



Australian Capital Territory

The Next Step

in the

No Waste Strategy

March 2000

The Next Step in the No Waste Strategy

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The Next Step in the No Waste Strategy *Executive Summary*

Background:

Implementation of the No Waste Strategy

The *No Waste by 2010*, Waste Management Strategy for Canberra was released in December 1996. Developing and adopting the *No Waste by 2010* strategy was a measured initiative based on evidence that it was wanted and backed by broad community support.

Progress to Date

The information provided by the 1997, ACT Waste Inventory, a survey of solid wastes, has been used to develop policy and infrastructure as well as setting priorities and establishing benchmarks to monitor performance towards the No Waste goal.

Resource recovery has more than doubled, and waste to landfill reduced by 40%, to 252,686 tonnes, over the past five years. Annual Progress Reports provide feedback to the community on the progress towards No Waste.

The Commissioner for the Environment's Review

In 1999, the ACT Commissioner for the Environment undertook an investigation into progress on the No Waste by 2010 Waste Management Strategy. Based on the findings of the review, the Commissioner for the Environment completed a report titled 'Progress towards No Waste By 2010', making recommendations to further implement the strategy.

The Commissioner for the Environment's Report was tabled in the Legislative Assembly in February 2000. Implementation of the No Waste Strategy, over the next three years, will be achieved through a series of programs or 'steps'.

The Next Step:

The goal of the No Waste by 2010 Strategy is a waste free society. An indicator of the success of the strategy will be no waste going to landfill by the year 2010. This goal will be clarified through community education programs, which meets the Commissioner for the Environment's Recommendation 1. It is proposed to reduce waste to landfill by undertaking a number of actions, targeted at priority wastes, during the next three years from 2000 to 2002.

1. Targets

The ACT Waste Inventory provides detailed information on the composition of waste streams and the recycling potential for component materials. The major components of the significant waste streams are considered the priority wastes (Table A) and are targeted in the *Next Step in the No Waste Strategy*.

Table A: - Major Wastes being disposed of at ACT Landfills in 1998/99 (Tonnes)

	Source	Commercial & Industrial	Building & Demolition	Domestic		Total	% of total waste
	Waste Type			Collected	Private Delivery		
a	Paper/Cardboard	40007	332	9261	2228	51289	21%
b	Food/Kitchen	15298		28392	581	44271	18%
	Garden/Vegetation	2203	2651	2591	13290	20736	9%
c	Soil		21066		6295	27361	11%
	Concrete/Bricks/Tiles	440	19011		5237	24688	10%
	Wood/Timber	3909	4544	304	7234	15991	7%
	Total					184876	76%

(a) *Paper/Cardboard*: Sourcing this material requires an increased effort in education to sort such material from general waste and to work with collecting companies to improve available services.

(b) *Food/Kitchen*: The central issue in the recovery of this material is the establishment of collection systems, which minimise contamination and service both domestic and commercial sources.

(c) *Naturally Excavated Soil, Concrete/Bricks and Wood/Timber*: Reuse and recycling of these materials is currently constrained by information and education, segregated sourcing and collection systems and available outlets for recovered materials.

The setting of targets and benchmarks is consistent with the Commissioner for the Environment's Recommendations 2 and 5.

2. Government leadership

Some time has passed since the official launch of the No Waste Strategy and without a high public profile the level of knowledge within the general community about the strategy has declined. The No Waste Strategy cannot succeed without the full participation of the Canberra community.

A program to further lift the public profile of the strategy will be planned and implemented during 2000-2001. It is planned to set up an interdepartmental committee, which would enable all Government agencies to cooperate and access programs such as Eco-workplace, to enable ACT agencies to be leaders in waste minimisation. It is planned to review the ACT Government's Purchasing Policies, to ensure that barriers to using recycled products are eliminated.

Government leadership programs are consistent with the Commissioner for the Environment's Recommendations 5 through to 9.

3. Education and community programs

- *Annual Progress Reports*

Progress reports on the *No Waste by 2010* strategy will be produced and issued annually to provide feedback to the community and foster its continued support and participation.

- *Second-hand Sunday*

ACT Waste conducted a trial of *Second-hand Sunday*, in September 1999 where residents were invited to place unwanted materials, with a potential for reuse, outside their residences so that other residents could collect what they wanted during the day. It is planned to develop the concept further during 2000, including running a district trial in Tuggeranong in April 2000.

- *Earthworks*

The Earthworks program was established to increase community knowledge and participation in waste reduction and composting activities. The Earthworks program is being diversified and a business program is being developed to target waste reduction and environmentally responsible practices in the commercial sector.

- *Community and Schools Programs*

ACT Waste will continue to facilitate community consultation forums to promote greater participation in programs and to continue to foster community ownership of the Strategy. A Schools Program will be developed and implemented.

- *No Waste Education Centre*

A National No Waste Education Centre is planned which will provide the focus for waste management and resource recovery education in Canberra and the region.

The community and education programs are consistent with the Commissioner for the Environment's Recommendations 1 and 3.

4. Waste pricing

ACT Waste will engage consultants in 2000 to determine the actual costs of disposing the various categories of waste and will develop and implement a waste pricing strategy. The pricing strategy will be designed in such a way as to discourage cross border disposal and to encourage the

recycling of materials through the subsidisation of resource recovery operations to ensure they remain economically viable.

Waste pricing initiatives are consistent with the Commissioner for the Environment's Recommendations 2, 5(e) and 7.

5. Infrastructure and services

In 1997 consulting engineers were engaged to prepare an Infrastructure Action Plan. The first stage of the Action Plan to be progressed includes the development of major infrastructure works associated with:

- *Resource Recovery and Transfer Stations* at Mitchell and Mugga Lane;
- an *Environmental Education Centre* within a *Resource Recovery Estate* adjacent to the Mugga Lane Landfill; and
- the closure of the Belconnen Landfill and the development of Mugga Lane as the principal landfill in Canberra.

The infrastructure development programs are consistent with the Commissioner for the Environment's Recommendation 4.

6. Market development

• *Marketability*

The ACT Government is a signatory to the *National Packaging Covenant for Used Packaging Materials*, which has been developed to encourage a market-based approach and improve the stability of kerbside collection systems

• *Barriers to the use of Recycled Products*

There is a perception that recycled products are inferior to products made from virgin materials. Without markets for recovered products the processes cannot be sustained. ACT Waste will work towards the removal of these barriers.

• *Australasian Market Development Network*

This network was established in February 1999, to promote information exchange and cooperation among industry and government agencies involved in market development for recyclable materials.

• *Local Industry - Research and Development*

An opportunity exists to establish and expand the capacity of local industries to utilise various elements of the waste stream as a resource base. The establishment of Resource Recovery Estates will provide the physical location for this to occur.

• *Access to Technologies*

ACT Waste is participating in the establishment of the Australasian Market Development Network to obtain access to work completed elsewhere. This will enable the identification and selection of suitable technologies for local application.

• *Temporary Resource Recovery Estate*

A Temporary Estate has been established at the West Belconnen Landfill to provide further opportunities for companies to set up new recycling and associated value-adding businesses.

The market development programs are consistent with the Commissioner for the Environment's Recommendation 9.

7. Collection systems

ACT Waste is planning to conduct organic collection trials in 2000/01 with a view to further reducing domestic waste disposal. In addition, trials involving the commercial food processing industries are being planned for late 2000. Collection of recyclables in public places, including shopping centres will also be undertaken over the 12 months commencing July 2000.

- *Domestic organic trials*

In the ACT, the composition of domestic bins includes 52% (23 450 tonnes) of food and kitchen wastes. It is proposed to target this waste stream through trials of organic collections from domestic premises.

- *Commercial Collections*

The most significant quantities of commercial waste being disposed of were paper/cardboard 40 000 tonnes and food/kitchen 15 000 tonnes. The central issue in recovering this material is the establishment of new collection systems that minimise contamination and requires an increased effort in educating the industries in sorting such material from general waste.

The trialing of new collection systems is consistent with the Commissioner for the Environment's Recommendation 5(c) and 5(f).

8. Building and demolition waste reduction

The quantity of building and demolition waste generated in the ACT during 1998/99 totaled 65 013 tonnes. To facilitate the recycling of these materials, ACT Waste implemented the Development Control Code for Best Practice Waste Management in the ACT. The Australian Reuseable Resources Network (ARRnetwork) network enables demolishers and builders to locate customers for their recyclable materials.

It is proposed that the establishment of the Mitchell Resource Recovery and Transfer Centre will be designed to accept and segregate mixed builder's waste for reuse and/or recovery. The facility will further reduce this waste stream.

The targeting of building and demolition waste is consistent with the Commissioner for the Environment's Recommendation 5(c).

9. Legislation and Regulation

Legislation is needed to enable the National Environment Protection Measure (NEPM) in the ACT. The ACT currently has no legislation specifically for waste management and this is needed in the future to support the No Waste Strategy. Waste management legislation that supports both the enactment of the NEPM and future aspects of the No Waste Strategy is a practical approach.

It is proposed that the legislation be based on an encouragement of voluntary approaches but allow for regulations to be established when satisfactory results are not being achieved. This will provide significant support to the implementation of the No Waste Strategy in cases where the voluntary approaches fail to deliver appropriate outcomes.

The development of supporting legislation is consistent with the Commissioner for the Environment's Recommendation 5.

10. Future Technologies

Research and Development programs are important in establishing new markets and to apply appropriate technology locally. ACT Waste is participating in the Australasian Market Development Network to obtain access to work completed elsewhere. ACT Waste will continue to monitor and investigate initiatives as they emerge. As markets and opportunities arise ACT Waste will utilise these as appropriate.

