Government of South Australia
Zero Waste SA

South Australia's Waste Strategy 2011 - 2015

AVOID • REDUCE • REUSE • RECYCLE

Cover image:

Detail of glass object *Urban Grass* by South Australian artist Rebecca Hartman Kearns. Made from natural resources, glass is endlessly recyclable. This artwork is displayed at the JamFactory, a contemporary craft and design centre in Adelaide, which has worked with Zero Waste SA to identify ways to reduce waste, improve recycling and cut down on water and energy use.

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Zero Waste SA
GPO Box 1047
Adelaide SA 5001
Telephone (08) 8204 2051
Email: zerowaste@zerowaste.sa.gov.au
Internet: www.zerowaste.sa.gov.au

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FOREWORD

South Australia's Waste Strategy 2011-2015 reflects our common concern that we consume more and more resources to maintain a privileged lifestyle, and that we may do this at the expense of our environment and the wellbeing of future generations. It reflects our common desire to provide a future that can protect and manage our natural resources within a strong economy.

Over the last five years South Australia has established its place amongst the leaders in waste management reform and resource recovery in the nation. Our recycling rate is among the world's best, but there is much more that we can do.

Efforts under *South Australia's Waste Strategy 2005-2010* have markedly reduced the amount of waste going to landfill in our state.

Entrusted with developing and implementing the first State Waste Strategy, Zero Waste SA has:

> learned important lessons
> achieved excellent successes and
> forged strong and productive collaborative partnerships.

This wealth of experience has built a solid platform for the state's next waste strategy for 2011-2015. South Australians understand and embrace the benefits of recycling and composting, embracing the more recent ban on check-out style plastic bags.

Future generations of South Australians need us to build on the achievements of our first waste strategy. Now is not the time for hesitation or complacency and I believe our new waste strategy is a confident and considered next step.

The *Environment Protection (Waste to Resources) Policy* under the state's *Environment Protection Act* heralds a new regulatory framework to manage waste and recycling.

In 2009, environment ministers across the country set a new national policy on waste and resource management. This sets the agenda for waste and resource recovery in Australia for the next 10 years. Environment ministers also agreed to a landmark product stewardship framework.

The Australian Government will regulate to support an industry-led scheme for collecting and recycling televisions and computers. Other problematic waste streams, such as tyres, are likely to follow.

Nationally and internationally the waste management landscape is changing. Managing waste is linked with challenges in population growth, consumption, resource availability, water and energy use, climate change and carbon reduction. We are setting broader and smarter environmental objectives and priorities in our future.

South Australia's Waste Strategy 2011-2015 looks different from its predecessor. It builds on earlier good work, takes advantage of a stronger national focus, and recognises sustainability as an integral part of future prosperity. The Strategy is underpinned by long term objectives, thorough planning and targeted collaborations and partnerships.

The whole community has contributed to the excellent achievements of the last strategy. Many targets have been met. Achieving 'zero waste' is difficult and it will need continued and combined efforts by industry, all spheres of government and the people and organisations in our community.

One of our greatest challenges in the coming years is to learn to enjoy and appreciate the quality of our lives by wasting less and caring more. We must more carefully align economic improvement and ecological sustainability, and measure our quality of life against the quality of our, and our children's, future environment. South Australians can continue to contribute to the process, reap the benefits of more considered attitudes to consumption and waste, and lead the way to a healthier environment and a more sustainable future.

Paul Caica

Minister for Sustainability, Environment and Conservation

WHAT ZERO WASTE SA DOES

Zero Waste SA was established when the Government of South Australia realised we needed a new strategy to improve waste management practices and rely less on landfill. Zero Waste SA champions a new approach.

In 2003, the Office of Zero Waste SA became a statutory authority. *The Zero Waste SA Act 2004* (the Act) followed, requiring a state waste strategy and three-year business plans. The Business Plan supports the strategy by setting out Zero Waste SA's major projects, goals, priorities and budget.

Zero Waste SA is funded by the Waste to Resources Fund. The Environment Protection Authority collects a levy imposed on the tonnage of waste sent to landfill and half of this revenue goes to the Fund.

Since 2004, Zero Waste SA has reinvested $20.25 million of levy funds into recycling and waste reduction projects targeting:

> local government
> the resource recovery and recycling industry
> business
> schools
> community groups
> the tertiary sector.

Zero Waste SA uses its legal, administrative and financial resources to help support organisations with financial incentives, partial funding, expertise and partnerships. A progress review in 2009[1] looked at the way Zero Waste SA helps organisations to change themselves, particularly local government. Enabling others to change is one of our positive attributes.

Integrating projects across the state, Zero Waste SA promotes practices that, as far as possible, eliminate waste or its consignment to landfill, and encourage resource recovery and recycling.

Through collaboration, advocacy, financial incentives and education, Zero Waste SA is working to meet the target in *South Australia's Strategic Plan* to reduce waste by 35% by 2020 and achieve the milestone of 25% by 2014.[2] Our first five-year strategy helped reduce waste from 2002-03 levels by 17.3%. Our next waste strategy will continue to support this progress.

South Australia's waste management achievements have been recognised by UN-HABITAT that assessed waste and recycling systems in more than 20 cities worldwide. This showed that South Australians are highly environmentally conscious.

> *South Australia has demonstrated a high level of political commitment and willingness to 'stick its neck out' and implement some policies and legislation upon which other administrations take a more conservative position. The Zero Waste Act and Plastic Bag Ban are two excellent samples of South Australia's Government showing leadership by putting in place arrangements to support a major drive towards the 3R's (reduce, reuse, recycle).* From *Solid Waste in the World's Cities: Water and Sanitation in the World's Cities,* UN HABITAT, 2010.

"One of our **greatest challenges** in the coming years is to **learn to enjoy** and manage the quality of our lives by **wasting less and caring more**."

OUR NEW WASTE STRATEGY

South Australia's Waste Strategy 2011-2015 (the Strategy) is the government's tool for reforming waste management with the help of all South Australians. It will:

> inform Zero Waste SA's Business Plan over the next five years
> guide state and local government activities
> involve business, industry and the wider community.

To look ahead with confidence, we should recognise our achievements, and build on our successes and learning. We have reduced waste going to landfill and will continue to do so, but we can now prioritise other areas like liquid and agricultural wastes. We can emphasise sustainable practice and involve the community in sustainability.

South Australia's Strategic Plan (the Plan) sets out the policy initiatives that influence the Strategy, which in turn helps achieve broader government objectives. The Strategy operates under the Plan's objective in 'attaining sustainability'.

The Act sets out the elements that guide the Strategy:

> the waste management hierarchy
> ecologically sustainable development
> best practice methods and standards
> policy development through open dialogue and consultation.[3]

The Strategy's long-term objectives are to avoid and reduce waste, and to maximise the useful life of materials through re-use and recycling. See how they relate to our priorities for waste resource streams on pages 24-29.

This Strategy informs Zero Waste SA's Business Plan which provides detailed information about programs, initiatives and directions.

Consultation

After releasing the draft Strategy for consultation in 2010, we received 44 submissions from stakeholders, communities and interested parties. These are listed in the Appendix. Their comments, opinions and statements generally supported and have informed the Strategy.

Issues raised in multiple submissions included:

> how diversion targets relate to mandatory collection requirements
> the impacts of higher density living
> the need for more action on hazardous and problem waste.

"Since 2005 **South Australia's** waste management has **rapidly improved** in a short period of time. It is now **among the leaders** in Australia and **global waste management** reform and resource **recovery**."

1

2

3


4

1, 2 Cowandilla Primary School, Adelaide and Kirton Point Kindergarten, Port Lincoln are just two of many South Australian schools embracing the Wipe Out Waste educational program funded by Zero Waste SA and delivered by KESAB *environmental solutions*. 3 South Australia's plastic bag ban in 2009 – the first in Australia – attracted strong community support including interest from the South Australian School for Visually Impaired. 4 High performing kerbside recycling systems such as the three-bin system characterise household waste collections throughout Adelaide and, increasingly, major South Australian regional centres.

OUR PROGRESS

"The first strategy **stimulated new ventures** in a wide **range of areas**."

South Australia's Waste Strategy 2005-2010 was born out of stark realities:

> we need the environment to sustain us
> we are increasingly concerned about climate change
> the environment has a finite capacity to accept our waste.

None of these realities has changed.

Our new Strategy maintains our original vision, but redirects the focus from recycling to reducing and avoiding waste towards sustainability.

Achievements of the first Strategy

The previous Strategy was based on well-documented experiences from Australia and overseas and focused on areas where we could achieve results relatively quickly.

In the first three years we concentrated on introducing high-performing, consistent, kerbside recycling in Adelaide. We gave councils incentives to modify their systems, and encouraged communities to recycle. In regional areas, we worked to establish and implement regional waste plans. To match the increase in household collections, the recycling industry sector developed infrastructure and increased local processing.

