

Queensland's Waste Strategy 2010 – 2020

Waste Avoidance and Recycling Consultation Draft

June 2010

Prepared by:

Waste Policy Unit

Department of Environment and Resource Management

© State of Queensland (Department of Environment and Resource Management) 2010

This document has been prepared with all due diligence and care, based on the best available information at the time of publication. The department holds no responsibility for any errors or omissions within this document. Any decisions made by other parties based on this document are solely the responsibility of those parties. Information contained in this document is from a number of sources and, as such, does not necessarily represent government or departmental policy.

**This publication is available in alternative formats
(including large print and audiotape) on request.**

Contact (07) 322 48412 or email <library@derm.qld.gov.au>

June 2010

Foreword

The Queensland Government is shaping more sustainable practices. We are turning the things traditionally regarded as a problem into opportunities for industry development, job creation, new markets and products, and a more sustainable future for all Queenslanders.

Queensland is home to some of the world's most beautiful, diverse and unique ecosystems, from the Great Barrier Reef and other World Heritage areas of the Daintree rainforests and Fraser Island to our wild rivers and outback. We have more native plants and animals than anywhere else in Australia and almost half the species found in Queensland live nowhere else in the world.

To protect our unique environment, we are tackling some difficult issues such as water security, climate change, urban development, transport congestion, protecting the Great Barrier Reef and renewable energy supply. Now we must turn our focus to waste management and resource recovery.

This is not Queensland's first strategy. The first—and current—waste strategy was released in 1996. In the 14 years since, there have been significant changes in waste management and resource recovery—changes that are not reflected in Queensland's current framework.

Queensland currently has a strong reliance on disposal, with only 33 per cent of household and business waste recycled. This current reliance on disposal has serious long-term environmental, social and economic implications for the state. We lose resources, industry investment, job creation and regional market growth.

Local governments have successfully provided efficient household kerbside waste and recycling services. However, this success is slow to translate to other sectors.

We know that wasteful consumption habits are not sustainable because of the limited availability and accessibility of our natural resources. We also know that there are limits to the amount of man-made waste and pollution the Earth can absorb or contain.

Our challenge is to take planned and sustainable action before we reach the point where we are forced to take drastic, and much more expensive, steps. This requires action to avoid waste generation in the first place, and then to turn the wastes we cannot avoid into valued resources.

Queensland faces some unique challenges, including distance to recycling markets and economies of scale. With 80 per cent of the state's population, and most of its services, located in the south-east corner, there is a considerable challenge in providing sustainable and viable local solutions for regional Queensland.

This draft strategy is part of the process to help meet current and future waste management and resource recovery challenges. The programs and reforms outlined in this draft represent a new future in waste management for Queensland and are the most comprehensive set of reforms in Australia today.

Through strategic direction, program delivery and regulatory support, the Queensland Government will demonstrate leadership and provide guidance through its own waste management and recycling practices. We can also apply stronger enforcement and compliance. It will also help local governments, business, industry and the community improve practices and develop sustainable waste management and resource recovery programs.

This strategy represents the first step in over a decade to undertake genuine integrated reform across all aspects—strategic, legislative and economic—of waste management and resource recovery in Queensland. Please read this draft strategy and consider the changes that we can all make, not only for ourselves but for future Queenslanders.

The Honourable Kate Jones MP

Minister for Climate Change and Sustainability

Contents

Foreword	iii
An invitation to comment	1
Executive summary	2
1. Setting the scene	3
The challenges	4
Challenge 1—Waste generation is increasing	5
Challenge 2—Queensland’s size and population distribution	6
Challenge 3—Encouraging industry investment and greater involvement from businesses	6
Challenge 4—Reducing the climate change impacts of waste management.....	6
Challenge 5—Getting the legislative framework right	7
Challenge 6—Meeting infrastructure needs	7
Challenge 7—Changing the way we look at business as usual	8
Queensland’s waste and resource management profile	10
Why do we need a new strategy?	11
2. Changing the focus	12
The guiding principles and strategic tools	14
The guiding principles	14
Strategic tools	14
3. The vision—waste management in Queensland over the next decade	18
Queensland Government’s vision	18
Strategy’s aim	19
Goals.....	19
Targets.....	19
Choices for the future.....	19
3.1 Working in partnership.....	20
Strategic partners.....	20
State government.....	20
Local government	21
Other states	22
Australian Government	22
Essential partners	22
3.2 Strengthening the legislation.....	25
3.3 Increasing investment—growing industry and jobs.....	26
3.4 Engagement, information and knowledge management.....	27
4. Taking action.....	29
Strategic focus.....	29
Priority strategic actions.....	30
1. Waste avoidance	30
2. Resource recovery.....	31
3. Disposal	33
Actions.....	34
Glossary	40

An invitation to comment

Submissions close

Friday 16 July 2010

Email

<waste.paper@derm.qld.gov.au>

Mail

Project Manager
Queensland Waste Strategy consultation
Natural Resources and Environment
Department of Environment and Resource
Management
GPO Box 2454
Brisbane QLD 4001

Facsimile

07 3330 5996

Queensland's Waste Strategy 2010–2020: Waste Avoidance and Recycling Consultation Draft provides Queenslanders with an opportunity to help shape the future of waste and resource management in Queensland by having input into a final renewed strategy for Queensland.

Queensland's current waste management strategy was released in 1996. A renewed strategy to replace the 1996 strategy will provide a 2020 plan for waste reform, industry development and program delivery in Queensland; and help Queensland meet any contemporary obligations it may have under the National Waste Policy and Queensland Government targets outlined in Toward Q2: Tomorrow's Queensland.

This draft builds on feedback received from the 2007 discussion paper and outlines the visions, goals, targets and actions for waste and resource management in Queensland over the next decade.

The Queensland Government will publish a submissions report after consultation closes.

What is a renewed strategy?

The renewed strategy will build on Queensland's existing platform of programs and achievements. It means keeping and enhancing the programs that work and adding new programs to continue to improve the way waste and resources are managed.

The renewed strategy also learns from the shortcomings of the 1996 strategy and puts in place mechanisms to overcome these.

Managing waste is not just about protecting the environment. It's also about improving how we live as a society and maintaining a healthy economy. That makes it an evolving process, one that occasionally has to be reviewed and updated.

You can help

This consultation draft invites response from all Queenslanders interested in contributing to the Queensland Government's renewed waste strategy.

The changes needed to transform Queensland into a 'low waste' state will require support and active participation from industry, the community and the government sector.

Your ideas, knowledge and experience will help the Queensland Government refine and further develop Queensland's waste and resource management reform agenda and ensure that the strategy's goals, targets and programs are suited to the many specific contexts in which they will operate.



Executive summary

Implementing this strategy will move Queensland towards achieving the following:

- waste generation that does not exceed population growth
- reducing the total amount of, and the environmental impacts from, littering and illegal dumping in Queensland
- 65 per cent recovery and recycling of municipal solid waste (MSW) by 2020
- 60 per cent recovery and recycling of commercial and industrial (C&I) waste by 2020
- 75 per cent recovery and recycling of construction and demolition (C&D) waste by 2020
- 15 per cent recovery and recycling of higher hazard regulated waste
- reducing green and organic waste to landfills without gas capture
- reducing the emissions from household waste to landfill by one-third
- strong regional collaboration and development to identify and implement local solutions to local issues
- industry investment and new green jobs
- detailed and accurate data being available for all wastes regardless of source, including construction and demolition and commercial and industrial
- an effective and responsive land-use planning system for waste management infrastructure and activities
- all businesses being aware of, and taking part in, work to avoid waste generation and improve resource efficiency
- accurate and timely information being available to local governments, businesses, industries and the community to help make informed waste management and resource recovery decisions
- Queensland Government departments and local governments supporting waste avoidance, reuse and recycling through smarter buying and green procurement opportunities.

The Queensland Government will monitor performance and achievements towards the targets through three-yearly progress reports.

Recycling targets				
Source	2008 rate (%)	By 2014	By 2017	By 2020
Municipal solid waste	23	50	55	65
Commercial and industrial waste	18	40	50	60
Construction and demolition waste	35	50	60	75
Higher-hazard regulated waste	1	5	10	15

Key resource recovery and recycling targets

1. Setting the scene

Every year in Queensland, millions of dollars are wasted burying valuable and finite resources. Waste is an inefficient use of natural resources and wastes money, water, energy, land, and time.

The amount of waste generated in Queensland is steadily growing and this trend is predicted to continue. As Queensland's population grows and the standard of living increases, more goods are consumed and more waste is produced.

As the precursor to a new Queensland strategy, this consultation draft provides the basis for waste reform in Queensland.

Clear direction and actions, supported by a strong legislative framework, underpin the behavioural change required to both avoid waste generation and reduce the amount of waste disposed to landfill.

It will also make the most of opportunities arising from optimising resource efficiency and recovery.



Recent developments underpin the need for a new strategy, including:

- the release of the National Waste Policy in November 2009
- possible introduction of a carbon pollution reduction scheme or similar means to reduce greenhouse gas emissions
- national agreement for Commonwealth legislation to give effect to product stewardship actions
- national investigation of options, including container deposit legislation, to reduce the impacts of used packaging such as beverage containers
- the New South Wales (NSW) government's introduction of a \$10 per tonne disposal levy in regional NSW to the Queensland border on 1 July 2009, and increasing to over \$30 per tonne from 1 July 2011
- the release of new waste management strategies by Brisbane City Council and the Sunshine Coast and Mackay regional councils, along with the regional work being undertaken by the south-east Queensland Council of Mayors
- increasing community desire to recycle more, such as end-of-life televisions and computers and mercury-containing lamps
- increasing community interest in stronger government intervention and leadership to encourage business and industry to take action to reduce unnecessary packaging, increase recyclability of products and provide opportunities for consumer's to recycle.

What do we mean by waste?

For the purpose of this draft strategy, waste refers to solid or liquid materials discarded as a result of household, state and local government, business, industry and construction and demolition activities.

It includes regulated wastes such as oil, tyres and food processing wastes.

The discarded items may be recyclable or non-recyclable.

It does not include waste to sewer, trade waste, nuclear, radioactive or mining activity wastes, or waste generated by heavy industrial processes, such as bauxite refining where these wastes are held on-site in indefinite storage.

The challenges

People and their everyday activities create pressure on the environment. Economic and population growth create increasing demand for goods and services. The process of making goods and providing services creates waste.

By creating less waste, the impacts on the Earth can be reduced and provide social and economic benefits; in effect, using resources more efficiently and doing more with less.

Waste generation in Queensland is increasing rapidly. Between 2003–04 and 2007–08 waste generation grew by 40 per cent. Over the same period the population increased by 10 per cent and retail turnover increased by 21 per cent.

One of the significant challenges of change is that there is no real perception of anything being wrong with the way things are done now. If good management is measured in terms of the provision of efficient and cost-effective collection and disposal services, then waste in Queensland is managed relatively well.

For most Queenslanders waste management simply means putting their waste in a bin that is removed with a minimum of fuss.

When is waste not a waste?

To achieve a more sustainable environment, there is real value in diverting suitable waste for resource recovery through reuse, recycling and energy recovery activities.

Resource recovery is about recovering those materials and end-of-life products from the waste stream that have a reuse, recycling or energy value.

A material remains a waste until suitable action has been taken to reuse, recycle or recover the available energy from the waste.

Products derived from waste are not waste. Any resulting residue from processing the recovered resources may need to be treated as waste, or there may be an inherent value remaining in the material that means it can be further recovered.

Warrabar Island waste management project

This project aims to demonstrate the sustainable recovery of used packaging materials on Torres Strait islands.

The project involves establishing a resource recovery facility and associated equipment to consolidate loads of recyclable material for transport to Cairns by barge. The whole project is supported by a community engagement and awareness strategy.

Small isolated island communities generally have severe problems with waste disposal in terms of capacity and cost.

The options previously used for disposing of garbage have been to either burn it, bury it at landfills or transport off the island, which is costly.

Through community recycling and composting, it is hoped that the waste management trial will decrease general waste to landfill by 70 per cent.

This will dramatically reduce the need to find more land for landfills on the islands and help protect the natural environment of the island.

Unlike the recent water crisis, there is no lack of waste services and, for the most part, no lack of infrastructure to treat and dispose of the waste. Because waste is removed efficiently, there is no real understanding that too much is being generated or that maintaining the level of services and infrastructure required is difficult.

