the production system, plus avoided disposal costs of $US100 per ton.[5]

The waste problem *can* be tackled effectively and this strategy sets in place a plan for doing this.

3 From Von Weizsacker, E, Lovins, A B, and Lovins HL, 1997, *Factor 4: Doubling Wealth — Halving Resource Use*, Allen & Unwin, chapter 9.

4 Von Weizsacker, E, Lovins, A B, and Lovins HL, 1997, *Factor 4: Doubling Wealth – Halving Resource Use*, pxx, Allen & Unwin.

5 Yale Study of Waste Reduction in New York, Tellus Institute and John Schall (Yale University), 1992. The scale of environmental benefits from source reduction probably apply to New Zealand given the sophistication of our economy and current emphasis on 'end of pipe' technology.

How big is New Zealand's waste problem?

The amount of waste we produce is directly linked to how many goods and services we consume — the greater our wealth, the more we waste. This link between material wellbeing and waste generation is recognised internationally. The Organisation for Economic Cooperation and Development (OECD), of which New Zealand is a member, recently commented:

Despite nearly 30 years of environmental and waste policy efforts in OECD countries, the OECD-wide increase in waste generation is in direct proportion to economic growth. A 40 percent increase in OECD GDP since 1980 has been accompanied by a 40 percent increase in municipal[6] waste during the same period.[7]

New Zealand is no different to other OECD countries. In spite of some progress, our waste problem continues to grow. The 1997 *State of the Environment Report* found that:

While waste management responses increasingly include recycling, cleaner production systems and higher landfill fees, total waste has increased, our landfill management practices are generally poor, as are our practices and attitudes towards managing hazardous waste.[8]

New Zealand's waste problem is large, and growing. Just how fast it is growing is difficult to judge precisely. Data on the size of the problem is inconsistent, difficult to compare, and in many cases, doesn't exist. Data from the Auckland region, where total landfill waste has been monitored since 1983, shows an increase in waste disposed to landfill per person of 73 percent.[9]

Nationally we dispose of over 3.4 million tonnes of waste into our landfills every year. Similar amounts of waste from building and demolition activities are disposed of into cleanfill sites.

Zero Waste New Zealand Trust

The Zero Waste New Zealand Trust is a funding, advocacy, support and information group fostering community development projects for minimising waste. In the past four years it has granted $2 million for waste reduction initiatives, and helped 34 of New Zealand's 74 territorial authorities commit to a target of zero waste to landfill.

Dunedin City council signed up to zero waste, with the trust helping develop the Dunedin Zero Waste Strategy. This looks at ways the council can reduce the quantity of waste sent to landfill, and prioritises them according to environmental, social and economic outcomes. It is guiding Dunedin's Zero Waste by 2015 policy.

Zero Waste funding, advocacy and technical support has helped about 40 community organisations and some small businesses develop resource recovery and waste minimisation projects. These are reducing waste flows and simultaneously creating job and business opportunities. The trust also fosters partnerships between community groups and their local councils, who can often provide the ongoing support required to maintain projects.

Staff at the Kaitaia Community Business and Environment Centre demonstrate the value of recovered materials! CBEC has received funding from the Zero Waste Trust to establish resource centres and education programmes.

6 There is no internationally agreed definition of municipal waste, but it generally refers to household wastes, and similar wastes collected from commercial and industrial sectors.

7 Environment at the OECD, www.oecd.org/env/efficiency/wastemini.htm

8 Ministry for the Environment and GP Publications, 1997, Chapter 10 page 16.

9 While this growth rate is very high, in per capita tonnage terms we still produce less waste than most OECD countries.

Past waste policies

Several attempts have been made at a national level to tackle waste. In 1990, government policy targeted a reduction of the country's solid waste to 20 percent below 1988 levels by 1993. This spurred local authorities and industries to develop recycling programmes, and the development of national guidelines for monitoring and managing landfill waste. Guidelines for hazardous wastes, contaminated sites and cleaner production have since been developed.

In 1992, the government dropped its waste reduction target and emphasised instead the importance of waste management programmes, generator-pays policies and implementation of the *5R* hierarchy of reduction, reuse, recycling, recovery and residual management. The Ministry for the Environment was directed to negotiate waste reduction targets with business sectors and encourage voluntary initiatives.

Legislation has also played a part. The Resource Management Act 1991 regulates the effects of discharges into the environment. While seen as a poor instrument for promoting waste minimisation, it plays a key role in waste management through the administration of the resource consent process. This Act also provides national instruments (National Policy Statements and National Environmental Standards), which could impact on waste management.

The Local Government Amendment Act 1996 brought the *5R* hierarchy of reduction, reuse, recycling, recovery and residual disposal into law and required territorial local authorities to prepare waste management plans. More recently, the Hazardous Substances and New Organisms Act was introduced, but it is still unclear how the Act will apply to hazardous wastes.

Territorial authorities hold principal responsibility for implementing waste policies in their local communities. They have undertaken a range of activities including waste management plans, cleaner production and education programmes, kerbside recycling systems, polluter-pays charging policies, identification of contaminated sites and improved landfill standards.

Around 500 billion litres of sewage flow annually into approximately 250 public wastewater treatment plants. Treatment of this wastewater generates between 700,000 and 1,000,000 tonnes of sewage sludge each year.

Approximately 282,000[10] tonnes of hazardous waste is landfilled each year, and a further 70,000 tonnes accepted at treatment facilities. New Zealand has approximately 20 waste incinerators that burn 13,000 tonnes of general medical waste, along with pathological and quarantine waste.

Some wastes are not so easy to measure. We don't know how much waste is illegally dumped every year. It is also difficult to measure non-point source waste discharges such as agricultural runoff and stormwater. Much more work is needed on all aspects of our waste streams to reveal the true size and nature of New Zealand's problem.

We do know that past waste practices have left a legacy of contaminated sites. A 1992 desktop study found 7,200 potentially contaminated sites (excluding timber treatment sites). Of those, 716 are landfill sites. Approximately 1,580 sites are potentially a high risk to human health and/or the environment.[11] Studies by regional councils suggest many more sites than the 1992 estimate. Councils have been systematically investigating these sites, and by 2000 had confirmed that 1,134 were contaminated. Forty-two percent of these have been cleaned up or are being managed. Although some sites resulted from poor practices or unlawful disposal methods, many stemmed from previously acceptable practices now regarded as inappropriate.

What progress have we made?

Waste minimisation and management policies at both central and local government level have changed practices over the last decade. Individuals, groups, businesses, non-governmental organisations, and central and local government agencies have launched many initiatives in a bid to address aspects of the waste problem. These have not by any means solved the waste problem, but they are steps in the right direction.

Landfill standards have markedly improved, and many substandard landfills are being closed in favour of modern, well-engineered landfills. Kerbside recycling schemes have helped raise awareness of the waste

10 This figure is based on data from various sources that may define hazardous wastes differently. It includes, for example, 176,000 tonnes of *Special Wastes* from Auckland. This requires special handling before being landfilled in a suitable site and is likely to range from sewage sludge and animal carcasses to asbestos.

11 Potentially Contaminated sites in New Zealand: A broad scale assessment. November 1992, Worley Consultants Ltd.

problem, and many communities are spearheading the drive for alternatives to waste disposal. Hazardous waste management is also being improved.

In other areas, results are mixed. Some councils have introduced cleaner production programmes for business, but are finding them difficult to promote because waste disposal is still easier, and in some cases cheaper, than recycling or waste prevention.

Waste management plans prepared by local authorities under the Local Government Amendment Act 1996 have resulted in good waste management progress in some areas. But the Act sets no timeline for completion of plans, and a few councils have not produced plans at all. Lack of central government guidance also means the quality of some plans is poor.

Voluntary agreements with industry have also brought mixed results. The 1996 Packaging Accord sought to minimise the environmental effects of packaging waste, and has improved rates of packaging recycling. Innovations such as lightweighting have slowed the growth in this waste. As in other countries, however, the total quantity of packaging waste has increased.

Under the Used Oil Recovery Programme, the major oil companies have made efforts to recover used oil and re-use it appropriately. Unfortunately, problems beyond the companies' control have dogged the programme, and legislation may be needed to ensure a workable New Zealand recovery network.

Higher environmental standards have sometimes led, paradoxically, to more waste. Higher wastewater treatment levels, for example, have increased the amount of sewage sludge requiring disposal. New policies to improve separation of hazardous wastes from the general waste stream will result in more waste requiring treatment before disposal.

Some waste streams are growing very quickly. As our forest plantations mature, for instance, harvesting and processing millions of logs will generate a lot of wood-processing waste. Although these wastes are potentially recoverable as fertilisers or fuel, as with all wastes they must be carefully managed to ensure they don't adversely effect the environment.

CBEC: community waste minimisation and management

The Community Business and Environment Centre (CBEC) in Kaitaia was formed in 1998. CBEC has piloted a broad range of services since then as a means of reducing waste to landfill and providing local employment. A large proportion of this development has come from running a comprehensive recycling programme under contract to the Far North District Council. The community company runs Kaitaia's kerbside recycling services, the Kaitaia recycling and transfer station, and the wider council network of transfer stations. It has operated the council's largest landfill, Ahipara, for four years, and run "Slash Trash", a schools and business education campaign on waste reduction.

CBEC have found they can handle the Far North District waste stream at about two thirds of the conventional waste handling cost, with a 65 percent recovery rate. Of the 40,000 cubic metres of refuse entering the Kaitaia recycling and transfer station annually, approximately 26,000 cubic metres is recovered through recycling and reuse.

Experience has led CBEC to believe the key to achieving high levels of waste reduction lies with councils running separate contracts for recycling and the operation of transfer stations, the transport of residual waste to landfill, and the disposal of residual waste at landfill. This allows councils to purchase, and measure, the appropriate services for each different function of waste handling. It would also provide an incentive for the recycling operator to improve recovery rates.

A CBEC staff member unloads kraft collected from Kaitaia retail stores. Over half of the recyclables that go through the Kaitaia Recycle Station come from the commercial sector.

Fisher & Paykel

Fisher & Paykel has been operating a whiteware take-back scheme since 1993, giving dealerships and service centres an alternative to landfilling. The company has agreements with most of its North Island dealerships and service centres to take back old appliances for dismantling and recycling. Fisher & Paykel's own appliances are partially stripped down and materials separated for recycling. Other brands' appliances may be stripped down but less is salvaged because of the difficulty in identifying materials.

Fisher & Paykel can re-use or recycle around 75 percent of appliances by weight. The company processes around 25,000 used appliances annually. It recovers 1,600 tonnes of materials, including aluminium, stainless steel, copper, steel, plastics, packaging, electric cable, compressors, glass and circuit boards. Refrigerants are safely removed from freezers and refrigerators.

Packaging is the biggest source of recovered material — 75,000 pieces per year — and the single highest revenue earner for the take-back centre. Some packaging can be used up to four times, so ensuring packaging is undamaged when appliances are delivered is crucial to the operation's success.

With sales of recyclable materials, and internal savings from the re-use of packaging material, the take-back centre is making a small profit, with revenue in 2000 topping $500,000.

Fisher & Paykel staff holding materials that tell a great recycling story. The polystyrene packaging on the left is collected, shredded and compressed into the heavy piece of material at centre, which is then used again in other plastic products such as the building component on the right.

WHAT'S BLOCKING THE PATH TO ZERO WASTE?

Past waste policies tended to focus on *end of pipe* solutions — those dealing with disposal rather than prevention. This strategy adopts a more comprehensive approach, recognising that we cannot minimise waste without a system that deals with it from generation through to final disposal. Crucially, the strategy recognises the need to promote materials and resource efficiency at every stage of production and consumption.

The strategy also recognises that the best environmental, social and economic solutions will vary for different wastes and different areas. While particular outcomes should be achieved throughout the country, a degree of flexibility is required in the means of achieving them.

In some areas, change can be immediate, but a number of factors stand in the way of easy, orderly progress. These must be addressed alongside change, or sometimes before change can be attempted.

Lack of information

Limited information on the size and nature of our waste problems hinders good policy-making and target-setting. We know more about waste disposal than we do about waste generation, but we need standardised measuring systems to establish baseline data and trends. We must also get a better understanding of production and consumption trends, which are closely correlated to how much waste we generate.

Variable community commitment

Many people enthusiastically promote and practice waste minimisation, but others know little about the problem. We need to raise awareness so we can build on and support community responses to local waste issues.

New Zealand's special character

Our towns and cities are widely dispersed, and transporting wastes and recyclables long distances is expensive. We are isolated from the rest of the world and all our imports and exports must be shipped or air-freighted. We import a large proportion of our consumer products so encouraging manufacturers to reduce waste or take back end-of-life products presents particular problems.

Inaccurate pricing and charging

Generating waste and disposing of it has social, environmental and economic costs, but these are not all covered by the *price* of waste treatment or disposal. Some councils still meet some or all of the costs of waste collection and disposal through a uniform annual charge levied on ratepayers. This gives waste generators little incentive to reduce the waste they dispose of, and is unfair to those who generate little, or recycle and compost their wastes.

Unreliable markets

There are healthy markets for some recyclable materials, but many markets are global, and susceptible to fluctuating prices. We must find reliable markets for more of our recyclables and ways to better manage fluctuations in prices. Part of the solution lies in overcoming prejudices about the quality of recovered materials. Many recyclers produce high-quality materials and products but are hampered by perceptions that virgin materials are better.

