

Integrated Waste Strategy for metropolitan Adelaide

Progress on implementation

January 1999



Government of South Australia



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1 Strategic overview

1.1 Background

Five years ago waste management was not a priority issue for South Australia. In the last five years, this position has reversed for economic and social reasons. This is the same for other States in Australia and many other nations throughout the world. In addition, waste featured prominently in the recent Organisation for Economic Cooperation and Development (OECD) report on Australia's environmental performance.

An *Integrated Waste Management Strategy for Metropolitan Adelaide* was released in May 1996. The Waste Strategy included a number of key elements for action, in particular improved infrastructure, strengthened regulation, and enhanced resource recovery. As a consequence, there has been significant improvement in the waste management industry, however, further advances are still required. It is expected to take five years before the strategy is fully implemented.

There are enormous pressures to manage waste such that its environmental and social impact on the community is minimised and the volume of waste to landfill is reduced through resource recovery.

Although there have been successes in reducing waste, in particular through kerbside recycling, these gains have been offset through increased waste production in other areas. For instance, since the introduction of bans on backyard burning by the Environment Protection Agency (EPA) and local government, green waste volumes have increased substantially. Current projections suggest Adelaide will produce about one million tonnes of solid waste per annum over the next 10 years unless significant waste reduction is accomplished.

The purpose of this document is to report progress on the Waste Strategy and provide the community with some insight into future issues which need to be addressed.

1.2 Who runs waste management?

There are numerous stakeholders in waste management. Collection of domestic waste is the responsibility of local government while industrial and commercial waste is managed by the private sector. Waste depots including resource recovery centres, transfer stations and landfills are operated by a mixture of local government and private sector operators.

Regulation of waste management is carried out by State Government. Planning SA regulates siting and approval of new waste depots while the EPA regulates the environmental performance of existing depots.

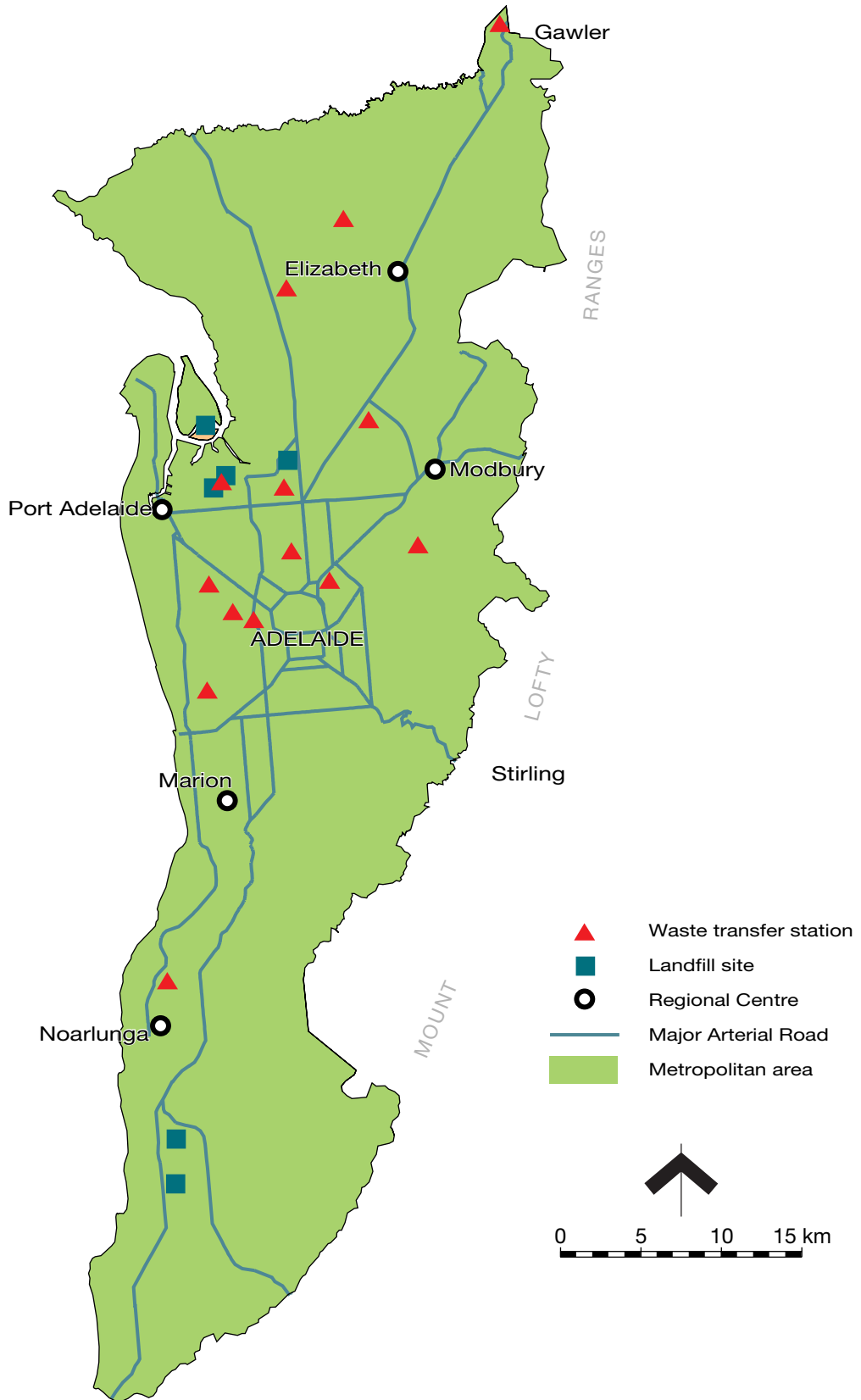
1.3 Infrastructure

There are currently 14 waste transfer stations and 6 landfills operating in metropolitan Adelaide (see Figure 1). Of the projected one million tonnes of waste per annum, about 250,000 tonnes per annum (tpa) will be disposed of to southern landfills (Pedler Creek and Southern Waste) in the foreseeable future.

Northern Adelaide however, currently takes the larger share of Adelaide's waste (750,000 tpa) with Adelaide City Council (ACC) Wingfield currently taking about 500,000tpa and Garden Island 180 000tpa. Recent closure (through EPA action) and phase-out of a number of landfills in northern Adelaide has caused a 'squeeze' in landfill capacity.

Figure 1

Existing waste management infrastructure in Adelaide



As a result of the 'squeeze', a number of applications have been lodged to address the potential shortfall in capacity. There is an urgent need to consider the future of the Wingfield region for waste management and the status of these new landfill proposals in order to manage Adelaide's future solid waste disposal.

Some material disposed of to major landfills is accepted as 'cleanfill' by landfill operators and is not routinely reported to the EPA. Because it is generally not reported, this material is not included in the landfill projections used in this document.

1.4 Regulatory strengthening

In parallel with EPA regulatory strengthening, there is a need to introduce greater certainty for the community and industry with regard to the planning system. A Plan Amendment Report has been developed by Planning SA for this purpose. Further direction and certainty will also be provided by an Environment Protection (Waste) Policy to be developed under the *Environment Protection Act 1993*.