In the past two years, we have encouraged waste reduction and recycling in the commercial and industrial sector. We ran a pilot project with 10 councils and 17,000 households to find ways to divert food waste from landfill, and are using the information to develop financial incentives to encourage recycling of kitchen scraps.

Through the efforts of the Environment Protection Authority, the state developed the *Environment Protection (Waste to Resources) Policy* and reviewed the *Environment Protection Act 1993*. Container deposits increased to 10 cents in September 2008 and check-out style plastic bags are now banned.

At the end of our first five years, South Australia is sending significantly less waste to landfill. When we began, both waste diversion and data about it were poor. We have improved rapidly in that time, and our state is now among the leaders in Australian and global waste management reform and resource recovery.

Results and changes

Some see the goal of zero waste as unachievable, and we have certainly not yet reached it. But many in the community, and businesses and organisations are working towards it. When we align policy, strategy and implementation we can quickly achieve significant change, as the achievements of our first five years show.

Waste diverted from landfill

Over five years (2003-04 to 2008-09), the state's total waste rose from 3.32 to 3.62 million tonnes, while waste sent to landfill dropped from 1.28 to 1.07 million tonnes.[4] By the end of that period, we were diverting 70.4% of waste away from landfill, the highest rate in the last six years.

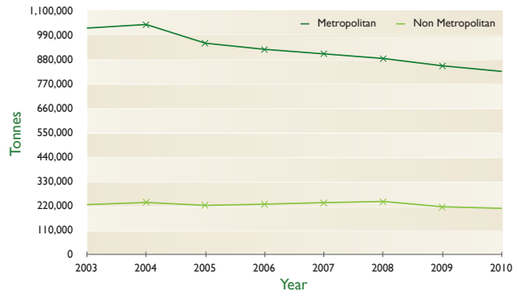


Figure 1. Waste sent to landfill in South Australia (2003-2010)

In this period, recycling increased from 2.04 to 2.55 million tonnes. Recycling per head in 2008-09 was 1.57 tonnes.[5]

Municipal solid waste (MSW) and commercial and industrial waste (C&I) still dominate landfill. 2007 figures show that three industry sectors generate over half of the C&I waste:

> 37% is from manufacturing
> 19% is from mixed small to medium enterprises (SMEs)
> 16% is from retail.[6]

1 CRT Recycling - the southern hemisphere's first television and computer monitor glass processing plant located in Adelaide. 2 Plastics Granulating Services - consumer and industrial waste plastics processing. 3 Regional Recyclers Pty Ltd - commercial and industrial waste sorting and recovery. 4 Jeffries Group (pictured) and Peats Soils and Garden Supplies are using world-class compost processing infrastructure to improve the quality of organics from kerbside and commercial collections.

The composition of the SMEs and retail sector waste has not changed significantly since 1998, so there is room to improve.

The waste stream that has changed most significantly over the past five years is from construction and demolition (C&D), which now diverts most of its waste from landfill to other beneficial uses.

Greenhouse gas savings

A report for Zero Waste SA estimates that recycling prevented the equivalent of about 890,000 tonnes of CO_2 entering the atmosphere.[7] This does not include the direct greenhouse gas benefits associated with avoided methane production.

Most waste is processed locally

South Australia supports approximately 54 waste re-processors, which treat most recycled material:

> 82% (2.103 million tonnes) is treated in South Australia
> 5% (123,250 tonnes) is treated interstate
> 13% (325,177 tonnes) is shipped overseas.[8]

Increasing the economic value of recycled commodities, such as paper and plastics, remains an area for future infrastructure development and investment.

Value increases as contamination is reduced

Separating materials at the source effectively reduces contamination and increases value. Better sorting systems within recovery facilities will improve the value and recycling of collected materials. If we can reduce contamination of domestic recycling and collect food waste, tonnages sent to landfill will reduce further.

We anticipate that the private sector will expand recycling services to business and industry. This should further reduce landfill material and improve resource efficiency. Important areas for future intervention are contaminated soils, food, cardboard and timber.

Reports and reviews

In 2009, a comprehensive review found that Zero Waste SA had achieved some excellent successes, forged strong and productive collaborative partnerships, learned important lessons, and identified some areas of risk and shortcoming.[9]

In 2007, we commissioned a cost benefit analysis of the waste strategy, which found it provides a net economic benefit for our state. Even without considering social and broader sustainability issues, South Australia benefits by reaching the target levels of recycling which the Strategy outlines.[10]

We also did an investment review for the recycling industry. [11,12] We found that, with large support from us, the industry anticipated supply and demand for infrastructure well. We also identified four main areas for future investment:

> improved efficiency of primary sorting facilities
> facilities for sorting mixed residual waste prior to despatch to landfill
> support to achieve sustainable markets
> improving quality and quantity of material presenting for reprocessing.[13]

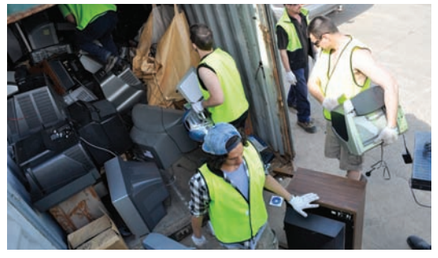
Each year, we commission an independent analysis of statewide recycling activity that we release on our website.[14]

Summary of our achievements

Our first five-year strategy stimulated:

> the standard three-bin system, a high-performing household waste and recycling collection system
> improved regional waste planning and infrastructure
> new ventures in composting, waste to energy, recycling services to industry, and recycling of e-waste, plastics, demolition and building waste
> partnerships with other agencies to promote business and industry sustainability, and give advice and help
> research into waste generation, market development, and consumption and disposal behaviour
> improved quality of recyclable material by reducing contamination
> a new regulatory framework: the *Environment Protection (Waste to Resources) Policy*.

“Technology change and its rapid rate of obsolescence **presents challenges**.”



South Australia is leading the way in finding practical and environmentally-sound solutions to help the community dispose of e-waste and other hazardous materials. E-waste contains valuable non-renewable resources which can be recycled. To help regional South Australian residents prepare for the digital switchover the Australian and South Australian Governments funded a free take-back collection service with the help of the Local Government Association of South Australia.

OUR NEW DIRECTION

When we talk about zero waste, we challenge the assumption that waste is inevitable and unavoidable. We shift the focus from how to dispose of a discarded product to how to cycle materials through our economy. Zero waste is a long-term vision that business and other jurisdictions are now adopting.

Our new Strategy has two objectives:

> to maximise the useful life of materials through reuse and recycling
> to avoid and reduce waste.

By building on solid achievements in the first five years in recycling, infrastructure development, community engagement and incentives for change, the Strategy will continue to increase the economic and social benefits of re-using resources. But we are now well positioned to also focus on avoiding waste.

This will require government, business and individuals to more thoughtfully approach how we use resources. The Strategy focuses on changing behaviour change and engaging with business, government and community to encourage sustainable living.

The Strategy will also guide policy development by meeting *South Australia's Strategic Plan 2011*[15] target to reduce waste and addressing recommendations in the *State of the Environment Report for South Australia* 2008.[16]

To achieve our goals, South Australia will need tools such as:

> advocacy
> partnerships
> research and development programs
> incentives programs
> communication and education
> investigation
> knowledge and data capture
> new technology investment
> product stewardship programs and regulation.

Challenges we face

Working in a national context

South Australia's directions will be influenced by the 2009 *National Waste Policy: Less Waste, More Resources* (National Waste Policy) from the Environment Protection and Heritage Council. This has a 10-year framework of priorities and principles, and tackling problems such as e-waste, hazardous materials, and product stewardship.

South Australia will be a strong advocate for better national systems, but is able to act independently in the state's interests.

Considering local, national and global economies

The first five-year strategy operated in a booming commodities market with increasing resource consumption, but then faced a global downturn. The prices of new and recovered/recycled commodities, particularly those like paper, metals and plastics that depended on world benchmarks, dropped by as much as 80% from their peaks. This taught us to develop a flexible Strategy that can adapt to changing conditions.

South Australia's prospects include major infrastructure investment and more activity in mining and defence, as the international economic environment recovers and consumer confidence improves. Our economy looks promising, with large developments planned in various sectors and population expected to rise, primarily from migration.

In our growing economy, the Strategy must support local infrastructure and markets while reducing wasteful consumption. Technological change and its rapid rate of obsolescence will present challenges.

Managing climate change

Climate change is a global issue with significant local impacts. Australia continues to work on developing international responses and national policy, such as the Clean Energy Future (establishing a carbon price through emissions trading) and the Carbon Farming Initiative.

The state government released *Tackling Climate Change: South Australia's Greenhouse Strategy 2007-2020* in May 2007. This set out South Australia's long-term response to climate change offering strategies and an action plan for agencies.

South Australia aims to achieve the Kyoto emissions reduction target within the first commitment period of 2008-2012.

"Many of the ideas of sustainability are now widely **understood and accepted** practices in business and **community life**."

