Waste Authority

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Western Australian Waste Strategy:
"Creating the Right Environment"

March 2012

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In accordance with the *Waste Avoidance and Resource Recovery Act 2007* a copy of this publication in PDF format is available on the Waste Authority website at www.zerowaste.wa.gov.au

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Minister's Foreword

One of the most critical obligations for our society is to bequeath a clean, healthy environment to future generations.

There is no question that improving the State's "waste" performance is central to achieving this obligation.

I am therefore particularly pleased to present *Creating the Right Environment*, the State's Waste Strategy. The development of such an important document has been a lengthy process and represents the culmination of extensive planning and consultation across the Western Australian community.

The Waste Authority received substantial feedback to earlier drafts of the Strategy; demonstrating the complexity of the task, the level of interest and depth of concern to get it right.

Creating the Right Environment sets the long-term strategic directions and priorities for the State with a focus on the next decade. Detail on the delivery of these priorities will be included in the Waste Authority's annual business plan.

Moving to a low waste society will require a cooperative effort across all levels of government, industry, community groups, households and individuals. Waste managers and waste creators will need to adopt new technologies and behaviours to reflect best practice for reducing waste.

Ongoing engagement will be critical to changing the way we think about waste. Through the Waste Strategy's development, the Waste Authority has provided the foundation for long-term engagement with all stakeholders to change our waste behaviours.

The significant reforms required to respond to the challenges for waste management will be implemented over the life of the Strategy and adapted as required. I encourage your continued participation in creating the right environment for action on reducing waste to landfill, and increasing resource recovery and waste avoidance.

Hon Bill Marmion MLA
MINISTER FOR ENVIRONMENT
March 2012

Introduction by Chairman

The Waste Authority's primary responsibility is to deliver a Waste Strategy to guide the State towards action which encourages waste avoidance and maximises the recovery of materials that might otherwise be destined for landfill.

The Strategy is an incredibly important document; arguably impacting on all Western Australians.

Not surprisingly, different people and organisations have different aspirations for this document. I thank all those who contributed to earlier drafts.

I am confident this final Strategy strikes an appropriate balance with targets set at levels which will make a major contribution to waste reduction in the State whilst being achievable.

The Strategy is not intended to provide a fully prescriptive answer to all aspects of waste management in the State (with the details provided in each year's Business Plan).

It has a strong focus on moving Western Australia towards best practice in waste management. The rate at which this is achieved will be strongly influenced by the changes in overall landfill costs, as they provide significant support to the increased diversion of waste from landfill.

It is pleasing to see that recovery rates in Western Australia have increased steadily over recent years, however, Western Australia's performance is still well behind other mainland States.

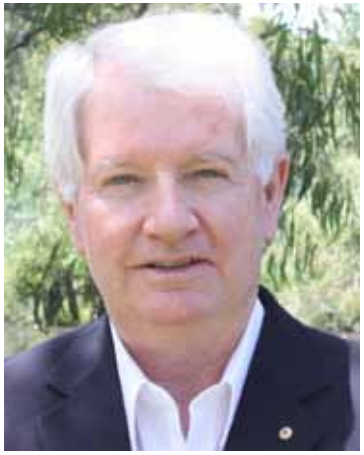
In 2009/10 across Western Australia the municipal waste recovery rate was just 30%. The Strategy aims to achieve a 50% municipal recovery rate by 2015 in the metropolitan region and 30% in non-metropolitan regions. By 2020, these rates will increase to 65% and 50% respectively.

The diversion of construction and demolition waste will also be a particular focus for coming years. Its recovery rate Statewide for 2009/10 was 29%. This Strategy sets targets to increase this rate to 60% by 2015 and 75% by 2020.

The commercial and industrial sector achieved a recovery rate of 46% in 2009/10 and this Strategy will push the sector to 55% recovery by 2015 and 70% by 2020.

The Strategy acknowledges the important roles community, industry, government and others will play in working together to make progress against the outcomes outlined in this Strategy.

I look forward to sharing this critically important journey with you.



Peter Fitzpatrick, AM JP
Chairman, Waste Authority
March 2012

The Waste Authority

The Waste Authority is a Western Australian State Government statutory body established under the *Waste Avoidance and Resource Recovery Act 2007*.

Its primary roles include providing strategic and policy advice to the Government of Western Australia, implementing policies, plans and programs consistent with this Strategy, and applying funding from the Waste Avoidance and Resource Recovery Account to strategic initiatives.

It does this by working closely with the community, government and industry, seeking understanding of their operating contexts and issues and providing information, advice and clear policies for reducing the amount of waste delivered to landfill.

In this leadership role it advocates a team effort to encourage open and frank dialogue with local government, regional councils, peak bodies, the waste management sector and the general public to derive economic and environmental benefits from sound resource recovery practices.

It also works with these organisations to ensure that the community understands the considerable benefits derived by the State from avoiding the generation of waste and recovering resources from the waste that has been produced.

The Waste Authority has prepared *Creating the Right Environment*, Western Australia's Waste Strategy, in accordance with Division 1, Part 4 of the *Waste Avoidance and Resource Recovery Act 2007*. Previous drafts of a Strategy were widely consulted on and the Waste Authority has taken into account those issues raised in workshops and through submissions in preparing this new version.

The Waste Authority is required to develop an annual Business Plan for consideration by the Minister for Environment. That public document will provide more details on the implementation of the strategies in this document by detailing specific programs and initiatives.

Executive Summary

Creating the Right Environment, the Waste Authority's inaugural Waste Strategy, developed under the *Waste Avoidance and Resource Recovery Act 2007*, aims to engage the Western Australian community over the next decade in moving to a low-waste society by providing the required knowledge, infrastructure and incentives to change behaviour.

The Strategy employs best practice and continuous improvement, along with target setting, as primary approaches to drive this change. The Strategy's success will be measured against its effectiveness in reducing the amount of waste generated, increasing the proportion of material recovered from the waste stream and reducing the proportion of waste destined for landfill.

The Strategy builds on existing programs and initiatives such as the Regional Funding Program, Household Hazardous Waste Program, Data Program, Waste Awards, and grants programs as well as strategic partnerships, to refocus the efforts of all those involved in managing Western Australia's waste.

The amount of waste being recovered in Western Australia has been increasing steadily for a number of years, and there is evidence that increases in the landfill levy have accelerated this trend. However, the State's performance when benchmarked against other mainland states is still poor and requires a significant boost if comparable outcomes are to be achieved by 2015.

The key drivers that have shaped the strategies and targets in *Creating the Right Environment* include:

- the need to lift the effectiveness of planning for long-term waste management at a State level
- access to data and information to underpin the measurement of strategies and services
- significant opportunities to improve performance on construction and demolition, and commercial and industrial waste recovery
- consolidation and improvement in municipal waste collection and processing performance
- a desire to do better on packaging waste management, litter recovery and other problematic wastes
- improved landfill practices and incentives to reduce waste to landfill.