Hard choices

We need to minimise waste *and* improve waste management. Many contaminated sites need better management and remediation; wastewater treatment plants need upgrading; hazardous waste-handling and treatment processes must be improved; substandard landfills must be upgraded or closed down. Making this happen takes time and money. Many communities will have to make hard choices about prioritising resources.

Waste minimisation funding problems

We spend millions on waste disposal but it's often difficult to get ongoing funding for waste reduction research, education and implementation programmes. Quantifying the financial gains of waste minimisation is complicated and benefits may not be apparent for some time, so decision-makers and waste generators are often reluctant to allocate funds for this purpose. Some councils find the initial funding of two systems, waste disposal and resource recovery, a financial burden as they try to make the transition to a resource recovery system.

Lack of incentive in existing contracts

Some local authorities have sunk significant capital in landfills, so diverting waste to other uses can add to their total costs. Some local authorities and businesses have long-term fixed waste contracts with private firms, which lock them into paying for the disposal of a set amount of waste, whether they generate it or not. This provides no incentive to reduce waste.

SECTION TWO

A new direction

THE CHALLENGE WE FACE

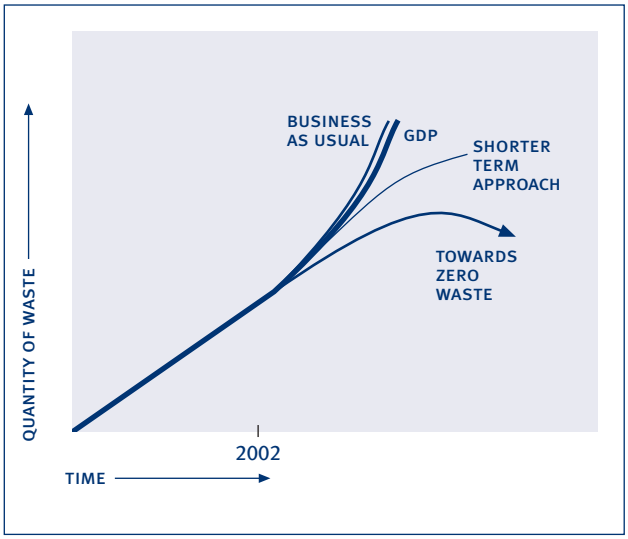
Breaking the link

Our challenge is to break the strong link between economic development and waste generation. We need *win-win* solutions to our waste problem that meet our need for environmental protection, social wellbeing and economic development.

In May 2001, OECD environment ministers, including New Zealand's environment minister, agreed that:

Decoupling environmental pressures from economic growth, while continuing to satisfy human needs, requires an integrated effort addressing consumption and production patterns, including encouraging more efficient resource use.[12]

Figure 1: Changing direction



NB: Diagram is illustrative only

Figure 1 illustrates the change of direction we need. Our current *business as usual* approach sees waste generation growing at a faster rate than the economy, represented here by GDP.

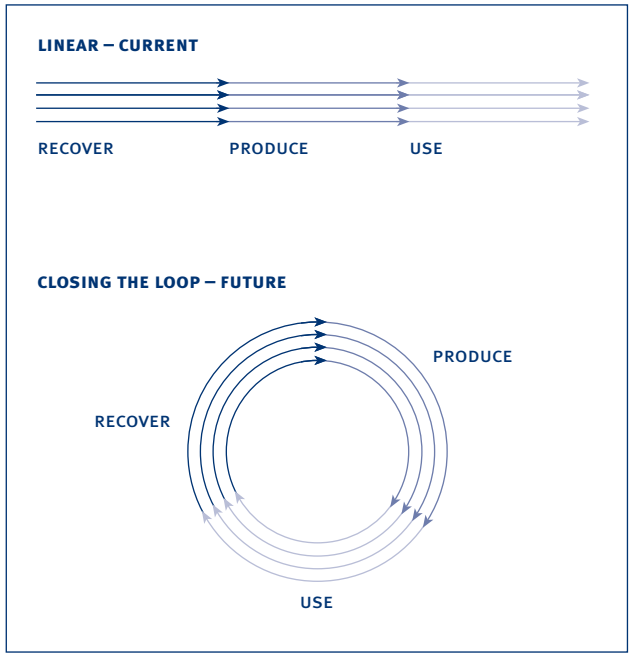
The shorter-term approach shows improvements we can make quickly in how we manage wastes, and in starting to reduce them. These include improving treatment and disposal standards, and educating the community and business sectors about waste.

On their own, though, these policies are unlikely to reduce the amount of waste we produce. Stronger measures will be needed to reverse waste generation rates and move them towards zero.

This change of direction will require *closing the loop* on resource use and waste generation. We must avoid producing waste materials, re-use them, or release them into our land, air and water only at a rate that will not compromise the ability of natural systems to support life.

Figure 2 shows two approaches to resource use. The current linear approach considers waste a natural part of production and consumption. The cyclical approach no longer accepts waste as a normal part of doing business.

Figure 2: Linear versus cyclical approaches to resource use



12 OECD Environmental Strategy for the First Decade of the 21st Century, Adopted by OECD Environment Ministers Paris, 16 May 2001.

Why must we act now?

Right now, community, central and local government and international priorities give us a unique opportunity to make significant progress:

- Government commitment: Government is committed to sustainable development as a basis of future policy and effective decision-making and management right across New Zealand society and its economy. Sound waste minimisation and management play a key part in this commitment.
- OECD policies: Most of our OECD trading partners have instigated policies and legislation to reduce and better manage waste. New Zealand must develop its own policies and practices while not getting out of step with these trading partners. Our *clean green* image is useful in promoting tourism and exports. Poor waste management would damage both the reality and the image. Our record on waste has important implications for trade and tourism, and the sustainability of all New Zealand businesses.
- Greater environmental awareness: Heightened awareness of the environmental and social costs of *end-of-pipe* management has prompted community calls for better standards of treatment and disposal. Many now recognise the potential of waste to contaminate land, air and water and destroy or compromise the ability of these resources to sustain life.
- Higher standards: Concern about releasing sewage into water is prompting more stringent treatment standards and land-based disposal. There is a move away from old dumps to bigger, better engineered, and therefore more expensive, facilities. Finding geologically suitable sites is difficult and costly. As these factors drive up the cost of waste disposal, waste minimisation becomes more attractive.
- Search for alternatives to dumping: The NIMBY (*not in my backyard*) response is driving serious consideration of waste minimisation as an alternative to disposal. Though far safer than the old style dump, big, modern landfills are rarely welcome neighbours.
- Maori as kaitiaki: Maori have driven improvements in wastewater treatment and disposal. Tangata whenua have a large body of knowledge (matauranga Maori) based on customary practice, and a strong sense of their duty as kaitiaki. These have fuelled efforts to ensure that sewage sludge and bio-solids resulting from wastewater treatment are made safe before being deposited on land.

Matauranga Maori

Iwi, hapu and whanau want to be sure that waste is disposed of appropriately — in harmony with their values, and without damaging the environment that sustains tangata whenua. This means, for instance, maintaining mahinga kai, or food-gathering areas, large enough and healthy enough for present and future needs.

Inappropriate waste disposal can damage the relationship Maori have with their lands, waters, food-gathering areas, and wahi tapu. Dumping waste into mahinga kai diminishes the site's mauri and mahinga kai values. The interdependence of mahinga kai ecosystems means any contamination — even of one species — has a negative flow on to all species in the ecosystem, including people.

Contamination of a food source threatens the ability of tangata whenua to fulfil their manaakitanga responsibilities (their ability to host visitors), as well as to sustain themselves from that food source. This, in turn, puts pressure on other food sources and ecosystems.

- Many contaminated sites: Contaminated sites throughout the country, and the expense of remediating them, underline the importance of preventing the environmental degradation that results from poor waste management.
- Local enthusiasm seeks government support: Local government is required to manage waste and the effects of waste disposal, but they face legal and market obstacles in doing as well as they might. Local government has called for a partnership with central government to address waste minimisation, and is backed by strong community support and enthusiasm for action.
- Community support for re-use and recycling: There is significant community support for product re-use and recycling, and more efficient use of resources. Communities are increasingly concerned by the degree to which we waste valuable resources, and many people find the idea of burying potentially useful materials in the ground offensive.
- Business and employment potential: There is growing appreciation of the business development and employment potential of waste minimisation, and, in particular, opportunities to take advantage of domestic and international markets for a range of previously used materials.

Life Cycle Analysis in Southland

Southland is a large region, with a dispersed population. In the past, every small community had a small, unlined disposal site, and many farms in Southland continue to operate their own. These landfills will close and be replaced with a modern, engineered landfill. The Southland District Council has used the Wisard Life Cycle Analysis tool to assess the environmental impacts of its disposal methods.

Table 1 shows the quantity of waste disposed of in Southland in 1997 and projected disposal methods in 2007. Table 2 shows the expected environmental effects using different forms of disposal.

Table 1

DISPOSAL METHOD	1997		2007	
ON-SITE (FARM)	9.002T	50%	4.501T	25%
LANDFILL	6.909T	38%	8.404T	45%
GREENWASTE COLLECTION	1.951T	11%	3.903T	22%
RECYCLING	0.138T	1%	1.192T	7%
TOTAL WASTE	18,000 TONNES*		18,000 TONNES	

Table 2

RESULTS:	1997	2007
WASTE (TOTAL TONNES)	27,774*	20,637
TOTAL PRIMARY ENERGY (GJ)	2,912	-15,952
AIR ACIDIFICATION (TONNES EQ PO4)	0.11	-0.18
EUTROPHICATION (TONNES EQ H+)	137.78	43.98
DEPLETION OF NON-RENEWABLE RESOURCES (TONNES/YEAR)	0.26	-6.18
GREENHOUSE EFFECT (TONNES EQ CO2)	16,944	7,274

A positive number shows an environmental burden and a negative number shows an avoided burden. Even though the volume of waste sent to landfill is expected to grow by 2007 (Table 1), the environmental impacts of this are off-set by a reduction in uncontrolled dumping and more composting and recycling.

A life cycle analysis can be applied to any combination of re-use, recycling and disposal methods. This example shows the often significant reductions in environmental effects, such as greenhouse gas production and resource depletion, from reducing waste and improving the way we manage it.

* These figures differ due to landfill cover and capping requirements included in the analysis.

Source: Life Cycle Tool for Waste Management in New Zealand: Wisard – Sensitivity Analyses Report; PriceWaterhouseCoopers in collaboration with URS.

- **Waste management industry support**: There is a groundswell of enthusiasm for action throughout the waste management industry, typified by the Waste Management Institute of New Zealand's *Lifeafterwaste* programme (see box page 38).
- **Meeting international obligations**: New Zealand has obligations under international environmental agreements. These include the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (ratified by New Zealand in 1994)[13], and the 1986 Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (or SPREP — ratified in 1990).

Links with other government policies

This strategy has links with the recently released *National Energy Efficiency and Conservation Strategy*, as well as New Zealand's international obligations under the Kyoto Protocol and the Framework Convention on Climate Change.[14]

The benefits of minimising waste in terms of energy efficiency and greenhouse gas reduction can be significant. For example:

- preventing waste generation and re-using products and materials reduces energy use and generation of greenhouse gases
- diverting organic wastes from landfill reduces the generation of methane
- improving landfill management can reduce the release of greenhouse gases; the use of landfill gas for energy can replace other fuels.

13 The Basel Convention requires signatories to reduce the amount of hazardous waste they produce and minimise the environmental effects of moving and disposing of hazardous waste.

14 New Zealand's climate change programme is still developing policies enabling New Zealand to meet the greenhouse gas emissions target in 2008-2012. It is likely that future greenhouse gas emissions will have a 'price', allowing emitters to assess abatement opportunities against the cost of buying emissions permits from the international market. A financial incentive will encourage reductions in emission-producing behaviour, such as poor landfill management and inefficient resource use in production systems.

VISION AND PRINCIPLES

Our vision of the future

Towards zero waste and a sustainable New Zealand is a vision for a society that values its environment and resources, and a guide to achieving it. People in such a society would use all resources efficiently and at a sustainable rate. They would no longer regard waste as inevitable, or see it as someone else's problem. They would identify and practice innovative methods for reducing waste and improving resource efficiency. They would respect others' environmental values and recognise the assault waste inflicts on these values.

Three goals reflect Government's renewed commitment to sustainable development and underpin this vision:

- Society
  lower waste's costs and risks to society
- Environment
  reduce environmental damage from generation and disposal of waste
- Economy
  increase economic benefit by using material resources more efficiently.

Towards zero waste and a sustainable New Zealand requires new ways of thinking at every level of the community. It doesn't mean radical change — we don't have to avoid the products and services we normally use — but we do have to think smarter about the service we want from products and find better ways of getting it.

Towards zero waste and a sustainable New Zealand will require an upgraded information base for future waste management and minimisation. We must also identify economic incentives for reducing waste, including price-based incentives to improve the effectiveness and efficiency of resource and energy use.

Cutting down on the amount of waste we generate and discard is the long-term challenge this strategy is designed to meet.