Zero Waste SA's grants are inspiring schools and community groups to embrace the 'zero waste' way of life: 1 Tulka Progress Association and their new trailer for recyclables collection. 2 Improved sorting facilities for James Well and Rogues Point Progress Association. 3 Gladstone Senior Citizens paper and recycling depot. 4 Waste baler operated by the Karoonda and Districts Lions Club.

A key priority of the Strategic Plan 2011 is limiting our state's greenhouse gas emissions to 108% of 1990 levels during 2008-12. This is a first step towards reducing emissions by 60% by 2050.[17]

The National Waste Policy suggests that the waste sector will contribute greenhouse emissions of around 15 million tonnes of carbon dioxide equivalent per year, of which approximately 11 million tonnes is from landfill.

> *Enhanced recovery of organic material presents considerable potential to positively contribute to climate change and sustainability issues, and contribute to jobs and the economy.* Environment Protection and Heritage Council, 2009.

As well as reducing methane emissions from landfill, collecting and recycling materials can save greenhouse gas, energy and water. When a recovered material is used, it saves the energy and other inputs used to extract and refine a virgin resource.

> *The climate benefits of waste practices result from avoided landfill emissions, reduced raw material extraction and manufacturing, recovered materials and energy replacing virgin materials and fossil-fuel energy sources, carbon bound in soil through compost application, and carbon storage due to recalcitrant materials [such as plastic and wood waste] in landfills.* from *Waste and Climate Change*, United Nations Environment Program (UNEP) report 2010

The report suggests that waste avoidance and recycling benefit the climate more than waste treatment technology, even where energy is recovered during the process.

How we access, use and recover resources in future is part of adapting to climate change. Assessing the way building materials flow through the economy, for example, will help us to better manage density of living, expansion, energy efficiency and sustainable design.

In the meantime, to help reduce greenhouse gas emissions we can continue to reduce wasteful consumption and inappropriate disposal.

Considering community views and values

Sustainability is now more widely understood, accepted and practiced in business and community life. But to balance environmental outcomes with lifestyle, the community looks to government and industry for signs of change – such as South Australia's ban on check-out style bags, updated container deposit legislation and new kerbside recycling systems.

Ecosystem services are the benefits people derive from environmental resources measured by tools such as ecological and water footprint calculators. When using natural resources we also cause carbon emissions, destroy habitat or lose biodiversity and increase water usage. We must consider the whole lifecycle of a resource. Aiming for zero waste means less demand on natural resource systems and less impact on the environment.

As we collaborate and act on policy initiatives to better use materials, energy and water, we will improve our health, our environment and our social wellbeing.

Managing costs and prices

Cost is a main factor from the time waste is generated, to its value as a recyclable commodity, to final disposal. Businesses and organisations that make, take, recycle and dispose of waste are sensitive to capital and operational cost.

Costs affecting the recycling and reprocessing sector in South Australia are:

> distance from infrastructure and markets
> scale of demand and supply
> transport logistics
> operating costs such as fuel, energy, employment, government levies and charges.

The global financial crisis showed that the resource recovery industry is vulnerable to sharp drops in commodity prices, demand for resource types and available finance. But the government can also apply market-based tools, such as:

> policy for setting landfill levies, advance disposal and recycling fees, and deposit-refund and subsidy schemes
> incentives, grants and loans to promote change and efficiency, enhance environmental performance and innovation, and reward desired behaviours
> producer responsibility measures, through including future recycling costs in purchase prices, influencing buying decisions and supporting effective recovery of valuable resources.

Australian state governments use landfill levies as the main market tool to manage waste.

OUR PARTNERSHIPS

Shared responsibilities

We achieve the Strategy's objectives and targets by sharing responsibility, and consulting, cooperating and partnering with a range of stakeholders.

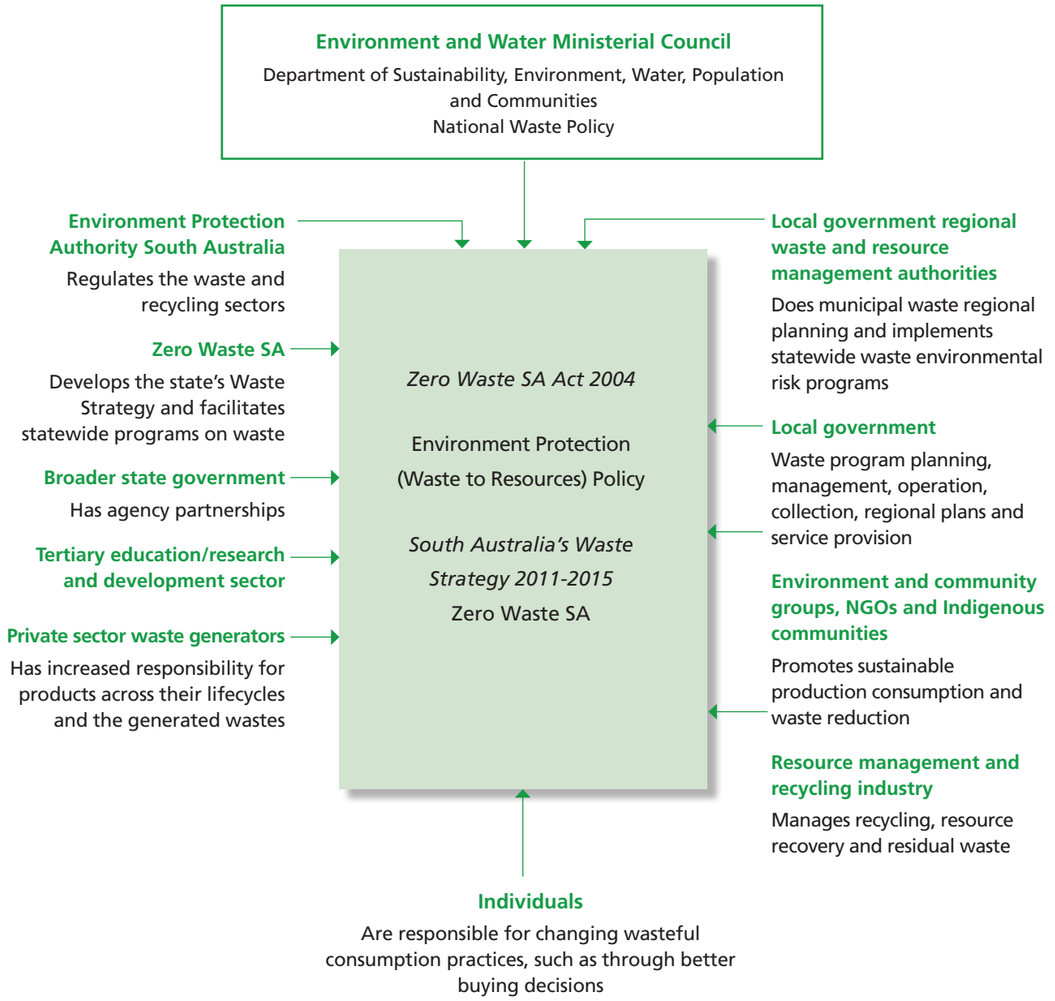
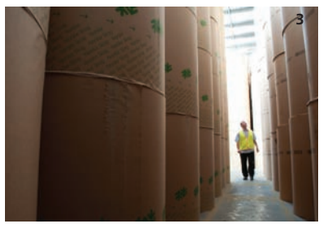
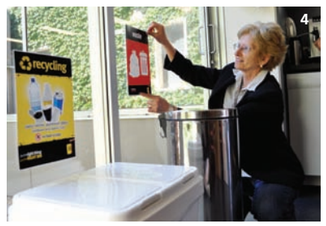
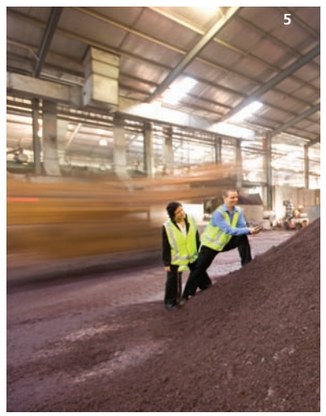


Figure 2. Roles and relationships in waste management in South Australia

"State government agencies and others **have partnered with Zero Waste SA** to change the way they **conduct their business,** recognising that a more sustainable approach **brings tangible benefits**."







1 New Castalloy (manufacturing Harvey-Davidson's wheels) continues to improve its environmental footprint with the assistance of Zero Waste SA. 2 The internationally renowned Regency International Centre for Hospitality, Tourism and Food Studies (TAFE SA Regency Campus) has made great progress in improving their recycling systems with the assistance of Zero Waste SA. 3 Working with industry associations, such as the Printing Industries Association of Australia, Zero Waste SA is reaching multiple organisations to improve resource efficiency and engaging staff in sustainability. 4 Treasury Wine Estates, one of Australia's largest wine producers is implementing an effective waste management program. 5 After building an export business from recycling wine grape waste, Tarac Technologies is embracing environmental sustainability throughout its manufacturing operation, also with assistance from Zero Waste SA.