Creating the Right Environment has five strategic objectives within which strategies relating to knowledge, infrastructure and incentives have been developed to support a coordinated approach to changing the behaviours of individuals, groups and organisations:

Strategy objective 1 – Initiate and maintain long-term planning for waste and recycling processing, and enable access to suitably located land with buffers sufficient to cater for the State's waste management needs.

Strategy objective 2 - Enhance regulatory services to ensure consistent performance is achieved at landfills, transfer stations and processing facilities.

Strategy objective 3 - Develop best practice guidelines, measures and reporting frameworks and promote their adoption.

Strategy objective 4 - Use existing economic instruments to support the financial viability of actions that divert waste from landfill and recover it as a resource.

Strategy objective 5 - Communicate messages for behaviour change and promote its adoption, and acknowledge the success of individuals and organisations that act in accordance with the aims and principles in the Strategy and assist in its implementation.

Targets in the Strategy are based on ambitious but achievable improvements in current recovery rates. The targets are expressed as the proportion of waste recovered compared to that generated. Recovery targets for municipal solid waste in the Perth Metropolitan Region are 50% by 2015 (up from 36% in 2009/10) and 65% by 2020 and in major regional centres 30% by 2015 (up from 15% in 2009/10) and 50% by 2020. Statewide targets for the commercial and industrial sector are 55% by 2015 (up from 46% in 2009/10) and 70% by 2020. Construction and demolition waste Statewide targets are 60% by 2015 (up from 29%) and 75% by 2020.

The implementation of the Strategy will be supported by funding from the Waste Avoidance and Resource Recovery Account, and initiatives and actions funded under the Strategy will be contained in the Waste Authority's annual Business Plan 2012/13 which will be available publicly following the release of the Strategy. The Strategy sets the primary roles and responsibilities that key groups need to play in order to allow coordinated actions consistent with the Strategy to be implemented. The Waste Authority recognises that the achievement of the targets in this Strategy relies on a collective commitment and effort by many individuals and organisations.

Western Australia's performance on waste management

Over the past decade, Western Australia has been consistently improving its waste management performance. Between 2004-05 and 2009-10, the amount reprocessed almost tripled from around 970,000 tonnes in 2004-05 to about 2,650,000 tonnes in 2009-10. Construction and demolition material reprocessing alone increased from about 720,000 tonnes in 2008-09 to over 1,210,000 tonnes in 2009-10.

However, Western Australia's performance is still a long way behind other mainland States. Western Australia's population and economy are growing at a rapidly increasing rate, which will place even greater pressure on existing systems to keep pace with progress in other jurisdictions.

National waste data for the year 2008-09 shows that Western Australia had the highest rate of waste generation in the country at approximately 2.6 tonnes per capita. In the following year a report prepared for the Waste Authority *Recycling Activity in Western Australia 2009-10* (Hyder Consulting) estimated waste generation in Western Australia at just over 3.5 tonnes per capita.

In 2009-10 Statewide, a total of almost 5.4 million tonnes of waste was sent to landfill, comprising about 3,135,000 tonnes of construction and demolition waste, about 1,289,000 tonnes of municipal solid waste and about 967,000 tonnes of commercial and industrial waste.

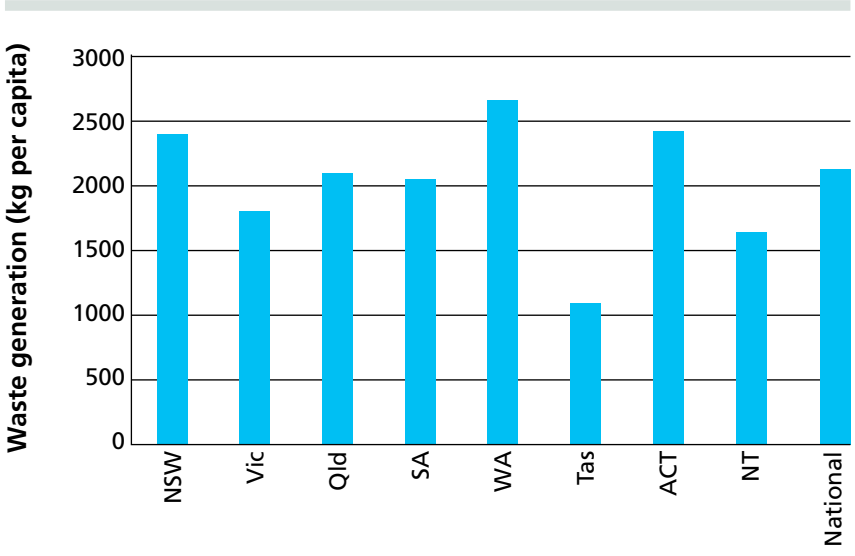


Figure 1: Comparison of waste generation rates across Australian jurisdictions in 2008-09 (*Waste and Recycling in Australia 2011*, Department of Sustainability, Environment, Water, Population and Communities [SEWPAC])

In 2008-09 Western Australia also had the lowest rate for recovery and diversion from landfill of any mainland State, with only 32% of material being recovered, and the remaining 68% sent to landfill.

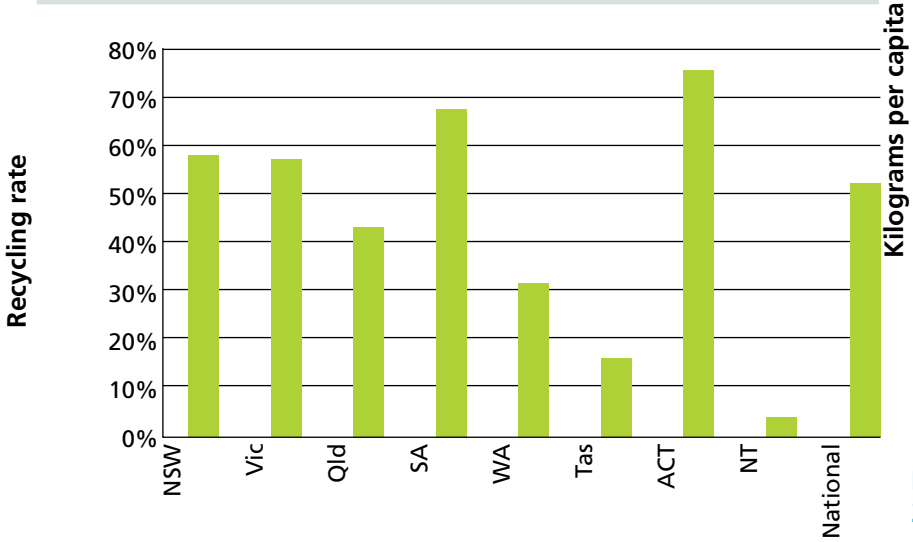


Figure 2: Comparison of recovery rates across Australian jurisdictions in 2008-09 (*Waste and Recycling in Australia 2011*, SEWPAC)

In 2008-09 on a material by material basis, WA performed slightly above the national per capita average for organics recovery (mainly vegetation and food waste). In all other areas Western Australia trailed the national per capita average.