1.5 Resource recovery

There is increasing community pressure to reduce the volume of waste to landfill through resource recovery. Strategic intervention from government is needed in order to enhance resource recovery initiatives, particularly in green waste management.

1.6 Institutional reform

In order to drive waste management into the future, institutional reform is needed. Interim arrangements resulting from the winding up of Recycle 2000 has seen the establishment of a special Waste Management Committee with a much broader focus.

1.7 Economic issues

The economic significance of the waste management industry to the State is commonly misunderstood and underestimated. Reform and improvement in the waste management industry will lead to increased costs of waste disposal which must be managed appropriately. At the same time the waste industry offers significant potential for employment growth. It is much larger today than it was 10 years ago and it employs at least two times more people when the contribution of collection, recovery, reuse, treatment and disposal are considered together.

A recent Australian Bureau of Statistics (ABS) survey estimated the SA waste industry (as of June 1997) employs 904 people and has a total income of \$103.4 million.

• Businesses / organisations involved	99
• Employment at end June 1997	904
• Income from the collection and transport of waste (\$m)	69.7
• Income from the treatment / processing and / or disposal of waste (\$m)	22.4
• Income from the treatment / processing and / or sale of recyclables (\$m)	11.3*

*subject to sampling variability (ABS, 1998)

Industry sources estimate employment associated with container deposit legislation (CDL) collection and recycling is between 600 and 700 people.

1.8 Social and environmental issues

Full implementation of the Waste Strategy will ultimately reduce the impacts of the waste management industry to a level which is acceptable to the majority of Adelaide's population. Early in the process, the EPA was confronted with numerous angry communities living close to landfills. Many of these problem sites have been dealt with by the EPA.

Future decisions regarding waste management depots will still attract some opposition. However, the intention is to minimise the opposition by establishing new sites which compare favourably against the best international practices, which minimise environmental and social impacts and which ideally are located away from significant areas of housing. This compares with recent circumstances where old sites have commonly impacted on whole suburbs.

2 Waste profile

The Waste Strategy identified a need for reliable data to facilitate sound planning for waste management.

In the past, waste data collection and analysis have been unreliable for a number of reasons including, inadequate and inconsistent on-site data collection. However, a disposal-based survey (waste audit) of commercial/industrial and construction/demolition waste at Adelaide landfill sites undertaken in December 1998 will improve our baseline information (Figure 2). Improvements to data collection and analysis will assist the waste management industry as well as government agencies to develop strategies to reduce and recover these wastes and develop markets for these materials.

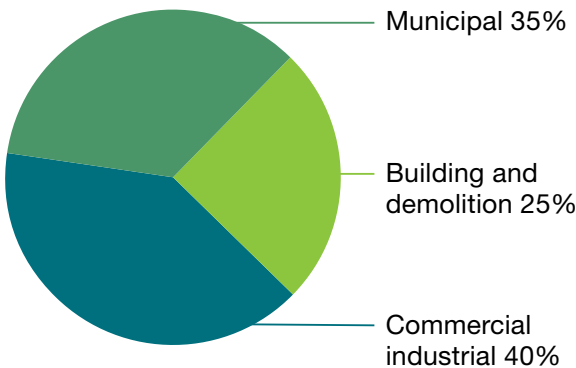
A general profile of South Australia's metropolitan waste based upon existing information is provided in the following diagrams.



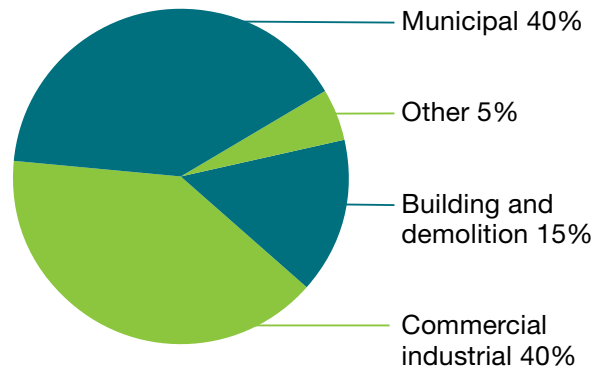
Figure 2

EPA waste audit at ACC Wingfield (December 1998)

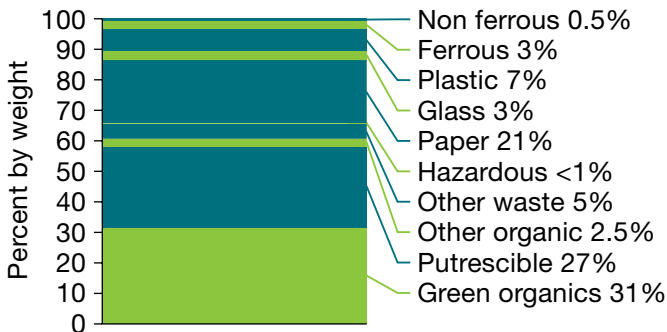
Metropolitan Adelaide solid waste
(Major categories estimated percentages)



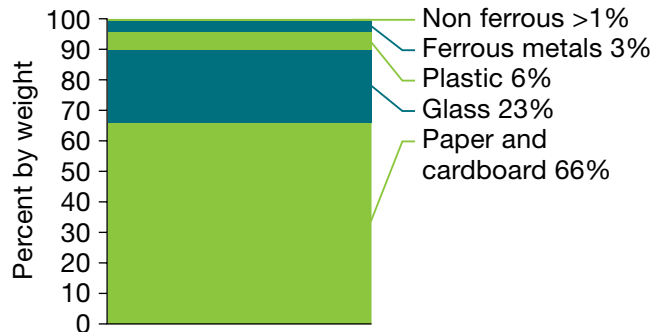
Metropolitan Sydney solid waste
(Major categories estimated percentages)



Typical kerbside municipal garbage bin
Tea Tree Gully 1995



Typical kerbside municipal recycle bin
Tea Tree Gully 1995



Source: Recycle 2000

3 Infrastructure and landfill capacity in metropolitan Adelaide

3.1 Background

One of the recommendations of the Waste Strategy was to establish a Waste Management Infrastructure Steering Committee (WMISC) to advise government on future waste infrastructure needs for the Adelaide metropolitan area. The WMISC was established in December 1996 and included representatives from the South Australian Employers Chamber of Commerce and Industry (SAECCI), the Local Government Association (LGA), the Conservation Council of South Australia, the Waste Management Association, Recycle 2000 and State Government agencies.

The Committee identified a need for additional landfill capacity and recommended an operational landfill capacity of up to 1 million tonnes of solid waste per annum should be planned for on a strategic basis, for the metropolitan area.

Of this 1 million tonnes, approximately 75% (750,000 tonnes) is directed to the northern metropolitan area and the balance (250,000 tonnes) is directed towards the southern metropolitan area.