Core principles

Six principles will guide central and local government in implementing this strategy. These are widely used in other developed countries and are in line with OECD principles for strategic waste prevention. They are not absolute but subject to equity, practicality and cost.

Global citizenship

Our responsibility to protect the environment extends beyond New Zealand's borders.

The impact of some wastes, such as those that deplete the ozone layer, are not confined to New Zealand. Other wastes cannot be treated here and have to be exported, while New Zealand processes some wastes for our Pacific neighbours. This principle recognises our responsibility to consider the global consequences of our actions in generating, managing, treating and disposing of wastes.

Kaitiakitanga/ stewardship

All members of society are responsible for looking after the environment, and for the impact of products and wastes they make, use and discard.

The Maori concept of kaitiakitanga expresses an integrated view of the environment and recognises the relationship between all things. Kaitiakitanga represents the obligation of current generations to maintain the life sustaining capacity of the environment for present and future generations. Stewardship is similar, acknowledging the role and responsibility we each have in managing the environment for the good of all. Fulfilling this obligation means managing all wastes to lessen their adverse environmental effects.

Extended producer responsibility

Producers have a degree of responsibility for their products throughout the product's lifecycle, from production through to final disposal.

This principle encourages those manufacturing or marketing goods to find ways of reducing a product's environmental impact throughout its life. The principle may not apply to all products.

Full-cost pricing
The environmental effects of production, distribution, consumption and disposal of goods and services should be consistently costed, and charged as closely as possible to the point they occur.

This principle encourages minimisation of environmental effects by ensuring full environmental costs are reflected in product and service prices, and paid as closely to their source as possible.

Life-cycle principle
Products and substances should be designed, produced and managed so all environmental effects are accounted for and minimised during generation, use, recovery and disposal.

This principle requires consideration of all the environmental effects of production, use and disposal on our land, air and water.

Precautionary principle
Where there is a threat of serious or irreversible damage, lack of full scientific certainty should not be a reason for postponing cost-effective measures to prevent environmental degradation or potential adverse health effects.[15]

Where decision-makers have limited information or understanding of the possible effects of an activity, and there are significant risks or uncertainties, a precautionary approach should be taken.

15 Principle 15 of the Rio Declaration on Environment and Development.

SECTION THREE

Taking action

PRIORITISING ACTIONS AND WASTES

A lot can be done to minimise waste and improve its management, but not all at once. Some easy short-term measures will bring immediate returns. Others must be tackled over the medium term, and still others demand long-term, ongoing commitment. This section sets out criteria for prioritising actions that will achieve the strategy's vision and goals.

Criteria for prioritising action

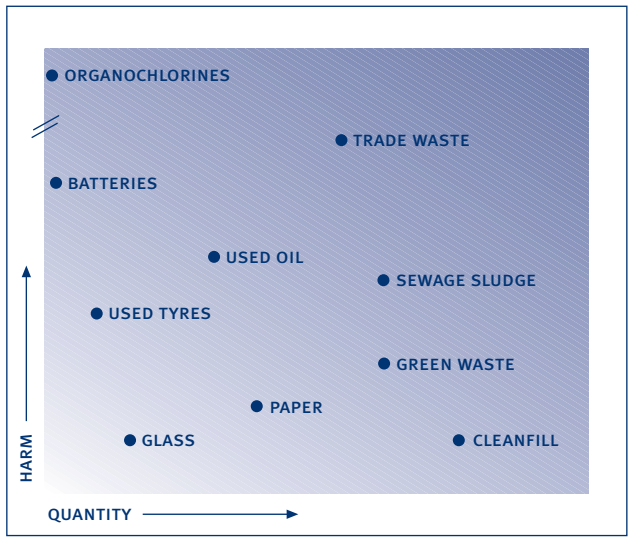
Volume and harm

Wastes cause a wide range of environmental risks and harm to human health. Minute quantities of some hazardous wastes, such as organochlorines, can be highly toxic, and present a significant and immediate risk. The Ministry for the Environment's work programmes address some hazardous wastes but more work is needed.

Some wastes cause a problem because of the sheer quantity of their contribution to landfills and other disposal facilities. Organic waste accounts for approximately a third of all landfill waste, and generates methane and leachate within a landfill. However, the large quantities of inert waste that earthworks, building and demolition activities produce don't usually impact heavily on the environment.

Figure 3 indicates the relationship between risk (to human health and the environment) and volume from selected wastes.

Figure 3: Relative quantities and harm for some wastes



NB: Diagram is illustrative only

Some high volume wastes are already being diverted from landfills with little or no government intervention. Green waste, for instance, is being composted in several places, and paper and many metals have been diverted and recycled for years.

Some wastes, such as glass, plastics, and aluminium and steel containers, are highly visible, but their total quantity and risk are not great. Markets exist for many of these wastes, and many councils and private companies operate collection systems.

Achievability

Policies and actions must be achievable and realistic to ensure success. The amount of green waste sent to landfill, for instance, is readily reduced, as composting programmes are already demonstrating. Other policies will require further investigation and attitudinal change, and will take longer to achieve.

Public concern

Policy and actions must respond to public concerns. Policies out of step with community concerns may erode public confidence in strategy implementation.

Cost-effectiveness

Policies and actions must be cost-effective. Measures that offer the best value for money will take priority. In some cases measuring costs and benefits will take some time.

NATIONAL TARGETS FOR PRIORITY WASTE AREAS

Setting targets requires good information to ensure they are realistic and to measure progress. Current information is poor, and we have no consistent, reliable information about waste flows. The Ministry for the Environment's Environmental Reporting Programme will address this problem — waste indicators will provide information on trends, and are likely to be operative within the next two years.

In the meantime, strategy targets have been set according to available information,[16] and should be considered goal statements rather than mandatory requirements. They will be reviewed in 2003 with the expectation of confirming national targets for key waste streams. Local government is encouraged to set local targets in line with national targets. The Ministry for the Environment will work with local government on guidelines for target setting and implementing waste indicators.

Three priorities, waste minimisation, hazardous wastes and waste disposal can be targeted for action on the basis of the criteria discussed above. Each of the three priorities incorporates targets for specific waste streams and issues.

TARGETS FOR WASTE MINIMISATION

Waste minimisation targets are general, addressing capacity building rather than specific waste streams. It is recognised that most local authorities will need a lead in time of two years to make budget allowances for minimising waste.

Targets for waste minimisation

1 Local Authorities will report their progress on waste minimisation and management for their annual report in 2001-2 and quantitatively on an annual basis from then onwards.
2 By December 2005, all regional councils will ensure that new or renewed industrial resource consents include a recognised waste minimisation and management programme and will report on the percentage of all consents under their jurisdiction that have such a clause.
3 By December 2005, at least 10 major businesses will be participating alongside central and local government in developing and promoting waste minimisation programmes within their sector.
4 Ninety-five percent of the population will have access to community recycling facilities by December 2005.
5 By December 2005, territorial local authorities will ensure that building regulations incorporate reference to space allocation for appropriate recycling facilities in multi-unit residential and commercial buildings.
6 By December 2005, all councils will ensure that procedures for waste minimisation have been addressed for all facilities and assets they manage and will have set target reductions based on public health, environmental and economic factors.
7 By December 2010, all regional councils will ensure that at least 25 percent of all existing industrial resource consent holders have in place a recognised waste minimisation and management programme.

Organic wastes

Organic wastes form a big proportion of the waste stream. They include garden waste, kitchen waste, food processing wastes and sewage sludge. Landfilled organic wastes produce leachate and generate methane, a greenhouse gas.

Targets aim to markedly reduce the amount of organic waste in landfills. A 60 percent reduction in landfilled garden waste would bring total landfill volumes down by as much as 800,000 tonnes and save around $40 million[17] in disposal costs.

16 The need for targets was identified by the Working Group on Waste Minimisation and Management, and supported by a majority of submissions on the Working Group's report.

17 This calculation assumes average disposal costs of $50/tonne.

The Living Earth Company

Organic wastes are a big part of the total waste we produce. The Living Earth Company recovers organic waste in Auckland, Christchurch and Wellington to turn into compost for gardens and farms throughout New Zealand. The company diverts 72,600 tonnes of garden waste, biosolids and abattoir wastes from landfill each year, saving more than 500,000 cubic metres of landfill space.

In Wellington, the company mixes garden waste with biosolids recovered from the Wellington City Council wastewater treatment system. Biosolids contain trace amounts of heavy metals such as lead, mercury, cadmium and zinc, as well as synthetic organic chemicals such as DDT and dioxin. Although heavy metals occur naturally in small quantities, they are toxic at certain levels, so their use must be carefully managed.
The company's resource consent in Wellington requires all compost to meet stringent standards for pathogens, trace metals and organochlorines and site management conditions for land application.

The need to limit biosolid contamination is behind the drive to cut down on contaminants entering the sewerage system. High mercury levels have been traced to dental surgeries, and discussions between The Living Earth and the New Zealand Dental Association have led Wellington dentists to adopt a code of conduct for managing mercury. The dentists are installing amalgam separators in their surgeries to capture mercury before it enters the sewerage system.

The Living Earth Company is also addressing Maori concerns about using human wastes on land used for growing food. The debate goes on, and illustrates the complex issues that will arise as we separate our waste streams.

This composting plant, owned by Wellington City Council and operated by Living Earth Ltd, converts garden waste and biosolids from the city's waste water treatment plant, into high quality compost.

Targets for organic wastes

1 By December 2003, all territorial local authorities will have instituted a measurement programme to identify existing organic waste quantities, and set local targets for diversion from disposal.
2 By December 2005, 60 percent of garden wastes will be diverted from landfill and beneficially used, and by December 2010, the diversion of garden wastes from landfill to beneficial use will have exceeded 95 percent.
3 By December 2007, a clear quantitative understanding of other organic waste streams (such as kitchen wastes) will have been achieved through the measurement programme established by December 2003.
4 By December 2007, more than 95 percent of sewage sludge currently disposed of to landfill will be composted, beneficially used or appropriately treated to minimise the production of methane and leachate.
5 By December 2010, the diversion of commercial organic wastes from landfill to beneficial use will have exceeded 95 percent.

Special wastes

Some wastes cause particular problems and need special management. These include used oil, tyres, end-of-life vehicles, batteries, and electronic goods like computers. Initiatives to address special wastes should be initiated by the relevant business sector or central government, so that the same rules are applied consistently throughout the country.

Target for special wastes

1 By December 2005, businesses in at least eight different sectors will have introduced extended producer responsibility pilot programmes for the collection and reuse, recycling, or appropriate treatment and disposal of at least eight categories of special wastes.

Construction and demolition waste

Construction and demolition wastes make up a large proportion of the solid waste stream. Many can be re-used or recycled, but there are often no financial incentives to do so.

Targets for construction and demolition wastes

1 By December 2005, all territorial local authorities will have instituted a measurement programme to identify existing construction and demolition waste quantities and set local targets for diversion from landfills.
2 By December 2008, there will have been a reduction of construction and demolition waste to landfills of 50 percent of December 2005 levels measured by weight.

TARGETS FOR HAZARDOUS WASTES

Risks to human health and the environment can be significantly reduced by minimising and properly managing hazardous wastes. The Ministry for the Environment's Hazardous Waste Management Programme aims to improve hazardous waste management through guidelines and regulation. Specific targets complement this programme.

Targets for hazardous wastes

1 By December 2005, an integrated and comprehensive national hazardous waste management policy will be in place that covers reduction, transport, treatment and disposal of hazardous wastes to effectively manage risks to people and the environment.
2 By December 2004, hazardous wastes will be appropriately treated before disposal at licensed facilities, and current recovery and recycling rates will be established for a list of priority hazardous wastes.
3 Recovery and recycling rates for priority hazardous waste will increase 20 percent by December 2012.

Contaminated sites

Contaminated sites, including closed landfills, are the legacy of poor management of hazardous substances and waste. Targets aim to ensure identification of all contaminated sites and management of those that are high risk. The Ministry for the Environment has developed guidelines on contaminated sites. A Hazardous Activities and Industries List assists the initial identification of sites.

Regional councils are well placed to do much of this work, but more progress would be made through collaborative operation of a land use register by regional and territorial authorities. Some authorities will have difficulty complying with the proposed timeframe[18] but it reflects the importance of addressing the problem.

18 It is recognised that orphan sites and sites owned by the Crown and others may be a heavy burden, and that their management may be interpreted as a full declaration of intent to achieve satisfactory environmental standards within a timeframe which may stretch beyond 2015.

Targets for contaminated sites

1 By December 2008, all sites on the Hazardous Activities and Industry List will have been identified and 50 percent will have been subject to a rapid screening system in accordance with Ministry guidelines.
2 By December 2010, all sites on the Hazardous Activities and Industry List will have been subject to a rapid screening system in accordance with Ministry guidelines, and a remediation programme will have been developed for those that qualify as high risk.
3 By December 2015, all high risk contaminated sites will have been managed or remediated. A timeframe will also have been developed to address the management or remediation of remaining sites.

Organochlorines

The Ministry for the Environment's Organochlorines Programme is developing standards and guidelines for managing 12 organochlorines. The Ministry has proposed a national dioxin standard.

Targets for organochlorines

1 By December 2010, New Zealand will have met international obligations under the Stockholm Convention to collect and destroy PCBs and organochlorine pesticide wastes.
2 By December 2020, the average body burdens of dioxins will have been reduced to 10 percent of present day levels.