In comparison with water and energy costs, the cost of waste management for businesses is relatively low. For households, waste management charges appear as a flat amount on the rates notice. In most cases the charge is the same, regardless of how much or little waste the householder generates. This means there is no immediate imperative or incentive to take action and avoid generating waste, reduce the amount of waste disposed of, or even to recycle more effectively.

There is also a perception that there are plenty of places to put waste in Queensland. Much of Queensland does not have the high population densities and limited space for landfills that create difficulties for some areas, such as Sydney and Melbourne.

However, some south-east Queensland local governments are currently grappling with rapidly filling landfills and finding acceptable solutions to managing the waste that continues to be generated. Landfill capacity varies between each local government area. Some local governments have significant landfill capacity remaining whereas other local governments

only have a couple of years left—and no opportunities for establishment of new sites.

Queensland also has the problem of vast distances and finding viable waste management and resource recovery solutions for more regional and remote areas of the state. Island communities in particular have difficulty finding sustainable and economically viable waste management solutions, due to a combination of small population, limited transport options, significant transport and logistics costs and planning issues, and limited storage space.

Some communities, such as those in the Torres Strait, also have quarantine issues to contend with when transporting waste and recyclables between islands and to the mainland.

A growing number of individuals and businesses are beginning to question current practices. For instance, people are concerned about the potential environmental impact from disposing of end-of-life products that contain potentially hazardous chemicals, such as mercury, lead and cadmium.

People are also concerned about the wasted resources when these items are disposed of. Many of these resources are finite and their extraction has the potential to cause significant environmental damage. There is also growing community interest in being able to take stronger action to prevent litter and illegal dumping activities.

The community is increasingly concerned about the local impacts of where to site landfills and other waste management and resource recovery facilities, such as composting, concrete crushing and grinding, materials recovery facilities and transfer station operations, and about the long-term legacy of landfills, for example, landfill gas migration into houses near landfills. Communities are becoming much less tolerant of waste management infrastructure in proximity to households and other sensitive land uses.

The challenge in attempting to change behaviour before there is a perceived need is creating the understanding that just because waste may not be a problem today, doesn't mean it won't be a problem tomorrow—or a decade from now.

The hazardous legacies of some past waste management and disposal practices are well-documented, with ongoing monitoring and clean-up coming at a considerable cost to governments and the community. It is important to start doing something now to change the way people think about waste management so that a similar legacy is not left in the future.

There has been good progress in some areas of waste management, such as improved landfill design and operation and the introduction of kerbside waste and recycling services. However, there is a long way to go and some key challenges remain.

Up-take of available recycling services by commercial waste generators is variable and currently most voluntary product stewardship is dependent on industry leaders and early-adopters. The quality of information available about the make-up of waste streams and trends generally remains poor.

Mobile phones are complex devices and contain many different components that are made from a wide range of materials.

A typical mobile phone is made from an assortment of plastics, ceramics, copper and copper compounds, iron, nickel and nickel compounds, zinc and zinc compounds, silver, flame retardants, and even gold.

In fact recycling 50 000 mobile phones reportedly yields one-and-a-half kilograms of gold.

Other materials used include tin, lead, cobalt, aluminium, tungsten, antimony, manganese, lithium, phosphorous, beryllium, palladium, and tantalum.

Challenge 1—Waste generation is increasing

Queenslanders are consuming goods and resources at record rates. Every year, Queensland households and businesses generate more waste and send increasing amounts to landfill for disposal. In 2008, a reported 32.6 million tonnes of waste was generated in Queensland.

While over 22 million tonnes of this waste was generated by heavy industrial processes and is held in indefinite storage—meaning much of this waste will not fall under this strategy—an estimated 10.3 million tonnes of waste was generated by Queensland households and businesses—around 2.4 tonnes per person. This is a 21 per cent increase over 2007 figures.

There are several reasons why waste continues to increase, including:

Increased disposable income	There is a clear link between economic growth and waste generation; however, in Queensland waste generation is significantly outstripping economic growth. In 2008 retail turnover grew by around 21 per cent while waste generation increased by 40 per cent.
Convenience-led lifestyle	People are spending more time at work and busier, faster-paced lifestyles mean less free time. This contributes greatly to the wider demand for more convenience and speed, increasing demand for ready-made meals, packaged snack-sized portions and a vast array of disposable items to make out lives easier.

Fashion trends	Today's society is more fashion conscious than ever, and with many goods previously considered as 'luxury' items now available at low cost, the trend is towards replacing items when they go out of fashion, or when the next model becomes available. As a percentage of income Australia is one of the top countries in the world in terms of spending on items such as mobile phones and computers. On average, mobile phone users change handset every one-and-a-half to two years.
Changing attitudes	There is no longer an attitude of 'make do and mend'; people would rather buy a new item than repair an old one.
Design for obsolescence	Many products are not designed to be repaired and as a consequence when they reach the end of their life they can only be disposed of.
Unsustainable consumption	Consumption is a fact of our modern way of life. However, our current consumption patterns are unsustainable. For instance, in 2009, the Australia Institute undertook a survey of wasteful consumption and found that Australians waste around \$10 billion per year in things they buy and then discard. Over half of this was household food waste. Queenslanders performed the worst in relation to food waste—wasting around \$262 per person per year on discarded food.

Challenge 2—Queensland's size and population distribution

Queensland is a large state. Although around 80 per cent of the population is located in the south-east corner of the state, Queensland is unique among Australian states and territories in having large population centres located in regional parts of the state.

Queensland's size and population distribution results in fragmented delivery of waste management and resource recovery services. It is often not economically viable to provide the same level of service to residents of smaller regional and rural areas as is enjoyed, and often taken for granted, by residents of metropolitan areas.

As more people move from metropolitan areas to regional and rural areas, increasing pressure is placed on these local governments to provide the services of metropolitan areas, including recycling and kerbside collections.

Regional Queensland faces unique challenges, including the provision of cost-effective and efficient waste management and recycling services, distance to recycling markets and capacity to provide and operate suitable infrastructure, such as transfer stations and landfills.

Many of the markets for recyclable materials are located in south-east Queensland. This makes recycling in regional Queensland a costly exercise due to a combination of smaller quantities of material being collected, longer transport distances, higher transport costs and the real risk of a load being rejected once it arrives at the processing facility due to contamination or off-specification issues.

Challenge 3—Encouraging industry investment and greater involvement from businesses

The current level of investment by government or industry is not delivering the performance we need to attain improved practices and sustainable performance. Currently, around 33 per cent of the waste generated by households and businesses is being recycled.

Although some businesses have risen to the challenge and are recycling well, overall disposal continues to outstrip recycling. While over 90 per cent of households have access to some form of recycling service, a relatively small number of businesses recycle.

Disposing of waste can often be the cheapest and easiest option. At the present time, Queensland does not have a strong policy direction or price signal to discourage unnecessary disposal or encourage the necessary behavioural change to transform from a throwaway society to one that values the things it currently wastes.

Local governments, business and industry need policy certainty to make long-term investment decisions that will help grow Queensland's regional capacity, improve waste management and resource recovery outcomes and provide employment opportunities.

Challenge 4—Reducing the climate change impacts of waste management

In September 2008 the Queensland Government released *Toward Q2: Tomorrow's Queensland*. This document outlines the Queensland Government's targets and measures to reduce our carbon footprint—including reducing

emissions from the disposal of waste to landfill.

Disposing of biodegradable organic wastes, such as food scraps and green waste, into landfill generates methane—a gas with a global warming potential around 23 times that of carbon dioxide.

Based on 2008 waste disposal data, Queensland's landfill disposal contributes around five mega tonne carbon dioxide equivalent (Mt CO₂-e) per annum. A carbon constrained future will see an increase in the cost of doing business.

For operators of waste disposal facilities it means implementing options to reduce their emissions liabilities. For waste generators, particularly generators of organic waste, it means either paying more to dispose of the waste produced or seeking alternative management options, such as avoidance or resource recovery.

Because Queensland is a highly decentralised state, one of the challenges facing us is finding the optimal balance between increasing resource recovery and reducing greenhouse gas emissions.

On the one hand, recycling has the potential to save significant amounts of landfill and other emissions, such as energy savings. On the other hand, these savings can quickly be offset by transport emissions generated to get the material to processing facilities and markets.

Challenge 5—Getting the legislative framework right

Queensland's waste management legislation is over 10 years old. There have been significant developments in waste management and resource recovery since the introduction of the *Environmental Protection Act 1994* and subsequent introduction of the Environmental Protection (Waste Management) Policy 2000 and Environmental Protection (Waste Management) Regulation 2000.

New legislation is needed to provide regulatory underpinning for the strategy, including promoting waste avoidance and resource recovery and the diversion of potential resources from landfill. The legislation needs to reflect modern waste management practices and an awareness of the need for Queensland to reduce its ecological footprint.

The 2007 State of the Environment Report calculated Queensland's ecological footprint at 7.19 global hectares per person—nearly three-and-a-half times higher than the world average. Avoiding waste generation and reducing the amount of disposal to landfill will be an important element in reducing our ecological footprint.

Benefits of recycling

- 95 per cent less energy is needed to make **aluminium** from used cans than from the raw material, bauxite.
- Every aluminium can that is recycled saves enough electricity to light a 20-watt energy efficient bulb for 17.5 hours, or a TV for three hours.
- The energy saved from recycling one **glass** bottle is enough to light a 20-watt energy efficient bulb for 20 hours.
- It also reduces air pollution by 20 per cent and water pollution by 50 per cent.
- Recycling one tonne of glass saves 1.1 tonnes of raw materials (sand, limestone, soda ash), and reduces energy use by 30 per cent.
- Adding used **steel** to new steel production reduces energy use by 25 per cent, air pollution by almost 90 per cent, water pollution by 76 per cent, mining wastes by 97 per cent and water usage by 40 per cent.

Challenge 6—Meeting infrastructure needs

A crucial part of modern waste and resource management is the infrastructure necessary for its collection, handling, transport, recovery, processing and disposal. With all waste management and resource recovery facilities there is a potential issue of interaction between the facilities and neighbours that requires careful planning and management.

Local governments own the majority of transfer stations and landfills in Queensland. Local governments are also responsible for the management of household waste and recycling services, either undertaking the service themselves or contracting to the private sector.

The private sector is largely responsible for the management of commercial and industrial (C&I) and construction and demolition (C&D) waste, including regulated waste. The private sector is also primarily responsible for resource recovery infrastructure in Queensland, such as materials recovery facilities (MRF), C&D recycling, composting, e-waste and tyre recycling.

The largest proportion of Queensland's existing processing and recycling infrastructure is located in south-east Queensland. This means long distances are involved with transporting material for recycling from regional areas.

Regional plans will play an important role in identifying potentially suitable areas to establish waste and resource management precincts for infrastructure. Establishing infrastructure is an extensive and time-consuming process involving a number of stages, including obtaining planning approvals and designing and constructing the infrastructure. Depending on the type and complexity of the infrastructure, this may take anywhere from six months to six years.

Box 1 outlines a scenario illustrating potential savings to local government for landfill infrastructure when some relatively simple recycling and landfill diversion measures, such as those outlined in section 4 of this draft strategy, are applied.

Landfill capacity issue

Scenario: A local government has around four years remaining landfill capacity. Under a new strategy and waste reforms, how much waste could be diverted from disposal and what landfill capacity could this local government have now?

Overall position

Total estimated waste input = 271 000 tonnes per year

Total estimated capacity remaining = 710 000 tonnes

Estimated waste diverted over the first five years of the strategy in this local government area

- MSW: 79 500 tonnes diverted from landfill
- C&I: 78,100 tonnes diverted from landfill
- C&D: 33,750 tonnes diverted from landfill.

Key finding: Estimated total waste diverted over the first five years of the strategy in this local government area would be around 200 000 tonnes. This could increase the landfill capacity by around 20 per cent or an estimated additional 12 months landfill life.

Box 1—Infrastructure planning scenario

While a 20 per cent saving—or an additional 12 months worth of space—may not seem like much, when the time required to plan and develop new infrastructure can take years, an additional 12 months may make the difference between proactive and reactive decisions.

Challenge 7—Changing the way we look at business as usual

A business as usual (BaU) approach will not get Queensland where it needs to be. The current understanding of BaU must change to make waste avoidance, improved resource efficiency and optimal resource recovery Queensland's new BaU.