The most important recommendations of the Committee include:

- adoption of best practice standards for solid waste management and development of an Environment Protection Policy for Waste;
- development of a planning framework which facilitates introduction of resource recovery centres (regional, district, and neighbourhood) and green waste processing facilities;
- refinement of the Planning Strategy to address land use components of the Waste Strategy and release of a statewide Plan Amendment Report and an advisory Planning Bulletin for waste management infrastructure;
- provision of landfill capacity of up to one million tonnes of solid waste per annum for Adelaide for the next 20 years through:
 - orderly closure of Wingfield and Garden Island;
 - establishment of buffers for Pedler Creek in order to secure the site for the longer term; and
 - establishment of new landfills which are consistent with EPA Guidelines for Major Solid Waste Landfill Depots; and
- Reform of institutional arrangements for solid waste management.

Figure 3

Metropolitan Adelaide landfills - expected life worse case scenario

Landfill/year	Tpa (1000)	1998	1999	2000	2001	2002	2003	2004	2005
Northern/Central landfills									
WRWMA - Garden Island	180	[Active]							
IWS - Wingfield	40	[Active]							
Enfield/Prospect	30	[Active]							
ACC - Wingfield	500	[Active]							
Annual Northern Total	750	[Active]							
IWS - Dublin				[Establishment]	[Active]	[Active]			
NAWMA - Smithfield				[Establishment]	[Active]	[Active]			
Pathline - Inkerman				[Establishment]	[Active]	[Active]			
Southern landfills									
SROC - Pedlar Creek	150	[Active]							
Southern Waste	100	[Active]							
Annual Southern Total	250	[Active]							

20.11.98

3.2 Landfill capacity

There are six landfill sites currently operating in the metropolitan area. The largest is the Adelaide City Council (ACC) site at Wingfield which currently takes about 50% (500,000 tonnes) of Adelaide's annual landfill waste. Garden Island currently takes about 180 000tpa. Use of the Wingfield landfill has increased substantially in recent years because of the closure of other landfills and difficulties in establishing new ones.

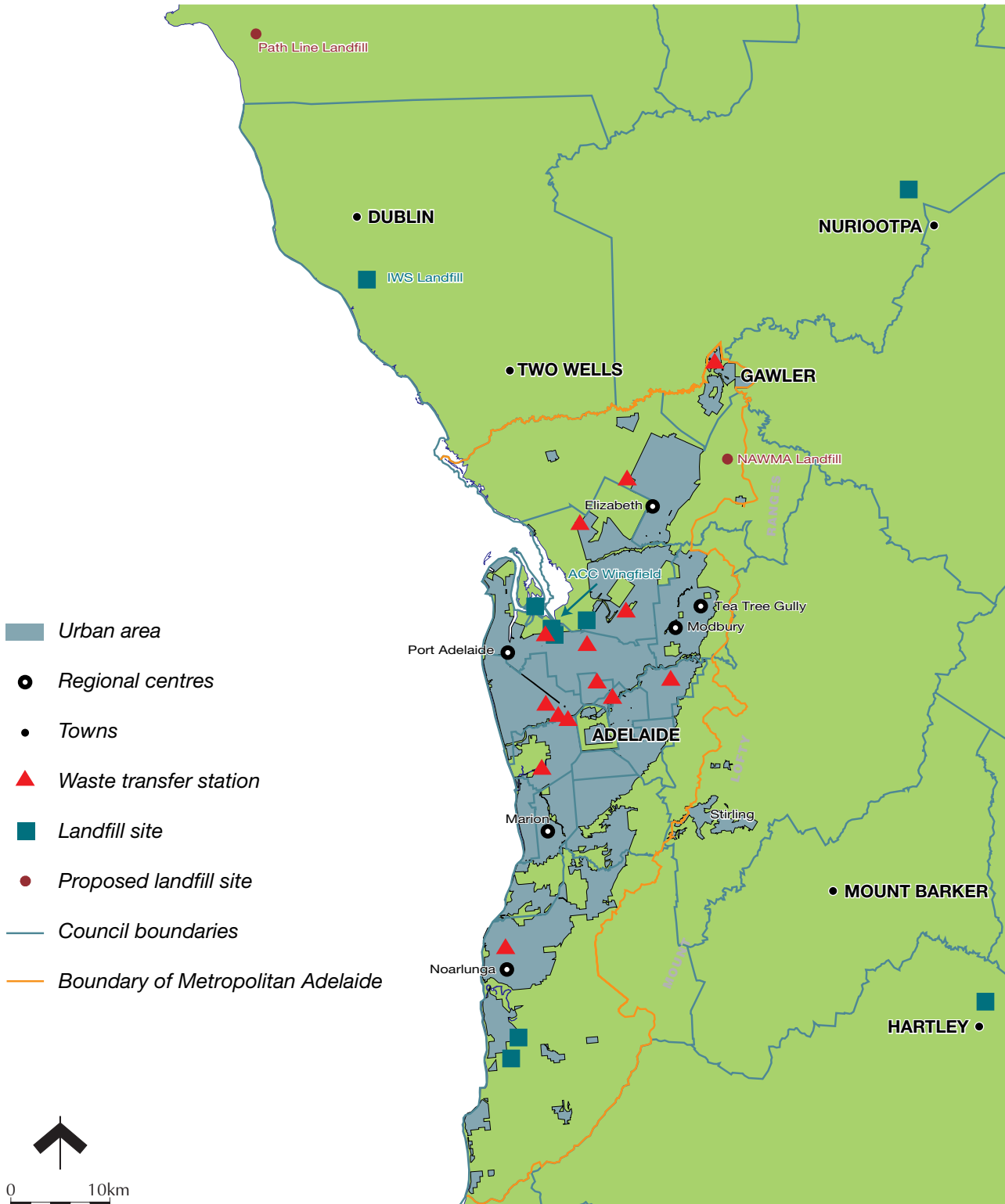
The landfill capacity of the southern metropolitan area is satisfactory until the year 2015 at least, mainly due to the large capacity of Pedler Creek and Southern Waste. The situation in the northern metropolitan area is more crucial because of the uncertainty surrounding the life of Wingfield and Garden Island.

It should be noted there are a number of scenarios which are possible in terms of infrastructure capacity. The worst case scenario is Wingfield closes in 12 to 18 months and IWS at Dublin (which was approved by the Governor in January 1998) is not commissioned until 2000, leaving a gap (Figure 3). A number of new landfills have been approved for construction to reduce this risk and meet future demand. Their location is illustrated in Figure 4.

Integrated Waste Strategy *for metropolitan Adelaide*

Figure 4

Existing waste management infrastructure and proposed landfill sites



3.3 Adelaide City Council (ACC) Wingfield

In recent years, ACC has improved management of the site in response to tightened license conditions by the EPA. However, the site is alongside sensitive coastal areas and was designed prior to today's high standards. In addition to its location, environmental issues associated with wind-blown litter, seagulls, odour and dust are also cause for concern.

The visual amenity of Wingfield has been a major issue with residents and the Port Adelaide Enfield Council for many years, adding to the negative public perception of the site.