Trade wastes

Trade wastes are generated by businesses, and disposed of through the sewerage system. They include hazardous materials from industrial and manufacturing processes, many of which are treated and discharged to water or land. Targets for trade waste aim for consistent management and progress towards minimisation.

Target for trade wastes

1 By December 2005, all territorial local authorities will have implemented and will be monitoring Model General Trade Waste By-laws based on the New Zealand Standard Model General Bylaws, Part 23 – Trade Waste or its equivalent.
2 By December 2005, all territorial local authorities will ensure that all holders of new or renewed trade waste permits will have in place a recognised waste minimisation and management programme.

The Recovered Materials Foundation

When Christchurch City Council (CCC) decided to start kerbside recycling, it wanted to be sure of long-term, sustainable markets for collected materials. The Recovered Materials Foundation (RMF) was set up as a not-for-profit trust to develop these markets and operate the council's recycling and recovery centres.

The RMF is funded through the CCC waste minimisation fee and through sales of recovered materials. The trust retains ownership of materials for processing and marketing. While it operates commercially, the RMF, in partnership with the CCC, has environmental and social objectives, such as local market development. These are recognised through triple bottom line reporting.

In five years the RMF has made substantial progress. Last year, it diverted 14,300 tonnes of recyclable materials through kerbside recycling and a further 4,330 tonnes for re-use and recycling through the recycling centres. It helped develop 11 local uses for crushed glass — its largest waste stream — including flooring, glass tiles, and filtration and sandblasting media. It undertook 31 research projects and worked with a number of organisations to establish recycling enterprises. The RMF has 57 employees and 13 casual staff, and has been responsible for creating 17 new jobs outside its own organisation as a direct result of materials recovery and processing.

One of the biggest employers is the SuperShed, a supermarket for second-hand goods recovered from the recycling centres. Staff repair and refurbish any goods from council recycling centres that can be re-used, including furniture, bicycles and computers. The SuperShed is doing a roaring trade.

The RMF recognises that to be fully effective, it must work at every level of recycling development. It provides services and expertise in business development, marketing, advocacy, information and research, and recovery methods. Critical to the RMF's success is the CCC's long-term investment in recycling and its control and ownership of both recovered materials and the city's waste stream.

Plastic PET bottles collected at the kerbside ready for processing at the Recovered Materials Foundation's Parkhouse Road site.

TARGETS FOR WASTE DISPOSAL

High environmental performance standards for waste treatment and disposal facilities are a key part of the strategy. Targets encourage local authorities to close or upgrade all substandard landfills by 2010. Substandard wastewater treatment facilities will be closed, replaced or upgraded by 2020. These are reasonable timeframes for completing what are often costly projects. Work is underway at a national level to survey all wastewater treatment plants to identify satisfactory standards and determine what upgrading is necessary.

Waste disposal targets encourage waste generators to pay the true cost of waste treatment and disposal. This change may be gradually phased in where there is a big difference between the current charge and the true cost. Targets allow true cost accounting to be introduced over a period acceptable to the local community. Some local authorities may need to re-evaluate their funding policies for more flexibility and fair allocation of costs. These targets will be looked at again once the strategy has been implemented and the second National Waste Data Report delivered in 2003.

Targets for waste disposal

1 By December 2003, local authorities will have addressed their funding policy to ensure that full cost recovery can be achieved for all waste treatment and disposal processes.
2 By December 2005, operators of all landfills, cleanfills and wastewater treatment plants will have calculated user charges based on the full costs of providing and operating the facilities and established a programme to phase these charges in over a timeframe acceptable to the local community.
3 By December 2005, all cleanfills will comply with cleanfill disposal guidelines.
4 By December 2010, all substandard landfills will be upgraded or closed.
5 By December 2020, all substandard wastewater treatment facilities will be upgraded, closed or replaced with systems that comply with all relevant regional and coastal plans, standards and guidelines.

POLICIES AND PROGRAMMES

Core policies

Many of this strategy's short-term targets can be achieved under the current waste minimisation and management system. The more challenging targets and the long-term vision will require change. This means addressing the barriers to effective waste minimisation and management identified in section two.

Five core polices will move New Zealand from its current focus on managing waste disposal to waste prevention, and inform an integrated, comprehensive policy framework to serve the country in the longer term. These policies are:

- sound legislation
- high environmental standards
- efficient pricing
- adequate and accessible information
- efficient use of materials.

Sound waste minimisation and management legislation

Unlike a number of other OECD countries, New Zealand does not have comprehensive legislation dedicated to the management and minimisation of wastes. Analysis of the waste minimisation and management provisions in these countries indicates that legislation is required to support programmes and targets.

New Zealand relies on the Local Government Act, the Health Act, the Building Act, the Resource Management Act and the Hazardous Substances and New Organisms Act as a framework for waste management. However, this collection of legislation can only be a partial basis for achieving the strategy's goals. The main areas of concern are:

- unclear roles and responsibilities at central, regional and local level, particularly in the area of waste minimisation
- the RMA focus on managing the environmental effects of waste (*end of pipe*), rather than regulating how activities are carried out; the strategy holds that it is often more effective and efficient to reduce waste at source
- the HSNO Act controls hazardous substances but not hazardous waste
- the lack of a central agency with explicit responsibility for coordinating waste minimisation and management activities.

This strategy, along with the review of the Local Government Act, provides the opportunity to consider how effective statutory provisions are for waste minimisation and management, and what changes are needed. This will also provide an opportunity to clarify and appropriately specify the roles and responsibilities of central and local government. In the meantime, the strategy provides for retaining the waste management planning provisions of Part XXXI of the Local Government Act 1974.

High environmental standards

High environmental standards, consistently and effectively applied, are essential to protecting the environment and human health. High standards also ensure we account for the environmental costs of waste generation.

RMA resource consent processes set standards of environmental performance for specific disposal facilities. Performance standards for waste treatment and disposal facilities are currently inconsistent. This reflects, amongst other things, differences in site characteristics, waste volumes, and the age of facilities, as well as the approach taken by consenting authorities. Nevertheless, a consistently high level of environmental protection is expected.

Like pricing policy variations, inconsistent environmental performance standards can mean wastes are sent to facilities with low performance standards, increasing the risk of environmental damage. If performance standards are inadequate, the environment subsidises the cost of disposal and there is less incentive for people to minimise waste.

Efficient disposal pricing

Pricing policies that, as far as practicable, reflect full costs are crucial to successfully implementing the strategy[19]. Failing to reflect all costs in the price of waste disposal weakens the incentive to prevent waste and avoid disposal.

If environmental costs are not fully counted, the environment subsidises the price of disposal. Where all or part of the disposal cost is met from council rates, ratepayers are subsidising waste generators. Inefficient pricing policies encourage waste flight to facilities that don't account fully for environmental cost. Progress is underway towards more efficient pricing policies, and further policy development and application is a cornerstone of the strategy.

19 Accurate calculation of all environmental and health risk costs is complex and some level of costs is likely to be excluded from prices. Global environmental costs that are a consequence of greenhouse gas emissions from waste generation and disposal will be considered during development of New Zealand's climate change policy.

Landfill Full Cost Accounting Guide

The Ministry for the Environment's *Landfill Full Cost Accounting Guide* helps decision-makers account for the full cost of landfills, and incorporates landfill planning, development, operation, closure and aftercare in a consistent manner.

Full cost accounting accurately identifies the total costs and risks of owning and operating a landfill. Territorial local authorities and other users can then compare waste management options and find ways to fund and improve the efficiency of waste management services.

The *Landfill Full Cost Accounting Guide* can help calculate an indicative unit cost for waste disposal at a given landfill, based on total tonnage and the site's operating life. This guideline only takes into account those environmental externalities that have been identified and provided for in resource consents.

Guidelines for councils and other landfill managers on options for charging regimes will be included in the guide. The Ministry expects these guidelines to encourage waste generators to meet the costs of the waste they produce.

National environmental performance standards and guidelines set a strong, consistent basis for private and public sector waste management. They send clear signals about central government's expectations, and help local and regional government establish appropriate resource consent conditions.

Substantial progress has been made in closing or upgrading substandard disposal facilities and building new ones. This process is likely to be complete by 2010. The Ministry for the Environment, in collaboration with local government, has already begun developing environmental performance guidelines for waste treatment and disposal. If necessary, these guidelines will be backed up by regulation in the form of National Environmental Standards under the RMA. Implementation and monitoring of environmental performance standards will be a strategy priority.

Adequate, accessible information

Lack of adequate, accessible information hampers effective waste minimisation and management. It limits the development of markets in recovered materials, adds to business transaction costs, limits community cooperation in recycling schemes, and inhibits development or use of new technologies. Information is also the basis of education and training.

Since information is critical for management and in encouraging public commitment to waste minimisation and management, this strategy recognises what central government can do to provide national information bases. In practice, this means:

- developing and implementing waste indicators, as part of the Environmental Reporting Project
- establishing national databases, such as the landfill census and the national waste data report
- undertaking research to fill information gaps
- facilitating a public information and education programme to support strategy implementation.

Efficient use of materials

Efficient use of materials is highlighted because longer-term efficiency gains and more use of recovered materials will significantly reduce waste. Inefficient resource use can result from, among other things, weak environmental standards, market structures, lack of information, and ingrained behaviour. It means that more material, and often more energy, than necessary is used for a particular product or service.

Improving material efficiency reduces material use, and increases re-use and recycling of recovered materials. Implementing full cost pricing and environmental standards will offer a bigger incentive for making more efficient use of materials. Improving information and education will also help.

Supporting policies and methods

The implementation of these core policies by central and local government will ensure better management of waste disposal and improve incentives for waste minimisation. Their implementation will involve the development and use of a range of tools and methods that can support work programmes and assist businesses, community groups and other parties contribute to achieve the targets and a significant reduction in waste. These will include:

- financial encouragement of innovation
- government leadership programmes
- economic instruments (other than pricing), such as levies
- extended producer responsibility
- voluntary agreements with industry.

The costs and benefits of these and other policies will be considered as the strategy is implemented.

Programmes

Key actions for putting policy into effect come under four programmes:

1. Institutions and legislation
2. Waste reduction and materials efficiency
3. Information and communication
4. Performance standards and guidelines.

Each programme is essential to the strategy's medium and long-term targets. No single programme will, on its own, achieve a significant reduction in waste.

Central and local government must be responsible for many key actions. These will rely on the partnership set up to prepare this strategy. Other partnerships are needed between all levels of government, private sector businesses, environmental and community organisations, Maori, professional associations and individuals.

The following sections summarise each programme area, describing proposed key actions and indicating a timeline for the work. They also set out the priority waste areas and barriers addressed. Table 3 on the following page summarises these programmes.

Green purchasing

Green purchasing favours products and services that minimise their environmental effects throughout production, use and disposal. Buying environmentally preferable products and services increases the size of the market for them, and encourages other producers to improve products and processes in order to compete.

All New Zealanders can consider green purchasing when they shop for goods and services. The Environmental Choice label (below), owned by the Minister for the Environment, independently verifies environmental claims made for particular products.

Government green purchasing is vital. Its own consumption comprises more than a fifth of GDP, and includes central and local government purchasing on final consumption and gross fixed capital formation. For the year ending March 2000, this amounted to $23,315 million, or 22 percent of Gross National Expenditure.

It includes many products and services which impact significantly on the environment — buildings, vehicle fleets, water supply and sanitation. This substantial purchasing power is a strong tool for buying green and reducing environmental impact, as well as encouraging market development for environmentally preferable products.

At the 1992 United Nations Conference on Sustainable Development, OECD member countries committed themselves to reviewing and improving government purchasing policies as a move towards more sustainable consumption and production. In 2001, the OECD agreed to the adoption by all member countries of strong guidelines on greener public purchasing.