The lessons from the past decade's BaU are clear—practices must be improved before action is taken that ends up being more costly and inefficient. Current practices and actions will only generate more waste and add to the use of increasingly finite resources.

Figure 1 shows the projected trends for resource recovery under BaU (today's approach) and under a fully implemented strategy (tomorrow's BaU). While the graph shows small increases in resource recovery under today's BaU, a fully implemented strategy will see much greater gains.

This is mirrored by the reduction in waste disposed to landfill (Figure 2). Some reductions will be evident under a BaU model; however, greater gains will be made by implementing the full package of proposed reforms.

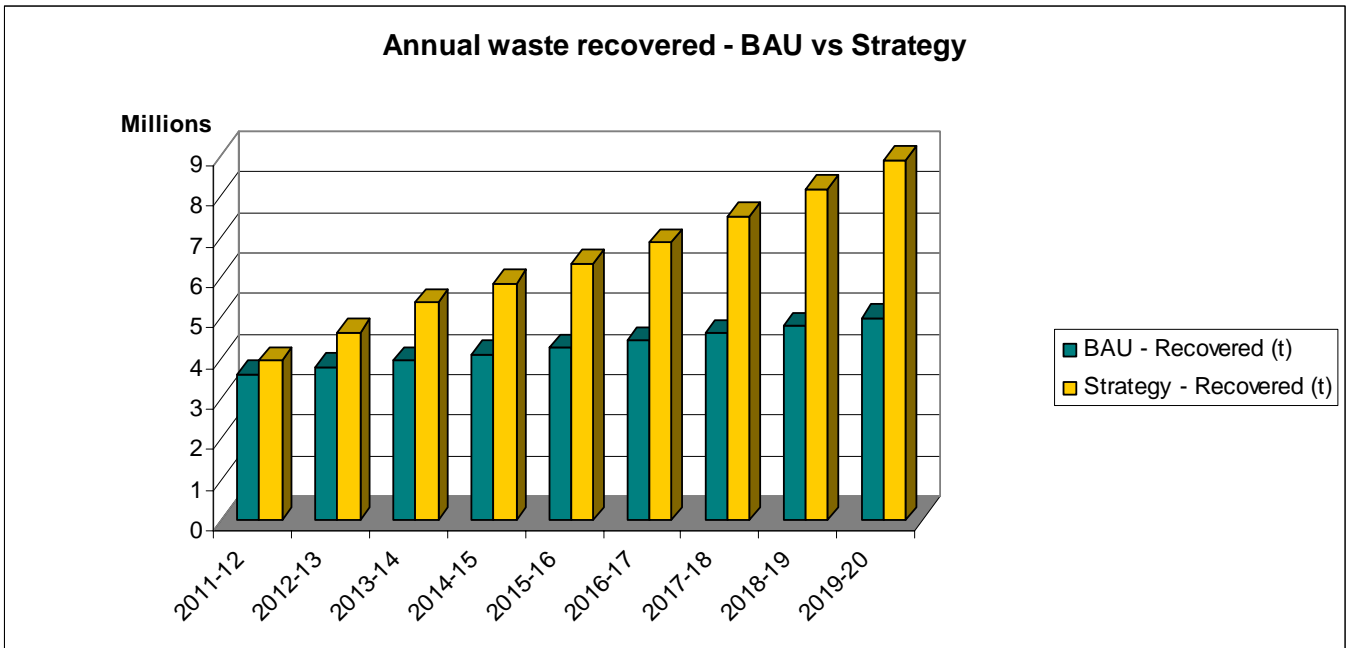


Figure 1—Annual resource recovery: today’s BaU vs strategy

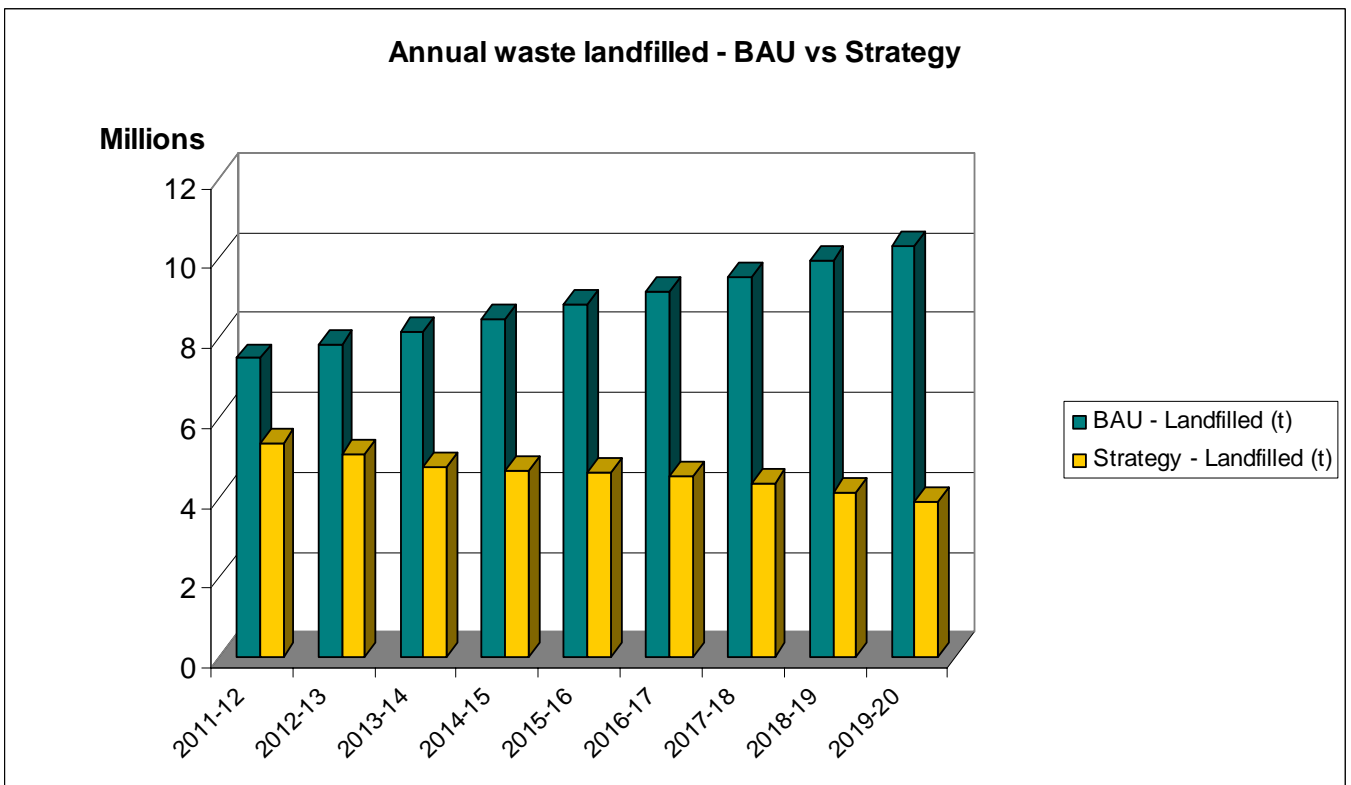


Figure 2—Annual waste to landfill: today’s BaU vs strategy

Moving towards a more resource efficient society will reduce the environmental, social and economic impact of waste management and place a higher value on recovering resources previously considered as waste.

The Queensland Government is committed to a sustainable Queensland. For waste management and resource efficiency and recovery, this means a ‘low waste’ Queensland where there are significant reductions in wasteful consumption and waste generation; where resources are used more efficiently and disposal is seen as a last—not

a first—option of choice.

Queensland's waste and resource management profile

In Queensland in 2008, an estimated 32.6 million tonnes was reported to the Department of Environment and Resource Management (DERM) as being generated from household, commercial and industrial, and construction and demolition activities. This includes data collected on waste that is classified for indefinite storage, such as red mud, milling waste and fly ash. This amounts to an additional 22.3 million tonnes.

Queensland households and businesses generated the remaining 10.3 million tonnes.

The trend over the past five years has been for a significant increase in waste generation and disposal. The data shows that domestic waste generation in 2007–08 was 40 per cent higher than in 2003–04; however, the population grew by only 10 per cent.

In 2007–08, over 60 per cent of the waste generated by households and businesses was disposed of to landfill. In 2008, each Queenslanders generated around 2.4 tonnes of waste from the three main waste streams—MSW, C&I and C&D. This is an increase of around 20 per cent from 2007 generation estimates.

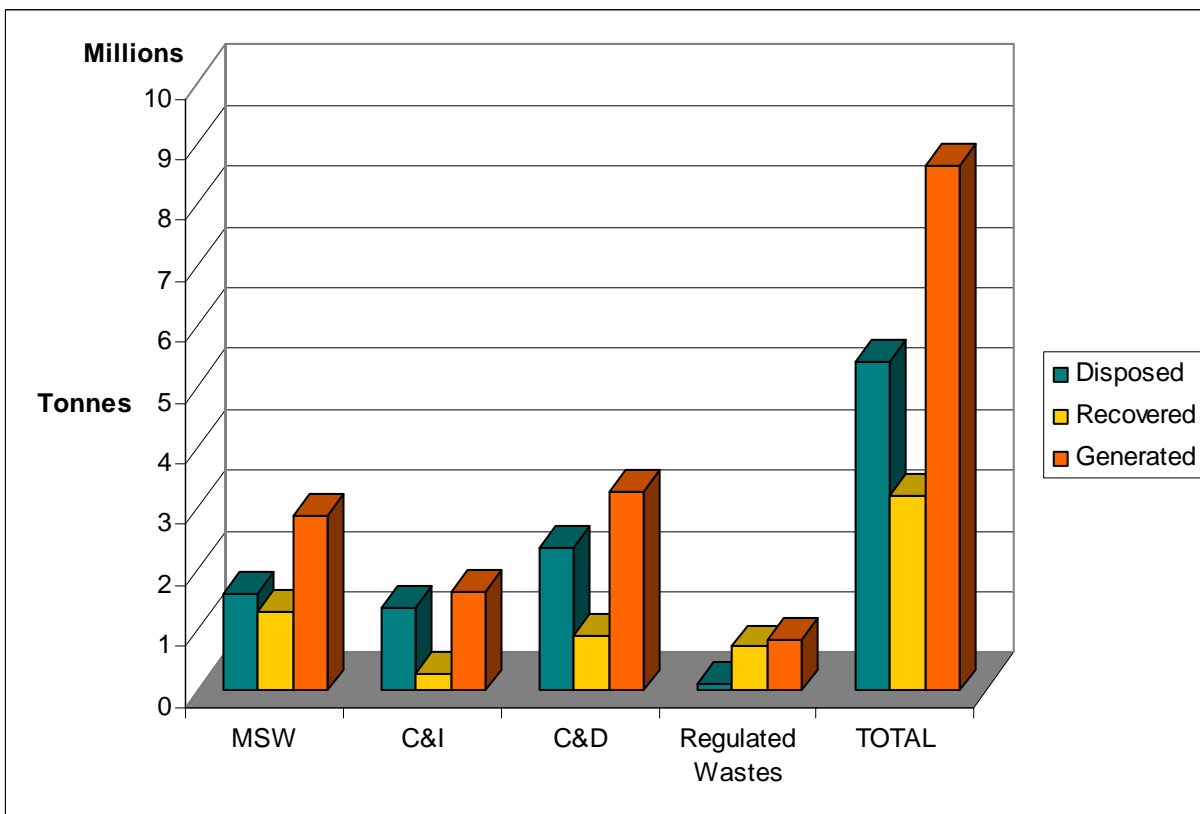


Figure 3—2008 waste generation, recycling and disposal

Why do we need a new strategy?

The Queensland Government has prepared Queensland's Waste Strategy 2010-2020: Waste Avoidance and Recycling consultation draft to help chart a new direction for waste and resource management in Queensland over the next decade. If Queensland is to manage its resources and the wastes resulting from the community's way of life in a more sustainable way, fundamental long-term change is needed.

Queensland's current Waste Strategy was released in 1996. It no longer provides a contemporary framework to improve waste management and recycling activities; to encourage industry investment opportunities; or to develop new markets for recovered materials.

The quantity of waste generated in Queensland is steadily growing, a trend that is predicted to continue. With the growing population and increasing standard of living, more materials are consumed, producing more waste. Currently, 33 per cent of Queensland's household and business waste is recycled.

The goals, targets and actions in this strategy will create an environment that encourages the necessary behavioural change, bringing about waste avoidance, resource recovery and responsible disposal of the residual that it is not economic or feasible to effectively avoid or recover.