In 1995 the Environment Protection Authority (the Authority) refused an application by ACC for a increase in the height of the landfill to 40 metres because there was insufficient information to confirm there were low impacts on the environment.

ACC is again seeking to increase the height of the landfill. Port Adelaide Enfield Council recently attempted to prevent the ACC from raising the landfill height on planning grounds. This was rejected by the Supreme Court on the basis that the condition was invalid but the Port Adelaide Enfield Council has lodged an appeal to the Full Bench of the Supreme Court on the decision.

Subject to the outcome of these legal proceedings, the effect could be that ACC once again seeks approval (via an Authority licence condition) to extend the landfill height above the currently licensed 15 metres. However, this matter has not yet been brought before the Authority for consideration and consequently no decision has yet been made by the Authority in relation to it. There is a need to resolve this issue and determine the future of the Wingfield area in waste management in order to provide greater certainty for the Port Adelaide Enfield community and the ACC.

The State Government wants an orderly and environmentally sound closure plan for the ACC landfill at Wingfield ensuring it is closed within a defined period. The State Government is negotiating with the ACC and Port Adelaide Enfield Council regarding the closure and will consider legislation to effect the closure. The State Government does not support a new putrescible landfill in the Wingfield-Gillman area. The State Government supports further investigations into the future use of the Wingfield-Gillman area in order to facilitate further industrial development, including the potential suitability of the area for resource recovery and green waste processing.

3.4 Garden Island Landfill

The Western Region Waste Management Authority (WRWMA) currently operates a solid waste landfill depot on Garden Island and receives about 180,000 tpa. Land Management Corporation, the owner of Garden Island, has required the preparation of a Landfill Management Plan to enable the orderly closure and rehabilitation of the landfill over a five-year period.

Waste received over this period will be baled to minimise the potential for adverse effects associated with litter. A closure plan is being developed to enable improvement of the landscape so it is suitable for a planned recreational land use, the recovery of landfill gas and the long-term monitoring of ground water and surface water quality.

3.5 Other landfill proposals

As far as landfill capacity for the northern metropolitan area is concerned, there is a need for additional capacity to be provided other than in Wingfield. This is to ensure adequate capacity and a competitive market.



Figure 5

Conventional landfill practice at ACC Wingfield (November 1998)

New landfill practice - balefill technology proposed for IWS Dublin

The uncertainty surrounding security of landfill capacity has led to a number of development applications being lodged in recent years.

IWS Landfill (Dublin)

A new landfill has been approved for construction by Integrated Waste Services (IWS) near Dublin, some 50 kilometres north of Adelaide. The site has a capacity of about 20 million tonnes of waste. This landfill will use improved practices including balefilling, leachate management, landfill gas control, surface water protection and on-going monitoring and management.

The main issues considered during assessment under the Environmental Impact Statement (EIS) process were potential for groundwater contamination, management of litter and potential health risks to adjacent livestock. The Assessment Report prepared by Planning SA determined the technology put forward by IWS provided a major shift in landfill practices currently used in South Australia and were comparable with best practice technology worldwide (Figure 5). The Assessment Report also demonstrated that the technology proposed provided acceptable methods for management of this new landfill.

The application received the Governor's consent (with conditions), in January 1998. It can proceed once it has received a licence from the EPA. The EPA is obliged to issue a license as planning approval has been granted.

Path Line Landfill (Inkerman)

The Governor has approved the Path Line Australia Pty Ltd landfill application. The proposal has been comprehensively assessed through an Environment Impact Statement process and was approved subject to a number of conditions designed to ensure that impacts are acceptable.

Some relevant points to note about the landfill are:

- the landfill is located at Inkerman, 85 km north of Adelaide and has a capacity of about 17 million tonnes of waste;
- the proposal had previously completed the EIS process under the *Planning Act 1982* and *Development Act 1993*. The proposal has been amended under the *Development Act 1993* prior to the Governor's decision, in order to provide greater ability to ensure any impacts are acceptable;
- Path Line Australia Pty Ltd has submitted a document, *Additional Investigation, Design and Documentation, Northward Fill, Final EIS Report* which provides additional information on the proposal to establish the landfill. The document clarifies issues raised in the Assessment Report (April 1997) which required further investigation, viz - operational procedures relating to surface water and ground water protection, landfill gas management, leachate control, odour control, buffers and revegetation aspects;
- the Minister for Transport and Urban Planning, Diana Laidlaw, MLC has released amendments to the Environmental Impact Statement (EIS) and the Assessment Report for Inkerman Landfill proposal. These set out measures to ensure impacts are acceptable;
- the Minister for Transport and Urban Planning subsequently accepted the document as an Amendment to the EIS;
- the EIS process has already enabled the community to input through written submissions on two occasions. First to assist in defining the Guidelines for the Environmental Impact Statement (4 weeks) and second to comment on the EIS (A period of 8 weeks between November 1995 and January 1996). In addition the community had the opportunity to raise any concerns about the proposal at a public meeting held at the Balaklava Town Hall during the public consultation period. The meeting was chaired by the former Department of Housing and Urban Development (Planning SA). Both Path Line Australia (the proponent) and its consultant attended;
- community input is considered to be important in the assessment processes and careful consideration has been given to all of the comments provided and the many additional letters and representations received;
- the public submissions raised a number of issues. The issues were further assessed in the light of the additional information provided in the EIS amendment document;
- the Minister for Transport and Urban Planning has prepared a detailed amendment to the Assessment Report to examine the environmental, social and economic impacts associated with the additional information and amended aspects of the proposal;

- the amendment to the Assessment Report assisted the Governor in making a final decision on the proposal. Some matters covered in the Assessment Report include:
 - the additional geological investigations undertaken have further ascertained that the site is suitable for the development of a landfill;
 - the base and walls of the landfill will be formed with a compacted clay liner with a 1m thickness designed to prevent any movement of waste leachates. In the unlikely event of a leak, there are not expected to be any adverse impacts due to negligible seepage rates, a flat hydraulic gradient and the attenuation capacity of the soils;
 - the leachate drainage arrangement will allow for drainage to sumps at the edge of the landfill and appropriate management and disposal of the leachate;
 - leachate ponds will be lined to prevent leakage;
 - leachate recirculation will allow for controlled decomposition of the wastes;
 - the final shape of the landfill has been designed to integrate with the existing topography and drainage patterns of the surrounding land;
 - a 500 m buffer exists from the landfill operations to the nearest residence and although it is not all within the proponent's site the impacts are expected to be ameliorated over that distance;
 - clean and contaminated run off will be collected through separate drains into separate holding ponds; and
 - landfill will not contaminate surrounding agricultural activities.

NAWMA Medlow Road Landfill (Smithfield Quarry)

The Governor has also approved the Northern Area Waste Management Authority's (NAWMA) Medlow Road landfill application. The proposal was comprehensively assessed through an EIS process and was approved subject to a number of conditions designed to ensure that impacts are acceptable.