Table 3: Strategy programmes

PROGRAMMES	INSTITUTIONS AND LEGISLATION	WASTE REDUCTION AND MATERIALS EFFICIENCY	INFORMATION AND COMMUNICATION	PERFORMANCE STANDARDS AND GUIDELINES
OBJECTIVES	SOUND LEGISLATIVE BASIS TO IMPLEMENT THE STRATEGY	IMPLEMENT TOOLS AND TECHNIQUES THAT ENCOURAGE WASTE PREVENTION, RESOURCE REUSE, RECOVERY, AND RECYCLING	DEVELOP AND IMPLEMENT INFORMATION SYSTEMS FOR DECISION MAKING AND MONITORING	ACHIEVE HIGH AND CONSISTENT STANDARDS OF ENVIRONMENTAL PERFORMANCE FOR WASTE TREATMENT AND DISPOSAL FACILITIES
	EFFECTIVE PLANNING FOR WASTE MINIMISATION AND MANAGEMENT	REDUCE BARRIERS TO USE OF RECOVERED MATERIALS	INCREASE UNDERSTANDING OF NEW ZEALANDERS ABOUT WASTE GENERATION, MINIMISATION AND MANAGEMENT	ESTABLISH STANDARDS AND GUIDELINES FOR MANAGING WASTE WITH HAZARDOUS PROPERTIES
	MEET THE REQUIREMENTS OF INTERNATIONAL CONVENTIONS	DEVELOP AND IMPLEMENT ECONOMIC INCENTIVES FOR WASTE MANAGEMENT AND MINIMISATION		IMPLEMENT FULL COST ACCOUNTING AND CHARGING POLICIES
MEASURES AND ACTIONS	REVIEW OF THE INSTITUTIONAL AND LEGISLATIVE PROVISIONS FOR WASTE	PROMOTION OF 'CLEANER PRODUCTION' PROCESSES AND ECO-EFFICIENCY	COMPLETE AND IMPLEMENT ENVIRONMENTAL REPORTING PROJECT FOR WASTE	ESTABLISH AND MONITOR STANDARDS AND GUIDELINES FOR LANDFILLS AND CLEANFILLS
	ESTABLISH BEST MANAGEMENT PRACTICE GUIDELINES FOR WASTE MINIMISATION AND MANAGEMENT PLANS	PROMOTION OF 'GREEN' PURCHASING POLICIES FOR CENTRAL AND LOCAL GOVERNMENT	ESTABLISH SOUND BASELINE DATA	WASTEWATER GUIDELINES AND SEWAGE TREATMENT HANDBOOK CLOSE AND UPGRADE SUBSTANDARD WASTEWATER TREATMENT PLANTS
	DOMESTIC LEGISLATION AND POLICIES IN PLACE AND A NATIONAL HAZARDOUS WASTES MANAGEMENT PLAN IS ADOPTED	WASTE MINIMISATION POLICIES FOR GOVERNMENT AGENCIES	DEVELOP AND IMPLEMENT PROGRAMME FOR PUBLIC INFORMATION AND EDUCATION	GUIDELINES FOR THE MANAGEMENT OF HAZARDOUS WASTE
		DEVELOP AND DESIGN ECONOMIC INSTRUMENTS TO FUND WASTE MINIMISATION AND CHANGE WASTEFUL BEHAVIOUR		NATIONAL STANDARD AND GUIDELINES FOR CONTROLLING DIOXIN EMISSIONS AND OTHER ORGANOCHLORINES
		DEVELOP 'EXTENDED PRODUCER RESPONSIBILITY' INITIATIVE		LOCAL GOVERNMENT TO IMPLEMENT TRANSPARENT FULL COST ACCOUNTING AND CHARGING POLICIES
		DEVELOP 'DESIGN FOR ENVIRONMENT' PROPOSAL		
		INVESTIGATE BUSINESS AND EMPLOYMENT OPPORTUNITIES FROM WASTE MINIMISATION		

1. Institutions and legislation

Objectives

1. Ensure a sound institutional and legislative base for implementing *The New Zealand Waste Strategy* that clarifies the responsibility for waste minimisation and management of central, regional and local government, as well as Maori, business and community groups.
2. Achieve effective regional and local government planning for waste minimisation and management.
3. Meet international convention requirements.

Institutional and legislative review

Institutional and legislative arrangements for minimising and managing waste will be reviewed to ensure a sound basis for implementing the strategy. This review will assess the current law's waste provisions and identify legal and institutional changes that would help put the strategy into practice.[20] It will clarify the roles and responsibilities of key players, including central and local government, and fully acknowledge the Crown's responsibilities under the Treaty of Waitangi. The Minister for the Environment will report back to Government in January 2003 on the progress of the review.

The review should:

- clarify the roles and responsibilities of territorial authorities and regional councils for waste minimisation and management
- clarify the purpose of waste management plans prepared under the Local Government Act, and ensure it is consistent with the responsibility of territorial authorities for minimising and managing waste
- bring all wastes into the orbit of waste minimisation and management plans
- review the current waste hierarchy to avoid rigid adherence to it at the expense of wider environmental, social and economic goals
- require waste management plans to be consistent with National Environmental Standards, Regional Policy Statements and Regional Plans prepared under the RMA
- remove charging limits that work against waste minimisation and may result in perverse cross-media effects
- enable territorial authorities to produce combined waste plans with other territorial authorities
- account for matauranga Maori in preparing waste minimisation and management plans
- ensure the approach to waste minimisation and management is consistent with the strategy's approach to sustainability and community engagement.

The wider review of resource management institutions and legislation that the Ministry for the Environment is undertaking will inform the review, and both will consider the Working Group's recommendation for a central government agency role in waste minimisation.

Waste minimisation and management planning

The Local Government Act's waste management plan provisions are important for implementing the strategy at a local level. These provisions require territorial local authorities to promote effective and efficient waste management in their districts and develop consistent waste management plans.

Local government has asked the Ministry for the Environment to guide and support waste management planning, and the Ministry is facilitating a collaborative project with local government and other relevant parties. This focuses on waste management planning tools and guidance that build on best practice. It will be a forum for discussion and activities relating to waste minimisation and management.

Territorial local authorities are expected to complete waste management plans or review existing plans within three years. Most plans already prepared cover solid waste only, and exclude hazardous and liquid waste, and wastewater. The review period will be an opportunity for councils to extend the scope of waste plans and work out how they will achieve the strategy's goals.

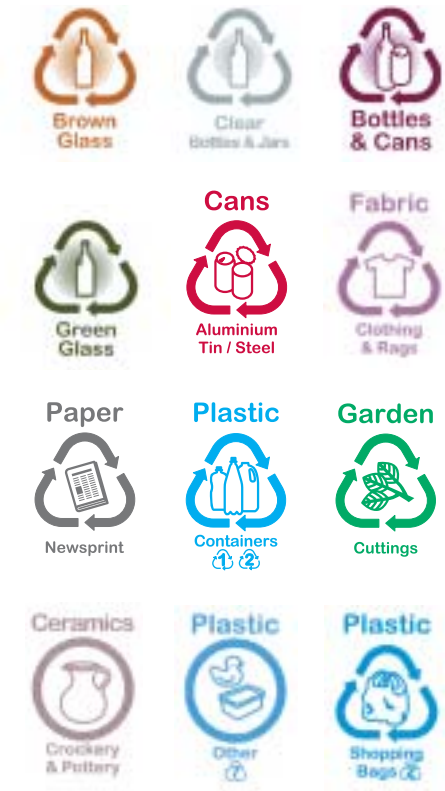
While waste management planning will still be mandatory for territorial local authorities, regional councils are encouraged to facilitate regional planning where it might achieve efficiencies in implementing policy.

20 The review will specifically include Part XXXI of the Local Government Amendment Act 1996.

Recycling symbols

Recycling products and packaging enables us to re-use materials in new products. It reduces the need for virgin materials as well as the waste we have to dispose of. To be recyclable, materials must be clean and free from contamination. This not only means separating them from the general waste stream, but from other types of recyclable material. It also means New Zealanders must know what is recyclable and where it should go.

The Recycling Operators of New Zealand, and Auckland consultants WasteNot Limited have developed standard recycling symbols for use on all recycling signage — from drop-off points to recycling bins to collection vehicles. A set of nationally used and recognised symbols that indicate which materials are recyclable and what containers they should be put in, will assist public recycling efforts. Below are some examples.



International conventions

New Zealand is a signatory to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Waigani Convention[21], and the Stockholm Convention on persistent organic pollutants. We must ensure existing legislation complies with these agreements, and the review outlined above will help us meet our international obligations.

A larger role for central government?

One problem New Zealand faces is lack of coordination in waste prevention and minimisation. Most responsibility for dealing with waste rests with local councils. Some are energetically promoting waste reduction and recycling. Others are struggling — from a lack of resources, knowledge or expertise. There are also a number of community-based waste minimisation initiatives, mainly focused on recycling. Many are funded by local councils, but like many councils, still struggle to find the information they need about waste streams, markets, new technologies and other organisations doing similar work.

The Working Group on Waste Minimisation and Management considered that the breadth of information on, and speed of growth in, waste minimisation technology is a strong argument for a central agency responsible for coordinating waste prevention and minimisation initiatives. The functions of a central agency could also include collecting expertise on technologies and evaluating new ones, monitoring voluntary agreements with business, and informing and promoting best practice.

21 The Waigani Convention is a regional convention that bans the importation to member countries of hazardous and radioactive wastes and controls the transboundary movement and management of hazardous wastes within the South Pacific region. The Waigani Convention came into force on 21 October 2001.

Institutions and legislation programme

PROGRAMME ELEMENTS	KEY ACTIONS	TIMEFRAME	WHO IS RESPONSIBLE	PRIORITY AREAS	BARRIERS ADDRESSED
REVIEW OF INSTITUTIONAL AND LEGISLATIVE PROVISIONS	LEAVE UNREPEALED PART XXXI OF THE LGA DURING CURRENT REFORMS	2002	MFE WITH LOCAL GOVERNMENT AND OTHER GOVERNMENT AGENCIES	▸ WASTE MINIMISATION ▸ HAZARDOUS WASTES ▸ WASTE DISPOSAL	▸ COMMUNITY COMMITMENT ▸ PRICING AND CHARGING ▸ PRIORITISING RESOURCES
	ESTABLISH SCOPE AND TERMS OF REFERENCE OF REVIEW OF INSTITUTIONAL PROVISIONS	2002			
	REVIEW ISSUES AND OPTIONS	2002			
	CONSULT WITH STAKEHOLDERS AND ENSURE THAT PLANS ARE CONSISTENT WITH MAORI CULTURAL AND SPIRITUAL VALUES	2002			
	REPORT TO GOVERNMENT ON PREFERRED OPTION POLICY OR LEGISLATIVE CHANGE WILL DEPEND ON OUTCOMES OF THE REPORT	JANUARY 2003			
WASTE MINIMISATION AND MANAGEMENT PLANNING *ENSURING CONSISTENCY WITH THE STRATEGY IN LOCAL AUTHORITY PLANNING AND OPERATIONS*	IMPLEMENT WASTE MANAGEMENT PLANS PREPARED UNDER PART XXXI – COUNCILS WITHOUT PLANS TO COMPLETE THESE	2002	LOCAL GOVERNMENT MFE IN PARTNERSHIP WITH LOCAL GOVERNMENT	▸ WASTE MINIMISATION ▸ HAZARDOUS WASTES ▸ WASTE DISPOSAL	▸ INFORMATION ▸ PRICING AND CHARGING ▸ EXISTING CONTRACTUAL ARRANGEMENTS ▸ COMMUNITY COMMITMENT
	ESTABLISH TERMS OF REFERENCE FOR THE PLANNING PROJECT	2002			
	CONFIRM PARTNERSHIP WITH LOCAL GOVERNMENT FOR CONSULTATION AND DEVELOPMENT OF THE PROJECT	2002			
	DESIGN AND UNDERTAKE IMPLEMENTATION PROGRAMME	2002 ONGOING			
INTERNATIONAL CONVENTIONS *MEETING OBLIGATIONS OF THE BASEL CONVENTION ON HAZARDOUS WASTE AND THE STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS*	MEET REQUIREMENT THAT A NATIONAL HAZARDOUS WASTES MANAGEMENT PLAN IS ADOPTED	2003	MFE, MED AND LOCAL GOVERNMENT	▸ HAZARDOUS WASTES	▸ NEW ZEALAND'S INHERENT CHARACTERISTICS ▸ INFORMATION
	MEET REQUIREMENT THAT ADEQUATE DOMESTIC LEGISLATION AND POLICIES ARE IN PLACE	2005			

2. Waste reduction and materials efficiency

Objectives

1. Develop and implement tools and techniques to reduce waste generation and maximise re-use, recycling and recovery by government, businesses and individuals.
2. Reduce barriers to using recovered materials in New Zealand.
3. Develop and implement economic incentives to change wasteful behaviour.

Tools and techniques

Developing tools and techniques to minimise waste will help government agencies, councils, businesses and others seeking to be more resource efficient. Existing tools and techniques, such as Design for the Environment and Cleaner Production provide a good basis for resource efficiency.

Design for the Environment covers those elements of product design that reduce waste and other environmental effects. Even small design changes can make a big difference to resulting waste. For example, designing for disassembly, improved energy efficiency, and using less toxic or recycled materials.

Cleaner Production is a similar concept that focuses on production processes rather than on the product itself, aiming to improve resource efficiency and reduce waste generated during production.

The Ministry for the Environment financially supports Cleaner Production programmes through its Sustainable Management Fund. This support will continue. The Ministry will also support Design for the Environment programmes. Together with local government and other interested parties, the Ministry will investigate more tools and methods for reducing waste and improving materials efficiency.

Barriers to re-use

Material recovery, re-use and recycling need robust markets. These are hampered by many factors, including variations in product quality, poor labelling of materials, price fluctuations, perceptions of quality, low volumes, high transport costs and product contamination. Some of these factors can be overcome through education, voluntary agreements between producers and recyclers, and good waste management planning. Others may require law changes or investment in research and development.

There is considerable potential for improving recycling rates. Work on removing market barriers for re-usable and recyclable inorganic wastes and achieving optimal rates of recovery and recycling will continue.

Policies driving resource efficiency and waste reduction include green purchasing, waste minimisation programmes, and Triple Bottom Line Reporting by government and business. Triple Bottom Line accounting measures an organisation's social, environmental and financial performance, informing better waste minimisation and management decisions.