State government policy links

South Australia's Strategic Plan sets out key directions for government, and shows how policies, strategies and plans are integrated. Zero Waste SA and the Environment Protection Authority are especially responsible for waste management, working with other agencies that create and lead reforms.

South Australia's Waste Strategy 2011-2015 is part of the framework of policies, strategies and plans that link government departments and other organisations.

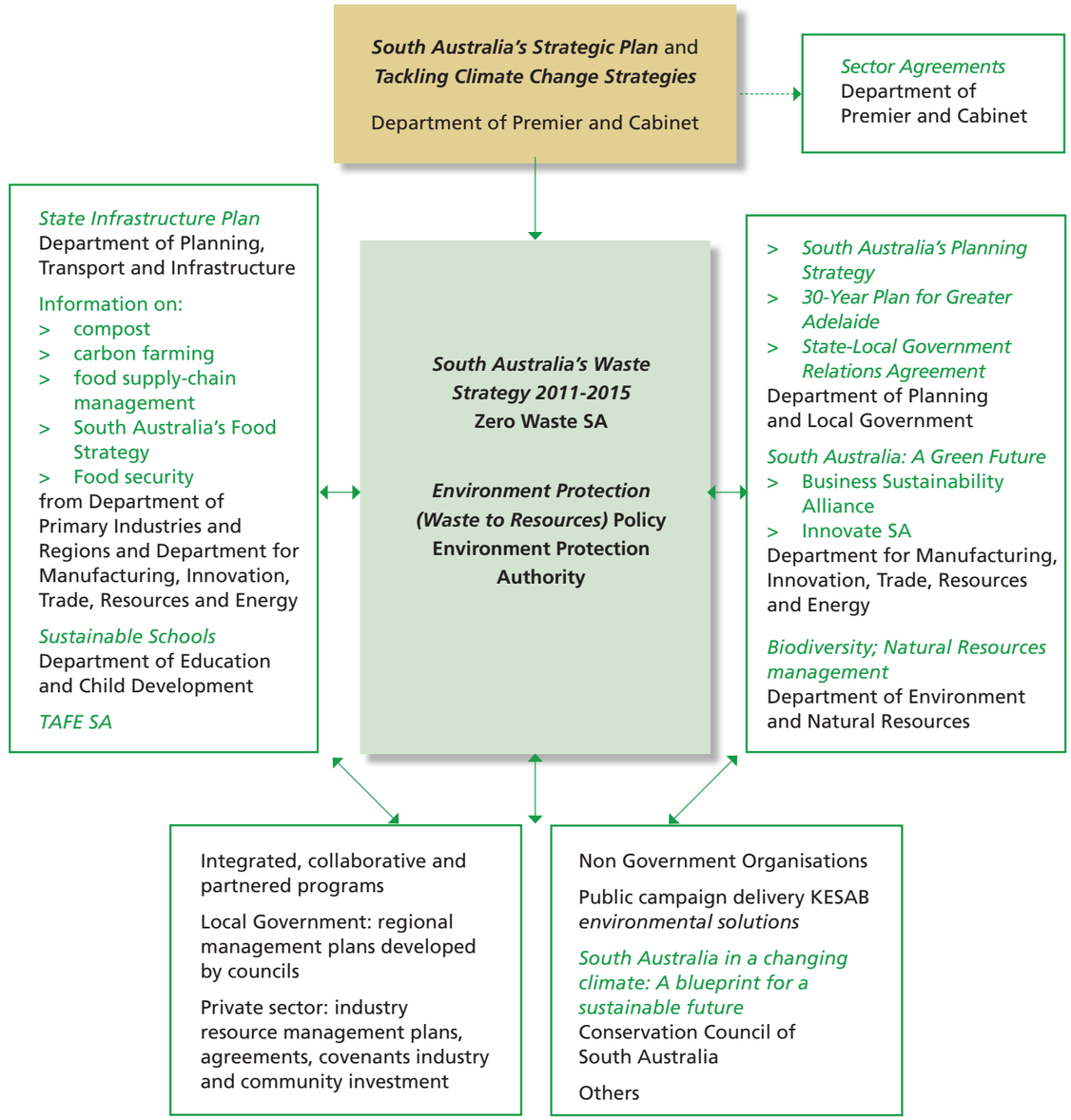


Figure 3. Key policy links for *South Australia's Waste Strategy 2011-2015*

Our partners

Environment Protection Authority

The Environment Protection Authority manages environmental impacts of waste in South Australia and minimises adverse effects on human health and the environment. It administers environment protection policies, codes of practice, licences, environment improvement plans, guidelines and enforcement tools. In 2010, the Environment Protection Authority introduced the new *Environment Protection (Waste to Resources) Policy*.

State partnering agencies

Agencies that lead by example are the Department for Communities and Social Inclusion, Arts SA, Royal Adelaide Hospital, and the SA Convention Centre (Tourism SA). Zero Waste SA partners with these agencies and others to change the way they do business, recognising that a more sustainable approach has tangible benefits. Other government departments and stakeholders will help to achieve the new Strategy in their own work through other collaboration and partnerships.

Local government including regional waste and resource management authorities

Local government plans and manages:

> household waste and recycling services
> municipal systems for solid waste, recyclables and green organics
> transfer stations.

Local government is central to planning infrastructure needs, including industrial waste needs where municipal and industrial facilities combine. The community expects local government to provide waste services as a service covered by their rates. Many councils also:

> run education programs
> develop environmental and sustainability strategies
> work cooperatively with Zero Waste SA to establish regional waste management plans.

These activities complement and support our Strategy.

Councils strive to meet community expectations, reduce costs, rehabilitate closed landfills, control illegal dumping and deal with hazardous and problematic waste.

Australian government

The Australian Government oversees international obligations and increasingly, industry seeks nationally coordinated and consistent policy on environmental regulation.

The National Waste Policy was endorsed by Australia's environment ministers in 2009. The Department of Sustainability, Environment, Water, Population and Communities leads this work, coordinating national product stewardship and extended producer responsibility schemes. It has established schemes for oil and packaging, with computers and televisions to follow.[18]

The resource management and recycling industry

South Australia supports more than 50 local companies reprocessing paper, metal, glass, plastics, tyres, concrete, asphalt, timber, e-waste and garden organics. In Adelaide, the industry is close to waste stream sources and markets for recycled materials, while buffered from residential areas.

Collecting, transporting, sorting and processing waste creates direct and indirect employment. Marketing and sales of recycled products such as aggregates, compost and recycled plastic products create more jobs.

Recycling material	Waste going to landfill
9.2 jobs per 10,000 tonnes	2.8 jobs per 10,000 tonnes

Environment Protection and Heritage Council. 2010. National Waste Report. EPHC, Canberra.

Zero Waste SA has helped expand the sector, investing in financial incentives for infrastructure, market development and research and innovation.

New or expanded businesses and facilities in our state now serve industry by producing energy from waste, and re-using, reprocessing or recycling through:

- e-waste
- compost
- demolition and building waste
- plastics.

When making decisions, we value our partnerships with the Waste Management Association of Australia, Australian Council of Recyclers, Business SA and the Australian Industry Group.

"We need to be **even more aware** of the environmental and social **impacts of our activities**. This means **taking responsibility for avoiding**, reducing, re-using and **managing our waste**."

A Zero Waste SA grant is helping Orroroo Area School's CRUNCH program to expand its recycling activities. The entire community, including the District Council of Orroroo-Carrieton and Lions Club is actively involved in measures to reduce the amount of waste sent to landfill.

Private sector waste generators

Modern businesses are aware of needing to be environmentally sustainable and may view managing waste as part of their productivity and efficiency. But to reduce waste further, some businesses need advice and support, from product design through to identifying recycling and reuse opportunities at the end of a product's life.

Many industries see the need to both manage their own waste and act as stewards for their products, such as under the National Waste Policy stewardship initiatives.

The recognised industry partners that help to achieve the goals of the Strategy are:

> Australian Council of Recyclers
> Australian Food and Grocery Council
> Australian Industry Group
> Australian Retailers Association
> Business SA
> Compost for Soils
> Hardware Association of South Australia
> Housing Industry Association
> Individual waste and recycling companies
> Master Builders Association
> Product Stewardship Australia
> Plastics and Chemicals Industry Association
> Property Council of Australia
> SA Retail Property Group
> SMEs and larger companies across South Australia
> State Retailers Association
> Waste Management Association of Australia (SA Branch) and others

Environment and community groups, non-government organisations and Indigenous communities

Environment and community groups, non-government organisations (NGOs) and Indigenous communities play a part. These range from tiny rural volunteer organisations collecting recyclable materials to fund local activities, through to large organisations that coordinate national campaigns or actively advocate for change.

Large organisations like KESAB *environmental solutions* can use the values of the community to encourage behaviour change. KESAB activities include schools education, community engagement, the Clean Sites program and litter and illegal dumping initiatives.