Some relevant points to note about the landfill are:

- the site is a degraded, disused quarry in the City of Playford with a capacity of about 2 million tonnes of waste. Restoration of the site to conform with the original landscape will be a positive outcome from the landfill operations;
- the use of balefill technology and to minimise activity on site. The balefill operation will not be carried out at the quarry site;
- the site had a previous development approval for a landfill issued in 1992 which has lapsed;
- the applicant is local government (NAWMA) and the local government authorities involved are aware that there is some community opposition to the landfill;
- the EPA has advised:
 - the proposed balefill liner and leachate collection system incorporated in the project will not adversely affect underlying ground water;

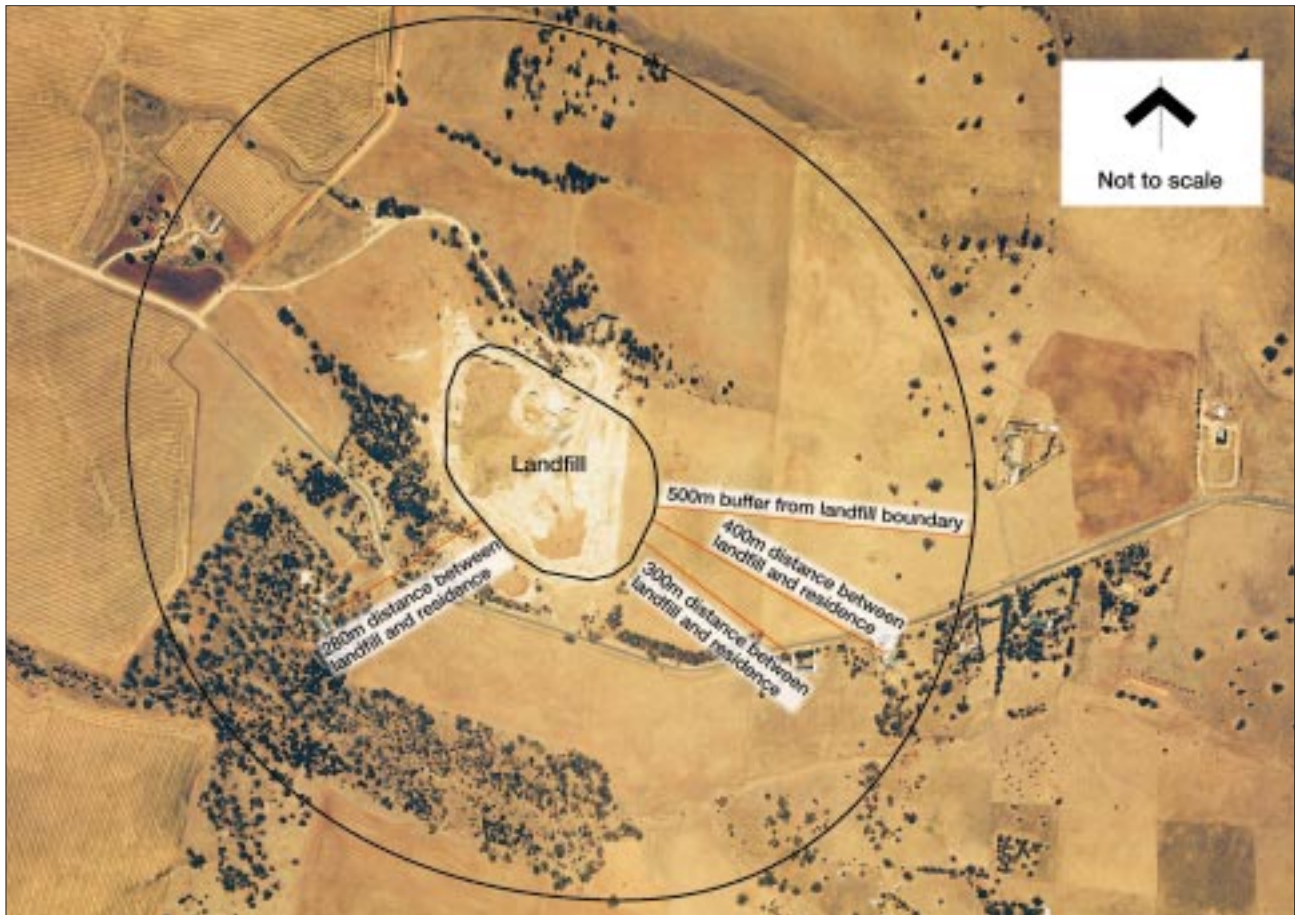
- the proposal to incorporate a low permeability clay liner overlain by a flexible membrane liner is considered to be "an effective management system ... and provides confidence that ground water will be protected from environmental harm";
 - stormwater management will comply with the general environmental duty;
 - predicted noise levels are considered acceptable;
 - the proposed vegetation screening and site management practices should assist in mitigating the visual and amenity impacts;
 - the adoption of balefill by NAWMA should significantly overcome any potential for adverse effects associated with litter, scavenging birds, dust and vermin compared to conventional landfill operations;
 - the proponent has provided a commitment to form a local consultative group during the operation of the balefill; and
 - in summary, the EPA is of the opinion that surface water, ground water, leachate, landfill gas, noise, litter and scavenging birds can be satisfactorily managed by the technology and methodology put forward by the proponent. The liner and balefill management system are regarded as equivalent or better than any current systems used in Australia.
- the EPA has also advised the following detailed issues will need to be addressed by the applicant:
 - a detailed groundwater and leachate management plan;
 - a surface water management plan;
 - compliance with provisions of the Environment Protection (Noise) Policy;
 - control over the types of waste to be received;
 - a financial assurance in accordance with the provisions of section 51 of the *Environment Protection Act* as a condition of licence;
 - finalisation of the Draft Landfill Environmental Management Plan;
 - satisfactory evidence from modelling and proposed management practices that odour impacts will be prevented; and
 - monitoring and reporting of landfill gas, odours and dust.

The Government is fully aware there are three houses within 500 metres of the proposed landfill operation. It should be noted that:

- the operation will be in a disused quarry and therefore predominantly below the general ground level;
- all three dwellings have either been built or sold since the original landfill approval in 1992 and thus the new owners should have been aware of the proposed landfill;

Figure 6

Proposed NAWMA Medlow Road Landfill (Smithfield Quarry)



- the Ministerial (Waste) PAR (see section 4) will make new dwellings non-complying in the Hills Face Zone within 500 metres of the landfill and there will be an advisory principle speaking against division of land in the adjoining Residential (Munno Para) Zone within 500 metres of the landfill;
- NAWMA has indicated in writing to the Minister for Transport and Urban Planning that it will offer to purchase some private properties in the Hills Face Zone and the Residential (Munno Para) Zone within 500 metres of the landfill which are directly impacted by the PAR; and
- the timeframe for the operation of the landfill will be limited to 20 years.

The landfill has been approved by the Governor under section 48 of the *Development Act 1993*.

The landfill will ultimately be operated by local government for the benefit of the ratepayers (Figure 6 shows the site).