While the environmental and social benefits of resource efficient practices and increased recycling are well established, future carbon constraints, reliance on overseas markets and global economic trends challenge the waste and resource recovery sector. These are challenges for Queensland as a whole. These problems can be addressed through a coordinated and strategic approach.

The approach outlined in this draft strategy coordinates the efforts of state and local governments, the waste and resource recovery industry and other key stakeholders to deliver improved management of wastes and recovery of resources statewide. It provides a framework for working collaboratively with the Australian Government and other states and provides the context for further development of strategic actions by local governments, business and industry.

When finalised, the strategy will be the primary document guiding state and local government agencies, business, industry and the community in waste avoidance and resource recovery and efficiency in Queensland over the next decade. It will enable focused policy and priority setting and deliver a more coordinated approach. It will provide certainty for new business investment in Queensland while guiding and supporting community and individual action.



2. Changing the focus

Currently, waste management decision-making is driven by a need to protect public health and reduce the environmental impact from waste after it has been generated.

Over the years, waste management practices have changed so that today the majority of Queensland households have access to one of the best, cleanest and most efficient waste management services available—in the form of kerbside wheelie bin collections. Many landfills in Queensland also use the latest technology to control environmental emissions. Several beneficially use the gas produced to generate electricity.

However, while the current systems of collection and disposal are good—and are improving—there is a considerable way to go in society's avoidance and resource recovery decisions. To make significant improvements, a shift in thinking away from the present linear system of **'take-make-waste'** is needed. Instead, thinking should move toward natural processes, avoiding waste generation, and where waste cannot be avoided, beneficial use and resource recovery. Ways must be found to fulfil the equation **'waste = resource'** within industry and society.



For many years waste generation and disposal has been viewed as the sign of a prosperous economy. However, waste generation is, in fact, a sign of inefficiency—in the use of materials, energy dollars and human resources.

The focus needs to be on mimicking the cyclic quality of natural systems, where waste from one process becomes a valuable resource for another, as demonstrated by the compost cycle.

The Queensland Government intends to change the direction of waste management in Queensland to one that meets both the preferred approach of the waste and resource management hierarchy and the principles of sustainability.

Plenty can be done to redirect current efforts so they more closely reflect the hierarchy and guiding principles. A major challenge—to break the strong link between waste

generation and economic development—will only be met by a range of policy measures.

The following outlines some of the changes that could be put in place to develop and maintain an environmentally and economically sustainable system where resources are kept in the production cycle.

<p>Changing the rules of the game</p>	<ul style="list-style-type: none"> • Putting policies and practices in place that encourage, facilitate and remove impediments for environmentally and economically sustainable practices over wasteful, inefficient and ultimately costly practices. • Such policies may include creating opportunities and incentives for businesses and residents to generate less waste and recycle more, banning specific products from disposal, and making it easier to recover materials than waste them.
<p>Design for the environment (D4E)</p>	<ul style="list-style-type: none"> • Instead of designing products with built-in obsolescence, without regard for the amount or type of resources used, the product's toxicity, or management of the product at end-of-life, D4E is about redesigning products and packaging that can be manufactured using reduced material inputs, non-toxic and recyclable materials, and designed for either repair, reuse, recycling or composting.

<p>Cleaner production</p>	<ul style="list-style-type: none"> • Cleaner production is about preventing waste and emissions, including the loss of energy, rather than dealing with them once they have been generated. • It deals with the efficient use of materials, energy, water and other natural resources when business is conducted, regardless of whether the business is in processing, manufacturing, service, transport, mining or agriculture. Its application makes more efficient use of natural resources (raw materials, energy and water) and reduces the generation of wastes and emissions at the source.
<p>Changing the role distribution or retail plays</p>	<ul style="list-style-type: none"> • Distribution centres work with manufacturers and retailers to reuse packaging, such as pallets and crates, and to reduce unnecessary distribution packaging. • Retailers work with the supply chain to introduce waste avoidance, reuse and recycling criteria into business as usual for the supply of goods. • Retailers and shopping centres look for more opportunities to recycle the waste they generate, such as food waste from produce and food court areas. • Retailers serve as education centres to inform consumers about the proper disposal methods for items they sell, such as motor oil, electronics and batteries. • Retailers work with government and product brand owners as part of product stewardship arrangements to provide a convenient drop-off point for priority products, such as batteries, plastic shopping bags, light bulbs and mobile phones.
<p>The informed consumer</p>	<ul style="list-style-type: none"> • An informed consumer is essential in all facets of improving waste avoidance and resource recovery. Consumer demand drives product design and packaging, rather than manufacturers giving consumers no choice. • Consumers choose products that are minimally packaged, less toxic, recyclable or made from recycled content—rewarding those manufacturers who take early action, and providing the incentive for other companies to follow suit where there is no legislative requirement compelling them to do so.
<p>Product stewardship</p>	<ul style="list-style-type: none"> • Product stewardship places responsibility for managing the end-of-life impacts of a product or packaging with the manufacturer. • The aim of product stewardship in placing responsibility on the manufacturer is to achieve products that are redesigned to reduce material consumption and facilitate reuse, recycling and recovery. • The manufacturer also has a responsibility to work with governments and other sectors within the supply chain, such as recyclers, retailers and consumers.
<p>Investing in recovery infrastructure and industrial ecology concepts</p>	<ul style="list-style-type: none"> • Encourage stronger investment in recycling, composting and reuse facilities, and plan for resource recovery hubs. • Plan for and develop industrial ecology precincts where the by-products of one operation can become an input for another.
<p>Creating jobs from waste</p>	<ul style="list-style-type: none"> • Three times as many jobs are created in recycling 10 000 tonnes of waste as they are in landfilling 10 000 tonnes of waste. Rather than discarding the value that remains in the by-products of our consumption, this value is protected and leveraged to create a new economy and local solutions and investment.
<p>Managing growth</p>	<ul style="list-style-type: none"> • Plan in advance for waste management and recycling in new developments • Plan transport networks and land use precincts for waste management activities and needs • Plan for future waste infrastructure needs well in advance of requirements

The guiding principles and strategic tools

This draft strategy has been developed considering the following principles and strategic tools:

The guiding principles

Resource efficiency

- Making better use of resources (energy, water, materials) and reducing waste generation, which is measured against an indicator, such as production rate, occupied bed days or items sold.
- Encouraging waste avoidance and resource efficiency and recovery through the application of strategic tools, including the waste and resource management hierarchy, product stewardship, polluter pays and stronger and more focused legislation.

Sustainability

- Maximising the net benefits to all Queenslanders, taking into consideration environmental, social and economic issues.
- Not imposing unnecessary costs on state or local government, business, industry or the community.
- Building on existing programs and achievements.
- Facilitating and developing sustainable local solutions for local issues.
- Keeping approaches to waste avoidance and resource efficiency and recovery simple.

Engagement

- Taking the views of all stakeholders into consideration.
- Providing an active role for the community, local government, business, industry and state government.
- Facilitating and encouraging shared responsibility.
- Facilitating and entering into partnerships.
- Taking into consideration any relevant interstate, national and international trends in waste and resource management, technologies and policy development.

Capacity building

- Encouraging and facilitating business and industry development and building sustainable local and export market capability.
- Recognising the different approaches needed for metropolitan, regional and rural/remote areas.

Strategic tools

The waste and resource management hierarchy

The waste and resource management hierarchy is a nationally and internationally accepted guide for prioritising waste and resource management practices. Use of the hierarchy in Queensland is not new, and it was introduced in legislation in 2000 with the commencement of the Environmental Protection (Waste Management) Policy 2000.

Although the hierarchy provides an effective framework for dealing with waste, the accepted wisdom that it contains is not being implemented in a holistic, coordinated or effective manner in Queensland.

In order to start changing behaviour and the way people perceive waste—in other words, to begin the journey towards valuing the things society wastes—this draft strategy will use a waste and resource management hierarchy. This recognises the value of used materials as resources and removes the implication that they have no value because they have been discarded.

The hierarchy sets out the preferred order for consideration of management options and underpins the programs and actions contained in this strategy. The hierarchy is a decision-support tool that states that avoidance is the preferred option, followed by reduction, reuse, recycling, energy recovery and, finally, disposal.

However, we also need to acknowledge that recycling is only a step along the way. Implementing the strategies and actions contained in this draft strategy, and the strategies that follow, will progressively shift the emphasis from recycling toward a culture where waste avoidance is an accepted lifestyle choice and the usual way of doing business for Queenslanders.

This draft strategy regards the hierarchy as a key element for guiding waste and resource management practices in Queensland while still recognising the need for flexibility based on local and regional economic, social and environmental conditions.



Figure 4—Waste and resource management hierarchy

The waste and resource management hierarchy

Avoid—making sure that waste is not generated in the first place.

Avoidance examples: changing production processes to avoid waste generation at its source; refusing to accept wasteful and unnecessary items (for example, refusing plastic shopping bags and taking reusable bags when shopping); buying durable items designed to be repaired not discarded; extending the life of currently used products where possible (for example, purchasing a set-top box to extend the use of a working analogue television when the digital system is switched on rather than purchasing a new television and discarding the old one).

Reduce—if waste generation cannot be avoided, reducing the amount of waste generated, the quantity of resources used, or the hazardous nature of the waste being generated.

Reduction examples: reducing consumption to avoid unnecessary products or packaging; where practical, purchasing items in bulk to reduce packaging; dematerialisation of packaging to reduce the amount of resources needed to manufacture the product (for example, an aluminium drink can weighs around 14.7 g today compared to 16.55 g in 1992, providing an 11 per cent reduction in raw material use); reducing the use of raw materials as an input (for example, glass bottle manufacture uses up to 20 per cent recycled glass, saving raw materials in the form of sand, limestone and soda ash); treating regulated wastes to reduce the hazard characteristics and rendering it suitable to be reused or recycled.

Reuse—using products or packaging again for the same purpose without further manufacturing.

Reuse examples: purchasing second-hand and refurbished goods, purchasing and returning refillable containers (for example, retailers such as The Body Shop sell some products in returnable, refillable containers and Coles Supermarkets use returnable, washable and reusable plastic trays in the fruit and vegetable section).

Recycle—processing materials to make the same or different products, avoiding the material being disposed of.

Recycling examples: making new glass bottles and jars from used bottles and jars; processing end-of-life tyres to manufacture soft-fall for playgrounds; processing used paper into insulating products; plastic high density polyethylene (HDPE) milk bottles into wheelie bins; composting green and organic waste; using fly ash produced by power stations to manufacture cement.

Recover energy—capturing the energy available in discarded products.

Energy recovery examples: accelerating and collecting the gas generated in a bioreactor by the decomposition of organic waste to generate electricity; using residual waste as a coal or gas substitute in boilers, incinerators, etc.

Dispose—disposing as a final option, when no further use can be gained from the material.

Disposal examples: landfilling of residual bottom ash from incineration facilities; thermal destruction of some intractable wastes, such as polychlorinated biphenyl (PCB) compounds and pesticides, resulting in CO₂ and water as by-products.