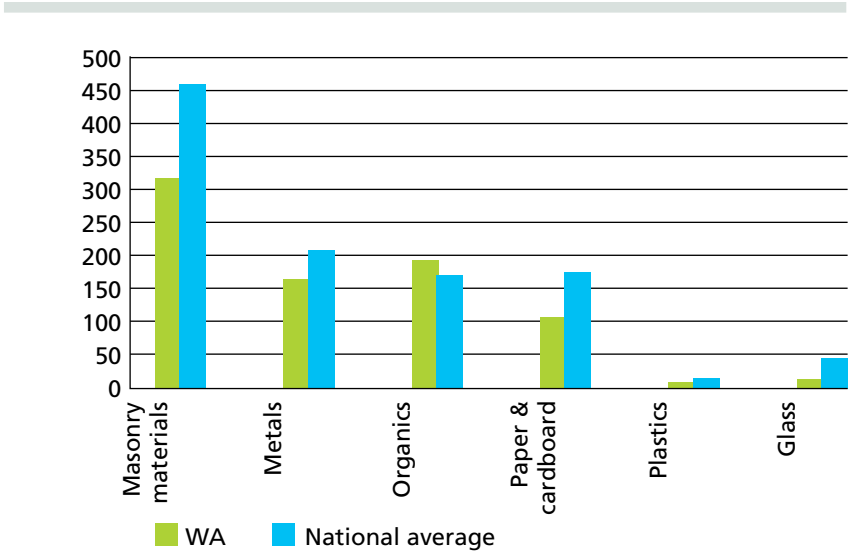


Figure 3: Recovery per capita – WA versus national averages in 2008-09 (*Waste and Recycling in Australia 2011*, SEWPAC)

This snapshot of Western Australia's performance against other mainland States indicates that significant steps are needed to close the gap. The fast pace of Western Australia's economic and population growth is going to add to this challenge. It is important to be mindful that other mainland States will continue to improve their performance and so our targets need to be set above the existing benchmarks.

Vision, Scope and Key Approach

Vision

The primary goal of sustainable waste management strategies is to reduce the environmental impact of waste and maximise conservation of natural resources through reduced overall material use and increased materials and energy recovery.

Creating the Right Environment begins a decade of engagement with the Western Australian community to shift to a low-waste society by providing the required knowledge, infrastructure and incentives to change behaviour.

The aim of this behaviour change will be to:

- reduce the generation of waste
- increase the proportion of resources recovered from wastes that can't be avoided
- reduce the proportion of waste disposed to landfill.

The Strategy's focus will be solid waste materials, including some hazardous wastes, discarded from households, government entities and businesses. It does not address the management of nuclear waste, mining spoil, agricultural wastes or industrial wastes (where these are managed onsite under licence). While the strategy looks forward over a 10-year period, it has targets which provide an imperative for action by the middle of this decade, by which time the Strategy will have been reviewed and revised.

Principles

The following principles are referenced in the *Waste Avoidance and Resource Recovery Act 2007* and underpin the development of *Creating the Right Environment*:

- Intergenerational equity – ensuring that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- Waste minimisation and waste avoidance – in which all reasonable and practicable steps should be taken to minimise the generation of waste and its discharge to landfill and the environment
- Promoting the most efficient use of resources, including resource recovery
- Considering management options against the waste hierarchy of avoidance, recovery (including reuse, reprocessing, recycling and energy recovery) and disposal
- User pays and polluter pays – where those who generate waste bear the full lifecycle cost of managing their waste.

The Authority also had regard to the following principles in developing this Strategy:

- Open dialogue with community, industry, government and others;
- Open competition and fostering innovation
- Government leading by example
- Benchmarking and demonstrated best practice
- Continuous improvement.

Key Approach

To bring about significant reduction in the amount of waste generated in Western Australia and an increase in the proportion we recover as a resource will require coordinated and complementary approaches based around enhanced knowledge, the availability of waste management infrastructure and the introduction of a range of incentives to encourage good practice. There may be cases where one of these approaches alone is sufficient to drive change but in most circumstances strategies that come from all three directions will be most likely to provide the right environment for behaviour change.

Knowledge

Increased knowledge and understanding of why and how to implement change is critical to improving performance. Knowledge plays a significant role in getting people and organisations started on behaviour change; however it is only a start. Knowledge must be backed up with the incentives and practical support people and organisations need to act on their decision to change behaviours.

Infrastructure

The availability of the right waste management infrastructure at the right time plays a critical role in enabling people and organisations to engage with waste management systems to improve their effectiveness and efficiency.

Infrastructure includes the physical facilities (including land, buffers and transport networks) used to process waste as well as the "soft" infrastructure such as the structures of government and regulation applying to the conduct of the various players involved in waste management.

Incentives

While knowledge and infrastructure can remove barriers to change, incentives provide the driving force for change. Incentives for action can be positive, such as funding, or negative, such as penalties and compliance actions.

Roles and responsibilities

The Waste Authority recognises the importance of effective partnerships between the community, local government including regional local governments, State Government and industry. The Waste Authority will encourage the following groups to fulfil the primary roles identified below to give effect to the Strategy.

Community

The Western Australian community's primary roles include participating in programs and actions designed to change behaviours to fulfil the objectives of this Strategy and ultimately, in paying for improved waste management practices.

Local Government and Regional Local Government

Local government's primary roles are to represent the general interests of their communities and to manage the delivery of municipal waste services in their districts either individually or in groups.

As the level of government closest to the community, local governments will play an increasingly important role in providing information, infrastructure and incentives to encourage behaviour change in their communities.

State Government

The State Government's primary roles in waste management include providing regulatory services to the industry through the *Environmental Protection Act 1986*, the *Waste Avoidance and Resource Recovery Act 2007* and the *Waste Avoidance and Resource Recovery Levy Act 2007*; provision of a range of government agency services; providing economic incentives to adopt behaviours that contribute towards the targets in this Strategy; and participate in the delivery of the National Waste Policy and the work of the Standing Council on Environment and Water.

Australian Government

The Australian Government's primary responsibility is to ensure compliance with international conventions to which Australia is a signatory, to implement the National Waste Policy and to implement the *Product Stewardship Act 2011* which provides for national product stewardship schemes.