The use of new technologies is consistent with the Commissioner for the Environment's Recommendation 5.

Formal Review Program

The initiatives detailed above are to be progressed between 2000 and 2002. A formal review of progress will be conducted and new programs implemented for the periods 2003-2006 and 2007-2010. The Next Step programs will be reviewed in 2002 and again in 2006 and a series new targets and priorities will be set to ensure that the ACT keeps on track to achieve the goal of No Waste by 2010.

A formal review program is consistent with the Commissioner for the Environment's Recommendation 3

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The Next Step in the No Waste Strategy

Background

Implementation of the No Waste Strategy

In 1991 the Commonwealth Government released the National Waste Minimisation and Recycling Strategy. This strategy was developed in consultation with the Australian and New Zealand Conservation Council (ANZECC) and set the goal of reducing waste to landfill by 50% by the year 2000.

In 1995, an issues paper, *A Waste Free Future* was produced by the ACT Government to highlight the major waste management issues in Canberra and the paper was widely circulated to community, business and professional groups. Further community consultation identified the need for a meaningful and definite goal not just a partial solution and a Draft Waste Management Strategy was developed.

The ACT Government endorsed the *No Waste by 2010*, Waste Management Strategy for Canberra on 14th October 1996 and the Strategy was released in December 1996. Priority actions identified in the Strategy, to be progressed in the first two years, included:

- Develop a waste inventory and identify the full costs of each type of waste
- Set benchmarks to monitor performance towards achieving the 2010 target
- Establish a resource exchange network to match wastes with resource requirements
- Provide feedback to the community on progress toward achieving No Waste by 2010
- Prepare a development and implementation plan to establish infrastructure for resource recovery, particularly in developing Resource Recovery Estates incorporating waste minimisation education centres.

Developing and adopting the *No Waste by 2010* strategy was a measured initiative based on evidence that it was wanted and backed by broad community support. It is built around a demonstrated willingness by Canberrans to recycle and reuse materials.

Progress to Date

In 1997, the ACT Waste Inventory was developed from a survey of solid wastes being disposed of in Canberra and surrounding areas. The inventory includes estimates of the composition, quantities and sources of waste and provides detailed information on wastes being disposed of and recycled. The information provided by the Waste Inventory has been used to develop policy and infrastructure as well as enabling priorities to be set and benchmarks established to monitor performance towards the No Waste goal.

Resource recovery has more than doubled, and waste to landfill reduced by 40%, to 252,686 tonnes, over the past five years. The introduction of commercial charges in 1993 resulted in significant decreases in some wastes going to landfill. For example, clean fill to landfill went down from 90,765 tonnes in 1993/94 to 4,361 tonnes in 1994/95 and in the same period, Builders Spoil reduced from 127,747 tonnes to 70,597 tonnes.

The further introduction of non-commercial charges in 1996 gave an incentive for the separation of materials from the general waste stream, prior to the waste going to landfill.

Subsequent resource recovery results rose considerably. Garden waste recycling for example, went from 35,000 tonnes in 1994/95 to 65,000 tonnes in 1995/96, to 85,000 tonnes in 1996/97 and to 107,848 tonnes in 1998/99.

Table 1 shows the overall trend in waste reduction and recycling rates. A continuation of these trends will largely depend on an increased effort in waste reduction and recycling initiatives.

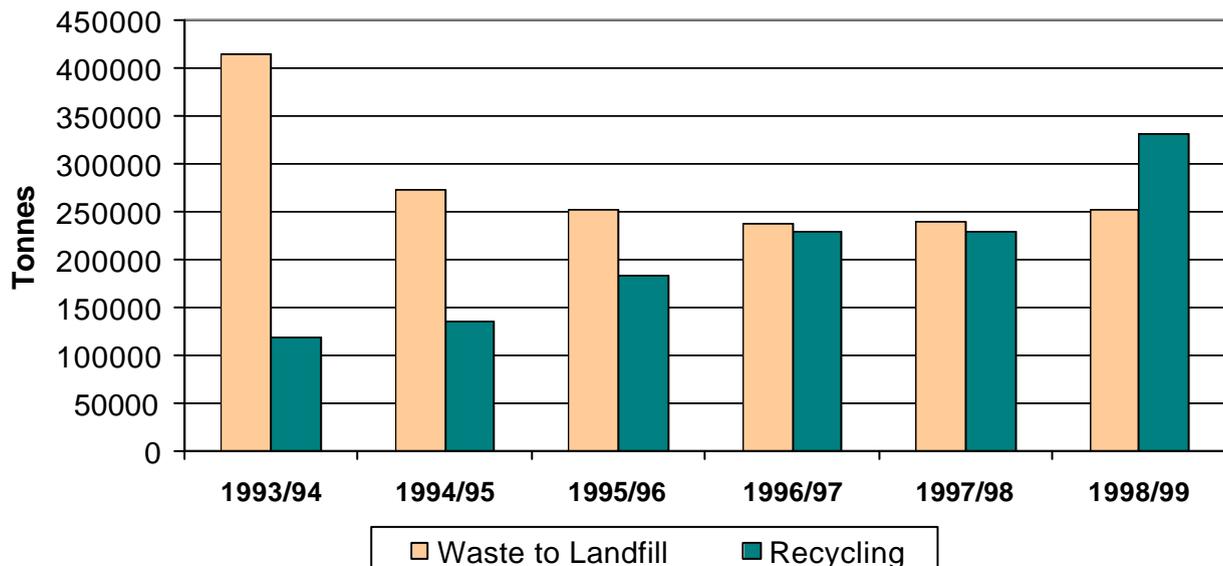
The *No Waste Strategy* identified that full community support is essential to achieving the 2010 goal. Community education programs and regular feedback to the community are vitally important to progress. Education programs such as those introduced for the commencement of non-commercial tip charges and for the kerbside recycling have been crucial to the success of those schemes. An annual Progress Report provides feedback to the community on the progress towards No Waste.

ACT Waste has worked closely in the past with recovery industries such as Canberra Paper Recyclers and SITA-BFI (now Pacific Waste Management), to maximise the effectiveness of the kerbside recycling service and to achieve substantial reductions in the levels of wastes going to landfill. A close liaison with the recovery industries has resulted in a considerable increase in the recycling of garden wastes and demolition wastes in particular. ACT Waste will continue to develop opportunities in conjunction with the recovery industries to increase the levels of recycling and to further reduce the waste to landfill.

Table 1:

Progress in Waste Reduction

How are we going?



The Commissioner for the Environment's Review and Recommendations

In 1999, the ACT Commissioner for the Environment considered that it was an appropriate time to review the Strategy and undertook an investigation into progress on the No Waste

by 2010 Waste Management Strategy. Independent auditors were engaged to conduct research as part of this review.

The investigation reviewed the implementation of the Strategy to date, having regard to the effectiveness and efficiency of actions taken and an assessment of outcomes. In particular, the investigation considered the direction of the Strategy and any impediments to its implementation.

Based on the findings of the review, the Commissioner for the Environment has completed a report titled 'Progress towards No Waste By 2010'. The recommendations made in the report are:

1. Clarify and publicise the Government's goals for the Strategy
2. Ensure the actions identified for the first two years are completed – in particular, identification of full costs of each type of waste and comprehensive benchmarking.
3. Develop a strong focus on initiatives to engender community commitment to achieving the goal of No Waste by 2010. This requires initiatives under "Information programs and community support" and "Public Recognition".

This requires initiatives under "Information programs and community support" and "Public Recognition". As part of that focus, consider:

- 1) a wider distribution of annual progress reports– for example, introduction of household distribution each year (as done in 1997)
 - 2) ways to encourage and recognise community initiatives in waste management
 - 3) revitalisation of community interest and participation in achieving the no waste goal through -
 - a booklet/guide such as was produced when recycling was introduced,
 - a media campaign (television and radio); and
 - strengthening the role of schools
 - 4) continuing participation in events such as Floriade, Recycling Awareness Week, etc.
4. Ensure that development of infrastructure for Resource Recovery Estates and the National No Waste Education Centre is implemented and that the Resource Recovery Estates are managed in such a way that they do not replace landfills as repositories for waste.
 5. Use an appropriate central structure in Government, or one that may cross agency or business unit boundaries to prioritise actions for implementation of the strategy to 2010.

Before the end of 2000, an update of the strategy should be initiated to identify action plans to 2010. That update should ensure the inclusion of –

- a) initiatives under the Broad Actions, "Community Commitment" and "Avoidance and Reduction" with commencement of their implementation as an urgent priority, during the current triennium
- b) other priority actions and a clear timeframe for their implementation
- c) a series of short-term targets to reduce specific waste streams based on the waste inventory (eg not less than a 30% reduction of household waste over the next 3 years)
- d) options for legislation to support the desired results
- e) options for economic instruments, particularly incentives for best management practice

- f) introduction of innovative ways to achieve the goal of the strategy, and
 - g) at least two reviews of progress/the program between 2000 and 2008.
6. Use an appropriate central structure in Government, or one that may cross agency or business unit boundaries to identify and articulate the socio-economic and environmental consequences for the ACT of moving towards no waste to landfill by 2010.
 7. Use an appropriate central structure in Government, or one that may cross agency or business unit boundaries to ensure adequate and appropriate resources are provided to implement the no waste strategy in accordance with the demands of the operating environment.
 8. Initiate a whole of Government approach to achievement of the No Waste by 2010 Strategy and implement best practice waste management in all Government agencies/departments.
 9. There is a need to integrate efforts taken in the ACT with regional and national efforts, specifically –
 - 1) take a leading role in implementation of the National Environment Protection (Used Packaging Materials) Measure as appropriate in the ACT, and in formulating national guidelines and codes of practice;
 - 2) through appropriate inter-governmental avenues, pursue development of a national rating system, which will provide information on the environmental characteristics of a product, including by-products, energy consumed in production and use, packaging used and the potential for reuse and recycling of the product, by-products and packaging; and
 - 3) formalise cross-border arrangements regarding waste minimisation

The structure that is devised to deal with Recommendations 5-8 above should be responsible for overseeing or coordinating such activities.