The traditional owners of South Australia hold or manage more than 40% of the state and are a significant proportion of the rural and remote population.[19] As land managers, Indigenous people have an important role in managing waste: in some areas, distance and access to recycling markets need innovative local solutions.

Individuals

South Australians have achieved the second highest per head recycling rate nationally, and our waste going to landfill has dropped. But waste tonnage overall is growing with our economy and population.

We consume and discard objects based on available options. We need to be even more responsible for the environmental and social impacts of our consumption choices. Individuals can avoid waste, recycle and reduce contamination of recyclables. They can also be active in consultation and market research.

The tertiary education/research and development sector

Collaboration, research, data collection and monitoring will help us to manage resources more efficiently.

The Zero Waste SA Centre for Sustainable Design and Behaviour opened in 2008. This is a $2 million partnership over five years between the University of South Australia and Zero Waste SA. The centre looks at design and behaviour change across a range of disciplines, such as architecture to childhood development, and researches waste management and reduction, recycling and resource efficiency.

We also collaborate with local tertiary and research and development institutions such as Flinders University, the University of Adelaide, the South Australian Research and Development Institute (SARDI), and interstate and overseas research centres.

"Zero waste is a **long term vision** that ultimately envisages the concept of a **thriving society** that exists within **nature's resource constraints**."

The *Zero Waste Lifeline* artwork located in the Range Wetlands at Dry Creek in Adelaide's north reminds South Australians that the level of consumption in our everyday lives has a direct impact on the environment.

THE STRATEGY FOR 2011-2015

Attaining sustainability

Meeting the needs of current and future generations through positive environmental, social and economic changes.

South Australia's Strategic Plan provides an important blueprint for our state. The three foundations of a sustainable society: Our Community, Our Prosperity and Our Environment are organising priorities for the Plan. The Plan also recognises that to nourish a sustainable society Our Health, Our Education and Our Ideas are essential.

South Australia's Waste Strategy 2011-2015 (the Strategy) relates primarily to the priority: Our Environment, and in particular Target 67: Zero Waste - which aims to reduce waste to landfill by 35% by 2020 and reach a milestone of 25% reduction by 2014.

The successful implementation of the Strategy will also contribute to the following targets in South Australia's Strategic Plan:

Our Prosperity – T35 Economic growth; T38 Business investment; T39 Competitive business environment; T47 Jobs and T56 Strategic infrastructure.

Our Environment – T59 Greenhouse gas emissions reduction; T62 Energy efficiency – Government buildings; T64 Renewable energy; T70 Sustainable land use and T75 Sustainable water use.

Our Ideas – T95 Industry collaboration, research and development commercialisation; T96 Public research expenditure; T98 Business research expenditure.

Vision

Achieving zero waste

When we talk about zero waste, we challenge the assumption that waste is inevitable and unavoidable. We shift the focus from disposing of a discarded product to promoting the cyclical use of materials in our economy. Zero waste is a long-term vision for a society that thrives within nature's resource constraints.

Mission

Our mission is to change the direction of waste management in South Australia, using the framework of the waste management hierarchy and the principles of ecologically sustainable development.

Framework and principles

The *Zero Waste SA Act* [20] sets out the framework and principles that guide us in the Strategy.

The framework is the waste management hierarchy. The principles are:

> ecologically sustainable development
> best practice methods and standards
> open dialogue with local government, industry and the community.

The waste management hierarchy

The waste management hierarchy is recognised internationally as an aspirational framework for sustainability.

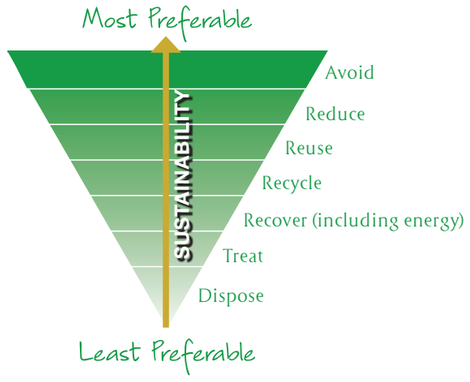


Figure 4. Waste management hierarchy

The framework stresses the need to:

> operate at the highest possible level of the hierarchy, considering social, environmental and economic practicalities
> make decisions for the mainstream using sound knowledge and education
> conserve materials and energy by acting to avoid waste and reduce wasteful consumption
> preserve the value of materials used, through source separation and reduced contamination.

The Strategy positions South Australia at the higher levels of the waste hierarchy, and emphasises sustainability and greater community engagement.

Ecologically sustainable development:

Ecologically sustainable development means to:

> use, develop and protect the environment in ways that allow people and communities to provide for their health, safety, and economic, social and physical wellbeing
> sustain the potential of natural and physical resources to meet the needs of future generations
> safeguard the life-supporting capacity of air, water, land and ecosystems
> avoid, remedy or mitigate adverse effects of activities on the environment
> give proper weight to long-term and short-term economic, environmental, social and equity considerations in deciding matters that relate to environmental protection, restoration and enhancement.

Our financial and social systems operate within the limits of our natural ecosystem.

Figure 5. Relationship of financial and social systems to the environment

Best practice methods, standards and innovation in managing waste and materials

As old waste infrastructure is renewed, we should apply best practice to:

> technical and regulatory innovation
> organisational structures and skills that reflect market and community expectations.

Open dialogue with local government, industry and the community

Our work with local government, industry and the community promotes trust in us to help them improve their waste management and make more positive changes.

Objectives

The Waste Strategy 2011-2015 has two objectives:

> to maximise the useful life of materials through reuse and recycling
> to avoid and reduce waste.

To maximise the useful life of materials, the Strategy focuses on local infrastructure, economic interventions and incentives for change.

To avoid and reduce waste, we focus on changing behaviour and influencing the choices that government, business and individuals make towards sustainable living.

These two objectives are inter-related. See the table on pages 24-29 for actions – such as research and development, or technology transfer – that serve both objectives.

Targets

Setting a target with a number and a time allows people to visualise and measure objectives. The community is likely to accept targets that seem reachable, even if they need incentives or a regulatory 'push'.

We define targets for waste diverted from landfill in municipal solid waste (MSW), commercial and industrial (C&I) and construction and demolition (C&D) waste streams. Figure 6 shows how these targets complement and support the broad reduction targets set in *South Australia's Strategic Plan*.

The targets are based on:

> information and data from 2005-2010
> a mid-term review of our first five-year strategy
> issues raised during consultation for this Strategy.

Numerical targets are set for metropolitan areas. Following public consultation, we changed the Strategy target for metropolitan municipal solid waste, but the revised figure is still likely to represent a stretch target for many metropolitan councils.

For non-metropolitan areas where conditions vary greatly, targets may need to differ. Challenges here include location, distance, population base, community expectations, quantities that can be collected for recycling and local relationships. So these targets are defined as intentions.

In setting targets for each sector, (MSW, C&I and C&D waste streams), we have worked from limited information to make estimates. As landfill operators need only report figures for aggregated waste, not for each sector, exact amounts were not available as baselines.

The goals and targets of the state's strategic plan and of the Strategy are summarised in Figure 6.

***South Australia's Strategic Plan* (Department of Premier and Cabinet)**

> 35% reduction in landfill disposal from 2002-03 level by 2020
milestone of 25% by 2014

Per capita target

> 5% reduction in waste generation per capita by 2015

***South Australia's Waste Strategy 2011-2015* (Zero Waste SA)**

Year	Metropolitan (% diversion)	Non-metropolitan
Municipal solid waste (MSW) landfill diversion targets		
2009 (baseline)*	55	Not applicable
2012	60	Maximise diversion to the extent practically achievable
2015	70	Maximise diversion to the extent practically achievable
Commercial and industrial (C&I) landfill diversion targets		
2009 (baseline)**	60	Not applicable
2012	65	Maximise diversion to the extent practically achievable
2015	75	Maximise diversion to the extent practically achievable
Construction and demolition (C&D) landfill diversion targets		
2009 (baseline)***	80	Not applicable
2012	85	Maximise diversion to the extent practically achievable
2015	90	Maximise diversion to the extent practically achievable

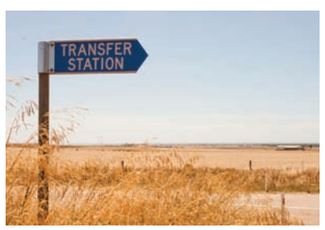
* Estimated from *Recycling Activity Report 2008-09* and assumes 30% MSW disposed to landfill. The MSW baseline figure is also supported by Zero Waste SA funded kerbside audit data of three-bin system from 2008 and 2009 in which the collection frequency (all tenements) consisted of: weekly residual waste; with fortnightly co-mingled and fortnightly green organics. These audits typically find diversion in the mid 50% range.