4 Regulatory framework

4.1 Background

The solution to waste management problems is not confined to a single approach but requires an integrated network of solutions to achieve waste minimisation, reuse and recycling. The *Environment Protection Act 1993*, in conjunction with complementary planning controls provided through the *Development Act 1993* and other relevant legislation, provides a lead role in controlling and setting the direction necessary to achieve best practice environmental management in the waste industry. Regulation is a key driver for the achievement of the Waste Strategy vision and objectives.

4.2 Planning Strategy

The Planning Strategy presents current State Government policy for development. In particular, it seeks to guide and coordinate State Government activity in provision of infrastructure and indicates directions for future development to the community. The Premier has responsibilities for its maintenance, as advised by Planning SA.

The waste management provision of the Planning Strategy promotes the following policy directions:

- aligning land use planning with priorities to reduce waste and pollution;
- minimising waste and promoting reuse of resources;
- providing certainty for the waste industry to develop waste facilities and associated infrastructure, in suitable locations;
- providing a policy framework for resource recovery centres and recycling;
- applying stronger environmental standards to new landfills and green waste sites;
- preparing environmentally sound closure plans for existing landfills such as Garden Island and Wingfield;
- locating waste facilities in an orderly way; and
- investigating the establishment of secure sites for hazardous waste.

4.3 Waste Disposal (Landfill) Plan Amendment Report (PAR)

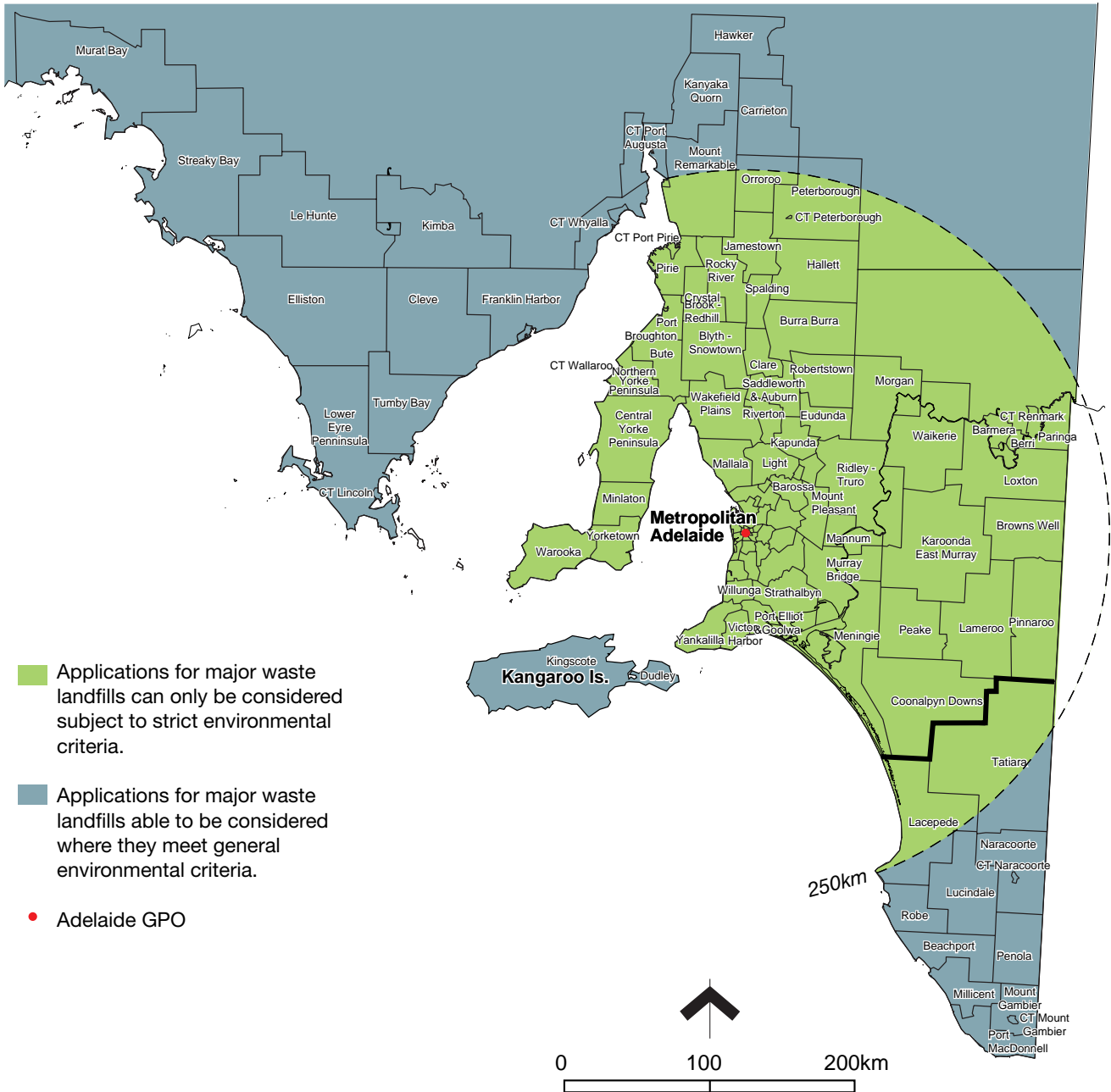
The proposed Waste Disposal (Landfill) Planning Amendment Report (PAR) is required to facilitate the orderly and proper development of landfill facilities to service the Adelaide metropolitan area. In the absence of the PAR, proposals for the siting and development of landfill facilities will continue to be considered in an ad hoc manner resulting in uncertainty for industry and the community.

The PAR will guide the assessment of landfill development on a statewide basis. More specific provisions will apply to areas within 250 kilometres radius of the Adelaide GPO (Figure 7). On the basis that major landfills (those proposing to receive 20,000 tonnes or greater solid waste per annum) serving the metropolitan area are only likely to be viable within a reasonable transport distance from Adelaide.

Figure 7

Planning controls for waste

Sites most likely to be sought for the development of major waste landfills (proposing to receive greater than 20 000 tonnes solid waste per annum) are within 250km radius of the Adelaide GPO.



The PAR criteria for siting and design of major landfills reflect the approved EPA Guidelines for Major Solid Waste Landfill Depots.

The PAR implements policies to restrict new dwelling construction within 500m of the now approved Dublin, Inkerman and Medlow Road landfills in order to prevent encroachment of incompatible uses into the buffer.

In the future, applications for waste landfills are not likely to be approved in coastal or water protection areas or areas used for industry, horticulture or rural living.

4.4 Environment Protection (Waste Management) Policy

Work has commenced on the development of an Environment Protection (Waste Management) Policy (Waste EPP) to review and extend the existing waste policy of the *Environment Protection Act 1993*. The Waste EPP will be statewide in scope and cover the full range of matters relating to waste including its prevention, recycling, and disposal.

The Waste EPP will require local government bodies, waste generators and the waste industry (including waste transporters and waste or recycling depot operators) to comply with prescribed standards by specified dates.

The Minister for the Environment and Heritage has determined a Discussion Paper needs to be prepared for the Waste EPP. The final Policy should be released by mid 2001.