In discharging its responsibilities the Australian Government is required to balance national waste imperatives with ensuring that jurisdictions such as Western Australia are provided with appropriate access to overseas markets if it is not viable to send product to local or interstate markets.

Producers

Producers or importers of products have a role to play by participating in product stewardship approaches and extended producer responsibility schemes as they are developed.

Waste Industry

The waste industry plays a pivotal role in providing a range of collection, sorting, processing (reuse or safe disposal) and information services on a competitive basis to local and State Government, private organisations and individuals.

Major Challenges facing Western Australia

Creating the Right Environment will guide continuous improvement in waste services, waste avoidance and resource recovery benchmarked against best practice, and sets targets for waste reduction, resource recovery and the diversion of waste from landfill. In order for the Strategy to be achieved it is critical for it to focus on the major challenges as priority areas for initial action.

This inaugural Strategy will not address all aspects of waste management, waste avoidance and resource recovery. Rather it will focus on providing the necessary knowledge, infrastructure and incentives to respond to the major challenges listed below. Within five years the Strategy document will have been reviewed and the learnings from the implementation of this first set of strategies will provide critical input into a more comprehensive Strategy document.

The Waste Authority recognises the importance of research and data for measuring the value of strategies and actions designed to deliver on the targets in this Strategy. Accessing consistent and comparable data in a timely fashion is not a problem unique to Western Australia. The National Waste Policy acknowledges that this is a priority for all States and Territories and will be an ongoing challenge into the future. The Waste Authority has identified the need to invest in the expansion of data collection and dissemination, in particular to assist in achieving the Strategy's targets and identifying best practice systems and outcomes.

Planning challenges

It is critical to ensure that there are appropriate waste and recyclables processing facilities available across Western Australia. With Western Australia's predicted continued economic growth and population increases, it is important that planning and development of waste and recycling processing facilities in the metropolitan region and other regions is undertaken early and is considered as critical infrastructure like other important infrastructure such as water, sewerage and power.

Access to land with appropriate buffers and transport links to allow the efficient and effective processing of waste is difficult to secure on a reliable basis and, as development across the State increases, this task will only become more difficult. Services like power, water, transport and sewerage face the same pressures but their requirements are already incorporated into the State planning framework more effectively thus allowing adequate sites and transport services for their long-term development. The Waste Authority is working to achieve a similar level of incorporation of waste needs into the State planning framework to be considered as critical infrastructure if the industry is to meet the challenges set by this Strategy.

The Waste Authority is working to identify future land, buffer and transport requirements for waste and recycling processing so that these can be incorporated into the State planning framework. This work will require a high degree of cooperation amongst a range of organisations if a coherent plan is to be developed and implemented.

Regulatory challenges

The landfill licensing and classification system that came into effect in Western Australia in 1995, and the associated waste acceptance criteria which support it, have improved the consistency with which the environmental impacts of waste are managed by way of regulation. With the advent of the landfill levy in 1998, the licensing system also provided the basis on which landfill levies were able to be imposed at relevant landfill premises.

Since that time, but especially with an increasing landfill levy, there has been growing pressure, mainly on inert landfill operators, to accept material that tests the border between what is inert waste and what is putrescible waste because of a significant difference in respective disposal costs. The policing of these acceptance rules is not adequately serviced by the standard licensing compliance processes, as the frequency of

inspections has been developed based on the risk of direct environmental impacts. Ensuring that acceptance criteria are consistently being complied with is a significant undertaking in addition to the normal licensing compliance process. It requires almost daily vigilance at about 30 landfills in and around the Perth metropolitan region along with another 30 or so transfer stations and sorting facilities that send waste to them.

The regulatory framework in which landfills operate is due for review and will need to be considered in light of the function it now performs for implementing the landfill levy as well as how it supports the industry in adhering to practices which provide an acceptable level of environmental protection.

Performance challenges

Western Australia faces unique challenges in managing waste in regional and remote areas, especially in the north of the State where resource development is placing unprecedented pressures on existing systems. Transport, lack of infrastructure, access to markets and limited capacity to generate funds for waste management are just some of the issues which limit progress in these areas.

While the Perth Metropolitan Region contains approximately 65 per cent of the State's population, it accounts for almost 90 per cent of material recovered from the waste stream. Increasing the proportion of materials recovered from the waste stream in the non-metropolitan regions will call for novel approaches especially where the market forces fail to deliver sustainable service delivery.

Western Australia's resource recovery performance benchmarked against other mainland States confirms that existing collection and processing systems need to achieve improved performance in most areas. In addition, new levels of service delivery will be required if we are to close the gap with other jurisdictions. The efficiency and effectiveness of these existing and new systems will be critical to minimising overall costs to the community and ensuring the viability of collection and processing into the future.

Diverting construction and demolition waste from landfill provides the single most significant opportunity for the State to improve its recovery performance. Over 50 per cent of waste to landfill is from this sector and there are many established technologies and markets that are able to process and utilise these materials.

Economic challenges

Well run landfills perform a vital function by accepting wastes which cannot be recovered or recycled, thus reducing their direct impact on the environment. Landfill also effectively competes with recovery and recycling processes in a market environment. The cost of landfill in Western Australia is relatively low compared to the cost of most recovery and recycling operations, especially for wastes which can be disposed at inert landfill sites. While the cost of landfill remains relatively low it will undermine the economic viability of preferred uses, such as recycling and hinder the achievement of the targets in this Strategy. If a viable industry, able to recover an ever increasing proportion of the waste stream, is to be successfully established in Western Australia, then the cost of landfill will need to rise quite significantly. This must occur in a managed and staged fashion so as not to disrupt orderly financial planning and the management of existing contracts.

Markets take many of the costs and benefits of managing waste into account and often provide incentives to reduce waste generation and undertake recycling. But 'market failures' can result in these incentives not being as strong as they should be.

Examples of market failures in managing wastes are often most marked in rural and remote regions because of additional transport costs and the lack of economies of scale. However, materials such as household

hazardous wastes, packaging wastes, tyres, used motor oils, electronic wastes and products containing hazardous substances, as well as materials that can cause management problems - like mattresses and crushed glass left over from materials recovery facility operations - are examples of market failures in the Perth Metropolitan Region as well.

Product stewardship approaches attempt to share waste management costs across the life cycle of products so that improved collection and processing is more viable. This type of approach is critical to resolving the long-term viability of managing these types of products. Many of the products mentioned above operate in a national market and lend themselves to management through national approaches. However, circumstances have arisen in the past, and are likely to do so in the future, when remedial action at the State level is required. *The Waste Avoidance and Resource Recovery Act 2007* provides some regulatory mechanisms to encourage or require action on products at a State level where effective systems are deemed not to be in place. To date these mechanisms have not been tested.