Extended Producer Responsibility (EPR) encourages producers and importers to consider the entire lifecycle of their products. It is especially useful for products not easily recovered from the waste stream. EPR encourages businesses to prevent wastes at source, practice design for the environment and set up take-back and recycling schemes. A few New Zealand businesses have already set up programmes to take back products for re-use or recycling. These will be used to encourage others to follow suit, initially through voluntary pilot projects. A review of these projects will establish EPR's costs and benefits, and whether it requires statutory backing.

Incentives

Levies and other economic instruments can act as incentives to change behaviour, reduce resource use, and improve recovery and recycling rates when applied at national, regional or local levels.

Programmes to minimise waste often need funding for start-up or ongoing support. The Working Group on Waste Minimisation and Management proposed a waste levy that would financially support waste minimisation.

Waste levy options and other economic incentives will be considered during strategy implementation. Incentives will be chosen in the light of New Zealand's particular characteristics and place in the world. We are a small country with a widely dispersed population, a high proportion of small and medium-size businesses, and we import many manufactured items. Finding solutions that work for us all will require extensive consultation.

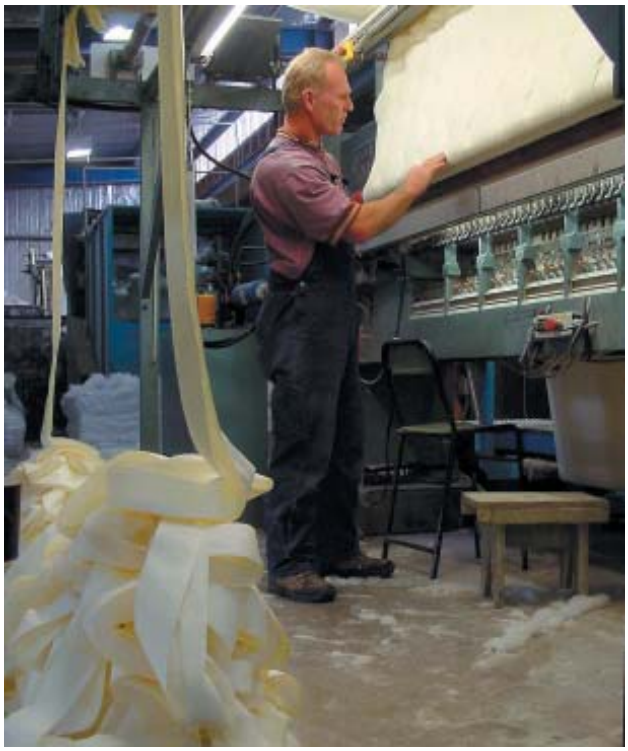
Funding waste minimisation

In 1998, Christchurch City Council began charging a minimisation fee on waste going to landfill, in addition to its standard waste disposal charges. This policy was put into effect under section 544 of the Local Government Act. The council wanted to fund minimisation initiatives by charging waste generators, rather than through general rates. It also wanted to signal to residential and business communities that they should reduce waste — the less waste they send to landfill, the less they pay.

A fee is charged on all waste accepted at council refuse stations, but green waste, separated recyclables and re-usable products dropped off at the refuse transfer stations are exempted from the fee.

In 2000/01, the fee raised nearly $4.5 million. This financed council waste minimisation operations and provided services to residential and business communities, including residential kerbside recycling, green waste composting, the Recovered Materials Foundation (see separate story page 26), the Business Enterprise Fund, recycling drop-off centres and the Target Zero programme, which promotes waste reduction to businesses.

The council intends improving the city's waste minimisation performance by reviewing the waste minimisation fee and its use of bylaws.



In Christchurch the waste minimisation levy helps fund the Target Zero programme to work with industry to minimise waste. Here a staff member at bedware and outdoor equipment manufacturer, Arthur Ellis Ltd, checks product quality.

Waste reduction and materials efficiency programme

PROGRAMME ELEMENTS	KEY ACTIONS	TIMEFRAME	WHO IS RESPONSIBLE	PRIORITY AREAS	BARRIERS ADDRESSED
CLEANER PRODUCTION *ACHIEVING IMPROVED EFFICIENCY IN PRODUCTION PROCESSES REDUCES THE USE OF RESOURCES AND THE GENERATION OF WASTE*	SUPPORT WILL BE PROVIDED THROUGH THE SUSTAINABLE MANAGEMENT FUND AND BY SOME COUNCILS TO SUITABLE PROJECTS	ONGOING	MFE WITH SUPPORTING COUNCILS AND OTHER PARTIES	▸ WASTE MINIMISATION	▸ PRICING ▸ COMMUNITY COMMITMENT
	BUSINESSCARE'S ROLE IN PROMOTING CLEANER PRODUCTION WILL BE SUPPORTED, SUBJECT TO PERFORMANCE, ON AN ONGOING BASIS BY CENTRAL AND LOCAL GOVERNMENT	REVIEW IN 2003	MFE WITH SUPPORTING COUNCILS AND OTHER PARTIES		
	AGREE TO THE EPHC BUSINESS SUSTAINABILITY FRAMEWORK; COLLABORATE AND SHARE INFORMATION WITH AUSTRALIAN STATES IN ACCORDANCE WITH THE FRAMEWORK	2002 ONGOING	MFE AND BUSINESSCARE		
	SUPPORT, THROUGH THE SUSTAINABLE MANAGEMENT FUND AND LOCAL GOVERNMENT INPUT, RESOURCE STEWARDSHIP BEST PRACTICE PROJECT BY THE CENTRE FOR ADVANCED ENGINEERING	2002/2003	CAE WITH SUPPORT AND PARTICIPATION OF MFE AND LOCAL GOVERNMENT		
'GREEN' PURCHASING POLICIES *GOVERNMENT LEADING BY EXAMPLE* *CONSUMER DEMAND FOR PRODUCTS CONSUMING LESS MATERIAL THAN ALTERNATIVES IS A MARKET-DRIVEN APPROACH*	PURCHASING POLICIES WILL BE REVIEWED TO ACCOMMODATE THE GOVERNMENT'S COMMITMENT TO REDUCING WASTE	2002	MED AND MFE	▸ WASTE MINIMISATION	▸ EXISTING CONTRACTS ▸ FUNDING OF WASTE MINIMISATION ▸ COMMUNITY COMMITMENT
	COUNCILS ARE ENCOURAGED TO ADOPT 'GREEN' PURCHASING POLICIES	2002 ONGOING	LOCAL GOVERNMENT		
WASTE MINIMISATION POLICIES FOR GOVERNMENT *GOVERNMENT LEADING BY EXAMPLE* *AS WASTE GENERATORS GOVERNMENT CAN CONTRIBUTE TO WASTE REDUCTION*	CENTRAL AND LOCAL GOVERNMENT WILL DEVELOP AND IMPLEMENT IN-HOUSE WASTE MINIMISATION PROGRAMMES AND PROMOTE THEIR SUCCESS	2002	MFE WITH MED AND OTHER GOVERNMENT AGENCIES	▸ WASTE MINIMISATION	▸ FUNDING OF WASTE MINIMISATION ▸ COMMUNITY COMMITMENT ▸ INFORMATION
	PILOT AND REVIEW METHODOLOGY AND EXTEND TO ALL AGENCIES	BY 2005			
	LINK TO THE GOVERNMENT'S 'TRIPLE BOTTOM LINE' REPORTING INITIATIVE	ONGOING			
DEVELOPMENT AND DESIGN OF ECONOMIC INSTRUMENTS TO FUND WASTE MINIMISATION AND CHANGE WASTING BEHAVIOUR *ECONOMIC INSTRUMENTS CORRECT MARKET FAILURES AND SIGNAL DESIRED BEHAVIOURS TO WASTE GENERATORS*	ESTABLISH SCOPE AND TERMS OF REFERENCE FOR FUTURE WORK ON ECONOMIC INSTRUMENTS TO CHANGE WASTEFUL BEHAVIOUR	2003	MFE WITH MED	▸ WASTE MINIMISATION ▸ HAZARDOUS WASTES ▸ WASTE DISPOSAL	▸ PRICING AND CHARGING ▸ INFORMATION ▸ FUNDING OF WASTE MINIMISATION
	UNDERTAKE WORK ON ECONOMIC INSTRUMENTS	2003/2004			
	CONSIDER WASTE LEVY OPTIONS AT NATIONAL AND LOCAL LEVEL AND ON SPECIFIC WASTES IN CONSULTATION WITH STAKEHOLDERS	2003			
	INITIATE PROJECTS TO DEMONSTRATE THE VALUE OF ECONOMIC INSTRUMENTS, SUCH AS A LEVY TO FACILITATE RECOVERY OF USED OIL, AND ASSESS EFFICACY OF THIS TOOL FOR OTHER WASTES	2002/2003			
	REPORT TO GOVERNMENT	2003			

Waste reduction and materials efficiency programme continued

PROGRAMME ELEMENTS	KEY ACTIONS	TIMEFRAME	WHO IS RESPONSIBLE	PRIORITY AREAS	BARRIERS ADDRESSED
EXTENDED PRODUCER RESPONSIBILITY *EXTENDED PRODUCER RESPONSIBILITY ENCOURAGES BUSINESS TO TAKE A LIFE-CYCLE APPROACH TO THEIR PRODUCTS, AND ENCOURAGES INCREASED REUSE AND RECYCLING, AND IMPROVED PRODUCT DESIGN*	DETERMINE THE ISSUES AND OPTIONS FOR INTRODUCING EPR IN NEW ZEALAND	2002	MFE WITH MED AND INDUSTRY PARTNERS	▸ WASTE MINIMISATION ▸ HAZARDOUS WASTES	▸ COMMUNITY COMMITMENT ▸ MARKETS ▸ INFORMATION ▸ NZ'S INHERENT CHARACTERISTICS
	IDENTIFY KEY PRODUCTS THAT COULD HAVE PRIORITY FOR EPR	2002			
	ESTABLISH VOLUNTARY PILOT SCHEMES	2002/2003			
	REVIEW EXPERIENCE AND REPORT BACK WITH A BUSINESS CASE FOR A MORE SUBSTANTIAL PROGRAMME; ADDRESS WHETHER EPR REQUIRES STATUTORY BACKING	2004			
DESIGN FOR THE ENVIRONMENT *DESIGN FOR THE ENVIRONMENT PREVENTS WASTE AT SOURCE AND ENCOURAGES GREATER LEVELS OF PRODUCT REUSE AND RECYCLING*	REVIEW OPTIONS FOR ENCOURAGING DESIGN FOR THE ENVIRONMENT	2003	MFE WITH INDUSTRY, DESIGN SCHOOLS AND OTHER PARTIES	▸ WASTE MINIMISATION	▸ COMMUNITY COMMITMENT ▸ MARKETS ▸ INFORMATION
BUSINESS AND EMPLOYMENT OPPORTUNITIES FROM WASTE MINIMISATION	REVIEW THE BUSINESS AND EMPLOYMENT OPPORTUNITIES FROM WASTE MINIMISATION AND THE BARRIERS TO THESE OPPORTUNITIES	2002	MED AND MFE	▸ WASTE MINIMISATION	▸ COMMUNITY COMMITMENT ▸ MARKETS ▸ INFORMATION

3. Information and communication

Objectives

1. Develop and implement relevant and consistent information systems on waste minimisation and management as a basis for decision-making and monitoring of strategy implementation by central and local government, and waste generators.
2. Enhance community understanding of waste generation issues and management, and encourage individual efforts to reduce waste.

Information for measuring and monitoring

Good national information about waste is not readily available. Local information varies in quality — some districts and regions have sound, regularly updated information, but others have little idea of the size or composition of their waste streams. The information we do have is mainly about how much waste we dispose of, rather than how much we generate. More information is available about solid waste than liquid waste.

The Ministry for the Environment's Environmental Reporting Project is taking steps to ensure information on some waste streams is consistently collected. Reporting measures have been developed for solid and hazardous wastes, wastewater, contaminated sites and air emissions. The Environmental Reporting Project will be the basis of a partnership between central and local government to ensure collection of standardised waste information. This partnership will be confirmed by formal agreements, and the project will establish some of the baseline data required for setting waste targets.

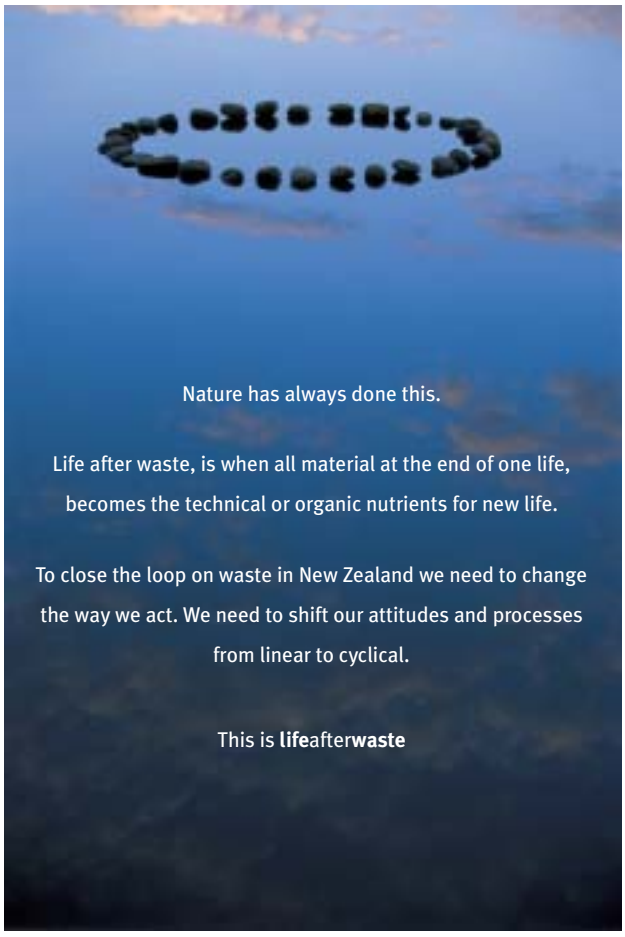
Work will be done on methods of collecting information on how much waste we generate from production processes, as well as identifying wastes not currently measured. Some of the wastes that aren't measured well are those dumped illegally into the environment, or in non-consented dumps and landfills, most cleanfill wastes, those burnt in non-consented incinerators and backyard fires, and many non-point source wastes, such as stormwater contaminants.