The Commissioner for the Environment's Report was tabled in the Legislative Assembly in February 2000 and the Government is required to respond, detailing the future programs to address recommendations and further implementation of the No Waste Strategy.

Further implementation of the No Waste Strategy will be achieved over the next three years through a series of programs or initiatives. This Next Step is detailed below.

The Next Step:

The No Waste Strategy was developed to set the vision and future directions for waste management in the ACT and was the result of extensive community consultation, which identified a strong desire to achieve a waste free society by 2010. Although this target is ambitious it is achievable with the willingness and participation of all sectors of the Canberra community.

The goal of the No Waste by 2010 Strategy is a waste free society. It is envisaged that wastes will be eliminated by a community that avoids, reduces, reuses and recovers the resources from materials previously wasted. An indicator of the success of the strategy will be no waste going to landfill by the year 2010. This core strategy goal will be clarified through the community education programs to support the further implementation of the strategy. This is consistent with the first recommendation made by the Commissioner for the Environment.

A significant proportion of the materials currently going to landfill in the ACT are potentially recyclable if these materials could be separated at source and collected in a clean form. The Next Step in achieving *No Waste by 2010* can best be identified through an assessment of where significant further gains can be made based on an analysis of waste going to landfill and the availability of services to recover these materials.

It is proposed to reduce waste to landfill by undertaking a number of actions, during the next three years from 2000 to 2002, that can be broadly grouped under the following headings:

1. Setting targets
2. Government leadership
3. Education and community programs
4. Waste pricing
5. Infrastructure and Services
6. Market development
7. Collection systems
8. Building and demolition waste reduction
9. Legislation and regulation
10. Future technologies

Details on the *Next Step in the No Waste Strategy* follow.

**Table 2
Waste Inventory – Waste Streams to ACT Government
Landfills**

MATERIAL TYPE	DOMESTIC (includes Queanbeyan)	OTHER DOMESTIC	OTHER COUNCIL	TOTAL MUNICIPAL	COMMERCIAL AND INDUSTRIAL	BUILDING AND DEMOLITION	TOTAL (TONNES)	% OF TOTAL WASTE
Paper/Cardboard *	9261	2228	282	11771	40007	332	52110	21.40%
Food/Kitchen *	28392	581	38	29011	15298	0	44309	18.20%
Garden/Vegetation *	2591	13290	319	16201	2203	2651	21055	8.65%
Wood/Timber *	304	7234	0	7538	3909	4544	15991	6.57%
Textile/Rags/Carpets	1791	2284	0	4075	1717	43	5835	2.40%
Leather/Rubber/Tyres	45	127	0	172	825	0	997	0.41%
Glass	3076	939	81	4096	2181	418	6694	2.75%
Plastic (Soft)	5656	509	0	6165	2079	34	8278	3.40%
Plastic (Hard)	451	1027	38	1515	2226	77	3818	1.57%
Polystyrene	0	80	0	80	79	9	167	0.07%
Ferrous	1690	3183	22	4895	1808	980	7683	3.16%
Non-Ferrous	282	676	0	958	475	60	1492	0.61%
Naturally Excavated Soil *	0	6295	0	6295	0	21066	27361	11.24%
Soil/Rubble/Inert	0	207	0	207	0	9821	10028	4.12%
Cobbles/Boulders	0	16	0	16	0	801	817	0.34%
Concrete *	0	4075	0	4075	56	13120	17251	7.09%
Bricks/Tiles *	0	1162	0	1162	384	5891	7437	3.05%
Ceramics	0	541	0	541	102	119	762	0.31%
Fixtures/ Fittings	0	0	0	0	0	0	0	0.00%
Fibro	0	143	0	143	0	605	749	0.31%
Plasterboard	0	32	0	32	79	759	870	0.36%
Fibreglass	0	0	0	0	23	17	40	0.02%
Asphalt/Road Construction	0	0	0	0	0	0	0	0.00%
Mixed B&D	0	0	0	0	0	34	34	0.01%
Mixed C&I	0	0	0	0	0	0	0	0.00%
Chemicals	0	0	0	0	0	0	0	0.00%
Asbestos	0	0	0	0	0	708	708	0.29%
Special Waste (contaminated soil, ash, etc.)	0	0	0	0	1898	0	1898	0.78%
Sullage	0	0	0	0	2260	0	2260	0.93%
Other	1037	867	16	1920	0	2924	4844	1.99%
TOTAL	54576	45497	796	100869	77607	65013	243489	100.00%
% OF TOTAL WASTE	22.41%	18.69%	0.33%	41.43%	31.87%	26.70%	100.00%	

Table 2: This table shows the waste streams by type and origin, going to ACT landfill based on the 1997 Waste Inventory percentages, using current 1998/99 tonnages.

1. Setting Targets

The ACT Waste Inventory was completed in May 1997. The Inventory provides detailed information on the composition of waste streams and the recycling potential for component materials. The Inventory has set benchmarks for waste generated and identifies where the greatest potential for diverting wastes from landfill can be made.

The percentage composition of the waste streams identified in the 1997 Waste Inventory has been applied to 1998/99 ACT landfill tonnages to provide a current assessment of the relevant waste streams. A summary of the inventory figures showing the percentage of each waste type and its origin is at Table 2.

The major components of the significant waste streams have been highlighted in Table 2 and are considered the priority waste targets. The highlighted wastes comprise just over 72% of the total waste to landfill. These priority wastes (Table 3) are targeted in the *Next Step in the No Waste Strategy*. Targets have been set for the major wastes and waste reduction programs developed based on the source of the waste. The projected targets and the associated initiatives are summarised in Table 4. The waste reduction programs are further detailed in the initiatives below.

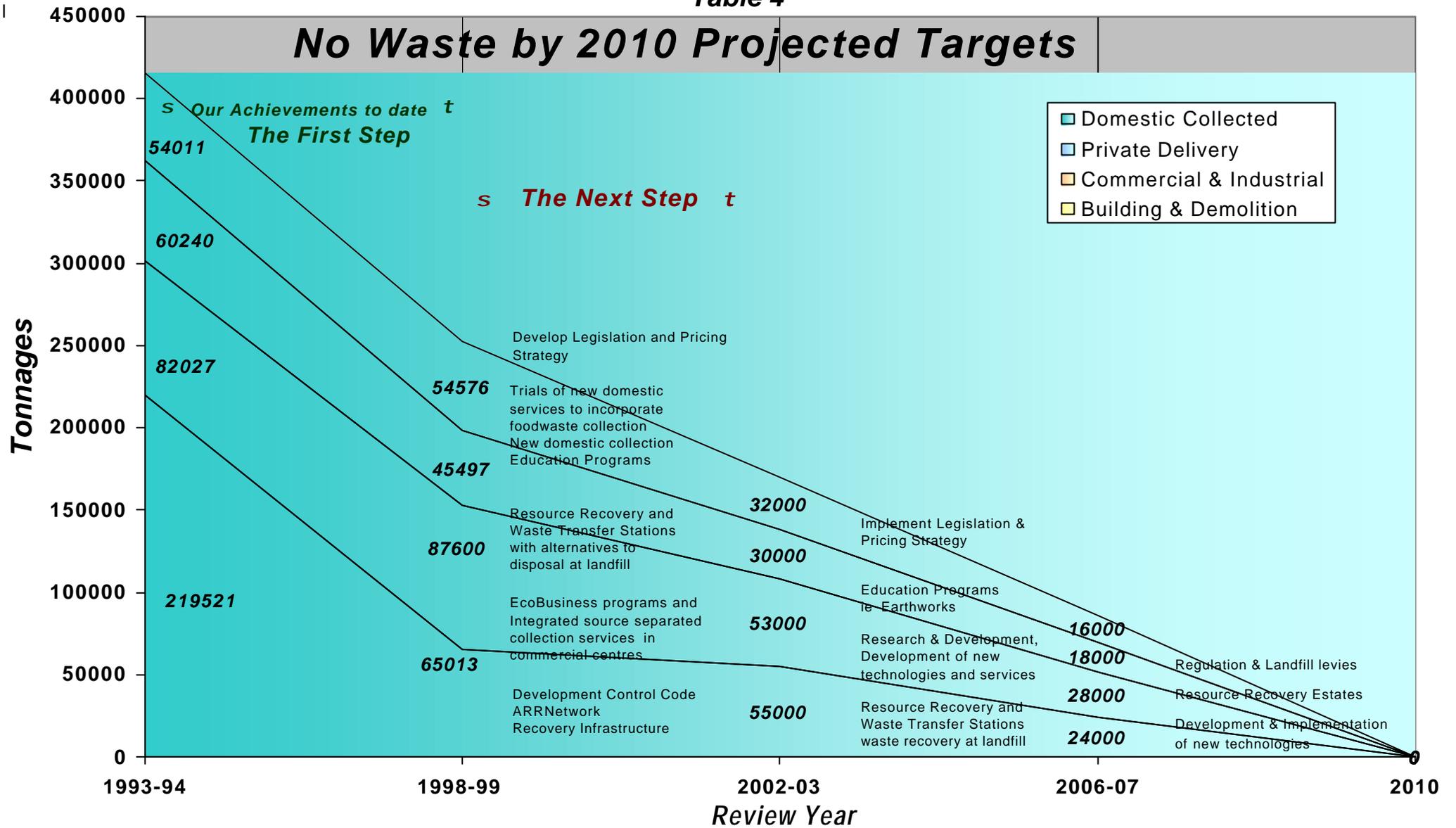
Table 3: - Major Wastes being disposed of at ACT Landfills in 1998/99 (Tonnes)

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	Wood/Timber	3909	4544	304	7234	15991	7%
	Total					184876	76%

(a) *Paper/Cardboard* comprises packaging material, newsprint, advertising material and fine writing paper. This material in Commerce & Industry is generated by retailers, office blocks and in factories. Collection services are provided by local companies at charges that are lower than disposal costs. Recovering more of this material will require an increased effort in educating the industries to sort such material from general waste and to work with collecting companies to improve available services. Similarly, the kerbside recycling collection service recover paper and cardboard from households and a greater effort is required to inform and educate the community to maximise the recovery of this material.