In addition to the waste and resource management hierarchy, other strategic tools influencing the development of the draft strategy, and forming a significant part of the approach to implementation, include:

<p>Product stewardship—the core principle of product stewardship is a shared responsibility by producers, consumers and governments for the environmental impacts of products throughout their lifecycle—from design and manufacture, to use and end-of-life management.</p>	<p>Examples of product stewardship in Queensland:</p> <ul style="list-style-type: none"> • National Packaging Covenant (co-regulatory) • DrumMuster (voluntary industry-led scheme) • MobileMuster (voluntary industry-led scheme)
<p>User pays—the core application of this principle centres on the premise that those who generate and dispose of waste should pay for its disposal.</p>	<p>Example of user pays approaches:</p> <ul style="list-style-type: none"> • Waste disposal levy • Variable price charging

<p>Local solutions—acknowledge that one size fits all legislation and program funding is not suitable for Queensland and that local solutions can be implemented to reduce the amount of recyclable material going to landfill and improve recycling outcomes.</p>	<p>Examples of local solutions to improve recycling:</p> <ul style="list-style-type: none"> • North Burnett Regional Council: mobile baler to provide more efficient recycling of aluminium cans and plastic bottles • Cook Shire Council: mobile recycling trailer to collect recyclable packaging materials (aluminium, plastic and cardboard) • Townsville City Council: conversion of de-commissioned compactor truck bodies into stationary cardboard compactors located at council waste facilities
<p>Partnerships—are essential to achieving the resource recovery targets in the strategy.</p>	<p>Examples of partnership approaches:</p> <ul style="list-style-type: none"> • Public Place Recycling on Fraser Island: introduction of public place recycling system on Fraser Island as a partnership between Fraser Coast Regional Council and DERM • Warrabar Island integrated waste management: improved waste management outcomes for Warrabar Island as a partnership involving Torres Strait Regional Authority; Australian Government (DEWHA); Federal and Queensland Government's Major Infrastructure Program; DERM; and the Packaging Stewardship Forum • DERM/Bovis LendLease Strategic Alliance.
<p>Engagement, communication and knowledge management—are fundamental to achieving changes in behaviour that will lead to long-term sustainable practices.</p> <p>Data collection and knowledge management is an important component to ensure that we can gain a more accurate picture of the waste that is generated and where it ends up. This helps with more efficient infrastructure needs planning and helps industry to identify potential market and investment opportunities.</p>	<p>Examples of engagement, communication and knowledge management approaches:</p> <ul style="list-style-type: none"> • Local government kerbside recycling education and awareness • Programs such as Tidy Towns, Clean Beach Challenge, Green and Healthy Schools and Clean Up Australia Day • Queensland Youth Environment Council • Annual State of Waste and Recycling Report Card • Industry peak bodies and associations.
<p>Legislation—provides an important tool to help support waste avoidance and resource efficiency and recovery actions. Queensland's approach to environmental protection and environmental management systems and practices is currently underpinned by the <i>Environmental Protection Act 1994</i>.</p>	<p>Examples of potential legislative reform approaches for Queensland:</p> <ul style="list-style-type: none"> • new Act dealing with waste avoidance and resource efficiency • identification of priority products and product stewardship arrangements • landfill disposal bans • resource recovery requirements • strengthened reporting requirements.

3. The vision—waste management in Queensland over the next decade

Queensland is Australia's fastest growing state and, as such, needs a contemporary waste management and resource recovery framework that is both responsive to change and meets the challenges delivered by the community's way of life and by increasing population.

By 2026, Queensland's population is projected to reach close to six million people—a 30 per cent increase from 2006. This growth will put increasing pressure on Queensland's available space as well as current and future infrastructure planning needs. Much of this growth will occur in south-east Queensland. However, regional pressures will also be experienced, particularly in the resource communities around the Surat and Bowen basins and on the Western Downs.

Toward Q2: Tomorrow's Queensland sets five ambitions that address current and future challenges for Queensland. Toward Q2 targets Strong Queensland; Green Queensland; Smart Queensland; Healthy Queensland and Fair Queensland. Under each of these ambitions are two 2020 targets. Green Queensland focuses on cutting Queenslanders' carbon footprint by a third and protecting 50 per cent more land for nature conservation and public recreation.

One of the indicators to measure the reduction in Queenslanders' carbon footprint by a third is emissions waste to landfill per household in Queensland. The Queensland Government will play its part in helping Queenslanders achieve this target by encouraging reuse and recycling of resources to reduce the generation of waste.

In the absence of a considerable shift in consumption, waste generation and disposal patterns, and in the way resources are used—as well as in changing how generated wastes are viewed—a significant proportion of Queensland's economy will continue to be spent on addressing the growing waste management issues.



Queensland Government's vision

The vision is for a Queensland that:

- looks for ways to avoid waste generation in the first place
- seeks design-for-environment opportunities
- values the wastes that cannot be avoided as a resource rather than a problem
- makes the most of recycling and resource recovery opportunities
- seizes the economic, environmental and job opportunities arising from better waste management and resource recovery practices
- reduces unnecessary disposal to a minimum
- creates an environment that fosters innovative solutions to avoid generating waste in the first place and provides business opportunities for dealing with unwanted materials
- has all businesses aware of and participating in resource efficiency.

Strategy's aim

The aim of the strategy is to drive a decade of significant improvement in waste and resource management in Queensland. Improvement will be achieved if the commitment and targets of this strategy are substantially met.

The strategy will provide direction for the development of a business plan, which will identify specific actions to enable the strategic objectives to be met. The business plan will identify levels of expenditure, priorities and programs over a rolling five-year plan, with actions directly linked to the objectives identified here.

Goals

The goals indicate where the strategy will be focused for the next decade. They highlight the areas where action is necessary to secure real progress in achieving the vision and in reforming Queensland's waste and resource management practices.

The goals are to:

1. **avoid and reduce waste**
2. **optimise recovery and recycling**
3. **develop sustainable waste industries and jobs**
4. **foster sustainable partnerships.**

Targets

Over the next decade Queensland will:

- reverse the overall trend for an annual increase in waste generation
- reduce the per capita generation of waste (based on the 2008 figure of 2.4 tonnes per person)
- reduce the total amount of, and the environmental impacts from, litter and illegal dumping
- recover and recycle:
 - 65 per cent of municipal solid waste
 - 60 per cent of commercial and industrial waste
 - 75 per cent of construction and demolition waste
 - 15 per cent of higher hazard regulated waste.
- reduce climate change impacts of waste disposal by at least:
 - 33 per cent for household greenhouse gas landfill emissions
 - 50 per cent for total landfill emissions.

Choices for the future

Waste is everyone's responsibility and the Queensland Government will work together with local governments, business and industry, environment groups and the community to develop and deliver a longer-term set of strategic actions.

The actions proposed over the next three years reflect imperatives that stakeholders and the government have identified to date. These include:

- improving waste avoidance and resource efficiency in priority sectors
- optimising and improving resource recovery opportunities
- investing in industry development and jobs for Queenslanders
- taking a collaborative approach and working together to reform waste.

The strategy's goals and targets addressed by each action are also identified. An indicative budget, along with outcomes and, where appropriate, key performance indicators will be developed for the Strategy business plan.

The strategy business plan will demonstrate that the government is committed to actively working with Queensland businesses, industries and communities to reduce their waste and become more resource efficient.

Unless reform is undertaken, business as usual will see waste generation and disposal increase every year. While resource recovery will also increase, it will be on a significantly smaller scale than disposal, and without a long-term plan and focus to drive infrastructure investment and market development.

3.1 Working in partnership

Strategic partners

Waste and resource management in Queensland is not the responsibility of one single organisation. It involves a number of different organisations across a range of roles and responsibilities.

Several Queensland Government agencies have institutional and administrative responsibilities for waste management and resource recovery in the state. Under the new framework, the Queensland Government as a whole has a responsibility to lead by example in the purchase of recycled-content products, as well as in improved waste management and resource recovery planning and decisions.

Individual government departments are responsible for developing strategic waste management plans that reflect the goals and targets of the strategy and for adopting green purchasing standards. The State Procurement Policy (January 2008) currently includes a requirement for departments to set purchasing sustainability targets, including increased use of recycled products.

The Queensland Government is in a position to address some of the perverse incentives that create impediments to the reuse of recovered resources, particularly in its own activities.

The Queensland Government, in conjunction with local governments, is also responsible for regional planning and administration of the *Sustainable Planning Act 2009*. Regional planning has a significant impact on future infrastructure development.

State government

Department of Environment and Resource Management

The Department of Environment and Resource Management (DERM), along with local governments, administers and enforces the *Environmental Protection Act 1994* and its various instruments.

DERM also implements the Queensland Government's responsibilities under the National Packaging Covenant, gives effect to the National Environment Protection (Used Packaging) Measure by enforcing non-compliance with provisions of the Environmental Protection (Waste Management) Regulation 2000, and chairs the Jurisdictional Projects Group established to consider funding applications under the covenant arrangements.

Under the new framework, DERM will also:

- continue to enforce regulatory provisions
- build on the successes achieved by programs established as part of the National Packaging Covenant, such as Public Place Recycling
- roll out targeted programs and funding arrangements to meet the goals and targets of the strategy
- work cooperatively with other sectors in areas such as data collection and information sharing
- ensure any adverse environmental impacts arising from the generation and management of waste are minimised and/or appropriately managed
- integrate the goals and targets of the strategy with existing programs
- work with other sectors to achieve the goals and targets of the strategy.

Department of Employment, Economic Development and Innovation

The Department of Employment, Economic Development and Innovation (DEEDI) is the Queensland Government's lead agency for industry and business development, regional and rural development, science, technology and innovation, and employment.

DEEDI is responsible for preparing and implementing a Queensland Cleantech Industry Development Strategy (QCIDS).

The focus of QCIDS is on advancing industry development, setting a vision and generating a coordination mechanism for measures that the Queensland Government can introduce or maintain. The waste and recycling industry makes up a significant proportion of the broader cleantech industry in Queensland.

Department of Infrastructure and Planning

The Department of Infrastructure and Planning (DIP) is responsible for delivering integrated planning and infrastructure solutions for Queensland, and building the capacity of local governments. DIP is responsible for the development of regional plans and local government model local laws.

Other Queensland Government departments

Other Queensland Government departments, such as the Department of Transport and Main Roads and Department of Education and Training have a significant role to play in improving practices and promoting recycling and recycled-content product use in the construction of civil infrastructure, such as roads, bridges and buildings.

Case study

For the Wacol to Darra section of the Ipswich Motorway upgrade the following recycling activities have been reported:

- overall recycling rate of 94 per cent for the project
- recycled over 11,160 tonnes of concrete
- recycled over 370 tonnes of steel
- recycled over 1,772 tonnes of asphalt

In 2009, the Department of Public Works released the Recycling Policy for Buildings and Civil Infrastructure. This policy aims to promote sustainability in the built environment through the improved utilisation of resources and reduced pressure on landfill waste sites. The policy sets a target of 40 per cent recycling of each material type by weight.

The Queensland Government's objective is to ensure that all practical and cost-effective opportunities for recycling and reuse of materials used in building and civil infrastructure projects are implemented. All Queensland Government departments and government-owned corporations and companies are required to

develop a resource (waste) recovery program for all recyclable materials in any significant government building or form of infrastructure that is being demolished or redeveloped.

Local government

Local governments have the primary role of providing waste and recycling services to households, and in providing waste management and recycling education and awareness to residents and schools. Local governments also provide public place recycling services and litter prevention and enforcement. Local governments also have a regulatory role in enforcing requirements in relation to waste management activities in their areas. Almost every local government in Queensland is responsible for at least one landfill facility and several transfer stations.

There are regional local government organisations that help local governments plan for regional waste and resource management activities. These groups are also a valuable information sharing service and provide the ability for better coordination of services, communication, awareness and training across the region.

Successful waste management and improved resource recovery requires coordinated planning and action at local and regional levels. Under the new framework, local governments will be encouraged to:

- work collaboratively with other local governments to address regional issues
- develop and implement strategic waste management plans to meet the goals and targets of the strategy
- establish data collection systems to accurately report on the amount, source and type of waste and recyclables



- engage with local industry and community to increase awareness of waste issues and sustainable behaviours
- provide sustainable waste and recycling services to local communities
- explore options for purchase of recycled-content products.

Other states

Policies, programs and legislation in other states have the potential to impact on the way waste and resource management is undertaken in Queensland. Many waste and resource recovery companies, as well as the vast majority of the business and industry sector, operate in more than one state.

This has implications for the ease of doing business across state borders. Where possible and relevant, Queensland's policies, programs and legislative reforms will be consistent with those of other states where there is likely to be the greatest potential impact.

Australian Government

National waste management issues are coordinated through the Environment Protection and Heritage Council (EPHC), which comprises membership from all state and territory environment ministers. The Commonwealth environment minister chairs EPHC.

The Australian Government is an important strategic partner for the Queensland waste reform process, as a number of priority issues for Queensland are also issues of national concern under EPHC. The Australian Government also has responsibility for international waste management issues, such as meeting Australia's signatory obligations under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

In November 2009, EPHC released the National Waste Policy: Less Waste, More Resources. This policy sets a clear agenda on waste up to 2020. The objective of the policy is to avoid the generation of unnecessary waste, reduce waste going to landfill, manage waste as a resource, and ensure that waste disposal is done safely to protect human health and the environment.

The policy sets six key directions and identifies 16 priority strategies that would benefit from a national or coordinated approach that will be progressed by collaborative or individual action by states and territories up to 2020.

Essential partners

Waste and resource recovery industry

The waste and resource recovery industry provides collection, sorting and processing, and disposal services. Some companies are contracted to local government to undertake household waste and recycling collection services and, in some cases, transfer station and landfilling operations.