** Estimated from *Recycling Activity Report 2008-09*. Assumes 43% C&I disposed to landfill.

*** Estimated from *Recycling Activity Report 2008-09*. Assumes 27% C&D disposed to landfill.

Figure 6. Summary of goals and targets for diversion from landfill

"It will be **more difficult** in regional areas because of **greater distances**, transport costs and a **lack of economies of scale**."



STRATEGIC OBJECTIVES AND PRIORITIES FOR ACTION

Long-term strategic objectives

OBJECTIVE: MAXIMISE THE USEFUL LIFE OF MATERIALS THROUGH REUSE AND RECYCLING

- Promote green innovation (e.g. promote the development and uptake of new, cleaner technology)
- Recognise the lifecycle of products and account for the resources used
- Increase and maintain capacity of recycling systems and reprocessing infrastructure
- Implement regulation that drives progress and long term investment decisions
- Identify new opportunities through developing and promoting innovative solutions
- Monitor and evaluate the effectiveness of appropriate price signals and legislative instruments

OBJECTIVE: AVOID AND REDUCE WASTE

- Avoid and reduce wasteful use of resources in production processes and products (e.g. resource efficiency, cleaner production, design for the environment and extended producer responsibility)
- Develop and adopt innovative products and services that drive efficiency improvements to reduce our ecological footprint and create a comparative economic advantage
- Learn and foster attitudes and lifestyle choices that encourage us to live within nature's limits
- Embed this new learning within our education systems
- Support consumers to make informed purchasing choices

Priorities for action

Measurement, analysis, evaluation and reporting to support targets and assess the adequacy of the Strategy

Building our knowledge and data on waste and recycling

Ongoing

- Measure recycling activity
- Measure waste (tonnes) to landfill
- Register illegal dumping
- Evaluate programs and initiatives
- Collect and analyse litter data

New

- Implement Zero Waste SA's environmental data and knowledge management and reporting system
- Measure waste (tonnes) to landfill by waste stream (MSW, C&I, C&D)
- Capture and report local government, industry and business experiences in the form of case studies for use by others
- Develop accreditation schemes that allow businesses and organisations to be recognised for their effort
- Develop new measurement tools to quantify reuse through market surveys and other research activities

Ongoing

- Monitor community attitudes and behaviours
- Monitor infrastructure and identify gaps
- Record learning and feedback
- Inform policy and design of projects with feedback

New

- Monitor industry investment, cost savings, jobs growth, change in perceptions and importance of environmental issues
- Measure outcomes as they relate to greenhouse gas emissions, water and ecological footprint
- Develop models that give feedback on individual and system performance

Priorities for action CONTINUED

OBJECTIVE: MAXIMISE THE USEFUL LIFE OF MATERIALS THROUGH REUSE AND RECYCLING

OBJECTIVE: AVOID AND REDUCE WASTE

Each waste stream has been analysed to arrive at the following strategies and associated targets.

Municipal solid waste target: 60% diversion by 2012

70% diversion by 2015 (target based on 2009 estimated diversion of 55% of MSW from landfill, Adelaide metro only - most councils)

Maximise diversion to the extent practically achievable (non-metropolitan only)

Ongoing

- Develop incentives for successful food organics collection and treatment
- Improve feedstocks to maximise value of source separated systems
- Improve
  - networks for drop-off of non-kerbside collected materials (e.g. e-waste)
  - sorting infrastructure
  - value-adding of materials
- Coordinate and advocate for national solutions to problematic wastes (e.g. packaging and hazardous wastes)
- Encourage better contracting and monitoring for household collection services
- Support the implementation of the *Environment Protection (Waste to Resources) Policy*
- Monitor and review kerbside collection systems to ensure maximum performance

New

- Assist Local Government to review, update and implement regional waste management plans
- Encourage reuse of materials or items through refurbishment
- Support coordinated and integrated householder recycling education campaigns such as *Recycle Right*
- Develop resource information to assist non-metropolitan areas to divert waste from landfill
- Reduce contamination arising from collection vehicle compaction rates
- Develop guidelines for residential waste and recycling services associated with higher density urban living

Ongoing

- Use innovative approaches to inform households, increase awareness of wasteful consumption and effective recycling, and maintain awareness above 80%

New

- Promote green purchasing and waste avoidance with householders and councils
- Explore links with emerging sustainability agendas (e.g. sustainability in food policy)
- Engage the community in opportunities involving resources and sustainability
- Develop systems that assist purchasing decisions such as extended producer responsibility, star-rating systems and the choice to leave packaging in-store

Commercial and industrial waste target: 65% diversion by 2012

75% diversion by 2015 (target based on 2009 estimated diversion of 60% C&I from landfill, Adelaide metro only)

Maximise diversion to the extent practically achievable (non-metropolitan only)

Ongoing

- Improve source separation, collection systems and sorting infrastructure
- Improve waste management and recycling service delivery by the private sector
- Reduce barriers to the use of recycled materials in projects or products

New

- Identify solutions to achieve diversion of C&I in regional areas
- Support development of guidance for management of farm generated waste streams
- Support the implementation of the *Environment Protection (Waste to Resources) Policy*
- Identify chemical hazard reduction and related opportunities in government and business and identify business leaders who can assist with education and change
- Identify recycling systems, resources and tools for workplaces to assist with ongoing awareness
- Work with economic development agencies to look at growing resource recovery sectors (e.g. e-waste sector)
- Consistent with the waste management hierarchy, continue to monitor energy recovery enterprises to ensure that viable options for higher-order beneficial uses are not circumvented

Ongoing

- Promote Environment Protection Authority sustainability licences that incorporate sustainability measures
- Encourage industry training and awareness
- Promote sustainable procurement and undertake specific analysis to demonstrate the full costs and other benefits of sustainable procurement
- Promote industry knowledge and awareness through web-based publications and information dissemination

New

- Implement sustainability initiatives within the State Government, including assets such as buildings and infrastructure
- Promote innovation in business sustainability
- Fund the expansion of resource efficiency initiatives to include accreditation schemes
- Involve greater numbers of businesses, especially SME and retail sectors in work-based recycling and resource efficiency programs
- Identify business leaders who can assist with industry education and enable change across sectors and through supply chains
- Support the development and implementation of Climate Change Sector Agreements

Priorities for action CONTINUED

OBJECTIVE: MAXIMISE THE USEFUL LIFE OF MATERIALS THROUGH REUSE AND RECYCLING

OBJECTIVE: AVOID AND REDUCE WASTE

Construction and demolition waste target: 85% diversion by 2012

90% diversion by 2015 (target based on 2009 estimated diversion of 80% C&D from landfill, Adelaide metro only)

Maximise diversion to the extent practically achievable (non-metropolitan only)

Ongoing
- Develop markets and remove barriers to the responsible use of secondary materials such as concrete, aggregates, fill materials etc
- Improve the quality of recycled materials ensuring fit for purpose
- Promote source separation wherever feasible

New
- Support the implementation of the *Environment Protection (Waste to Resources) Policy*
- Embed wastes reduction and management practices in Vocational education and training courses
- Encourage salvaging and reuse of building materials

Ongoing
- Ensure planning decisions take account of waste generation and waste reduction
- Promote sustainable procurement, especially in the government sector
- Apply financial instruments to drive change

New
- Engage industry training and association bodies to include avoidance, reduction and recycling within a sustainability context in apprentice training
- Promote better design of the built environment and adoption of new and more sustainable building materials

Problematic and hazardous waste target: effective product stewardship schemes in place by 2015

Ongoing
- Encourage the recovery and treatment of oils, solvents and other valuable materials for reuse
- Reduce hazards through hazardous waste collection, recycling and appropriate disposal

New
- Encourage remediation of low level and high level contaminated soils for reuse

Ongoing
- Engage with producers, importers and manufacturers to educate, encourage and support product stewardship initiatives and progressively introduce schemes for e-waste, televisions, tyres, batteries etc over the period
- Reduce hazards through hazardous waste collection, recycling and appropriate disposal

New
- Encourage use of less toxic alternatives in industry and in households, reducing hazards, injuries and health impacts
- Provide convenient drop-off facilities for unwanted household and farm hazardous materials

Disposal and illegal dumping target: decreased incidences and tonnages (target based on 2009 baseline)

Landfill, enforcement, use of levies and financial instruments

Ongoing
- Review levies and other financial instruments, penalties and on the spot fines to reflect real costs

New
- Support the implementation of the *Environment Protection (Waste to Resources) Policy*
- Support, encourage and, where possible, demand landfill gas recovery for energy production where this is consistent with Environment Protection Authority requirements
- Implement litter reduction and public place recycling

Ongoing
- Do not develop new landfills to service metropolitan Adelaide
- Apply financial instruments to drive change
- Provide education, enforcement action and disincentives for dumping

New
- Ban from landfill those materials that could be disposed of through strongly performing markets – having regard to metropolitan and non-metropolitan context
- Identify and maximise opportunities to increase awareness, link environmental values with reduced litter, illegal dumping and associated impacts

Research and development

As we extend our knowledge and focus on sustainable use of resources, we begin to extend beyond known approaches to recycling and reuse. Research will underpin and inform how we address these new challenges of wasteful consumption, and change behaviours. Research priorities will be evaluated from time to time.