Lifeafterwaste

Lifeafterwaste is a Waste Management Institute of New Zealand (WasteMINZ) initiative instigated partly in response to this strategy, and designed to change the way we think about waste and the way we act.

Though this professional body focuses on waste, it represents many interests, from councils to waste companies to waste minimisation professionals. It set out to discover how waste is perceived now and how it might be perceived in the future, and explore ways this diverse industry can meet the challenge of sustainable development.

Lifeafterwaste seeks to emulate nature, in which all material at the end of one life becomes the technical or organic nutrients for new life. It challenges New Zealanders to imagine life without waste. To guide us down the path towards this possibility and others, it sets out a series of principles and actions for change for all sectors of the community.



Baseline data

To ensure good baseline data informs decision-making, the Ministry for the Environment will prepare a second National Waste Data Report. The first report was completed in 1997. Before preparing the new one, the Waste Analysis Protocol will be revised to ensure consistent measurement of solid waste. Any crucial gaps in our waste data will be identified and filled, and a public database of wastes generated by New Zealand industries will be compiled.

Public information and education

Communicating information and educating the community about waste problems and solutions is a challenge, nationally and locally. Different methods are needed at different levels but messages must be consistent.

The Waste Management Institute of New Zealand is developing the *Lifeafterwaste* programme, aimed at changing how the waste industry and the general public think about waste. It includes an education programme, and benchmarks against which every New Zealander can measure themselves. Central and local government, and waste industry businesses will support and have input into the programme.

Many local authorities and community groups inform and educate businesses and the community about waste, but with varying comprehensiveness and consistency, and some unnecessary duplication. To address this problem, options will be explored for coordinating information and education programmes.

Information and communication programme

PROGRAMME ELEMENTS	KEY ACTIONS	TIMEFRAME	WHO IS RESPONSIBLE	PRIORITY AREAS	BARRIERS ADDRESSED
ENVIRONMENTAL REPORTING PROGRAMME *THIS PROGRAMME WILL PROVIDE CONSISTENT NATIONAL INFORMATION ESSENTIAL FOR MONITORING AND MANAGEMENT*	ESTABLISH PARTNERSHIP AGREEMENTS WITH LOCAL GOVERNMENT	2002	MFE WITH LOCAL GOVERNMENT	▸ WASTE MINIMISATION ▸ HAZARDOUS WASTES ▸ WASTE DISPOSAL	▸ INFORMATION ▸ COMMUNITY COMMITMENT ▸ PRIORITISING RESOURCES
	PILOT PARTNERSHIP AGREEMENT FOR SELECTED WASTE INDICATORS	2002/2003			
	DEVELOP INDICATORS FOR WASTE GENERATION	2003/2004			
BASELINE DATA *SOUND BASELINE DATA IS REQUIRED TO PROVIDE THE FOUNDATIONS FOR TARGETS AND FOR ENVIRONMENTAL REPORTING*	UNDERTAKE AN UPDATE OF THE NATIONAL WASTE DATA REPORT	2002	MFE, LOCAL GOVERNMENT AND INDUSTRY	▸ WASTE MINIMISATION ▸ HAZARDOUS WASTES ▸ WASTE DISPOSAL	▸ INFORMATION ▸ COMMUNITY COMMITMENT ▸ PRIORITISING RESOURCES
	DETERMINE GAPS IN INFORMATION REQUIREMENTS, AND METHODS OF FILLING THOSE GAPS	2002/2003	MFE		
	UNDERTAKE A RISK ANALYSIS OF WASTES CONTAINED IN WASTE WATER	2002	MFE		
	COMPLETE AND DISSEMINATE REVISED SOLID WASTE ANALYSIS PROTOCOL; DETERMINE THE DEGREE OF SUPPORT REQUIRED BY LOCAL GOVERNMENT TO ENSURE ITS USE AS THE BASIS FOR NATIONALLY CONSISTENT INFORMATION	2002	MFE		
	INVESTIGATE MEASUREMENT PROTOCOLS FOR RESOURCE RECOVERY	2002	MFE, LOCAL AUTHORITIES AND LANDFILL OPERATORS		
	COMPLETE AND PROMOTE USE OF THE ONLINE NEW ZEALAND WASTE LIST	2002/2003	MFE		
	COMPILE A PUBLIC DATABASE OF WASTES GENERATED BY NEW ZEALAND INDUSTRIES	2003/2004	MFE		
PUBLIC INFORMATION AND EDUCATION	INITIATE A COORDINATED AND COLLABORATIVE APPROACH TO PUBLIC INFORMATION AND EDUCATION ON WASTE MINIMISATION AND MANAGEMENT	2002 ONGOING	WASTEMINZ AND OTHERS INVOLVED IN THE LIFEAFTERWASTE PROGRAMME	▸ WASTE MINIMISATION ▸ HAZARDOUS WASTES ▸ WASTE DISPOSAL	▸ INFORMATION ▸ COMMUNITY COMMITMENT ▸ PRIORITISING RESOURCES
	INVESTIGATE OPTIONS FOR A CENTRAL AGENCY TO IMPROVE THE EFFICIENCY OF INFORMATION AND EDUCATION PROGRAMMES	2002/2003	MFE, LOCAL GOVERNMENT AND OTHER PARTIES INVOLVED IN WASTE MINIMISATION AND MANAGEMENT		

4. Performance standards and guidelines

Objectives

1. Achieve consistent, high standards of environmental performance for waste treatment and disposal facilities.
2. Institute comprehensive standards and guidelines covering minimisation, transport, storage and disposal of wastes with hazardous properties.
3. Have all waste treatment and disposal facilities account for the full cost of operation, including environmental costs, and ensure charging policies reflect these costs directly and transparently.

Towards consistent, high standards

Many substandard landfills have already closed. The private sector and local government have set up a few large, modern landfills, meeting high performance criteria, and others are planned. There has been increased investment in wastewater treatment facilities to improve health and environmental outcomes.

The Ministry for the Environment is developing guidelines for landfill and cleanfill management, and National Environmental Standards to cover dioxin emissions, landfill classification and landfill acceptance criteria for wastes with hazardous properties. This work is being done in collaboration with local government and other parties. Central and local government will monitor these standards and guidelines. A complementary project looking at wastewater treatment and management is planned.

Very little New Zealand waste is incinerated. A major concern about incineration is the creation and discharge of dioxins. The Ministry for the Environment recently proposed a National Environmental Standard, with performance standards and a dioxin discharge limit for incinerators. More general incineration performance standards will be considered if the recovery of energy from municipal waste becomes a viable option for waste disposal.

Standards for hazardous wastes

Minimising and managing hazardous wastes is a priority. As well as standards for landfill classification and waste acceptance criteria, there will be standards, guidelines and management controls to ensure a comprehensive policy on hazardous wastes.

Full cost pricing

Pricing policies are crucial to comprehensively managing and minimising waste. If charges for waste treatment and disposal reflect the full cost of facilities, including environmental costs, more economically viable minimisation options will open up. Full cost accounting guidelines and charging policies are being developed, and councils should implement them as soon as possible. The target date for full implementation is 2010.

PROGRAMME ELEMENTS	KEY ACTIONS	TIMEFRAME	WHO IS RESPONSIBLE	PRIORITY AREAS	BARRIERS ADDRESSED
LANDFILL AND CLEANFILL STANDARDS AND GUIDELINES *THE WORK ON LANDFILL STANDARDS AND GUIDELINES IS INTENDED TO SEE THE UPGRADING OR CLOSING OF SUB-STANDARD LANDFILLS BY 2010*	COMPLETE AND IMPLEMENT PROGRAMME OF GUIDELINES FOR LANDFILLS AND CLEANFILLS	2002	MFE WITH LOCAL GOVERNMENT	▸ HAZARDOUS WASTES ▸ WASTE DISPOSAL	▸ INFORMATION ▸ PRICING AND CHARGING ▸ PRIORITISING RESOURCES
	CONFIRM THE PREFERRED OPTION FOR LANDFILL CLASSIFICATION AND WASTE ACCEPTANCE CRITERIA FOR WASTE WITH HAZARDOUS PROPERTIES	2003	MFE WITH LOCAL GOVERNMENT AND OTHERS		
	UNDERTAKE A LANDFILL REVIEW AND AUDIT TO ESTABLISH RISK OF SPECIFIC LANDFILLS	2002/2003	MFE WITH LOCAL GOVERNMENT		
	MONITOR COMPLIANCE WITH POLICY IN RESOURCE CONSENT APPLICATIONS	ONGOING	MFE AND LOCAL GOVERNMENT		
	CLOSE AND UPGRADE SUBSTANDARD LANDFILLS OR ESTABLISH NEW ONES CONSISTENT WITH STANDARDS AND GUIDELINES	BY 2010	LOCAL GOVERNMENT		
WASTEWATER *COMPLETE CURRENT COMMITMENTS AND CARRY OUT FURTHER WORK TO DEFINE TASKS AHEAD FOR THE BETTER MANAGEMENT OF WASTE WATER AND REDUCTION OF WASTE INPUTS*	COMPLETE AND PUBLISH SEWAGE TREATMENT HANDBOOK FOR SMALL COMMUNITIES	2002	MFE, MOH, AND LOCAL GOVERNMENT	▸ WASTE DISPOSAL	▸ INFORMATION ▸ PRICING AND CHARGING ▸ PRIORITISING RESOURCES
	COMPLETE MONITORING GUIDELINES FOR WASTE WATER TREATMENT	2002	MFE		
	IMPROVE INFORMATION BASE FOR WASTEWATER QUALITY AND CONTENT	ONGOING			
	DEFINE, IN CONSULTATION WITH OTHER PARTIES, THE SCOPE OF WORK REQUIRED FOR WASTEWATER IN THE CONTEXT OF THIS STRATEGY, THE REPORT OF THE PARLIAMENTARY COMMISSIONER FOR THE ENVIRONMENT, AND THE REVIEW OF THE LGA	DECEMBER 2002	MFE WITH MOH, LOCAL GOVERNMENT AND OTHER PARTIES		
	CLOSE AND UPGRADE SUBSTANDARD WASTEWATER TREATMENT PLANTS	BY 2020	LOCAL GOVERNMENT		
	MONITOR COMPLIANCE WITH POLICY IN RESOURCE CONSENT APPLICATIONS	ONGOING	MFE		
HAZARDOUS WASTES *PRIORITY IS GIVEN IN THE STRATEGY TO POLICY FOR HAZARDOUS WASTES AND ANY STANDARDS OR GUIDELINES REQUIRED TO SUPPORT THIS POLICY*	ESTABLISH PRIORITY HAZARDOUS WASTES	2002	MFE AND LOCAL GOVERNMENT	▸ HAZARDOUS WASTES ▸ WASTE DISPOSAL	▸ INFORMATION ▸ PRICING AND CHARGING ▸ PRIORITISING RESOURCES
	ESTABLISH DEGREE OF MANAGEMENT CONTROL REQUIRED, CONSIDERING BOTH REGULATORY AND NON-REGULATORY OPTIONS	2003			
	DEVELOP RECORD KEEPING AND RECORDING SYSTEMS	2002/2003			
	PILOT SYSTEMS AND CONFIRM AND IMPLEMENT POLICY FRAMEWORK	BY 2005			

Performance standards and guidelines programme continued

PROGRAMME ELEMENTS	KEY ACTIONS	TIMEFRAME	WHO IS RESPONSIBLE	PRIORITY AREAS	BARRIERS ADDRESSED
ORGANOCHLORINES *THIS PROGRAMME FOCUSES ON DIOXIN BUT ALSO INCLUDES PCBS AND OTHER ORGANOCHLORINES*	COMPLETION OF A NATIONAL ENVIRONMENTAL STANDARD FOR CONTROLLING DIOXIN EMISSIONS	BY 2003	MFE, WITH MOH, LOCAL GOVERNMENT AND OTHER AGENCIES	▸ HAZARDOUS WASTES	▸ INFORMATION ▸ PRIORITISING RESOURCES ▸ NZ'S INHERENT CHARACTERISTICS
	GUIDELINES FOR THE MANAGEMENT OF OTHER ORGANOCHLORINES	BY 2003			
FULL COST PRICING *THIS OUTPUT IS INTENDED TO FULFIL THE GOVERNMENT'S COMMITMENT TO WASTE DISPOSAL INCORPORATING FULL COSTS AND THE 'POLLUTER' PAYING THOSE COSTS*	COMPLETE FULL COST ACCOUNTING GUIDE AND GUIDELINES ON CHARGING POLICIES FOR LANDFILLS	2002	MFE WITH LOCAL GOVERNMENT	▸ WASTE DISPOSAL	▸ INFORMATION ▸ PRICING AND CHARGING ▸ PRIORITISING RESOURCES ▸ NZ'S INHERENT CHARACTERISTICS
	CARRY OUT A TRAINING PROGRAMME IN THE USE OF THE GUIDELINES	2002/2003	MFE WITH LOCAL GOVERNMENT		
	IMPLEMENTATION OF 'TRANSPARENT' CHARGING POLICIES BY LOCAL GOVERNMENT	BY 2010	LOCAL GOVERNMENT		