Operators within this sector vary greatly in size and service provision, ranging from large multinational companies offering a wide range of services, to small specialised service providers.

Queensland's waste and resource recovery sector is vital to Queensland achieving the goals and targets of the strategy over the next decade.

The waste and resource recovery sector faces a number of challenges, including securing appropriate sites for future infrastructure needs and certainty of raw material inputs.

This sector will be encouraged to:

- work with commercial, manufacturing and construction sector companies to provide options for improved resource recovery
- adopt continuous improvement for service provision
- provide education and awareness for employees and customers regarding waste avoidance and appropriate segregation to optimise resource recovery
- work with local governments and commercial customers to develop sustainable waste management and resource recovery contracts
- work with the Queensland Government to raise planning requirements for future infrastructure well in advance of need.

Business and industry sector

This sector includes:

- manufacturers who can influence product design and recyclability and the purchasing of recycled materials as inputs into product manufacture
- retail and service industries who can influence the availability of more sustainable services, improved management practices for their own wastes, and the purchasing and recycling behaviour of businesses within the sector.

A number of businesses already undertake recycling and resource recovery of the waste they generate, and also influence how consumers can recycle by providing recyclable products for the market.

The business sector is an important partner in meeting the targets of the strategy—influencing the design of products in the market, the availability of services, end-of-life product management, and purchasing and recycling behaviour in offices and retail areas.

Collectively business and industry will be encouraged to:

- investigate opportunities for implementing design for environment (D4E) and waste avoidance initiatives
- undertake research and development to help identify areas for change and improved practice
- implement improved waste management and resource efficiency practices in business
- work collaboratively with government and community sectors
- engage with industry association or government programs designed to reduce waste generation and improve resource recovery practices.

Case study – Golden Circle

- The product to packaging ratio has decreased from 9.9:1 to 11.8:1.
- The total weight of non-recyclable materials has reduced from 1350 tonnes to 3.6 tonnes per annum, a reduction of 99.7 per cent.
- Tetra 1 L packs that are not recyclable have been replaced with polyethylene terephthalate (PET) containers, which is fully recyclable.
- 99.97 per cent of packaging materials used by Golden Circle are recyclable as are 98.57 per cent of packaging materials used by Original Juice Company (a subsidiary of Golden Circle).

Community

When provided with the right information and good systems to allow behavioural change, the community demonstrates improved practice. Perhaps the most well-known and obvious example of this is household recycling. Recycling has really only been easily available to households in Queensland since the early 1990s. Since its introduction, over 90 per cent of households now have access to kerbside recycling and it is a well-supported part of today's everyday household activities.

Extending recycling beyond households into workplaces and public places, while starting to happen, requires a concerted effort from state and local government, business and the commercial sector, and the waste and resource management industry.

Changing consumer behaviour will take a greater effort and consumers will rely increasingly on industry to develop products with a lower environmental impact and governments to provide a framework conducive to waste avoidance and resource recovery.

In order to meet the targets of the strategy, individuals will be encouraged to:

- avoid generating waste wherever possible
- participate in available recycling and resource recovery schemes
- seek information on the environmental impacts of their purchasing decisions
- change unsustainable consumption behaviours
- question manufacturers on product sustainability, for example, product end-of-life management, excess packaging and improved recyclability.

Academic and research community

As the actions in the strategy reform Queensland's waste and resource management environment, research and innovation into new technologies, practices and products is essential. Partnerships with tertiary institutions and research organisations will provide crucial information on future directions and priorities.

Academia and the research community will be encouraged to:

- work with the Queensland Government to support delivery of waste avoidance and recycling programs, including:
 - projects to address barriers that are impeding operation or efficiency of new or existing resource recovery technology
 - help to refine feedstock from waste materials that can be incorporated into products
 - provide comparative research into environmental impacts of alternative uses for particular materials and the different resource recovery and treatment options that are currently available
- work with business and industry sectors to identify potential solutions to waste generation issues.

3.2 Strengthening the legislation

Strengthening Queensland's waste and resource management legislation involves a substantial amount of work, including preparing a new Act and regulations and amending existing legislation. The *Environmental Protection Act 1994* deals primarily with protecting the environment and managing the pollution impacts of activities—including managing the impacts of waste after it has been generated.

There is little ability under the current framework for effectively dealing with actions associated with waste avoidance, product stewardship and resource recovery and efficiency.

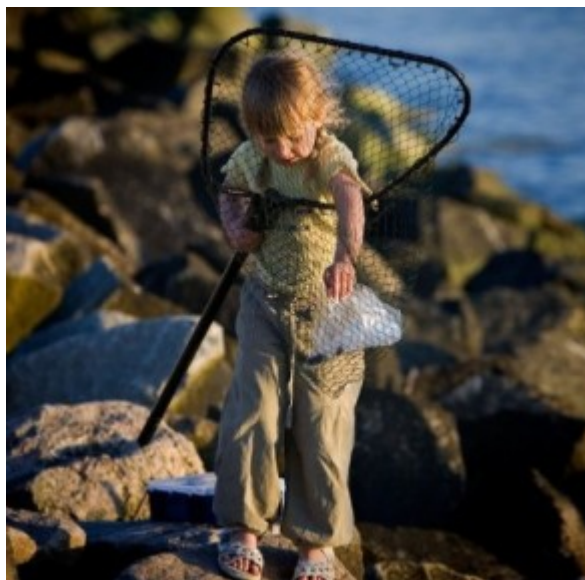
Subordinate regulations made under the *Environmental Protection Act 1994* give effect to various aspects of the Act. This includes specific management requirements for certain wastes, such as clinical and related waste, waste tracking and local government administration of waste management activities within their local government area.

Regulations also identify waste management for environmentally relevant activities, such as landfills, regulated waste storage and treatment, and transfer stations. This is for the purposes of licensing and conditioning to reduce the environmental impacts of the activity and outlining the requirements for state and local governments to prepare and implement strategic waste management plans.

The development of a new Act and associated regulation will provide the necessary head of power to deliver improved outcomes for waste and resource management in Queensland. It will clearly define the legislative options for managing end-of-pipe, front-end and whole-of-life impacts. This approach is consistent with the framework used in other states.

A new Act could include provisions relating to:

- strengthened application of the waste and resource management hierarchy and supporting principles
- requirements for the Queensland Government to maintain and review a strategy
- priority products, including identification of priority products; development of product stewardship programs for priority products; and publication and review of a priority product statement
- strengthened requirements for the development and implementation of state and local government strategic plans
- the introduction of an industry waste levy to change behaviour
- requirements for resource recovery from waste streams prior to disposal
- phased-in disposal bans for priority products
- establishment of a Waste Avoidance and Resource Efficiency Fund and



- strengthened resource recovery reporting requirements.

Amendments to the *Environmental Protection Act 1994* will strengthen litter offence provisions and provide for third-party public reporting of vehicle-related litter offences.

New regulations would give effect to new provisions in the Act while strengthening existing provisions to ensure a more contemporary and flexible approach to waste management in Queensland. The new regulatory provisions will provide more scope to adopt a 'fit for purpose' approach rather than the current 'one size fits all'.

The proposed legislative reforms will:

- assist in achieving the goals and targets of the strategy
- complement delivery of the actions and programs
- help to regulate illegal activities more effectively and provide a level playing field

- help to manage priority and higher hazard regulated wastes more effectively
- modernise Queensland's waste and resource management legislation to provide clarity for regulators, business and industry
- provide more consistency with other states
- provide a more flexible approach that can readily keep pace with changes in technology.

The Queensland Government will introduce an industry waste levy as a price signal to change disposal behaviour. The key features are:

- the levy will apply to the following waste streams:
 - commercial and industrial waste (C&I)
 - construction and demolition waste (C&D)
 - regulated waste
 - contaminated and acid sulphate soils
 - liquid and sludge wastes
- Municipal solid waste (MSW), which includes household kerbside-collected and self haul waste, as well as local government wastes from park and street bin maintenance will not attract levy payments
- regulated waste will be classified as lower and higher hazard, depending on the hazard characteristics of the waste
- a differential levy will apply to lower and higher hazard regulated waste

Waste stream	Disposal levy amount
Commercial and industrial waste	\$35 per tonne
Construction and demolition waste	\$35 per tonne
Contaminated and acid sulphate soils	\$35 per tonne
Lower hazard regulated waste	\$50 per tonne
Higher hazard regulated waste	\$150 per tonne
Municipal solid waste	\$0

- the levy will commence from 1 July 2011
- a levy collection zone will be established
- the levy collection zone will cover 35 local government areas

Further details on the proposed industry waste levy model can be found in the support document *Proposed Industry Waste Levy Consultation Draft* at <www.derm.qld.gov.au>.

3.3 Increasing investment—growing industry and jobs

In order to provide the means to achieve improved practices, people must have the ability to recycle and companies collecting recyclable materials must have markets for the product.

Current disposal costs are a deterrent to industry investment in resource recovery infrastructure and in expansion into regional areas of the states.

Feedback from the 2007 discussion paper *Let's Not Waste Our Future* indicated that, without pricing reform and stronger policy direction from government, industry would not invest in new or expanded facilities in Queensland.

The Queensland Government will work with relevant industry sectors to foster the strong institutional and infrastructure foundations necessary for increased investment, employment and innovation in waste and resource management in Queensland.

Investment will be encouraged for a range of operations and technologies suited to different materials, generation sources and geographic locations, and at a sufficient rate to attract the necessary viable investment.

Priority areas and products will be identified, with an emphasis on the areas that are currently under-represented as indicated by the resource recovery data reported to DERM.

Programs will also be developed to strengthen markets for recycled products. Strong markets currently exist for some recovered materials, such as plastic, aluminium, paper and cardboard, timber and concrete.

However, as improved and expanded recovery programs take effect and new challenges are presented from product take-back initiatives, market gaps are expected to develop.

Developing new markets for recycled products is essential for achieving the resource recovery targets in the strategy. It will also help prevent increased illegal dumping or ultimate disposal of this material if markets cannot meet supply.

Investment in technology and infrastructure will be monitored, particularly in the three-yearly review periods. The pace at which systems are adopted, and the type of systems established, will hinge on decisions by local governments and other stakeholders on the capacity of new technologies to cost-effectively meet community expectations.



3.4 Engagement, information and knowledge management

Engagement and education are fundamental to achieving behaviour changes that will translate into better decisions and long-term improved practices. The most lasting outcomes arise from programs with strong core messages, local level engagement and participation, which are linked to the provision of supporting infrastructure.

Stakeholder buy-in and ownership is essential. To this end, the Queensland Government is proposing to establish a Stakeholder Advisory Committee (SAC) to provide advice to the Minister for Climate Change and Sustainability and DERM on waste and resource management priorities for Queensland.

The SAC will comprise representatives from key stakeholder sectors, including local government, the waste and recycling industry, environment and community organisations, general business and state government.

Building research and development capacity will be an important aspect of information and knowledge management. The Queensland Government will fund specific research and development projects to achieve the goals and targets of the strategy, with an emphasis on the priority focus areas.

Many submissions resulting from the 2007 discussion paper highlighted the poor quality of Queensland's waste data. Clearly, robust data collection and reporting systems need to be among the priority actions. Good quality data underpins Queensland's waste reforms. Without it we have no way of measuring our progress and achievements towards the targets in the strategy. While we do not need to wait for accurate data to commence the reforms—the general trends are obvious—we need to address the issue as soon as possible.

In order to establish better data collection systems, the Queensland Government needs to establish significant partnerships with local government, the waste and resource recovery sector and specific industry sectors to develop appropriate methodologies and reporting mechanisms.

Some of the initiatives that may be implemented to help gain a better understanding include:

- conducting composition audits on household waste to identify priority products and recoverable materials
- conducting composition audits of commercial and industrial (C&I) and construction and demolition (C&D) wastes

being disposed of to help measure recovery performance

- undertaking an infrastructure analysis across Queensland to identify current capacity and gaps in management and processing capacity
- developing and introducing standard methodology for measuring and reporting on achievements from public place and event recycling
- developing and introducing a standard methodology for measuring and reporting on local government and private sector waste disposal and resource recovery
- establishing a methodology for surveying litter and illegal dumping quantities
- undertaking a characterisation study for regulated waste generation and management.