4.5 Landfill Gas Management Policy

There are five operating power stations in South Australia which recover landfill gas from eight landfills and convert this into electricity. The power stations have a total capacity of 14MW collectively. Not only does this supply ETSA with additional top-up electricity for the public grid but the use of methane in this form saves the equivalent of 50 000 tonnes of carbon dioxide (for every 1 MW generating capacity) from being released into the atmosphere annually.

A Landfill Gas Management Policy is being developed prior to completion of the Waste EPP to address concerns over landfill gas migration and inappropriate standards of operation. This is receiving a very high priority because of the potential risk to public safety.

4.6 EPA guidelines for waste management

The EPA Guidelines for Major Solid Waste Landfill Depots apply to the establishment of future major landfills and the expansion of existing landfill depots where reasonable and practicable. The guidelines provide criteria for the siting, design, operation and closure of landfill depots to minimise the risk of adverse environmental impacts. The guidelines require the implementation of Best Available Control Technology and include criteria for the management of leachate, landfill gas emissions and promote and encourage a focus on waste avoidance and minimisation rather than landfilling as one of its principal objectives.

The EPA is also preparing guidelines for:

- Siting and Operation of Green Waste Processing Facilities;
- Development of Landfill Environment Management Plans;
- Siting and Operation of Waste Transfer Stations and Resource Recovery Facilities; and
- Development of Closure/Post Closure Programmes for Landfill Sites.

4.7 Strengthening of existing EPA landfill licences

In its 1996 Waste Strategy, the EPA highlighted the need for best practice environmental management in the waste industry. Accordingly, existing landfill licences continue to be reviewed, amended, and strengthened where appropriate to ensure:

- compliance with statutory requirements (including planning consents);
- provision for Environment Improvement Programs if needed; and
- improved environmental monitoring and reporting.

Priority has been given to major landfills, particularly those serving metropolitan Adelaide. Upgraded licences are being developed for all major landfills including, Wingfield (Adelaide City Council), Garden Island, Pedler Creek (Southern Region of Councils), and Southern Waste Depot (Private operator). Attention has also been given to controls for recently closed landfills at Highbury, Lynton, Eden Hills, Coleman Road and St Agnes, and the partial closure and redevelopment of the Waterloo Corner (Remove All Rubbish) landfill. Work continues on rural and regional waste depot licenses.

5 Waste reduction and resource recovery

5.1 Background

While historically regulation has stood alone as the sole means for achieving change, it is now regarded as a tool to be used in conjunction with other positive measures to encourage waste minimisation, reuse and recycling, such as negotiated agreements, financial incentive schemes and strategic marketing initiatives.

One of the key objectives of the Waste Strategy is to encourage government, industry and the community to embrace and promote reduction of waste to landfill through waste minimisation and resource recovery. Subsequently, the Metropolitan Planning Strategy was amended stating that as one of its goals, waste should be minimised and used as a resource wherever possible.



Figure 8

Glass beneficiation plant of Recyclers of Australia Pty Ltd converts glass bottles into glass cullet which is remelted and used in new glass products by ACI Glass Packaging.

In 1997, some \$10.6m worth of materials were recovered from our waste stream by kerbside collection and drop-off centres. Many new industries have arisen to turn these waste materials traditionally destined for landfill (plastics, glass, aluminium) into useable products. Examples of such industries include Recyclers of Australia Pty Ltd's glass beneficiation plant (Figure 8) and Statewide Recycling's resource recovery facility (Figure 9).

In addition, the EPA has provided grants and financial assistance to develop new recycled products and expand existing industries. One such industry assisted by EPA is Omnipol which manufactures plastic poles and other products from waste plastic (Figure 10). The poles are used in the oyster and grape growing industries.

The disposal of whole waste tyres to landfill in South Australia was banned in 1992 for metropolitan landfills and in 1995 for all country landfills due to fire and public health risks and because they do not readily compact and so occupy large volumes of landfill space. Consequently, new uses had to be found for used tyres. Industries such as Budget Retreads assist in this endeavour by converting used tyres into retreads and other products (Figure 11).

5.2 Planning Bulletin - resource recovery centres

A Draft Planning Bulletin on Waste Infrastructure has been developed to facilitate establishment of resource recovery centres and is being released for consultation. Examples of such facilities are drop-off centres for beverage containers, composting facilities and facilities for recycling concrete.



Figure 9

Statewide Recycling's resource recovery and baling facility at Ottoway.

The Bulletin proposes the establishment of a network of resource recovery centres, at the regional, district and neighbourhood level. Each level of centre serves the needs of a particular population catchment.

Multi-purpose regional facilities are large sites with diverse resource recovery functions and a waste transfer component. The recently established facility at North Plympton is an example.

The Bulletin will assist councils to implement better environmental controls for waste recycling centres. Adequate separation distances are required to reduce the environmental impact of these industrial operations on the neighbourhood.

Comments are invited on the Draft Bulletin within a two-month period of its release.

Integrated Waste Strategy for metropolitan Adelaide



Figure 10

Waste plastic is converted to fence poles and other products by Ompipol at Gillman.



Figure 11

Budget Retreads at Wingfield convert used tyres into retreads for cars and rubber for use in special surfaces or re-use by industry.

5.3 Industrial waste survey (waste audit)

A detailed waste audit of Adelaide's construction and demolition and commercial/industrial waste streams was undertaken in December 1998.

This audit has a number of objectives and will assist in quantifying types of waste, its source, and assist in developing strategies to reduce, recover, and develop markets for waste materials.

One such market which has considerable potential is the reuse of cardboard to make other products. It has been estimated this could generate 200 jobs and up to \$100m in industry investment.

5.4 Green waste

Since the introduction of bans on backyard burning by the EPA and local government, green waste volumes have increased substantially.

This increase has more than offset any gains made in diversion of recyclables hence Adelaide's waste production has remained at around one million tpa. Without diversion of recyclables it would be well over a million tpa.

It is estimated 20% to 30% of Adelaide's total waste stream comprises green waste (the waste audit will assist with quantifying this estimate). Disposal of this material to landfill occupies important landfill space and squanders a useful resource.



Figure 12

Green waste compost is produced at Wingfield by Jeffries Soils.

South Australia currently has two major green waste composting operations located at Willunga (Peats Soils) and Wingfield (Jefferies Soils). Green waste operators take up only a small percentage of total green waste and further effort is required.

Research work into the potential uses of green waste in SA, for horticulture, viticulture, flower growing etc have yielded encouraging results particularly for water conservation and weed control purposes.

The close proximity of these types of commercial enterprises to metropolitan Adelaide, and consequently to major sources of composted green waste, is a significant advantage and compares favourably to the circumstances found in Melbourne and Sydney where greater distances prevail.

Planning SA has undertaken a preliminary study to identify potential sites for green waste processing.