The programs targeting recovery of paper and cardboard are expected to reduce the quantity of this material going to landfill by a total of 25 000 tonnes, being 20 000 tonnes from the Commercial and Industrial sector and 5 000 tonnes from Domestic premises.

Table 4



(b) *Food/Kitchen* waste is generated from commercial kitchens and domestic premises. The material is currently collected in the general garbage collections. In an uncontaminated form, this material would provide a valuable nitrogen source for composting operations. The central issue in the recovery of this material is the establishment of collection systems, which minimise contamination and service both domestic and commercial sources.

Pending implementation of new collection services and the introduction of education programs it is expected that there could be a reduction of 15 000 tonnes of domestic organic and 5000 tonnes of commercial organic waste going to landfill by 2003/04.

(c) *Naturally Excavated Soil, Concrete/Bricks and Wood/Timber* are generated from construction, demolition and landscaping activities. Large loads of these materials have recycling opportunities available at costs less than disposal at landfill. Small quantities are generally included in mixed loads of materials from building sites or households. Reuse and recycling of these materials is currently constrained by information and education, segregated collection systems and available outlets for recovered materials. It is anticipated that the programs associated with the recovery of these materials will result in a reduction of 5 000 tonnes going to landfill by 2003/04.

The benchmarks and the priority targets set by the Waste Inventory are consistent with the Commissioner for the Environment's recommendations number 2 and 5 which call for a comprehensive benchmarking and the prioritisation of actions to implement the No Waste Strategy.

2. Government Leadership

Some time has passed since the official launch of the No Waste Strategy and the level of knowledge within the general community about the strategy has declined. The Strategy needs to be given a public profile that goes beyond general information programs and an annual progress report. The No Waste Strategy cannot succeed without the full participation of the Canberra community and for this reason the community needs to be constantly reminded of and given ownership for the progress of the strategy.

While the ACT Government is committed to achieve the goal of the strategy there is an opportunity to reinforce the level of this commitment to the community and provide a strong message of the government leading by example. This would encourage wider community participation and ownership of the strategy. The community is currently strongly committed to recycling but a greater focus on waste reduction programs will need to be made by all sectors as the strategy progresses.

To help achieve a higher government profile for the strategy it is planned to change the name of ACT Waste to better reflect the goal of the strategy. It is also planned to include the No Waste Strategy logo as an essential element of the ACT Government's printed material. The No Waste Strategy will in this way quickly become a central component of the government's business and be reinforced as a core policy throughout all levels of the government and the community. A program to further lift the public profile is being planned and will be implemented during 2000/01.

The recommendations made by the Commissioner for the Environment include several which call for a central government structure to ensure the No Waste Strategy is dealt with appropriately. It is not considered necessary to set up a separate central structure in government to deal with these issues as a business unit in the Department of Urban Services can already put forward submissions that if accepted by Cabinet become government policy.

It is considered appropriate to instead set up an interdepartmental committee. This committee would be coordinated by Urban Services and enable all Government agencies to cooperate and access programs such as Eco-workplace, to help in reducing waste and enabling ACT Government agencies to become leaders in waste minimisation. The interdepartmental committee would discuss issues and policies in the context of implementation of the No Waste Strategy, which will help ensure that future planning is carried out with regard to the strategy goal. It is also considered appropriate to link the interdepartmental committee to the Commonwealth's EcoNet program.

Without markets for recovered products recycling cannot be sustained. Significant effort is being put into the development of standards and into trialing the recycled products to demonstrate their performance. The current market resistance could largely be overcome if the ACT Government lead by example to become a primary purchaser of recycled products. To achieve this it is planned to review the ACT Government's Purchasing Policies, through a forum such as the interdepartmental committee, to ensure that where price and performance are comparable, recycled products are given preference and the barriers to using recycled products are eliminated.

It is also planned to pursue the wider acceptance of purchasing policies that favour the use of recycled materials through to Commonwealth purchasing policies. A link through the interdepartmental committee with the Commonwealth could provide the avenue to achieve this.

The development of the interdepartmental committee and the government leadership programs meets the intent of the recommendations 5 through to 9 made by the Commissioner for the Environment.

3. Education and Community Programs

Education is critical to achieving *No Waste by 2010* strategy goals. Much of the success in waste reduction and recycling has been achieved by providing the community with accurate and helpful information on available services, how to effectively use the services and ways in which waste can be reduced.

- *Annual Progress Reports*

The Strategy identified that community support is essential to achieving the 2010 goal. Community education programs and regular feedback to the community are vitally important to progress. Progress reports on the *No Waste by 2010* strategy will continue to be issued annually to provide feedback to the community and foster its continued support and participation. The 1997 and 1999 reports were distributed to all Canberra households while the 1998 report was available from shopfronts and libraries.

- *Second-hand Sunday*

In response to the 1998 Progress Report a suggestion was made by a Canberra resident regarding a community recycling day. ACT Waste conducted a trial of the day, *Second-hand Sunday*, in September 1999. The trial involved 840 residents in an inner Canberra suburb. The residents were invited to place unwanted materials, with a potential for reuse, outside their residences so that other residents could collect what they wanted during the day.

Items left out for collection were generally larger items that could not readily be placed in either garbage or recycling bins. The items ranged from furniture and household appliances, computers and children's play equipment through to building materials. The diversion of these items away from landfill is another step towards achieving the *No Waste by 2010* goal.

Trial results obtained through a survey indicated that 70 per cent of respondents would participate in a future *Second-hand Sunday*. It is planned to progress the concept through a trial in Tuggeranong in April 2000 with a view to conducting a Canberra wide day in late 2000 if the trial proves successful.

- *Earthworks*

In November 1997 the Earthworks program was established to increase community knowledge and participation in waste reduction and composting activities. ACT Waste engages specialist teachers and consultants to take education programs such as *Earth Works* into the community. *Earth Works* demonstrates how people can make waste minimisation part of their daily lives through activities such as composting, worm-farming, recycling and minimising waste production. Over 200 people have completed *Earthworks* courses to date.

To maximise the effectiveness of the Earthworks program it is being diversified. Open days are regularly being held to demonstrate composting, wormfarming and associated activities. The open days are intended to reach the maximum number of residents and improve their level of skills in this area. It is planned to continue the open days.

A business program, to be called Ecobusiness is also being developed in order to target waste reduction and environmentally responsible practices in the commercial sector. As part of the Ecobusiness program, businesses will be encouraged to adopt waste minimisation practises, focused on specific industries or particular business applications. The businesses would set targets, identify suitable audit programs and regularly compete for "reduction" targets. The program will focus on an annual presentation night with awards in set classifications, for specific achievements and percentage reduction in waste production, energy consumption etc.

- *Community and Schools Programs*

There is an ongoing requirement to develop and implement education programs to support activities being progressed. For example the education programs associated with the introduction of non-commercial tip charges and the introduction of kerbside recycling services were crucial to the success of those schemes.

The value of undertaking targeted information programs cannot be underestimated. Targeting information to suit the desired audience is essential to the success of programs. Targeted campaigns will be developed whenever new programs or initiatives are introduced. To ensure that the investment in infrastructure is utilised effectively, it is necessary that the users of the services are given suitable information in order to develop the knowledge and understanding required to use the service appropriately.

There is a need to inform and meet the community to continue to foster ownership of the Strategy. ACT Waste facilitates community consultation forums to promote greater participation in programs. The Waste Management Forum, which is a community based consultative forum, is an example of this. Other consultative workshops such as those held for the development and implementation of the Development Control Code will continue to be conducted.

Annual displays and promotions have been conducted at Floriade and to coincide with Recycling Week. These promotions generally follow a theme, for example composting and worm-farming at Floriade. The theme for National Recycling week in 1999 focused on Getting in the Loop and buying recycled products. It is planned to continue these promotional activities, targeted to specific wastes or themes, through events such as the Canberra Show and National Recycling Week. A community awards program will also be established to engender community involvement in the strategy.

Measuring the success of programs can be difficult in that some programs are aimed at reduced consumption or generation of waste and may not be evident in waste to landfill results. For example, recent Floriade displays have focused on selecting plants that do not grow too big, which will result in a reduction of garden waste generation in the future.

Waste education in schools has in the past, been limited to the individual actions of local groups such as School Communities Recycling All Paper (SCRAP). A Schools Program will be developed and implemented using resources prepared in other states as a basis for this program. It is proposed to provide financial support to expand these programs progressively into all ACT schools. These projects would provide a basis for all current and potential school programs and could be managed within the framework of the No Waste Education Centre.