4. Taking action

This draft strategy and the proposed legislative reforms challenge the old way of thinking about what has traditionally been considered as waste.

Priority will be given to sectors and areas with the greatest need and potential to achieve the greatest gains and cost effective improvements over the next decade.



Photo supplied courtesy of Volvo Commercial Vehicles Australia

The proposed program areas and actions are designed to help us:

- conserve our increasingly finite resources
- create investment opportunities and new 'green' jobs in waste management and resource recovery
- reduce waste management costs
- increase the life of our landfills
- help mitigate the climate change impacts of waste generation and disposal.

Householders, businesses, industry, and state and local governments must all do their bit to avoid and reduce waste and, for the wastes that cannot be avoided, improve management practices.

The highlighted actions recognise that Queensland has to take some immediate and clear steps to reform waste management.

This section outlines the key areas for action and some of the priority programs.

Strategic focus

- waste avoidance
- climate change
- regional development
- partnerships
- infrastructure
- commercial and industrial sector
- construction and demolition sector

Objectives

1. Avoid and reduce waste
2. Optimise recovery and recycling
3. Develop sustainable waste industries and jobs
4. Foster sustainable partnerships.

The following outlined actions aim to address the strategic focus areas and priorities of the Queensland Government over the next three years as well as the ongoing and future program areas for further consideration and development.

The actions reflect the current situation and knowledge; however, changing circumstances, national priorities or information may be catalysts to review the priorities and redirect focus.

It is essential to the Queensland Government that this strategy is not only about direction, but also about leadership and delivery.

Priority strategic actions

The strategy is designed to drive a decade of significant improvement in managing Queensland's waste and recovered resources. The strategy is a new take on an old theme—the waste and resource management hierarchy.

The strategy is underpinned by empowering and supporting local government and the private waste management sector, providing education and public information, and encouraging manufacturers who produce goods that end up as waste to take more responsibility for their products at the end of their life.

1. Waste avoidance

Under the waste management hierarchy, waste avoidance is the first step. By reducing waste generation in the first place and using resources more efficiently, society's reliance on unnecessary waste disposal will be reduced.

The Queensland Government can influence waste avoidance through engagement in national processes, such as implementation of the National Waste Policy objectives and working collaboratively with the Australian Government on developing product stewardship legislation.

Challenges and priorities

Waste avoidance needs to be approached from the design and manufacturing phase as well as the consumption phase. Waste avoidance is about how products are consumed, and developing more efficient processes and redesigning products so that waste is not generated in the first place.

The challenge facing the Queensland Government is that many of the products available are imported, so they are designed, manufactured and packaged somewhere else. While the Queensland Government cannot influence imported products on its own, action can be taken to help avoid waste generation for products that are manufactured in Queensland.

There is a need for producers to design products and services with a view to avoiding as much as possible end-of-life waste, and adopt cleaner production and resource efficiency processes. Product stewardship is one way of doing this.

The priority is to promote a culture of waste avoidance and resource efficiency among manufacturers and consumers and to encourage consumers, businesses and government to choose low-waste products and services – both in the manufacture of the product and in managing it at the end of its life.

Setting targets

Measuring how much waste has been avoided is a difficult task. One way we can measure waste avoidance is by calculating the reduction in overall waste generation (measured as recovered plus landfilled).

We also need to take into account population and retail growth, as both influence waste generation. For the purposes of this draft strategy, two waste avoidance targets are proposed.

Waste avoidance targets

1. Reverse the overall trend for an annual increase in waste generation.
2. Reduce the per capita generation of waste from the current 2.4 tonnes per person.



Do you think these targets are an appropriate measure for waste avoidance...

Can you suggest other targets or measures for waste avoidance...

2. Resource recovery

Resource recovery means finding uses for waste by way of reuse, recycling, processing or energy recovery. Resource recovery can occur through source separation of recoverable materials (such as household kerbside recycling) or from a mixed load of waste at a transfer station, treatment facility or landfill (such as using a dirty materials recovery facility (MRF) to separate recyclable material from waste prior to disposal).

The environmental benefits of resource recovery generally result from reduced waste disposal and offsetting the use of virgin, and often finite, resources. The benefits include conserved resources and landfill space, reduced greenhouse gas emissions, less air pollution and water savings.

Challenges and priorities

A challenge is to optimise resource recovery despite unstable commodity prices, increasingly complex waste materials and often large distances to markets. At the household level, kerbside recycling has generally been embraced as a community norm. However, more materials can be beneficially recovered.

Outside the home, waste generators have not embraced recycling to the same extent and still send large amounts of recoverable materials to landfill. Increasing resource recovery from commercial, industrial, construction and demolition wastes is a significant challenge.

The development of local markets for recovered materials is essential for increasing resource recovery. Stable markets for recovered materials underpin private investment in recovery infrastructure.

The continued development of resource recovery infrastructure and technologies is a priority for the Queensland Government, particularly for larger regional centres.

Product stewardship and extended producer responsibility will be key tools in improving resource recovery for priority products and materials. The Queensland Government believes that price signals also have a role to play in improving resource recovery.

Price signals, such as an advance disposal/recycling fee to generate funds for the improved recovery and management of priority or problematic wastes, or a deposit/refund system to provide an incentive to consumers to return end-of-life products for recycling could be applied.

An advance disposal/recycling fee (ADF) is a charge that is included in the purchase price of the product in order to provide funds for appropriate management of the product after it has been used. Usually under an ADF approach, where the manufacturer or sector is a party to or has their own effective product stewardship scheme, they are released from the need to apply the ADF.

An advance disposal fee example – Florida

On 1 October 1993, Florida instituted a two-year advance disposal fee program, introducing a fee of one cent on a variety of containers. Exempted from the tax were containers made of plastic, plastic-coated paper and glass that had average recycling rates of at least 50 per cent, glass containers having 35 per cent recycled content and plastic containers having 25 per cent recycled content.

Paper and plastic packaging were also subject to the ADF, with exemption possibilities similar to those for glass and plastic containers. Aluminium and steel cans had been determined to already fulfil the 50 per cent recycled content requirement and were exempt from the tax. To further encourage recycling, the tax was doubled the second year it was in effect.

The ADF was introduced in an effort to improve recycling rates. At least two recycling companies established recycling facilities in Florida as a direct result of the ADF.

A deposit/refund scheme applies an additional charge to the price of a product, the majority of which is returned to the consumer in the form of a refund when the product is presented for recycling. Container deposit legislation, such as the scheme operating in South Australia, is a form of deposit/refund scheme.

The introduction of incentives to encourage and optimise resource recovery from the household and business sectors is another priority. With only 33 per cent of waste being recycled, a significant amount of recyclable material is entering the waste stream for disposal. While infrastructure, such as a dirty MRF, can be constructed on transfer station and landfill sites, source separation is always the best option as it provides a much cleaner and higher-value resource product.

A proportion of the recycling stream will be contaminated—whether knowingly or unknowingly—by materials that cannot be recycled or that cannot be recycled as part of that process. For instance, much contamination comes from plastic bags that are used to contain the recyclable material before being placed in the recycling bin, or from glass products such as light bulbs, drinking glasses and heat-resistant glass being placed in the recycling bin. High levels of contamination in kerbside recyclable materials increase the cost of providing the service.

Setting targets

This draft strategy sets ambitious but achievable recycling targets for the three main waste streams and for higher-hazard regulated waste. The targets have been set following analysis of the data trends and consultation with various local government and waste and resource recovery industry stakeholders.

Progress towards achievement of the targets will be measured in a series of milestones and through comparison with the base case (2008). These targets are aimed at maximising available opportunities for recovering and reusing or recycling materials and end-of-life products. The targets should influence infrastructure planning processes and activities of local governments and be a leading input into Queensland Government initiatives.

The targets represent aggregated outcomes across the whole of Queensland, as it is expected that metropolitan areas will initially out-perform regional and rural areas of the state. The targets are designed to encourage non-metropolitan local governments to work regionally and establish workable targets for continuous improvement and innovative local solutions, which will achieve the goals and aims of the strategy.

A range of programs and initiatives will be available to rural and regional Queensland to support alignment with the goals and targets of the strategy. Developing innovative waste management technologies, their accessibility and performance at recovering resources, will be key factors in meeting the targets. The proposed recycling targets are outlined in the table below.

Recycling targets				
Source	2008 base case	By 2014	By 2017	By 2020
Municipal solid waste	23	50	55	65
Commercial and industrial waste	18	40	50	60
Construction and demolition waste	35	50	60	75
Higher-hazard regulated waste	1	5	10	15

Table 1— Key resource recovery and recycling targets



Do you think that the recycling targets are appropriate...

Do you think there should be targets for other specific streams (e.g. for green waste)...

3. Disposal

When discussing disposal in Queensland, we largely mean landfilling. While well-designed and engineered landfills can be operated with minimal environmental and social impact, many landfills outside metropolitan Queensland are not designed, constructed or operated to best available practice.

Challenges and priorities

There is a challenge to ensure adequate accessible landfill capacity to safely manage the residual waste after the resource value has been recovered. Bioreactors hold a unique place in managing waste and the difference between the recovery of energy from the biodegradable fraction and the disposal of inorganic wastes must be acknowledged.

In implementing the strategy, the Queensland Government will be mindful of the potential impacts of its policies on illegal dumping.

The Queensland Government will work with local governments to assess infrastructure needs, including the consolidation and replacement of small rural landfills, where necessary, with transfer stations. Waste can potentially be separated at these transfer stations before being transported in bulk to recycling centres or regional landfills.

There is a need for a statewide planning framework to deal effectively with where to site waste disposal and resource recovery infrastructure to meet future infrastructure needs. This is particularly necessary in areas of high growth, such as south-east Queensland, where population growth places competing and increasing pressures on available and suitable waste and resource recovery infrastructure location.

As part of the remake of the waste management legislation, the Queensland Government could consider the inclusion of provisions declaring waste management activities as an essential service. Following on from this, the Queensland Government could work in partnership with local government and relevant stakeholders to prepare a high-level regional waste infrastructure plan for south-east, central and north Queensland regions.

Many Indigenous communities in Queensland either receive no waste management services or far more limited services than the rest of the Queensland community. The Queensland Government will implement programs aimed specifically at improving waste management services and at building local capacity to recycle.

Setting targets

In the first instance, this draft strategy proposes to target a minimisation of the environmental impact of disposal—and, in particular, unlawful disposal.

Litter and illegal dumping are the most obvious evidence of wasteful and irresponsible resource use. The target's focus is away from solely cleaning up litter once it has been dumped, to preventing its dumping in the first place. The draft strategy does not propose a reduction target at this stage as there is not currently good baseline data on which to establish a target.

Disposal target

Minimise the environmental impact of waste disposal by reducing litter and illegal dumping.



Do you think we should have a reduction target for litter and illegal dumping...and if so, what should this target be...

Should we have a landfill diversion target...

If so, can you suggest an appropriate diversion target...