OUR WASTE, OUR RESPONSIBILITY

Many people from many sectors deal with waste — from waste generators to recycling operators, regulators to educators. Each sector has particular skills and responsibilities and will play a part in moving *towards zero waste and a sustainable New Zealand.*

Generators

We all generate waste, and we can all play a part in reducing it. Individuals can do a lot at home, at work, and in the community. Some things can be done easily straight away; others will become easier as we establish policies and programmes to promote resource efficiency and waste reduction. To ensure the strategy's success, we must all:

- Take responsibility for our own waste — Waste is often seen as someone else's problem. We pay rates and expect the council to take our waste away from the kerb or through the sewer system. We run a business and pay another company to take our waste away. But since we all generate waste, we are all part of the problem, and we must each address it.
- Expect to pay for waste — Waste is a cost to us all. We pay in foregone resources, polluted land, air and water, and waste disposal charges. The good news is that as we cut down on the waste we generate, we cut down on the resources we waste, the harm we do the environment and the costs of waste disposal. If we don't generate waste, we don't have to pay to dispose of it.
- Stay informed — Things are changing fast for waste. We no longer dump everything in one place or flush it all down the drain. Improving resource efficiency and waste management means dealing with each waste appropriately. It usually involves more players and means that information relevant to you and your wastes may come via several channels. Your local council should be your first port of call. If it can't tell you what you need to know, it should be able to tell you who can.
- Work out how to reduce the waste we generate — There's a clear relationship between the products and services we buy and the wastes you generate. Products often come in packaging that is quickly discarded. When we no longer want the product, or it wears out or breaks, that too becomes a waste. Maintaining products and services also produces wastes — paint, petrol, oil, pesticides and fertilisers are widely used. Your council is your best source of information on reducing waste, but you can also ask product manufacturers what they recommend.

Central government

Central government must focus on issues affecting the whole country. It has set national targets for waste reduction and improved practice but achieving them depends on both the mechanisms it puts in place and what other sectors of the community decide to do.

Central government will take a lead in developing and implementing national policies. It will identify institutional barriers and support local government to ensure effective waste minimisation and management. It can coordinate work that is more efficiently done jointly, rather than by many different bodies. It can fund waste minimisation activities through the Ministry for the Environment's Sustainable Management Fund, as well as Industry New Zealand and the Community Employment Group. Central government must also look at its own waste production, and reduce it.

Local government

Many councils are already demonstrating leadership and innovation in minimising waste and managing disposal more effectively. However, they face widely varying circumstances and resources. For example, big cities confront different issues to district councils with large land areas and dispersed populations. Despite this, there are good opportunities for councils to learn from each other and use approaches that are effective and efficient. Every council should explore ways to work with its neighbours for mutual advantage, and some councils are already doing so. All should look at the waste they produce and how to reduce it.

Territorial authorities need robust waste management plans that express the spirit of the law. Over the next two years, the Ministry for the Environment will work through waste management planning issues with local government, towards best-practice models. Territorial authorities must join in that work, deciding how the strategy's waste targets apply to their own locality, and allocating resources accordingly. They should expect to set targets in consultation with the community. They should plan for full cost pricing and charging for waste disposal. They should also take stock of waste minimisation activities in their areas and decide how to support and encourage them.

Regional councils Some actions are best taken at a regional level and regional councils may facilitate them. Regional councils grant resource consents for waste treatment and disposal facilities. They should ensure consents and conditions are consistent with national standards and guidelines. They should also monitor consents and take action over breaches. Further consideration of the role of regional councils will be given in the course of the proposed review of waste legislation.

Maori

Maori have a unique perspective and role in waste minimisation and management. They have played an important role in pushing change in the area of wastewater treatment and disposal and are increasingly involved in land contamination issues. As New Zealand moves *towards zero waste* Maori are expected to become more active in waste management planning and waste prevention. Decision-making must allow for direct Maori input into policy, standards and guidelines, monitoring and evaluation, and iwi consultation in preparing waste minimisation and management plans. Maori are encouraged to take part in this process.

Waste management and minimisation industry

The waste management and minimisation industry offers services that range from waste reduction to disposal. This sector must improve environmental standards for treatment, management and disposal of waste, and discover new technologies and management methods to facilitate waste prevention and materials re-use. New Zealand has many examples of new technologies and methods such as composting, worm composting, specialised collection vehicles and landfill gas collection systems.

The industry must consider what incentives it offers customers to reduce waste. Contracts must be reassessed in light of the behaviour they encourage. There are many *win-win* ways for the industry to grow and provide employment while helping reduce waste. The industry should also lead by example, reducing its own environmental impact, and some companies are making good progress in doing so.

Community and voluntary sectors

A number of community and voluntary groups are involved in the provision of recycling services, resource recovery parks and education programmes for waste reduction and recycling. These groups represent a range of concerns, including employment trusts, environmental groups and groups with specific interests, such as worm composting.

As well as delivering a service, this sector acts as an intermediary between community and government, both central and local. It often lobbies for legal and regulatory changes, information, or funding mechanisms to help communities take action.

The sector is expected to continue its work while looking for ways to do it better. By working closely with other sectors, it can share resources to maximise effectiveness. Organisations like the Zero Waste New Zealand Trust and the Environmental Business Networks already provide good coordination. Groups in this sector should think carefully about their purpose, and focus on what they can deliver most effectively.

Business

Businesses have a huge role in waste reduction — directly, as waste generators, and indirectly, as designers, manufacturers and distributors of the products and services we use. Businesses must take stock of the types and quantities of waste they generate, what they do with them, and what options there are for reducing them. These options include changing products and processes to prevent waste, and identifying opportunities to re-use or recycle what they generate.

Businesses also need to look at what happens to products at the end of their life, and how consumers can repair, re-use or recycle them. This partly depends on accurate labelling that identifies a product's components, and in some cases, directions on environmentally appropriate disposal methods. It also means looking to improve product design for durability or recyclability, as well as for ways to participate in, or facilitate, product take-back schemes.

Industry associations

Some industry associations have a direct interest in waste (eg, WasteMINZ, NZWWA and RONZ) or an indirect one (eg, Plastics NZ, Packaging Council of New Zealand, New Zealand Business Council for Sustainable Development, Business New Zealand). Many facilitate discussion, consultation and training on industry waste and waste minimisation issues.

Preparing this strategy has stimulated debate and prompted complementary initiatives such as those of the Waste Management Institute of New Zealand's *Lifeafterwaste* programme. These associations must work with members and each other to promote and facilitate waste minimisation initiatives and information sharing.

STRATEGY MONITORING AND EVALUATION

Monitoring and evaluation of the strategy is essential for tracking progress and identifying any changes that may be required. The Ministry for the Environment, in collaboration with local government, will be responsible for this, and targets will first be reviewed in 2003.

An effective reporting system is vital for measuring progress. The Ministry and local government will develop this in consultation with stakeholders. It will build on existing data collection mechanisms and, where necessary, develop others.

At the local level, it will be important for local government waste management plans to include information collection and reporting based on a common methodology. At the national level, the first step will be to assess whether waste indicators developed by the Ministry for the Environment's Environmental Reporting Programme meet strategy needs.

Action: Central and local government

Put in place by February 2003 an agreed system for evaluating and monitoring strategy progress. The system must be approved by government and the National Council of *Local Government New Zealand*.

GLOSSARY

Biosolids	Biosolids are a by-product of sewage collection and treatment processes, which are beneficially reused as a soil conditioner.
Cleaner production	Cleaner production practices are those that reduce adverse environmental impacts by improving resource efficiency and reducing waste.
Cleanfills	Cleanfills are waste disposal sites that accept only inert wastes. These include materials such as clay, soil, rock, concrete and bricks.
Contained gases	Contained gases are gases that can be controlled before being released into the air. Examples are gases from incinerators and pollution control devices.
Contaminated sites	Contaminated sites are land areas where hazardous substances are in concentrations above those occurring naturally and are a risk to human health or the environment. They include service stations, farm sheep dips, timber treatment sites, closed gasworks, landfills and scrap yards.
Design for the Environment	Design for the Environment refers to products that are designed and managed so that minimum environmental impact is caused by their generation, use, recovery and disposal.
Extended Producer Responsibility	Extended Producer Responsibility puts the onus on businesses to look for, and capitalise on, opportunities for resource conservation and pollution prevention throughout a product's life cycle, including disposal.
Gaseous waste	Gaseous waste consists of gases and small particles carried by air. It includes dust, fumes, smoke and vapour resulting from fires, industrial processes, vehicles and spraydrift.
Green waste	Garden waste.
Hazardous waste	Hazardous waste refers to materials that are flammable, explosive, oxidising, corrosive, toxic, ecotoxic, radioactive or infectious. Examples include unused agricultural chemicals, solvents and cleaning fluids, medical waste and many industrial wastes.
Kaitiaki	Guardians or stewards of resources who promote the integrity of the resource.
Kaitiakitanga	Kaitiakitanga means guardianship over the land and its resources. It expresses an integrated view of the environment and recognises the relationship between everything within it.
Landfill	A landfill is an area used for the controlled disposal of solid waste.
Liquid waste	Liquid waste is waste generated in, or converted to, a liquid form for disposal. It includes point and non-point source discharges, stormwater and wastewater.
Mahinga kai	Food gathering areas.

Manaakitanga	The responsibility to host visitors.
Matauranga Maori	The body of knowledge based on Maori observation, experience and custom, belief and harvest practice.
Mauri	Life-sustaining power.
Non-point source discharge	A non-point source discharge is one that has no identifiable source point. Examples include livestock effluent, and agrichemicals washed from paddocks into streams by rainwater.
Organic waste	Organic waste includes garden and kitchen waste, food process wastes, and sewage sludge.
Organochlorines	Organochlorines are chemicals that contain carbon and chlorine atoms joined together. Some organochlorines are persistent and present a risk to the environment and human health. Examples include dioxin and polychlorinated biphenyls (PCBs).
Point source discharge	A point source discharge has an identifiable source point, such as a particular factory.
Precautionary principle	The precautionary principle asserts that action must sometimes be taken in the face of scientific uncertainty, especially where there are threats of serious or irreversible environmental, social or economic damage.
Quarantine waste	Quarantine waste refers to material brought into New Zealand through airports and ports in breach of quarantine regulations. Quarantine waste is regarded as hazardous and is either incinerated or sterilised.
Sewage sludge	Sewage sludge is a by-product of sewage collection and treatment processes.
Solid waste	Solid waste is all waste generated as a solid or converted to a solid for disposal. It includes wastes like paper, plastic, glass, metal, electronic goods, furnishings, garden and other organic wastes.
Special waste	Special wastes are wastes that cause particular management and/or disposal problems and need special care. Examples include used oil, tyres, end-of-life vehicles, batteries and electronic goods.
Stewardship	Stewardship puts a duty of care on everyone — government, business and the community — for waste prevention and resource recovery.
Stormwater	Stormwater results from rainwater runoff that is channelled through drains from roads and urban properties into waterways and the sea.
Trade waste	Trade waste refers to liquid wastes generated by business and disposed of through the sewerage system. Trade waste includes a range of hazardous materials resulting from industrial and manufacturing processes.
Used oil	Oil contaminated through use with substances that can be hazardous to human health and the environment.
Wahi tapu	Sacred sites.

Waste	This strategy defines waste as any material, solid, liquid or gas, that is unwanted and/or unvalued and discarded or discharged.
Waste hierarchy	The waste hierarchy orders preferred waste management options. The most preferred option is re-use, followed by recovery, recycling, treatment and, lastly, disposal.
Waste minimisation	Waste minimisation refers inclusively to all activities aimed at preventing, reducing, re-using or recycling waste.
Waste prevention	Waste prevention refers to practices that avoid and reduce the generation of waste.
Wastewater	Wastewater is a by-product of sewage, and liquid trade waste collection and treatment processes.
Whanau	Family.

ABBREVIATIONS

EPHC	Environment Protection and Heritage Council (Formerly ANZECC)
GDP	Gross Domestic Product
HSNO	Hazardous Substances and New Organisms Act 1996
LGA	Local Government Act 1974
MED	Ministry of Economic Development
MfE	Ministry for the Environment
MOH	Ministry of Health
NZWWA	New Zealand Water and Wastes Association
OECD	Organisation for Economic Cooperation and Development
PCBs	Polychlorinated biphenyls
RMA	Resource Management Act 1991
RONZ	Recycling Operators of New Zealand
WasteMINZ	Waste Management Institute of New Zealand