- *No Waste Education Centre*

The No Waste Education Centre is planned to be co-located with the Hume Resource Recovery Estate. The centre will provide the focus for waste management and resource recovery education in Canberra and the region. By using new telecommunications technology, waste management and resource education will also be delivered both nationally and internationally.

The education programs administered by the No Waste Education Centre will support and strengthen the *No Waste by 2010* strategy. The products and services delivered by the Centre would have two distinct markets being:

- Meeting the needs of the ACT and regional community; and
- Providing a national repository on waste minimisation and resource education information and material.

The close inter-relationships between the National No Waste Education Centre and Resource Recovery Estate will foster an environment where new waste management technology research and development can occur.

The National No Waste Education Centre will provide an internationally recognised facility providing information on waste minimisation, recycling and resource recovery to councils throughout Australia and to the international community thereby assisting in the protection of the natural environment.

The community and education programs conducted by ACT Waste are supported by the Commissioner for the Environment's recommendation number 3 which requires initiatives to be developed to engender community commitment to the No Waste Strategy.

4. Waste Pricing

The introduction of landfill charges in the ACT has had a significant impact on the volume of waste materials diverted away from landfill and either reused or recycled. The introduction of commercial charges in 1993 resulted in significant increases in the quantities of demolition, construction and greenwaste being recycled. The introduction of non-commercial charges in 1996 gave a further incentive for the separation of materials from the general waste stream, prior to the waste going to landfill. The introduction of these charges has resulted in substantial increases in resource recovery. As an example, the recovery and recycling of garden waste has increased from 35,000 tonnes in 1994/95 to 107,000 tonnes in 1998/99.

The importance of benchmarking to improve service delivery and ensure charges reflect the actual costs of waste disposal is acknowledged. In 1998, ACT Waste commissioned consultants to research and prepare a report on landfill charges amongst six Australian cities – Brisbane, Newcastle, Sydney, Wollongong, Melbourne and Adelaide. The report revealed that landfill waste disposal charges in Sydney are significantly higher than those charged in Canberra. For example, waste disposal charges for commercial waste in Canberra is \$25 per tonne compared to \$44-\$78 per tonne for Sydney.

One aspect that must be considered when making this comparison is that Sydney's price includes a levy of \$17 per tonne. The proceeds of this levy go to the Waste Management Fund, which is administered by the State Waste Advisory Council. These levies are used to fund activities of Waste Boards, fund research and development into waste disposal, environmental improvements and to be rebated to Councils who recover materials. However, even when the levy is deducted, there is still a significant difference between Sydney and Canberra's landfill charges.

The consultant's research revealed that differential charges for various classes of waste are used to achieve a desired outcome. For example, in Sydney higher disposal fees have been applied to commercial and industrial waste delivered with more than a specified amount of paper in the load. In some cases, loads are rejected that have above specified limits and these must be taken away and the paper sorted out for recovery.

Building on this consultancy, ACT Waste will engage consultants this year to determine the actual costs of disposing the various categories of waste. This consultancy will examine economic, environmental and social costs associated with waste management. A waste pricing strategy will be developed based on the outcomes of the study. It is proposed to implement waste pricing that reflects the actual costs of waste disposal and to provide an incentive to reduce waste disposal.

The difference in landfill charges between Canberra and other cities such as Sydney has led to an increased incidence of interstate wastes being transported to Canberra's Landfills. To ensure Canberra achieves its No Waste Strategy, the pricing strategy will have to be designed in such a way to discourage interstate companies disposing of their waste in the ACT.

A major goal of the pricing strategy is to further encourage the recycling of materials. For example, if charges are too low then there is insufficient incentive for companies to consider alternative forms of recovery. If charges are too high illegal dumping is likely to occur. It is important that the pricing strategy be formulated in such a way that illegal dumping is limited while waste generators are provided with a viable alternative to landfill disposal. This may involve the initial subsidisation of resource recovery operations to ensure they remain economically viable.

To maintain the resource recovery momentum, it may be necessary to divert a component of waste charges to waste minimisation and resource recovery programs as is done in some states. This would provide a mechanism to fund research programs and to develop the technologies necessary to achieve No Waste.

The waste pricing initiatives being undertaken by the Government are consistent with the Commissioner for the Environment Recommendation 2, 5(e) and 7. The 'determination of waste disposal costs, benchmarking and financial incentives for best management practice' are currently being undertaken. Incentives for best Management practice are continually being developed.

5. Infrastructure and Services

In 1997 consulting engineers prepared a *No Waste by 2010 Infrastructure Action Plan*. The first stage of the Action Plan included the development of major infrastructure works associated with:

- . *Resource Recovery and Transfer Stations* at Mitchell and Mugga Lane;
- . an *Environmental Education Centre* within a *Resource Recovery Estate* adjacent to the Mugga Lane Landfill; and
- . the closure of the Belconnen Landfill and the development of Mugga Lane as the principal landfill in Canberra.

- *Resource Recovery and Transfer Stations*

Requests for Proposals were advertised on 29 November 1997 to identify operators who may be interested in establishing and operating Resource Recovery and Transfer Stations

at Mitchell and Mugga Lane and operating the Mugga Lane landfill. The proposals were evaluated by a panel of government officers.

The proposals submitted for the construction and operation of a Territory-wide system of Resource Recovery and Transfer Stations indicated that a significant reduction (75%) in waste to landfill would cost \$15-\$17 million per annum, or the equivalent of waste handling fees of \$80-90 per tonne compared to the current operating costs of about \$20 per tonne. The key feature of most proposals was that each incremental increase in the rate of recovery of materials from the waste stream would be significantly more expensive to achieve. It was concluded that no single submission provided a cost-effective solution that would deliver a significant reduction in waste to landfill without a significant increase in waste disposal/processing charges.

The proposals provided valuable insight into the current state of the recycling industries and identified a number of new and emerging technologies associated with:

- . the source separation of wastes (particularly organic and inorganic) prior to resource recovery, treatment and disposal;
- . new domestic recycling collection systems based on wet/dry wastes;
- . converting residual waste to energy; and
- . integration of solid and liquid waste streams (garden, kitchen, waste water and sewage sludges).

It was determined that a waste management facility at Mitchell, could be undertaken on a smaller scale than originally envisaged and be regarded as a model for future resource recovery and waste handling infrastructure in Canberra and the region. Opportunities for the development of such a facility were investigated. In March 1999, government agreed to the construction of a smaller waste management facility at Mitchell, to be progressed in 1999/2000 through an EOI/tender process.

- *Expressions of Interest for Mitchell/Mugga*

Expressions of Interest (EOI) have been sought for the design, construction and operation of a facility at Mitchell and for the augmentation and operation of disposal operation at the Mugga Lane landfill. The EOI closed on 14 October 1999 were reviewed by an evaluation panel.

Select tenders are now being sought on the basis of providing higher levels of resource recovery within current cost parameters. Tenders will be assessed on a 'base case' for Mitchell for a basic waste transfer facility with salvage activity equivalent to that currently carried out at the West Belconnen landfill. Options for additional resource recovery are to be identified and costed.

It is expected that waste disposal pricing will be a vital consideration for viable proposals for the Mitchell Resource Recovery and Waste Transfer Centre. Gate fees at the Mugga Lane landfill are critical to the viability of recycling enterprises. A waste disposal pricing

strategy, that reviews pricing in other metropolitan areas, provides incentives for recycling and has the potential to increase the levels of resource recovery significantly, will be considered in the context of the outcome for the Mitchell/Mugga tender process.

- *Hume Resource Recovery Estate*

In October 1997, the first stage of a *No Waste by 2010 Infrastructure Action Plan* was agreed to. The first stage included seeking registrations of interest for businesses interested in setting up in the Estate.

Registrations of Interest were called in December 1997 to identify potential resource recovery industries and businesses interested in operating in a proposed Resource Recovery Estate. More than twenty registrations suitable for the Hume Resource Recovery Estate were received from industry operators who fell into the following cluster activities:

- Organic-based value adding;
- Construction and demolition material recovery and reuse;
- Single product recovery and recycling including paper, tyres and cooking oils; and
- Recycling resaleable and reusable goods.

The activities outlined in the expressions of interest indicated a total land requirement within the Estate of 45 to 50 hectares. The Registrations of Interest indicated the potential for generating 120 to 140 jobs in several clusters in the Estate. As the Estate develops over time additional value-adding activities could contribute further significant employment opportunities to the local economy.

The Estate can provide the critical mass necessary for the increased recovery of resources in a commercially viable manner. The cohabitation of enterprises on the Estate has the potential to generate significant synergies in recovery and value adding activities through the collaborative development of opportunities to turn the by-products from one enterprise into the inputs of another. It is planned to conduct a feasibility study on the commercial viability of the Estate during 2000.

The Mugga Lane Landfill provides the most appropriate and logical location in the ACT for the Resource Recovery Estate. The *No Waste by 2010 Infrastructure Action Plan* established that Mugga Lane offered:

- . Cost minimisation for transfer of residual materials to landfill storage
- . Potential for utilisation of landfill gas as an energy source for the resource recovery Estate
- . Co-ordination of the environmental protection features required for both facilities
- . Preservation of waste materials transport patterns on the south side of Canberra

In particular, Mugga Lane provides a practical location where commercial recycling and reuse activities across a wide range of goods can be further fostered. There are already significant recycling and reuse activities occurring on-site and these form a solid base for the growth of additional recycling and reuse activities. The Mugga Lane site is well serviced with urban infrastructure other than sewage, offers a central location, has good access and its land use policy is 'Industrial' under the ACT Territory Plan.