Direct financial support for the delivery of collection and processing systems where the market has failed provides another means to improve recovery rates and reduce the environmental impacts associated with landfilling or inappropriate disposal. An example is the Waste Authority's support of household hazardous waste collections. About $10m has been earmarked for these programs over the next four years but, as this waste stream is growing, the provision of direct financial support on an ongoing basis is not a viable option if the funds from the Waste Avoidance and Resource Recovery Account are to be available to initiate work in other areas.

Western Australia's performance on recovering packaging waste and minimising the impact of packaging litter needs to better meet community expectations. Market failures again underpin the relatively poor performance in recovering these materials, especially outside the Perth Metropolitan Region.

A lack of sufficient investment and regulation by successive State Governments has hindered progress on tackling the increasing waste volumes generated by a rapidly growing population and strong growth in the Western Australian economy. This Strategy relies on turning this situation around and securing long-term funding and commitment to creating the right environment in which the targets in this and future Strategies can be realised.

Communication and Promotion challenges

Embarking on a decade of behaviour change to reduce the generation of waste, increase the proportion of waste recovered as resources, and reduce the amount landfilled is a significant task but one that is essential if the State is to move towards a more sustainable approach to managing waste. Western Australia had the highest waste generation rate in the country at over 2.6 tonnes per capita in 2008-9, and about 3.5 tonnes per capita in 2009-10. Unless this pattern of waste generation is changed an increasing tonnage of waste will continue to go to landfill, even if the proportion of waste recovered increases.

It will be essential to undertake communications, engagement and education programs to ensure that industry, community, and government entities are aware of the role they can play in promoting sustainable waste avoidance behaviour change. Linking awareness with access to the necessary information and infrastructure and removal of the barriers for behaviour change is a complex and difficult task. Benchmarking of attitudes and current practice and ongoing measurement against the benchmarks will also be critical to assess the effectiveness of strategies and identify where additional work is required.

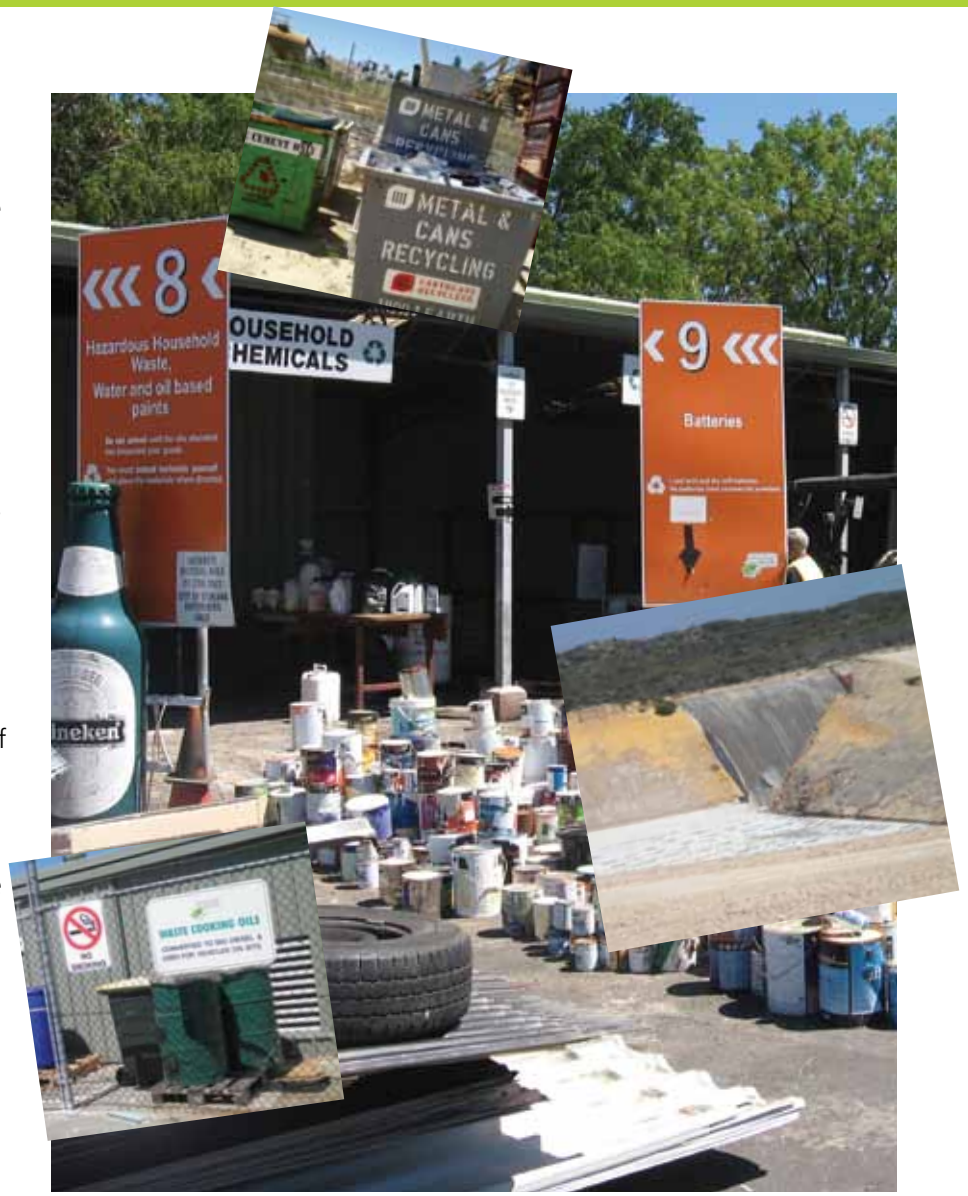
Major Challenges facing Western Australia (continued)...

Many organisations and individuals are making significant contributions to the State's waste performance every day of every year. Much of this work goes unnoticed or unrewarded. The Waste Authority believes that showcasing the actions of individuals and organisations and sharing case studies of successful actions can act as a powerful catalyst and incentive for action by others and may play an important role in areas where financial and regulatory approaches alone are not leading to behaviour change.

In response to these major challenges the Strategy will focus on five key strategic objectives:

1. Initiate and maintain long-term planning for waste and recycling processing, and ensure access to suitably located land with buffers sufficient to cater for the State's waste management needs.
2. Enhance regulatory services to ensure consistent performance is achieved at landfills, transfer stations and processing facilities.
3. Develop best practice guidelines, measures and reporting frame works and promote their adoption.
4. Use existing economic instruments to assist the financial viability of actions that divert waste from landfill and recover it as a resource.
5. Communicate messages for behaviour change and promote its adoption, and acknowledge the success of individuals and organisations that act in accord with the aims and principles in the Strategy and assist in its implementation.