Green waste composting and processing sites need to be established urgently to encourage private sector investment and enable green waste producers to establish viable markets. It is anticipated the establishment of secure green waste composting sites will:

- facilitate development of viable green waste industries;
- conserve valuable landfill space and prolong the life of landfill facilities which will represent a major saving to the State;
- reduce harmful methane and leachate products contributed by landfilling green waste;
- establish South Australia as a national leader in green waste processing;
- assist in meeting national and state landfill targets and reduce greenhouse emissions;
- provide infrastructure enabling councils to increase the number of green waste kerbside collection systems servicing metropolitan Adelaide (only three Councils currently provide a service); and
- encourage greater participation within the community to separate green waste for kerbside collection.

Securing major green waste composting sites, (one north and one south of Adelaide), is being given high priority by the State to enable the recovery of the green waste resource. The Department of Industry and Trade will take a role in facilitating and expediting the development of green waste sites in consultation with Planning SA and the EPA.

Research work into products and potential markets needs to be continued and further supported. Developments interstate should be monitored and liaison with researchers and developers maintained and enhanced.

Even in the absence of viable markets for green waste, there is an urgent need to re-direct this component of the waste stream from existing and future landfill sites to reduce the rapid filling of these facilities.

5.5 Packaging Covenant and NEPM

The desired environmental outcomes of the National Packaging Covenant (The Covenant) and associated National Environment Protection Measure (NEPM) for Used Packaging Materials are to optimise resource use and recovery and conserve virgin materials.

The Covenant, which is voluntary, is being negotiated between the packaging industry, local government, and large fillers eg Grocery Manufacturers Association, Australian Supermarkets Institute, Packaging Council of Australia and others.

The development of the Used Packaging Materials NEPM originated from major industry concern that a regulatory mechanism should be developed to ensure non-signatories to The Covenant do not gain a competitive advantage over those industries abiding by it.

The National Environmental Protection Council (NEPC) released a discussion paper in July 1998 following development of the NEPM, however, many of the issues relevant to the NEPM could not be fully addressed as The Covenant had not been finalised.

NEPC's decision to release the NEPM along with a draft of The Covenant was intended to assist industry and others to focus on finalising The Covenant and provide for discussion on some of the fundamental implementation and monitoring/reporting issues. The draft has now been released for comment.

5.6 CDL and Litter Strategy implementation

Originally designed as a litter control measure Container Deposit Legislation (CDL) has also proven to be an effective way of recovering beverage containers and continues to provide a guaranteed supply of clean recovered materials for reuse.

South Australians recover for recycling and reuse 83% of their glass beverage containers, 73% of PET beverage containers and 84% of aluminium cans. The national average is only 45% for glass, 30% for PET and 65% for aluminium.

It also employs a significant number of people. There are in the order of 120 container collection depots in the State, estimated to employ 600 to 700 people.

Improved litter monitoring, to ascertain industry performance in litter reduction (non-deposit beverage containers), is well established. Results from February 1998 indicate that non-CDL beverage litter is three times that of deposit bearing beverage containers. This is further evidence of the proven success of CDL.

The 1996 Litter Strategy, endorsed by Cabinet and aimed at reducing litter, also serves to enhance resource recovery. The majority of the responsibilities for implementation of the Litter Strategy are undertaken by KESAB with funding support provided by EPA.

Further initiatives in the implementation of the Litter Strategy as part of the Service Agreement between EPA and KESAB include: Litter Monitoring, Building Site Litter Reduction, Tidy Towns Program, Enforcement Seminars and Highway Litter Reduction.

6 Review of institutional arrangements

6.1 Background

In December 1993, the former State Government entered into a Memorandum of Understanding (the MoU) with the Local Government Association (LGA) in respect of the formation of the Local Government Recycling and Waste Management Board, an association incorporated under the *Associations Incorporation Act*, and trading as Recycle 2000.

In return for funding, Recycle 2000 was to administer the Kerbside Recycling Program (pursuant to which councils receive a rebate per tonne of household waste collected for recycling) as well as performing other relevant waste management functions.

The MoU expired in December 1998.

The South Australian Employers' Chamber of Commerce and Industry (SAECCI), the LGA and the EPA consider Recycle 2000 is no longer an efficient arrangement through which to deliver any further advances in waste management in this State.

It is considered highly important to have a broader focus on waste minimisation, promoted by a body which can encourage improved performance and participation across the whole waste stream, if waste reduction goals are to be achieved in the future.

Alternative institutional arrangements are therefore required to achieve best practice waste management in South Australia and until these new long term arrangements have been agreed and implemented, the following interim arrangements are proposed.

6.2 Interim arrangements

In view of the above, the State Government has addressed institutional reform in waste management through the following interim arrangements:

- Recycle 2000 was wound up in December 1998, as in the original MoU; and
- a special Waste Management Committee was established by the Environment Protection Authority pursuant to section 17(1)(b) of the *Environment Protection Act* and approved by the Minister for Environment and Heritage.

The new Committee will:

- take over the assets, roles and functions of the Local Government Recycling and Waste Management Board and give advice in relation to waste management matters;
- continue to be funded from the \$1 per tonne of waste received at metropolitan landfills, as well as the Recycle 2000 reserves as at end of December 1998 (approx \$1.3m);
- investigate and make recommendations to the parties to this Memorandum in relation to strategic planning for waste management including the identification of objectives and strategies;
- advise and make recommendations to the Authority with respect to a new Environment Protection Policy on waste management; and
- receive and apply for or towards the performance of its roles and functions such funding as may result from the development of the National Packaging Covenant.

Further information

Contacts:

Waste Disposal (Landfill) Plan Amendment Report (PAR)

Malcolm Govett (08) 8303 0791

Planning Bulletin – Waste Infrastructure-Resource Recovery Centres Discussion Paper

Malcolm Govett (08) 8303 0791

Waste Infrastructure Steering Committee Report

Elmer Evans (08) 8303 0745

Inkerman Landfill

Sally Jenkin (08) 8303 0649

Smithfield Quarry (Medlow Road) Landfill

Sally Jenkin (08) 8303 0649

Department of Industry and Trade

Mr Chris Kaufman

Project Manager

Phone (08) 8303 2058

Fax (08) 8303 2027

For further information about Environment Protection contact:

Information Officer, **Environment Protection Agency**

5th Floor, 77 Grenfell Street, Adelaide

Phone (08) 8204 2004

Fax (08) 8204 9393

Free call 1800 623 445

Copies

Copies of:

- Waste Disposal (Landfill) Plan Amendment Report (PAR);
- Planning Bulletin – Waste Infrastructure-Resource Recovery Centres Discussion Paper;
- Assessment Report for the Environmental Impact Statement (as amended) for the Northern Adelaide Waste Management Authority Balefill proposal (Smithfield Quarry (Medlow Road Landfill)); and
- Amendment to the Assessment Report for the Environmental Impact Statement (as amended) for the Inkerman landfill Depot-Northward Fill.

are available for inspection and/or purchase from

Planning SA, 5th floor public counter, 136 North Terrace, Adelaide
or phone Planning SA on (08) 8303 0724.

Or can be viewed on the internet at the following address:

www.planning.sa.gov.au/waste_strategy