- *Temporary Resource Recovery Estate at West Belconnen Landfill*

To facilitate business establishment a temporary Resource Recovery Estate has been established at the West Belconnen landfill. Assistance is being given to resource recovery businesses in the form of land and subsidised rental during their establishment phase. Some of the activities undertaken by these businesses include the acceptance and segregation of organic/non organic waste, worm production, acceptance of whitegoods, tyres and the acceptance of building timbers which are substituted for firewood.

As well as creating jobs, the temporary Estate is helping to develop creative local solutions that could ultimately transfer into the main Estate. It is envisaged that the future Estate will include waste minimisation and handling techniques, recycling and resource recovery operations.

- *National No Waste Education Centre*

The establishment of an Environmental Education Centre was the subject of a scoping study undertaken by Tirra Lirra Environmental Projects Australia Pty Ltd. The brief for the scoping study allowed the consultant to take a broad approach to identifying the potential for an education centre and how it would link to related, current and possible, developments within the ACT and nationally.

The Consultant envisaged that the Education Centre would be an integral part of the Resource Recovery Estate and would showcase national best practice waste management, demonstrate advanced technologies and techniques and link national industry expertise in reprocessing. It would link a network of Australian Resource Recovery Estates, with a role in benchmarking and developing national performance indicators.

In 1999, a consultant was engaged to cost the construction and operation of an education centre at the proposed Mugga Lane Resource Recovery Estate. A Preliminary Business Plan has now been developed for "The National No Waste Education Centre".

An important aspect of the No Waste by 2010 Strategy is community education. The cost of generating waste is ultimately borne by all members of the community and to enable people to make sound purchasing and business decisions, they must be made aware of the social, environmental and economic impacts of our "throw-away" society.

The National No Waste Education Centre will provide the focus for this education in Canberra and the Capital Region. Through the application of telecommunications, waste management and resource education can also be delivered across the nation and internationally. The education programs administered by the National No Waste Education Centre will support and strengthen each of the five action areas of the No

Waste by 2010 Strategy. The products and services delivered by the Centre would have two distinct markets being:

- Meeting the needs of the ACT and Regional community; and
- Providing a national repository on waste minimisation and resource education information and material.

It is proposed to co-locate the National No Waste Education Centre with the Resource Recovery Estate. The close inter-relationships between the National No Waste Education Centre and Resource Recovery Estate will foster an environment where new waste management technology research and development can occur.

The National No Waste Education Centre would also provide a base for training the staff of the various Estate's enterprises in the improved methods of resource recovery and reuse. It is proposed during 2000, to prepare a prospectus, seek funding from stakeholders and identify a potential operator with an established track record in environmental education.

The actions associated with infrastructure currently being undertaken and those to be performed in the near future are consistent with Commissioner for the Environment's Recommendation 4. This recommendation states "Ensure that development of infrastructure for Resource Recovery Estates and the National No Waste Education Centre is implemented, and that the Resource Recovery Estates are managed in such a way that they do not replace landfills as repositories for waste.

6. Market Development

A key action of the No Waste By 2010 Strategy was the establishment of a resource exchange network to provide waste generators with an alternative to landfill, to develop regional markets for previously unwanted materials and to recover the true value of resources.

Before selecting a system, a review of waste exchanges operating in Australia and overseas was undertaken. This review concluded that the Illawarra Waste Exchange provided the best model for establishing a Canberra-based exchange network. There were considerable advantages in adapting the Illawarra system to best suit Canberra's requirements. Following agreement with Illawarra Waste Management and the software's designer, Global Presence, the Canberra Resource Exchange Network (CREN) was launched in December 1997. The Canberra Resource Exchange Network had over 200 businesses and organisations listed.

The wasteboards decided to replace their exchange network with the Australian Reusable Resources Network (ARRnetwork). ACT Waste has become a partner in the (ARRnetwork), a joint venture with NSW Waste Boards and the Local Government Association of Queensland. The ARRNetwork has now replaced CREN.

ARRnetwork is an online trading place for reusable goods and materials, where people and businesses can list items they need as well as items they want to dispose of, for which

others may have a use. It is a goal of the joint venture partners to introduce the Network along the East Coast of Australia, with a view to eventually taking it Australia-wide.

ACT Waste has worked closely in the past with recovery industries to maximise the effectiveness of recovery services. Examples include:

- . SITA-BFI (now Pacific Waste Management) to ensure residents fully utilise the available kerbside recycling system,
- . Canberra Paper Recyclers to provide free paper collection services to government offices and other larger generators of waste paper
- . Canberra Concrete Recyclers to establish a demolition waste reprocessing service
- . Corkhill Bros and Canberra Sand & Gravel to expand the services for garden waste reprocessing available to the Canberra community and markets for products.

A close liaison with the recovery industries has resulted in a considerable increase in the recycling of materials, particularly paper, garden wastes and demolition wastes. ACT Waste will continue to develop opportunities in conjunction with the recovery industries to increase the levels of recycling and to further reduce the waste to landfill.

The development of sufficient large and sustainable markets for recovered materials is imperative to the success of the No Waste Strategy.

In the late 1980s recycling was identified as a way of reducing waste to landfill and an emphasis was placed on the collection of newspaper and packaging. While it was relatively easy to implement collection services for these materials, the amount of material collected was far in excess of the demand and this resulted in depressed markets and low commodity prices. The emphasis then turned to major material streams being garden wastes, demolition wastes and paper and cardboard. The volumes of materials collected in these areas is significant but again there have been issues involved in developing markets that can cope with the increasing volumes being recovered.

While ACT Waste has worked closely with recovery industries operating in the ACT to expand market opportunities there is a need to continue these efforts to ensure that markets develop in line with the supply of recovered material.

Balancing the levels of materials recovered with appropriate markets is the greatest challenge facing the resource recovery sector, particularly when some commodities are traded internationally and are therefore subject to movements in the market. The development of local markets to a degree insulates the ACT from these fluctuations.

- *Marketability*

Materials collected from kerbside services are traditionally not reprocessed locally. These materials have been subject to significant price fluctuations in recent years and values for products are generally depressed. The specification for acceptance of material by processors is usually increased when there is an over supply in the market. As a result volumes of collected materials such as mixed paper and glass fines have limited markets and must either be disposed of at landfill or alternate markets developed for them.

The ACT Government is a signatory to the *National Packaging Covenant for Used Packaging Materials*, which has been developed to encourage a market-based approach and improve the stability of kerbside collection systems. The focus of the Covenant is to move kerbside recycling to a market base and to ensure the sustainability of the recycling system with the removal of inappropriate barriers to the marketing of recycled products.

- *Barriers to the use of Recycled Products*

There is a perception that recycled products are inferior to products made from virgin materials. Without markets for recovered products the processes cannot be sustained. Significant effort is being put into the development of standards and into trialing the recycled products to demonstrate their performance.

In the past, despite the successful production of large quantities of materials and their compliance with quality standards in their various fields, it has been difficult to sustain markets due to insufficient support in the community. This market resistance could be overcome if the ACT Government itself became a primary purchaser of products from local recycling industries by ensuring that when price and performance are comparable then recycled products are given preference.

- *Australasian Market Development Network*

This Network to which ACT Waste belongs, was established in February 1999, to promote information exchange and cooperation among industry and government agencies involved in market development for recyclable materials. Members include relevant Government agencies from States, the Commonwealth, Wasteboards, Waste Authorities and organisations involved in market development both in Australia and New Zealand.

The Network supports the development of national markets for all major resource materials and is developing strategies and programs to assist with the implementation of the National Packaging Covenant. It is considered that this Network could provide great assistance in coordinating market development activities as part of the Kerbside transition program.

- *Access to Technologies*

The ACT has limited resources available to undertake the research and development necessary to establish new processing and manufacturing techniques. Considerable work in these areas has been undertaken by organisations such as the Clean Washington Centre and the Clean Hunter Centre. By participating in the Australasian Market Development Network the ACT has access to work completed elsewhere. This will enable the identification and selection of suitable technologies for local application.

- *Local Industry - Research and Development*

An opportunity exists to establish and expand the capacity of local industries to utilise various elements of the waste stream as a resource base. This approach provides the best result for the community and can help insulate against market fluctuations elsewhere. The establishment of Resource Recovery Estates provides the physical infrastructure for this to occur.

Research and Development programs are important in establishing new markets and to apply appropriate technology locally. An example of such a program is the ACT

Government's involvement in the establishment of a technology to produce a clean-burning briquette, as a replacement for firewood, from greenwaste and mixed waste paper.

It is essential that the Research and Development program continues to identify, develop and promote new markets for sustainable resource recovery as well as innovative solutions to maximise resource recovery.

- *Temporary Resource Recovery Estate*

A Temporary Resource Recovery Estate has been established at the West Belconnen Landfill. This Estate provides a unique physical and philosophical environment based on waste minimisation and resource recovery, recycling and reuse. The Estate provides the opportunity for small businesses to cluster together and utilise recovered materials as input resources to their various value-adding processes. The Hume Resource Recovery Estate would provide further opportunities for other companies to set up new recycling and associated value adding businesses.

The development of markets through initiatives such as ARRnetwork, the Australasian Market Development Network, participation in the Covenant and the Resource Recovery Estate meet the Commissioner for the Environment's recommendation number 9 which recommends the integration of efforts taken in the ACT with regional and National efforts.