Actions

Program	Description	Target date for commencement
Queensland Government		
Strategic action—Stakeholder Advisory Committee	<p>The Queensland Government will establish a Stakeholder Advisory Committee (SAC). In the first 12 months the SAC will provide advice regarding implementation of the strategy and legislative reforms. Following the implementation phase, the SAC will evolve to provide advice regarding program funding priorities and program design.</p> <p>The SAC has no statutory function and is an advisory group not a decision-making body.</p>	Ongoing
Action 1—Toward a resource efficient government	<p>The Queensland Government is a significant generator of commercial and industrial (C&I) and construction and demolition (C&D) waste across its many operations, including hospitals, offices, schools, national parks, emergency services, correctional facilities, and road and major infrastructure construction and maintenance.</p> <p>The Queensland Government will lead by example and ensure that government actions are based on the goals and targets of the strategy.</p> <p>All government departments will be required to prepare and implement strategic waste management plans. These plans will be required to include targets for the purchase of recycled-content products, recycling and actions to avoid waste generation and disposal. Departments will also be required to report on the use of recycled-content product, such as recycled aggregate in government works programs.</p>	2011
Action 2—Statewide litter prevention strategy	<p>The Queensland Government will prepare and implement a statewide litter prevention strategy that outlines the long-term strategic actions to reduce litter and raise awareness of the impacts of litter in Queensland. Programs that could be included in the strategy include:</p> <ul style="list-style-type: none"> • introducing a public reporting system for littering from vehicles • implementing a ban on the release of lighter-than-air balloons from government and government-sponsored events • working with retail associations to reduce the use of plastic shopping bags and develop awareness information on the impacts of plastic bag use and opportunities to recycle bags. There could be potential to partner with interested retailers to trial different approaches and plastic bag alternatives • support programs, such as Adopt-A-Road, Clean Beach Challenge, Clean Site, Tidy Towns and Clean Up Australia Day • working with the Australian Catalogues Association and community newspaper publishers and distributors to reduce the incidence of unwanted advertising material and community newspapers from becoming litter. 	2011
Action 3—Expand the “Do the right thing, use the right bin”	The Queensland Government will expand the current public place recycling program to allow Queenslanders access to	Ongoing

Program	Description	Target date for commencement
public place recycling program	more recycling bins when they are away from home. This expansion will involve the installation of recycling facilities into additional shopping centres, sporting venues, major events, theme parks, workplaces and schools.	
Local government		
Strategic action—Local government reference group	The Queensland Government will establish a local government reference group to provide advice on priority areas and the design of programs to best meet the needs of local government, recognising issues such as regional differences and contractual obligations.	Ongoing
Action 4—Strategic waste management planning	The Queensland Government will work with, and provide financial assistance for, local governments to prepare and implement strategic waste management plans that are consistent with the goals and targets of the strategy. Regional waste management planning will be encouraged where practical.	2011
Action 5—Improvement and performance payments	The Queensland Government will establish a scheme to reward local governments where there is improved performance against specified priorities and performance outcomes. This scheme aims to provide an incentive to local governments to further improve waste management and resource recovery practices. An advisory group will be established to develop the guidelines, priority targets and performance measures for the scheme, as well as to establish the payment formula.	2012
Action 6—Local government assessment and mitigation program	The Queensland Government will establish an assessment and funding program to help local governments assess the environmental risks and infrastructure needs of small to medium sized facilities. In partnership with local government, application and assessment guidelines and program funding criteria will be developed.	2010
Action 7—Alternative waste treatment technology	The Queensland Government will provide assistance to local governments considering alternative waste technologies by establishing assessment guidelines to aid decision making.	2011
Action 8—Orphan and historical waste removal	The Queensland Government will establish a program to assist local governments with the cleanup and removal of historic wastes, such as abandoned vehicles in remote areas of the state or for sites with accumulated illegally dumped waste, such as tyres and builders' rubble.	2011
Action 9—Enhanced litter and illegal dumping compliance program	The Queensland Government will work with local governments to identify litter and illegal dumping hot spots and partner with local governments through regional illegal dumping squads.	2010
Action 10—Indigenous council area waste removal and litter program	The Queensland Government is committed to reducing the incidence of illegal dumping across Queensland and will work in partnership with Indigenous councils to address the environmental and social issues of illegal dumping occurring on Indigenous council land. The objectives of the program are to: <ul style="list-style-type: none"> • clean-up illegally dumped material • assist with litter prevention infrastructure and awareness • raise education and awareness of issues associated with 	2011

Program	Description	Target date for commencement
	<p>illegal dumping to help deter this activity</p> <ul style="list-style-type: none"> • maximise recovery and recycling from the illegally dumped materials (where possible)—for instance, car bodies can be recovered and recycled • foster relationships between Aboriginal Councils, state and local government, the waste and recycling sector and community and environment groups. 	
Industry development		
Strategic action—Competitive grant program: industry investment and infrastructure program	<p>The Queensland Government will establish a competitive grants program to encourage and facilitate industry investment in infrastructure and market development. Priority funding areas may include:</p> <ul style="list-style-type: none"> • regional infrastructure and market development for recovered concrete, used glass, end-of-life tyres, organic materials • establishing opportunities for the recovery and use of particle board and low-value timber recovered from mixed wastes • developing processing capability and markets for end-of-life agricultural plastic mulches and irrigation tape. 	Ongoing
Action 11—Market development for recycled organic products	<p>The Queensland Government will work with the organics processing industry to help develop markets and uptake for recycled organic products.</p>	2011
Action 12—Regional resource recovery support programs	<p>The Queensland Government will undertake 25 strategic projects in regional Queensland aimed at reducing waste disposal, improving resource recovery and creating 'green' jobs in regional areas. Priority areas will include organics processing, material recovery facilities, establishing strategic regional resource recovery infrastructure, local market development and waste processing for construction waste.</p>	2012
All sectors		
Strategic action—Design for Environment (D4E)	<p>This program will encourage product development and design professionals to use sustainable product design across the entire lifecycle of the product.</p> <p>The D4E program may include initiatives, such as:</p> <ul style="list-style-type: none"> • regular forums and information for each sector • pilot projects and partnerships • funding development of design tools • sponsorship of events and awards • showcasing leading D4E product designs. 	2011

Program	Description	Target date for commencement
Strategic action—Identification of priority products	<p>The Queensland Government will develop a process for identifying priority end-of-life products for action.</p> <p>This initiative will ensure that recyclable products and materials are not disposed of in landfill when there are clear and viable alternative uses.</p> <p>It will reduce the amount of heavy metals and other toxins in Queensland landfills and the environment. Products such as batteries, electronic waste and fluorescent lamps contain toxic metals. For example, fluorescent lights contain mercury, a powerful neurotoxin that can be toxic in landfill. It is an international substance of concern, and governments need to carefully manage mercury emissions to limit any potential for it to contaminate the environment.</p>	2010
Strategic action—National projects	The Queensland Government will continue to work with the Australian Government and states and territories on national priorities, including implementing the National Waste Policy and developing a national product stewardship framework.	Ongoing
Strategic action—Research and development	The Queensland Government will work with various sectors, industry bodies and associations to identify research and development opportunities for innovative technologies, processes and products and to support the work of Cooperative Research Centres and similar entities.	Ongoing
Action 13—Community recycling champions	The Queensland Government will provide funding for five recycling champions. This program aims to foster community leadership to encourage innovative local recycling and management solutions. It also aims to provide community-based education and advocacy on waste avoidance and resource recovery	2011
Action 14—Collection program for priority products	This action will involve several program areas. The initial phase will involve an infrastructure assessment to identify current and future collection infrastructure needs and considerations. The second phase will include an infrastructure roll-out.	2011
Household and community sector		
Action 15—Household green and organic waste collection	The Queensland Government will work with local governments and the organics processing industry to design a series of different green and organic waste collection options (for example, a third kerbside collection bin for green waste only; provision of a kitchen food waste bin and collection of green and food waste using an existing two-bin system with collection in the alternate week to the recycling bin). These options will be trialled in selected areas across the state.	2011
Action 16—Household waste avoidance strategy	Consumer purchasing decisions play a central role in determining the amount of waste that is generated, recycled and disposed of. However, in order for consumers to make better choices, the information needs to be available to help make these decisions. The Queensland Government will work with local governments, industry associations and products manufacturers to raise consumer awareness of the issues associated with wasteful consumption and to provide information about the options available to them.	2011

Program	Description	Target date for commencement
Action 17—Target 150	<p>The Queensland Government will work with local government, the waste and resource recovery industry and community groups to increase household recycling and decrease household waste disposal to 150 kg per person within 10 years. The current household recycling level is 64 kg per person and the current disposal level is 267 kg per person.</p> <p>This program may include initiatives such as:</p> <ul style="list-style-type: none"> • RecycleSmart education and awareness to inform householders of the problems with contamination in the recycling bin, the materials that can be recycled and useful tips for recycling smarter • assessing options to provide people with enhanced capacity to recycle more and better (e.g. smaller waste bin, larger recycling bin) • investigating incentive programs to motivate increased household recycling of priority products such as end-of-life televisions and computers, batteries and fluorescent lights. 	2011
Action 18—Plastic bag management program	The Queensland Government will work with retailers, consumers and community groups to help reduce the use and environmental impact of plastic shopping bags.	2012
Action 19—Community gardens project	The Queensland Government will work in partnership with local governments, compost manufacturers and environment and community groups, such as Greening Australia and organic farming associations, to establish community garden and permaculture projects. The program could include competitive grants funding for communities to plan and design gardens and purchase equipment and plants, etc. The project will help begin behavioural change in households about the way we view food and reduce the amount of food waste generated.	2012
Commercial and industrial sector		
Action 20—Online resource exchange register	The Queensland Government will establish an online database and resource exchange register to link business to a recycled-content product directory. An awareness campaign will be undertaken to promote then online database. The resource exchange register will help businesses reduce the amount of waste they dispose of by listing the material online to potentially become an input for another business.	2010
Action 21—Business waste avoidance and resource recovery program	The Queensland Government will assist 5 000 Queensland businesses to put in place practices and install infrastructure and equipment to help increase recycling and reuse, reducing the amount of waste generated and disposed to landfill.	2010
Action 22—Regulated waste program	The Queensland Government will establish a regulated waste research and development program with a focus on avoidance, treatment to reduce the hazard characteristics and alternative end-uses for this waste.	2011
Construction and demolition sector		

Program	Description	Target date for commencement
Action 23—Resource recovery and awareness	The Queensland Government will work with the construction and demolition sector to develop a waste avoidance and resource recovery awareness program. This will help developers, builders, architects and planners minimise waste generation and optimise resource recovery during refurbishment, planning, building and occupation.	2011
Action 24— Working with developers to achieve waste avoidance and resource recovery	The Queensland Government will work with developers and peak bodies to raise awareness of the costs associated with resource inefficiencies and wastage and the actions that can be taken to improve waste avoidance and recycling.	2010
Action 25—Timber and wood waste product stewardship	The Queensland Government will work with peak timber industry organisations to find sustainable solutions to help improve timber and wood waste recycling, improve community and potential end-user awareness and reduce unnecessary wastage and disposal.	2011
Measurement and performance		
Strategic action—Improved data collection and reporting	The Queensland Government will reform the legislative framework to improve the current data collection and reporting methodologies.	2011
Action 26—Measuring community behaviour and attitudes	The Queensland Government will undertake biennial community surveys to measure people's attitudes on waste management, recycling, litter and their response to actions taken to improve practices.	2012

Glossary

Commercial and industrial waste (C&I)	Waste that is produced by business and commerce. It includes waste from schools, restaurants, offices, retail and wholesale businesses, hospitals, primary production and manufacturing industries.
Construction and demolition waste (C&D)	Inert waste that is produced by construction, renovation or remodelling, or demolition activities and has the potential for resource recovery. C&D material may include plastic and cardboard packaging, material off-cuts, timber, steel, concrete and recovered appliances, doors and windows, taps, roofing iron and tiles and pipe work. Much of this material is able to be recovered for a beneficial use.
Ecological footprint	A resource accounting tool that can measure how much land and water area a person, event, business, city or country needs to produce the resources it consumes and to absorb its waste. The footprint is measured in global hectares.
Global hectares	The global hectare is a measurement of biocapacity of the entire Earth that defines an area of global average productivity. It is used in the measurement of ecological footprint.
Global warming potential (GWP)	A relative scale to enable comparison between greenhouse gases. Gases are given a number based on their effect on the atmosphere relative to carbon dioxide (CO ₂), which = 1. The rating changes relative to the length of time the gas remains in the atmosphere, for example, methane has a GWP of 21 over 100 years, meaning it has 21 times the heating capacity of CO ₂ .
Greenhouse gas	Greenhouse gases in the Earth's atmosphere absorb and re-emit infrared radiation. The Kyoto Protocol lists six major greenhouse gases, which vary in their relative warming effect. The principle greenhouse gases produced by waste in landfill are carbon dioxide and methane.
Higher-hazard regulated waste	Regulated wastes classified as higher-hazard under a proposed new hazard classification system. These wastes require a higher level of control and management.
Methane	Methane is released into the atmosphere from landfills, some agriculture (rice, cattle and sheep), burning biomass, the mining and use of fossil fuels (coal, oil and gas) as well as from natural wetlands. Methane has an atmospheric lifetime of about 10 years.
Municipal solid waste (MSW)	Waste that is generated by: <ul style="list-style-type: none"> • household kerbside-collected and self haul material • local government street sweeping; maintenance of litter bins and public parks and gardens; and water and sewage treatment plants.
Regulated waste	Waste generated from non-domestic sources that is listed in Schedule 7 of the Environmental Protection Regulation 2008, such as acids, oil, batteries, tyres and clinical waste. Regulated waste may be a solid or liquid.
Residual waste	Waste remaining after extraction of any reusable or recyclable materials.
Resource recovery	Broadly means the extraction of useful materials or energy from solid waste.