The Strategy will build on existing programs and initiatives such as the Regional Funding Program, Household Hazardous Waste Program, Data Program, Waste Awards, Strategic Waste Initiatives and Community Grants Schemes and well as strategic partnerships, to refocus the efforts of all those involved in managing Western Australia's waste.



Strategic Objectives and Strategies

Strategic objective 1.

Initiate and maintain long-term planning for waste and recycling processing, and enable access to suitably located land with buffers sufficient to cater for the State's waste management needs.

Enabling access to sufficient land for waste management facilities, in the right place by the right time, including appropriate buffers and access to transport networks, to meet industry needs is critical to the success of this Strategy. In order to cater for this need a long-term plan outlining the number and types of facilities that are likely to be required, their optimum location and access to transport networks along with trends in the generation of waste and the change in waste stream composition is required. Such a plan can only be developed with the cooperation of organisations that will require access to such sites in the future if it is to properly respond to the needs of the State.

Providing access to enough sites in the Perth Metropolitan, Peel and Greater Bunbury regions and other areas of the State for the processing of significant additional quantities of construction and demolition waste will be a high priority for the Waste Authority as it is expected that the amount of material recovered will more than double by 2015.

The Authority will work within the State planning and environmental approval systems with the aim of enabling access to well located land for the full range of waste facilities for the next 30-40 years and, where necessary, will seek and support the acquisition of land in public ownership for this purpose and make it available on a leasehold basis to public and private entities across the State. The Authority considers that funds from the Waste Avoidance and Resource Recovery Account can provide a valuable contribution to securing publicly owned sites necessary for this to be achieved.

Knowledge strategies

1 a. Conduct research and gather information required to understand the long-term planning and land use requirements of the waste management industry in the State.

1 b. Identify the availability of public and privately owned sites suitable for waste and recycling facilities through the planning system.

1 c. Develop and maintain a State Waste and Recycling Infrastructure Plan and promote the inclusion of its requirements into the State planning framework.

1 d. Develop and maintain a public register of sites identified for waste and recycling facilities in the State.

Infrastructure strategies

1 e. Provide funding support for the public purchase of strategic sites and buffers throughout the State in consultation and association with the Western Australian Planning Commission.

1 f. Increase inspection and compliance at waste and recycling facilities to ensure environmental and social values are protected.

Incentive strategies

1 g. Make necessary strategic sites across the State available for the establishment of waste and recycling processing facilities on a commercial leasehold basis.

Strategic objective 2.

Enhance regulatory services to ensure consistent performance is achieved at landfills, transfer stations and processing facilities.

Existing regulation of wastes ensures that basic environmental and health values are protected. To provide services that support more consistent performance throughout the landfill, transfer and processing industry will require more vigilant inspection and compliance regimes to ensure that the costs of compliance are equally impacted on all players. It is vital that appropriate regulatory approaches are maintained to support a truly competitive playing field so an organisation is not disadvantaged by adhering to appropriate standards when a competitor does not adopt compliant practices. Increased oversight of landfills, transfer stations and processing facilities will be an important part of moving waste management to best practice standing and supporting those organisations that invest for improved performance.

Regulatory changes at inert landfills are a particular priority and options including calculating levies using weight (tonnes) rather than volume would require the installation of weighbridges at all sites where the landfill levy applies.

Regulations may be made for extended producer responsibility scheme operating under the *Waste Avoidance and Resource Recovery Act 2007*. No extended producer responsibility schemes are currently in operation in this State. The Waste Authority must include in its business plan each year a priority statement with respect to any extended producer responsibility schemes the Waste Authority proposes to recommend for implementation and operation under the regulations.

Knowledge strategies

2 a. Support a review into, and provide recommendations on, the existing landfill regulatory framework, waste acceptance criteria and best practice guidelines for landfills.

2 b. Develop best practice guidelines for processing activities such as transfer stations, material recovery facilities and crushing and screening operations.

2 c. Develop product specifications to better define recycled products made from wastes to support their application in relevant circumstances.

Infrastructure strategies

2 d. Establish a dedicated inspection and compliance team, funded from the Waste Avoidance and Resource Recovery Account, to provide targeted enforcement activity at landfills and waste and processing sites over and above that already undertaken for standard licence compliance.

2 e. Promote the provision of product stewardship plan approvals or the development of extended producer responsibility schemes under the *Waste Avoidance and Resource Recovery Act 2007* as required.

Incentive strategies

2 f. Develop, maintain and implement enforcement procedures that allow the timely and effective application of regulatory provisions.

Strategic objective 3.

Develop best practice guidelines, measures and reporting frameworks and promote their adoption.

Best practice is a dynamic concept – one which accommodates ongoing change in how things are done. While best practice may suggest at a given time and place, a 'best way' of doing things, it must allow for this 'best way' to be replaced by other methods as technology and procedures improve and circumstances change. In this sense the notion of best practice assumes the operation of continuous improvement.

Defining best practice requires the identification of measures that inform best practice outcomes, such as cost per household for a collection service, or the yield of recyclables per household per week, or the percentage of products recovered as a proportion of those sold in the case of a product stewardship scheme.

Once measures have been developed there is a need to identify the values for those measures that represent best practice. Yield may be identified as a measure that will be used but then there is a need to determine what value of the yield measure will represent a benchmark for best practice. This is probably best done by identifying high performing systems amongst local ones, or reference systems in other jurisdictions, being mindful of the context in which they operate (urban, rural, household size etc).

Significant work is required to determine a set of best practice outcomes for the variety of collection and processing services that operate throughout the State for construction and demolition, municipal and commercial and industrial wastes. This will involve building on existing data collection and interpretation work in an open manner to identify appropriate measures, yields and systems which tend to deliver best practice outcomes.

The Waste Authority will focus on working with local government and industry service providers to promote source separation and develop collection and processing capacity that delivers best practice outcomes. Construction and demolition waste makes up more than half the material going to landfill. If the targets in the Strategy are to be met there will be a need for significant investment in best practice facilities and the Waste Authority will consider incentives for the establishment of these and other critical infrastructure.

The Waste Authority recognises the need for coordination and cooperation amongst local governments, regional local governments and regional groupings and will be relying on communities serviced by local governments to improve their performance against best practice outcomes relevant to their local circumstances.

Knowledge strategies

3 a. Gather data, and analyse and distribute information on local high performing collection, processing and product stewardship systems for use in case studies / business cases for best practice outcomes.

3 b. Review best practice systems and outcomes for collection, processing and product stewardship in other jurisdictions and countries.

3 c. Develop recommendations for, and publish information on, best practice outcomes relevant to local circumstances in Western Australia and promote the adoption of systems that achieve those outcomes.

3 d. Develop criteria for determining priority products for product stewardship actions and publish a list of priority products in the annual business plan.