7. Collection Systems

As a result of the advancement in domestic collection systems, ACT Waste is planning to conduct organic collection in 2000/01 with a view to further reducing domestic waste disposal. It is proposed to conduct trials of organic waste collections from households as the first step in determining the effectiveness of establishing an additional domestic collection that provides a better level of service and recovers more material.

In addition to domestic waste collection trials, trials involving the commercial food processing industries are being planned for the latter half of 2000. There are significant quantities of organic wastes produced by these industries which, if collected and processed, could produce value-added products such as organic fertilisers.

Apart from organic collection trials, collection of recyclables in public places, including shopping centres will be undertaken over the 12 months commencing July 2000.

- *Domestic organic trials*

The current domestic garbage and recycling contracts were established in 1994 and were the result of a series of trials conducted to develop an integrated service that had strong community support. The kerbside recycling is recovering about 24,000 tonnes of material per annum.

The introduction of the kerbside recycling service initially resulted in a 20 % reduction in domestic collected waste going to landfill. In recent years there have been lower reduction levels, due in part to the introduction of non-commercial tip charges and the removal of corrugated cardboard from the recycling collection service.

The Beverage Industry Environment Council 1997 National Recycling Audit and Garbage Bin Analysis Report concluded that Canberra's kerbside collection service was the best performing service in Australia in terms of participation and recovery. Despite this performance there are opportunities to further improve the service delivery. The current domestic garbage and recycling contracts are due to expire in November 2001.

There has been considerable advancement made in domestic collection since 1994 and it is timely to now review the services being provided to improve the overall services and make changes to further reduce domestic waste disposal. Since the contracts commenced, kerbside recovery technologies have improved. As a result it may no longer be necessary to use divided bins to keep paper separate from glass as these materials could be effectively separated at the Materials Recovery Facility.

Changing to a single chamber bin could overcome problems relating to:

- . Litter
The divided bin collection system requires the lid to be opened before emptying. This is currently achieved by using compressed air to blow open lids and often results in littering during collection.
- . Increased capacity
Consumption varies in individual households and it is common that one side of the recycling bins becomes full while the other side still has considerable capacity remaining.
- . Jamming of materials
Corrugated cardboard was removed from recycling bins in 1999 following a mediation process with the contractor because this material, in the form of pizza boxes and beer cartons, often jams between the divider and the side of the bin causing a partial clearance of material.

Surveys on the composition of domestic waste have revealed that the composition of domestic bins includes 52% (23 450 tonnes) of food and kitchen wastes in the ACT (Table 5). Because organic wastes are putrescible they can rot and smell if not collected frequently. However, the remaining residual wastes are inert and could be collected less frequently than weekly.

Table 5:
Composition of domestic waste

Material	% by weight	tonnes/annum
Food/kitchen wastes	52	23,450
Paper/cardboard	17	7,650
Garden/vegetation/wood	5	2,400
Total	74	33,500

There is an opportunity to reduce the amount of domestic waste being sent to landfill by 74% if all this material could be separately collected. It is proposed to target this waste stream through the changes to the domestic kerbside collection system.

Although some of this material can be home composted, a large proportion is unsuitable. For example it is not recommended that meat scraps be home composted as they attract vermin. Also some of the heavier paper and cardboard and the woody vegetation does not break down successfully in home compost bins. Home composting is not always managed well and this can result in problems with vermin and poor decomposition of material. In terms of the type of materials able to be successfully composted, it is more efficient to collect and commercially compost the organic materials.

A number of metropolitan councils now provide a three bin collection service with the extra bin in most cases used for the collection of garden wastes. This collection is recognised as a step towards a “bio-bin” which can accept food wastes and garden wastes in a separate stream for reprocessing through a composting operation. The bio- bin is common in Europe where the collection system incorporates at least four bins. Materials are segregated at source into paper, packaging materials, organics and residual garbage. Drops off centres are also utilised for materials such as glass.

As yet, there are no putrescible organics collection services being conducted with a three-bin system within Australia, although some councils are moving towards this. The ACT has a drier climate than other capital cities and particular seasonal variations that have an impact on the amount and type of organic wastes generated. We need to trial the organic service to determine collection and processing systems that are appropriate for the ACT.

It is proposed to undertake trials of organic collections from domestic premises as the first stage in determining the effectiveness of establishing new domestic collection arrangements that provides a better level of service and recovers more material.

Initially, the results from trials conducted elsewhere in Australia will be reviewed. Local specifications and research parameters will then be established. A trial area will be selected in an area representative of Canberra averages – for demographics, household numbers, age profile income etc. The expected basis for the initial trial is to utilise:

- a further 140 litre bin provided to each dwelling in the trial area with appropriate signage indicating that this bin is for organic materials – this bin is to be emptied weekly
- existing 140 litre bin to be signed for residual wastes – with a collection frequency reduced to fortnightly.

The trials will be finalised by June 2001 and results compiled. A report will then be prepared on the results, making recommendations, for a Canberra wide implementation of a new service.

Pending implementation of new collection services and the introduction of education programs it is expected that there could be a reduction of domestic waste going to landfill by 2003/04 of 15 000 tonnes of organic and 5 000 tonnes of paper and cardboard. This would be measured through an expected increase in the recycling of paper and organics. Once a domestic organic system is in place there is scope to replicate this service for the collection of organic materials from commercial sources and this could further reduce total waste to landfill by an additional 9 percent.

- *Commercial Collections*

Prior to the introduction of commercial landfill disposal charges in 1993 there was limited incentive for businesses to reduce waste. The lack of heavy industry and manufacturing in Canberra means that commercial and industrial wastes are limited to materials used in offices, hospitality and service industries, retail and light industries.

In 1996 trial collections of source separated organics were conducted from a number of supermarkets with a local waste contractor. These trials were discontinued because the relatively low disposal costs did not allow sufficient margin to cover the costs involved in separately collecting and processing this material.

The 1997 Waste inventory provided detailed information on the composition of commercial waste streams and their potential for recycling. The most significant quantities of commercial waste being disposed of were paper/cardboard and food/kitchen (Table 6).

Table 6
Commercial and Industrial – significant wastes

Material	Percent by weight	Tonnes/annum
Paper/Cardboard	52	40007
Food/Kitchen	20	15298
Total	72	55305

The largest proportion of commercial and industrial waste is paper/cardboard with the major generators being government and private offices, educational facilities, retail and distribution businesses. Paper/Cardboard comprises packaging material, newsprint, advertising material and fine writing paper. The Waste Inventory identifies that over 40 000 tonnes of this material is going to landfill annually.

There are four significant issues affecting the recovery of paper/cardboard, being:

- . Low landfill disposal fees for mixed waste has provided little incentive for businesses to separate their paper and cardboard at source for recycling;
- . The prices paid for recovered paper have been low making it marginal for recovery businesses to offer free collection services;
- . To separate at source requires additional infrastructure in the form of bins, hoppers and collection vehicles; and
- . Costs of collection are increasing due to rising costs for labour, fuel etc.

The inventory also identified that food and kitchen waste should be targeted in the commercial and industrial sector as there is some 15 000 tonnes going to landfill from this source. The major generators of these wastes are the hospitality and fast food industry, supermarkets and greengrocers. Similar issues apply for these wastes as apply for the

paper and cardboard with low landfill charges and infrastructure being the biggest concerns.

Food/Kitchen waste is generated from commercial and domestic kitchens. The material is currently collected in the general garbage collections. This material, in an uncontaminated form, would provide a valuable nitrogen source to current composting operations. The central issue in recovering this material is the establishment of new collection systems that minimise contamination.

The recovery of paper and organic wastes from commercial sources is limited by space for segregating materials and availability of collection services. Waste facilities are limited in most commercial centres.

Sourcing these materials in an uncontaminated form will require increased effort in educating the industries in sorting such material from general waste. The Ecobusiness programs will be tailored to target the businesses that generate much of this waste. Prior to implementing this program, it is proposed to undertake research and to develop a series of case studies using businesses that have achieved superior results in waste reduction and promote these benefits to similar businesses in Canberra.

Ecobusiness Programs will initially target the most significant wastes generated by each industry group. For example, the recycling of paper will initially be targeted in the office-based sectors whereas cardboard generated by packaging will be targeted in the retail sector. After these courses are conducted further courses will be run targeting the remaining waste streams in each sector. For example a further course will target the cardboard in the office-based sector.

An Ecobusiness program will also be directed at the hospitality/fast food industry to target their organic waste and identify alternative disposal techniques. Following on from this a program will further target office based organic waste. Ecobusiness programs will be developed and implemented by June 2000.

The development of programs within commercial areas to facilitate centralised waste and recycling facilities as a demonstration of best practice in waste management is currently underway. The segregation of wastes into separate facilities prior to disposal and collection will be promoted. While a voluntary approach is preferred, the inability to capture all tenants within a centralised facility is limited and the full implementation of such an initiative may require specific regulations.

It is proposed to further facilitate the recycling of these wastes by working with the commercial sector to segregate the waste streams and with contractors to improve collection services from commercial buildings.

Expressions of interest will be sought from organisations to conduct trials to process the organic wastes generated by commercial outlets. A potential site for processing the organic waste could be the Temporary Resource Recovery Estate at West Belconnen. The collection and processing of this organic kitchen waste is planned to commence by 30 September 2000.

A cooperative promotion with collection businesses, organic processors and paper recyclers will also be sought which targets the commercial sector and provides incentives for segregated waste streams. It is anticipated that this will provide the basis for a broad acceptance of these collections throughout the commercial sector.