New
- Analyse the flow of materials and other resources in a product's lifecycle from raw material extraction and manufacturing, through a product's useful life and recycling, to final disposal
- Identify where in lifecycle, changes can make large positive impacts on energy, waste, materials use and greenhouse gas production
- Attract other funding partners, such as the Australian Research Council for research projects
- Consistent with the guidance provided by the waste management hierarchy, support new technologies that either enhance performance or replace landfill as a disposal option
- Support research into durable goods and products that encourage reuse

New
- Understand how sustainable behaviour change is achieved and apply findings to waste avoidance, reduction, littering, illegal dumping, consumption etc
- Find the information we need to make better decisions about what we buy and use
- Discover the policy choices society will need to make to ensure its future wellbeing
- Fund and develop graduate and post-graduate capacity
- Measure consumption and ecological footprint; understand links between wasteful consumption, disposable income, behaviours and ecological footprint

OUR CHALLENGES

Achieving our targets means recognising and managing possible barriers to the success of the Strategy.

Municipal solid waste

Target achievability - high

In many areas we can work with existing local government groups and networks. In regional areas, greater distances, transport costs and a lack of economies of scale make improvements more difficult.

Challenges include:

> improving the quality of material collected from kerbsides for recycling
> improving capacity and technology for facilities to recover materials
> expanding local and international markets for recycled commodities
> encouraging companies to choose recyclable packaging for their products.

To address these challenges we can:

> communicate and use partnerships to educate householders about recycling
> encourage investment in improved capacity and technology
> track trends in commodity markets
> support product stewardship schemes including extended producer responsibility.

Commercial and industrial waste

Target achievability - medium

Commercial and industrial activity is dispersed, diverse and competitive. Waste material is also varied, and largely unsorted when collected. Large-scale facilities for recovery of C&I waste are in their infancy.

Challenges include:

> dispersed and highly varied collection arrangements and processing infrastructure
> limited resources, staff or expertise within SMEs to commit to change in managing waste
> need to coordinate staff, cleaners, building managers and collection companies for efficiency in multi-tenanted buildings
> markets for materials underdeveloped.

To address these challenges, we can:

> encourage consolidation of collection and infrastructure development in precincts
> educate businesses to take up recycling services
> support the development of new markets for, and products from, recycled materials
> use government purchasing to support the market for recycled products.

Construction and demolition waste

Target achievability - medium to high

This sector is very commercially competitive. A few industry organisations with large membership bases provide avenues for communication and support. The government can also ensure businesses comply with regulations.

The range of waste material is not as varied as in C&I, and the acceptance of recycled products is increasing with some large processors in the market.

Challenges include:

> preference for virgin materials due to concern that recycled products contain contaminants
> proportion of recycled product restricted in engineering applications
> time lag between demand and supply of recycled materials for large projects
> establishing markets for materials.

To reduce these risks and address these challenges, we can:

> engage with industry to reduce product contamination
> ensure products are fit for purpose
> encourage the forward purchase of materials.

What happens next?

A positive future for waste and resource management in South Australia is within reach. We have many of the management systems and much of the infrastructure in place, and there is strong evidence that the community is ready to act for a healthy environment.

The Strategy guides our programs and activities. We will continue to:

> promote sustainable waste management
> establish incentives
> define the regulatory environment
> facilitate innovation
> provide leadership for South Australia and other jurisdictions.

For *South Australia's Waste Strategy 2011-2015* to be a success, individuals and organisations need to value the vision of zero waste. This requires the on-going cooperation and support of existing stakeholders while we build new relationships. By engaging fully with the community on all levels to change waste management behaviour, Zero Waste SA will create a more sustainable future for South Australia.

GLOSSARY

Carbon Farming Initiative

The Commonwealth Government's legislation that allows carbon credits to be generated (which can be traded within carbon markets) through reducing emissions associated with land-use (ie farming practices, waste diversion).

Carbon, water and ecological footprint

Carbon footprint - the carbon equivalent emissions of a product, process or jurisdiction (can also include embedded carbon), expressed in kilograms / tonnes of carbon equivalent emissions.
Water footprint - the draw on surface and subsurface water of a product, process or jurisdiction (can also include embedded water), expressed in terms of litres / kilolitres.
Ecological footprint - the demand on renewable resources of a product, process or jurisdiction, expressed in terms of land area.

Carbon Energy Future

An emissions trading scheme which sets an overall cap on carbon emissions and an associated trade mechanism to meet carbon pollution reduction targets.

Cleaner production

The continual effort to prevent pollution, reduce the use of energy, water and material resources and minimise waste, all without reducing production capacity.

Cyclical use of materials

The design and use of materials so they can be recovered, reused and recycled, recirculated rather than following a linear flow of use commonly referred to as 'take-make-waste'.

Embedded carbon or water footprint

The impact from having created an infrastructure asset (e.g. building) or item (e.g. bottle) initially as distinct from the impact of using the asset or item.

End of pipe solutions

Technologies and processes that focus on mitigating the environmental impacts of system after the event rather than preventing or avoiding those impacts.

E-waste

Electrical and electronic equipment.

Extended producer responsibility (EPR)

Extended producer responsibility is a subset of product stewardship which places primary responsibility on the producer for the reuse, recycling or disposal of their products when they are no longer required by the consumer.

Feedstocks

The raw / recovered materials from which products are manufactured.

Greenhouse gas emissions

The release of greenhouse gases into the atmosphere. A greenhouse gas is an atmospheric gas that absorbs and emits infrared or heat radiation, giving rise to the greenhouse effect.

Green futures

A priority policy theme being progressed by the South Australian Government to use South Australia's existing standing in sustainability and renewable energy to build a comparative economic advantage.

Green purchasing

Purchasing priority not only on the price and quality, but also on the impact that a product or service has on the environment and its necessity.

Product stewardship

A policy approach recognising that manufacturers, importers, retailers, governments and consumers have a shared responsibility for the environmental impacts of a product throughout its full life cycle. Product stewardship schemes establish a means for relevant parties in the product chain to share responsibility for the products they produce, handle, purchase, use and discard.

Source separation of materials

Sorting different waste materials (e.g. cardboard, metals, paper, organic material) where the waste is generated, to facilitate reuse, recycling or processing which reduces contamination.

Sustainability (World Commission on Environment and Development)

Development that meets the needs of the present without compromising the ability of future generations to meet their needs.

Sustainability licences

A type of licence which combines the standard Environment Protection Authority statutory licence enforceable conditions with a voluntary sustainability agreement, outlining the company's public commitment to reduce its impact on the local environment.

Wasteful consumption

Spending on goods and services not consumed or used.

Zero waste

Waste minimisation by designing waste out of processes and product; resource recovery and prevention of materials becoming waste; a cultural and social shift in how we perceive and manage resources.

REFERENCES

Conservation Council of South Australia. 2009. *South Australia in a changing climate: A blueprint for a sustainable future.* CCSA, Adelaide. <www.conservation.sa.org.au/blueprint.html>

Department for Transport, Infrastructure and Energy. 2005. *Strategic Infrastructure Plan for South Australia*. DTEI, Adelaide. <www.dtei.sa.gov.au/infrastructure/>

Department of Sustainability, Environment, Water, Population and Communities. 2010. *National Waste Policy; Less Waste, More Resources. Product Stewardship Legislation Consultation Paper*. Australian Government, Canberra.

Environment Protection and Heritage Council and the Australian Department of the Environment, Water, Heritage and the Arts. 2009. *National Waste Policy: Less Waste More Resources.* EPHC, Canberra. <www.environment.gov.au/wastepolicy/>

Environment Protection and Heritage Council. 2010. *National Waste Report*. EPHC, Canberra.

Environment Protection Authority. 2009. *The State of our Environment: State of the Environment Report for South Australia.* Environment Protection Authority, Adelaide.

Environment Protection Authority. 2008. *Draft Environment Protection (Waste to Resources) Policy and Explanatory Report.* Environment Protection Authority, Adelaide.