Infrastructure strategies

3 e. Increase capacity of reprocessing infrastructure that supports best practice collection approaches by providing financial incentives for the establishment of processing facilities.

Incentive strategies

3 f. Fund trials of systems that achieve best practice outcomes to determine their applicability to WA.

3 g. Provide funding support to encourage the adoption of systems that achieve best practice outcomes.

3 h. Provide funding support for programs to assist with the collection of problematic wastes.

3 i. Tie funding from the Waste Avoidance and Resource Recovery Account to the establishment of infrastructure and systems that achieve best practice outcomes for collection and processing.

Pics: Top: Fitzgerald River National Park; Bottom: Baobab trees, Kununurra;©Tourism Western Australia

Strategic objective 4.

Use existing economic instruments to support the financial viability of actions that divert waste from landfill and recover it as a resource.

The landfill levy is a key economic instrument designed to make alternatives to landfill more viable by increasing the cost of landfill disposal and to provide funding for waste and environmental programs. The 300 per cent increase in the landfill levy in 2010 has seen improved recovery performance and decreased use of landfill.

Of course, the landfill levy is additional to the underlying or operational cost of landfill. At putrescible landfills the levy is approximately one-third of the total cost of landfilling. The underlying cost is generally increasing as landfill airspace and proximity to waste generators become more limited and carbon related initiatives are introduced. Nevertheless, the cost of landfill is still well below most alternatives such as composting and alternative waste treatment. While the low cost of landfill continues to undermine investment in alternatives, the Strategy will not deliver on its targets. For this reason, the Waste Authority has identified that ensuring the full cost of landfill is reflected in gate fees is fundamental to driving major reform in the waste area.

Application of levy funds from the Waste Avoidance and Resource Recovery Account provides a more focused method for the Waste Authority to stimulate actions which contribute directly to achieving the targets set out in this Strategy. The Waste Authority has identified a need to place a much greater emphasis on the link between funds provided from the account and the delivery of tonnes diverted from landfill that contribute to targets. The Waste Authority also recognises that, with a limited pool of funding, investment in infrastructure is a more viable long-term strategy rather than subsidising ongoing operating costs.

Western Australia is a signatory to the Australian Packaging Covenant and provides funding along with industry for programs that target packaging waste. The Waste Authority will provide recommendations to Government for increasing the amount of packaging waste that is diverted from landfill through recycling. The Waste Authority will review the reliance on the Australian Packaging Covenant as the primary mechanism for managing the impacts of packaging waste in Western Australia in light of ongoing poor recovery of packaging waste in rural and remote areas of the State.

The Authority will continue to support the abatement of litter by contributing to the implementation of the Keep Australia Beautiful Council litter strategy as amended from time to time.

Ensuring that landfill disposal is not a financially preferable option for an increasing proportion of the waste stream will be critical to the long-term success of this Strategy. Without sufficient financial incentives to drive change and underpin the activities of those investing in alternatives to landfill, the Waste Strategy is likely to face significant hurdles in driving change. The Waste Authority will investigate and provide recommendations to Government on the staged increase in the landfill levy required to support the achievement of this objective. This will include consideration of levies in terms of total landfill costs, carbon pricing initiatives and the requirement for additional funds raised by the landfill levy to be returned to waste initiatives.

The relationship between landfill price increases and the reduction in waste to landfill — that is, how much and how quickly landfill disposal responds to price changes — is not well understood and is impacted by many factors which are difficult to tease apart. The Waste Authority will undertake work during and beyond the term of this Strategy to gain a better understanding of how increases in landfill costs are related to reductions in waste to landfill. This will provide the basis for the Waste

Authority's advice to government on the price of landfill that is most likely to support the achievement of the Strategy targets.

Knowledge strategies

4 a. Undertake economic assessments to determine the relationship between increased landfill costs and reductions in waste to landfill to inform the Waste Authority's recommendations on landfill levy rates that best support the achievement of the targets in the Strategy.

Infrastructure strategies

4 b. Establish a five-year plan for the application of landfill levies.

Incentive strategies

4 c. Apply funds in the Waste Avoidance and Resource Recovery Account to actions that directly contribute to achieving the Strategy targets.

Pics: Upper: Canoeists, Irwin River, Dongara; Lower: East Mount Barren, Fitzgerald National Park; ©Tourism Western Australia

Strategic objective 5.

Communicate messages for behaviour change and promote its adoption, and acknowledge the success of individuals and organisations that act in accord with the aims and principles in the Strategy and assist in its implementation.

A critical task for *Creating the Right Environment* will be to not only generate the traction needed to engage not only with those public and private organisations that are involved in the day-to-day management of waste, but also to start work on engaging the wider community in understanding the implications of consumption on the generation of waste and the role they can play in reducing their waste. Consultations in the lead up to the development of this Strategy consistently emphasised the need for a much higher profile on communication and engagement in the Authority's Strategy. The early focus of this Strategy will be to work through existing and new recycling and recovery activities that engage the public, and to investigate with key players the options available to use this relationship to pursue actions which actively reduce the amount of waste produced in our communities.

Many members of the public who are relatively easily involved in reducing their waste outputs have likely already been touched by local government and industry programs and education initiatives. Exactly what motivates and inhibits sustained waste avoidance behaviours across the full spectrum of the community is not well understood in a Western Australian context and much work will need to be done to determine the most effective ways to influence attitudes and behaviours to reduce the amount of waste produced per capita in this State. This will be a long-term task and the Waste Authority has recognised that this investment will take time to realise change. However, this work will provide an opportunity to set targets in the next version of the Strategy that have a reasonable chance of being achieved as they will be based on a much better understanding of the quantum of work required to convert behaviour change into tangible outcomes.

Changing the behaviours of enough individuals and communities to register a significant change to the Statewide generation, recovery or landfilling of waste will likely take many years. Meanwhile, it is vitally important to recognise the work of individuals and organisations that are leading the way by their actions. By showcasing the excellent work undertaken by individuals, local governments (individually or in groups), community groups, industry groups, State agencies and private companies the Waste Authority will create an environment where waste avoidance, recovery and reduced landfilling behaviour is acknowledged, celebrated and rewarded with the aim of making it mainstream. The use of construction and demolition materials in road building is an example where improved information and knowledge need to be translated into action to realise a significant opportunity for the State. The Waste Authority will work with State and local government to promote this translation into action.

Knowledge strategies

5 a. Identify opportunities to bring about sustained waste avoidance behaviour change together with those key players involved in the delivery of information, education and waste services to the community.

5 b. Identify excellent waste avoidance, resource recovery and reduced landfill performance amongst organisations and individuals.

Infrastructure strategies

5 c. Continue to support the development and delivery of green procurement programs that drive better outcomes for waste management.