Government of South Australia. 2011. *South Australia's Strategic Plan 2011.* Government of South Australia, Adelaide. <saplan.org.au/>

Hyder Consulting. 2010. *Recycling Activity in South Australia 2008-2009*, Zero Waste SA, Adelaide. <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/RecyclingActivitySA-2008-09.pdf>

McLennan Magasanik Associates Pty Ltd and BDA Group. 2007. *South Australia's Waste Strategy 2005-2010 Extante Benefit Cost Assessment Volume 1: Summary Report.* Zero Waste SA. Adelaide. <http://www.zerowaste.sa.gov. au/Content/Uploaded/Assets/BenefitCostAnalysisVolume_summary.pdf>

McLennan Magasanik Associates Pty Ltd and BDA Group. 2007. *South Australia's Waste Strategy 2005-2010 Extante Benefit Cost Assessment Volume 2: Technical Report.* Zero Waste SA Adelaide. <http://www.zerowaste.sa.gov. au/Content/Uploaded/Assets/BenefitCostAnalysisVolume_complete.pdf>

Rawtec. 2009. S*outh Australian recycling industry investment review: Setting the picture.* Zero Waste SA, Adelaide. <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/Recycling%20Industry%20Investment%20Review%20Part1.pdf>

Rawtec. 2009. *South Australian recycling industry investment review: Priority investment opportunities.* Zero Waste SA, Adelaide. <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/Recycling%20Industry%20Investment%20Review%20Part2.pdf>

United Nations Environment Program. 2010. *Waste and Climate Change: Global trends and strategy framework*. UNEP, Osaka/Shiga.

United Nations Human Settlements Programme (UN-HABITAT). 2010. *Solid Waste Management in the World's Cities*. Earthscan Ltd, London, UK.

Waste Audit and Consultancy Services. 2007. *Disposal based survey.* Zero Waste SA, Adelaide. <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/Landfill%20Audit%202007.pdf>

Wright Corporate Strategy and KJA. 2009. *Mid-Term Review of South Australia's Waste Strategy 2005-2010 Compilation Report.* Zero Waste SA, Adelaide. <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/Mid%20term%20review%20SA%20Waste%20Strategy%202005-10.pdf>

More reading

Sustainability Victoria. 2009. *Annual Report 2008-09.* Sustainability Victoria, Melbourne.

Sustainability Victoria. 2009. *Business Plan 2008-09*. Sustainability Victoria, Melbourne.

Waste Authority of Western Australia. 2010. *Draft II Waste Strategy for Western Australia.* Waste Authority, Perth.

WRAP. 2009. *Waste & Resources Programme Annual Report and consolidated accounts for year ended 31 March 2009.* WRAP, Banbury UK. <www.wrap.org.uk>

Zero Waste SA. 2009a. *Annual Report 2008-09*. Zero Waste SA, Adelaide. <http://www.zerowaste.sa.gov.au/Content/Uploaded/ Assets/ Zero Waste SA%20Annual%20Report%202008-09.pdf>

Zero Waste SA. 2009b. *Business Plan 2010-11*. Zero Waste SA, Adelaide. <www.zerowaste.sa.gov.au/About.mvc/BusinessPlan>

Zero Waste SA. 2007. *Explanatory Paper South Australia's Waste Strategy 2005-2010 Benefit Cost Assessment*. Zero Waste SA, Adelaide. <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/BenefitCostAnalysisPositionPaper.pdf>

Zero Waste SA. 2005a. *South Australia's Waste Strategy 2005-10*. Zero Waste SA, Adelaide. <www.zerowaste.sa.gov.au/About.mvc/Wastestrategy>

Zero Waste SA. 2005b. *Background paper to South Australia's Waste Strategy 2005-10*. Zero Waste SA, Adelaide.

Like organisations

- Department of Sustainability, Environment, Water, Population and Communities, Australian Government
- Department of Environment, Climate Change and Water NSW
- Department of Sustainability and Environment (Victoria)
- Sustainability Victoria
- Environment Protection Authority Victoria
- Towards Zero Waste WA: Waste Authority of Western Australia
- Department of Environment and Resource Management (Qld)
- Department of Environment, Climate Change, Energy and Water (ACT NOWaste)
- Department for Natural Resources, Environment, the Arts and Sport (NT)
- WRAP (UK)
- California Environmental Protection Agency (USA)
- Ministry of Environment (British Columbia)

Endnotes

1 Wright Corporate Strategy and KJA. 2009. *Mid-Term Review of South Australia's Waste Strategy 2005-2010* Compilation Report. Zero Waste SA, Adelaide, accessed 17 May 2010, <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/Mid%20term%20review%20SA%20Waste%20Strategy%202005-10.pdf>

2 Government of South Australia. 2011. *South Australia's Strategic Plan 2011*. Government of South Australia, Adelaide, accessed 8 September 2011, <saplan.org.au/>

3 *Zero Waste Act 2004*, accessed 23 April 2010, <http://www.legislation.sa.gov.au/LZ/C/A/ZERO%20WASTE%20SA%20ACT%202004/2010.01.31/2004.1.UN.PDF>

4 Hyder Consulting. 2010. *Recycling Activity in South Australia 2009-2010*, ZWSA, Adelaide, accessed 17 May 2010, <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/RecyclingActivitySA-2008-09.pdf>

5 Ibid, p. 1

6 Waste Audit and Consultancy Services. 2007. *Disposal based survey*. ZWSA, Adelaide, accessed 23 April 2010, <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/Landfill%20Audit%202007.pdf>

7 Hyder Consulting. 2010. *Recycling Activity in South Australia 2009-2010*, ZWSA, Adelaide, accessed 17 May 2010, <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/RecyclingActivitySA-2008-09.pdf>

8 Ibid, p. 4

9 Wright Corporate Strategy and KJA, op.cit.

10 McLennan Magasanik Associates Pty Ltd and BDA Group. 2007. *South Australia's Waste Strategy 2005-2010 Extante Benefit Cost Assessment Volume 1: Summary Report*. ZWSA, Adelaide, accessed 17 May 2010, <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/BenefitCostAnalysisVolume_summary.pdf>

11 Rawtec. 2009a. *South Australian recycling industry investment review: Setting the picture.* ZWSA, Adelaide, accessed 17 May 2010, <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/Recycling%20Industry%20Investment%20Review%20Part1.pdf>

12 Rawtec. 2009b. *South Australian recycling industry investment review: Priority investment opportunities*. ZWSA, Adelaide, accessed 17 May 2010, <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/Recycling%20Industry%20Investment%20Review%20Part2.pdf>

13 Ibid, p. 1.

14 Hyder Consulting. 2010. *Recycling Activity in South Australia 2008-2009*, ZWSA, Adelaide, accessed 17 May 2010, <http://www.zerowaste.sa.gov.au/Content/Uploaded/Assets/ RecyclingActivitySA-2008-09.pdf>

15 Government of South Australia, op. cit. p. 47.

16 Environment Protection Authority. 2009. *The State of our Environment: State of the Environment Report for South Australia*. Environment Protection Authority, Adelaide.

17 Government of South Australia, op. cit. p. 47.

18 Environment Protection and Heritage Council and the Australian Department of the Environment, Water, Heritage and the Arts. 2009. *National Waste Policy: Less Waste More Resources*. EPHC, Canberra, accessed 23 April 2010, <www.environment.gov.au/wastepolicy/>

19 Government of South Australia. 2005. *Caring for Country*. Government of South Australia, Adelaide.

20 *Zero Waste SA Act 2004*, op.cit. p. 3.

APPENDIX: WHO WE CONSULTED

Zero Waste SA values all the contributions and we thank everyone for taking part. We released the *Draft South Australia's Waste Strategy 2011-2015* for eight weeks consultation in August 2010. We called for submissions through:

- a media announcement (4 August)
- distribution to 150 stakeholders (printed)
- distribution to 100 stakeholders (email)
- notification advertisement (state based newspaper)
- our website
- various presentations and briefings.

We received 44 submissions and noted those comments that did not directly relate to the Strategy.

State Government

Department of Planning and Local Government

Department for Manufacturing, Innovation, Trade, Resources and Energy

Department of Treasury and Finance

South Australian Arid Lands Natural Resources Management Board

South-East Natural Resources Management Board

Local Government

Campbelltown City Council

City of Adelaide

City of Burnside

City of Charles Sturt

City of Marion

City of Mount Gambier

City of Onkaparinga

City of Port Adelaide Enfield

City of Prospect

District Council of Grant

District Council of Naracoorte Lucindale

Local Government Association of South Australia

Non Government Organisations and others

Conservation Council of SA

KESAB *environmental solutions*

Ms Emma Bartram

Mr Tim Folwell

Ms Kate Campbell

National Association of Charitable Recycling Organisations

University of SA

Business and industry

Australian Industry Group (SA Branch)

Business SA

Housing Industry Association

Restaurant and Catering South Australia

State Retailers Association

Waste management industry

Fleurieu Regional Waste Authority

Jeffries Group

LMS Generation Pty Ltd

Northern Adelaide Waste Management Authority

ResourceCo Pty Ltd

Sims Metal Management

Southern Region Waste Resource Authority

Transpacific Industries Group Ltd

Veolia Environmental Services

Waste Management Association of Australia – SA Branch

Waste Management Association of Australia – SA Resource Recovery Working Group

Waste Management Association of Australia – Waste Educators Working Group

WastecareSA

Zero Waste SA

Level 8

Statewide House

99 Gawler Place

ADELAIDE SA 5000

Telephone: (08) 8204 2051

Facsimile: (08) 8204 1911

Email: zerowaste@zerowaste.sa.gov.au

Internet: www.zerowaste.sa.gov.au

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