5 d. Develop, promote and make available case studies on recycling and waste avoidance techniques and systems that achieve excellence.

Incentive strategies

5 e. Develop and support programs and initiatives, including awards, that acknowledge, celebrate and reward excellence in waste avoidance, resource recovery and reduced landfilling behaviours and outcomes and that contribute to the implementation of this Strategy.

5 f. Use reporting provisions in the Waste Avoidance and Resource Recovery Act 2007 to determine state and local government and private organisations compliance with the Strategy and assist in highlighting their performance on waste management.

Targets

Strategy targets for Western Australia have been set with regard to known performance in the three sectors listed below in 2009/10. Recent landfill levy increase impacts are likely to continue to see these rates improve gradually for some time without any specific further interventions. Western Australia's resource recovery performance benchmarked against other mainland States confirms that the performance of our existing collection and processing system needs to improve. In addition, new levels of service delivery will be required if we are to close this gap in performance when compared to other jurisdictions.

Diversion rates in these targets are calculated by dividing the amount of recycling or recovery by the sum of the amount of material landfilled plus the amount of recycling or recovery.

The information provided for the three sectors listed is consistent with that prepared for national waste reporting purposes. Over time this may need to change to stay aligned with national reporting requirements.

Municipal Solid Waste Sector Targets

- 50% diversion from landfill of material presented for collection in the metropolitan region by 30 June 2015 (metropolitan region recovery in 2009/10 was 36%)
- 65% diversion from landfill of material presented for collection in the metropolitan region by 30 June 2020
- 30% diversion from landfill of material presented for collection in major regional centres by 30 June 2015 (non-metropolitan region recovery in 2009/10 was 15%)
- 50% diversion from landfill of material presented for collection in major regional centres by 30 June 2020

Those areas to be considered major regional centres are still subject to agreement. The proposal at this stage is that the regional targets would apply to Avon, Greater Bunbury, Albany, Geraldton, Kalgoorlie, Karratha, Peel and Busselton.

Construction and Demolition Waste Sector Targets

- 60% diversion from landfill of material presented for collection across the State by 30 June 2015 (Statewide recovery in 2009/10 was 29%)
- 75% diversion from landfill of material presented for collection across the State by 30 June 2020

Commercial and Industrial Waste Sector Targets

- 55% diversion from landfill of material presented for collection across the State by 30 June 2015 (Statewide recovery in 2009/10 was 46%)
- 70% diversion from landfill of material presented for collection across the State by 30 June 2020

Diversion rates in 2009/10

Waste Recovery Rates by Sector and Region 2009/10*			
	Metropolitan Region	Non Metropolitan Region	State
Municipal Solid Waste (MSW)	36%	15%	30%
Commercial and Industrial Waste (C&I)	51%	33%	46%
Construction and Demolition Waste (C&D)	39%	3%	29%

*Recycling Activity in Western Australia 2009-10, Hyder Consulting Pty Ltd.

Implications of meeting targets in 2015 and 2020

2009/10	Waste generation	Recovery	Landfill (est)
MSW (Metro region)	1,287,506	462,167	825,339
MSW (Non-Metro region)	548,563	84,310	464,253
C&I (whole state)	1,778,925	811,266	967,659
C&D (whole state)	4,431,104	1,295,327	3,135,777
Total	8,046,098	**2,653,070**	5,393,028

2014/15	Estimated waste generation	Estimated recovery @ 2015 targets	Estimated landfill @ 2015 targets	Increased recovery over 2009/10
MSW (Metro region)	1,413,604	706,802	706,802	244,635
MSW (Non-Metro region)	602,290	180,687	421,603	96,377
C&I (whole state)	1,953,154	1,074,235	878,919	262,969
C&D (whole state)	4,865,088	2,919,053	1,946,035	1,623,726
Total	8,834,137	**4,880,777**	3,953,360	**2,227,707**

2019/20	Estimated waste generation	Estimated recovery @ 2020 targets	Estimated landfill @ 2020 targets	Increased recovery over 2009/10
MSW (Metro region)	1,560,734	1,014,477	546,257	552,310
MSW (Non-Metro region)	664,977	332,488	332,488	248,178
C&I (whole state)	2,156,440	1,509,508	646,932	698,242
C&D (whole state)	5,371,450	4,028,588	1,342,863	2,733,261
Total	9,753,601	**6,885,061**	2,868,540	**4,231,991**

All data in tonnes. Assumes constant waste generation rate of 3.5 tonnes per capita; 2% per annum population increase across the state; waste generation equals the sum of waste landfilled and recovered. (Based on extrapolation of figures provided in Recycling Activity in Western Australia 2009-10, Hyder Consulting Pty Ltd.)

Implementing the Waste Strategy

The Waste Authority's five-year rolling Business Plan prepared under Division 2, Part 4 of the *Waste Avoidance and Resource Recovery Act 2007* (WAARR Act) will set out actions and initiatives consistent with the Waste Strategy. The Business Plan will be reviewed and updated on an annual basis. The Business Plan will include:

1. Programs to be undertaken each year including a brief description of the intended activities and outcomes.
2. A Waste Authority policy for the application of funds.
3. The budget for each program area.
4. Success indicators for each program area.
5. The five-year funding outlook for the program areas.
6. A priority statement on extended producer responsibility schemes to be pursued under section 47 of the WARR Act.

Pics: Top:Harding River Dam; bottom: Woolleen Station ©Tourism Western Australia

Glossary

Waste generation	The sum of products and materials that are recycled, recovered for energy or disposed to landfill.
Waste avoidance	Actions or approaches which result in the reduced generation of waste.
Disposal	Solid waste that is disposed of to landfill, incinerated or destroyed without energy recovery, or is unrecovered litter.
Recycling	A set of processes (including biological) that converts solid waste into useful materials or products, net of contaminants/residuals disposed.
Recovery; Resource Recovery	Solid waste recycled or recovered for energy, net of contaminants/residuals disposed to landfill.
Reuse	Involves recovering value from a discarded resource in its original state without reprocessing or remanufacture.
Recovery rate	Solid waste recycled and recovered for energy (net of contamination/residuals) as a proportion of waste generation.
Solid waste	Waste products and materials that are 'spadeable'.

Where a term in this Strategy is defined in any of the *Waste Avoidance and Resource Recovery Act 2007* (WA), the Waste Avoidance and Resource Recovery Regulations 2008 (WA), the *Waste Avoidance and Resource Recovery Levy Act 2007* (WA) or the Waste Avoidance and Resource Recovery Levy Regulations 2008 (WA), that definition shall apply for the purposes of this Strategy.

Waste Authority

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Office of the Waste Authority
Level 7, 168 St George's Tce, Perth 6000
T: 08 6467 5325 F: 08 6467 5532
www.zerowaste.wa.gov.au