If the voluntary approach to segregated collections fails then it will be necessary to consider differential prices or banning material at landfill. Differential charges for materials have been used elsewhere to achieve an outcome, for example in Sydney higher disposal fees have been applied for commercial and industrial waste delivered with more than a specified amount of paper in the load.

Following implementation of new segregated collection services and the introduction of education programs it is expected that there will be a reduction of 25 000 tonnes of commercial waste going to landfill by 2003/04. This will be measured through an expected increase in the recycling of paper/cardboard by 20 000 tonnes per annum and an increase in the recycling of 5 000 tonnes of organics per annum.

The recycling and waste collection systems being developed and implemented under this step meet the Commissioner for the Environment's recommendations 5(c) and 5(f) regarding the targeting of specific waste streams based on the waste inventory as well as the introduction of innovative ways to meet the goal of the strategy.

8. Building and Demolition Waste Reduction

The quantity of building and demolition waste generated in the ACT during 1998/99 totaled 65 013 tonnes which represents approximately 25% of waste being deposited at landfill. The introduction of commercial charges in 1993 resulted in significant decreases in some wastes going to landfill. Clean fill to landfill went down from 90,765 tonnes in 1993/94 to 4,361 tonnes in 1994/95 and in the same period, Building and Demolition waste reduced from 127,747 tonnes to 70,597 tonnes.

Significant quantities of naturally excavated soil as well as concrete, bricks and tiles are generated during the demolition and construction of buildings. To facilitate the recycling of these materials, ACT Waste implemented the Development Control Code for Best Practice Waste Management in the ACT on 1 November 1999 (the "Code"). The code assists professional such as engineers, architects, planners and developers to comply with best practice waste requirements applicable for the demolition, refurbishment, construction and operational phases of projects. The Code requires waste management plans to be submitted to ACT Waste for approval. Information to be provided as part of the waste management plan includes:

- . the extent of demolition work to be undertaken;
- . the nature and amount of wastes which will be generated by demolition;
- . the location to which each type of waste will be taken by the builder, or his/her agent for reuse, recycling and/or disposal.
- . containment of waste and recyclables within the property; and
- . safe and easy access for collection trucks.

The implementation of the Code should result in a significant increase the reuse and recycling of materials generated from demolition activities.

The Code's effectiveness in reducing the quantities of demolition and construction materials going to landfill will be monitored by ACT Waste. A rolling program of audits will be conducted to ensure demolishers are managing the disposal and recycling of materials in accordance with the approved Waste Management Plan.

One mechanism by which the Government has assisted businesses find markets for their recyclable materials is through the establishment of and participation in the Australian Reuseable Resources Network (ARRnetwork) within the Canberra region. This network enables demolishers and builders to locate customers for their unwanted materials, which enables them to satisfactorily complete their Waste Management Plans.

Mixed builder's waste has been identified as a resource capable of recovery. It is proposed that a site will be made available following the establishment of the Mitchell Resource Recovery and Transfer Centre that will accept and segregate mixed builder's waste for reuse and/or recovery. The facility will further reduce this waste stream. It is anticipated that the programs associated with the recovery of Building and Demolition wastes will result in a reduction of 5 000 tonnes of this material going to landfill by 2003/04.

The targeting of building and demolition waste through the Code's implementation is consistent with the Commissioner for the Environment's recommendation 5(c) being targets to reduce specific waste streams based on the waste inventory. The initiatives being undertaken have already achieved significant increases in the quantities of building and demolition materials recycled.

9. Legislation and Regulation

Legislation is needed to enact the National Environment Protection Measure (NEPM) in the ACT. The ACT currently has no legislation specifically for waste management and this is needed in the future to support the No Waste Strategy. Waste management legislation that supports both the enactment of the NEPM and future aspects of the No Waste Strategy is a practical approach.

It is proposed that the legislation be based on an encouragement of voluntary approaches but allow for regulations to be established when satisfactory results are not being achieved. This will provide significant support to the implementation of the No Waste Strategy in cases where the voluntary approaches fail.

- *National Packaging Covenant/NEPM*

With the approval of the National Packaging Covenant and the *National Environment Protection Measure for Used Packaging Materials*, enabling legislation for the National Environment Protection Measure (NEPM) is needed in the ACT.

NEPMs are broad framework-setting statutory instruments, which outline agreed national objectives. A NEPM becomes law in each participating jurisdiction once it is made by the

National Environment Protection Council. Implementation of NEPMs is the responsibility of each participating jurisdiction and requires enacting legislation to enable the jurisdiction to enforce the NEPM.

The Covenant/NEPM package is aimed at developing a national approach to the life cycle management of consumer packaging. While the Covenant is a voluntary agreement, legislation will need to be enacted to ensure that voluntary participants are not unfairly disadvantaged by industries choosing not to participate. This legislation is currently being developed by Environment ACT and needs to be in place by July 2000 to meet the national obligations.

- *No Waste Strategy*

The No Waste Strategy identifies the need to use economic instruments or legislation, as appropriate, if the voluntary systems fail and to support new waste management initiatives. The ACT currently has no legislation specifically for waste management and many of the regulations that control waste activities are inconsistent with the intent of the strategy.

The ACT will continue to promote voluntary approaches as the preferred alternative. If satisfactory levels of waste minimisation are to be achieved however, there is a need to have supporting regulatory mechanisms to ensure that those complying with the voluntary are not disadvantaged by others not complying.

- *Development Control Code*

The Development Control Code has been introduced to increase the recovery of demolition waste and is supported by the Building Act. The Development Control Code is supported by reference in the Building Act, which permits the making of a code for the disposal of waste materials. Changes to the ACT Appendix of the Building Code of Australia to make specific reference to the Development Control Code are being made to further support the Code.

At present there are no set penalties for non-compliance with either the Building Act or the Building Code of Australia and this makes enforcement of the Development Control Code complex and difficult. Should monitoring determine that appropriate results are not being achieved then it may be necessary to establish regulations to balance non-compliance with voluntary approaches. Waste management legislation that regulated disposal of materials would enable a simplified enforcement of the Development Control Code.

- *NSW Waste Minimisation and Management Act 1995*

NSW has comprehensive waste legislation in the form of the *Waste Minimisation and Management Act 1995*. This Act establishes a framework for the regulation of waste facilities and activities as well as ensuring that government, industry and the community share in the responsibility for waste minimisation and management.

The NSW legislation also fixes charges for disposal at landfill that reflect the true costs of waste disposal as well as providing for levies which are made available for waste reduction programs. It is important for the ACT to be consistent with NSW legislation if cross border waste issues are to be avoided. For example, if landfill charges in the ACT are set at levels significantly below those in NSW then there is an incentive for NSW operators to dispose of their wastes in the ACT.

Directions and Priorities

Waste management legislation that not only supports the enactment of the NEPM but also simplifies the administration of waste activities is a practical approach. Waste management legislation will be central to the ongoing implementation of the No Waste Strategy as well as giving consistent regulatory backup to landfill charging and the Development Control Code.

Legislation will also be vital to the regulation of materials to make significant progress towards the No Waste goal in circumstances where voluntary approaches have failed to achieve the desired outcomes. The ACT has worked hard on voluntary approaches and the lack of formal legislation has been an impediment to moving forward as there is limited incentive to comply. Any ACT legislation would be outcome focused and not overly prescriptive but provide a framework and an ability to establish regulations for the various materials and activities that need to be targeted.

It is timely, with the necessity to have enacting legislation for the NEPM, to develop Waste Management Legislation for the ACT that sets a broad framework for the establishment of regulations that control materials. Regulations could then be progressively developed under this framework for the control of priority wastes such as building and demolition waste, tyres and paper. For example, regulations could be developed for the control of some of the more problematic building wastes and thus give valuable support to the Development Control Code.

The development of supporting legislation is recommended by the Commissioner for the Environment in recommendation number 5 which considers the need for legislation to support the desired results.

10. Future Technologies

- *Research and Development*

An opportunity exists to establish and expand the capacity of local industries to utilise various elements of the waste stream as a resource base. This approach provides the best result for the community. Research and Development programs are important in establishing new markets and to apply appropriate technology locally.

ACT Waste will continue to undertake research and development targeted at specific waste materials. An example of such a program is the ACT Government's involvement in the establishment of a technology to produce a clean-burning briquette, as a replacement for firewood, from greenwaste and mixed waste paper.

- *Access to Technologies*

The ACT has limited resources available to undertake the research and development necessary to establish new processing and manufacturing techniques. Considerable work in these areas has been undertaken by organisations such as the Clean Washington Centre and the Clean Hunter Centre. ACT Waste is participating in the Australasian Market Development Network to obtain access to work completed elsewhere. This will enable the identification and selection of suitable technologies for local application.

It is proposed to co-locate the National No Waste Education Centre with the Hume Resource Recovery Estate. The close inter-relationships between the Hume No Waste Education Centre and National Resource Recovery Estate will foster an environment where new waste management technology research and development can occur.

The waste management and resource recovery industries are rapidly developing and changing. In addition to the initiatives outlined above, there are new technologies emerging that address waste management issues from cleaner production to waste-to-energy. The current information indicates that these technologies are significantly more expensive than the initiatives proposed, and may not be economically feasible for some time. ACT Waste will continue to monitor and investigate new initiatives as they emerge, including seeking Expressions of Interest to determine opportunities to use Waste to Energy systems for residual wastes. As markets and opportunities arise ACT Waste will utilise these as appropriate.

Once the steps outlined above have been implemented, a program will be developed to address the remaining wastes going to landfill.

Formal Review Program

The initiatives detailed above are to be progressed between 2000 and 2002. Following on from the 2000-2002 Next Step, a formal review of progress will be conducted and new programs implemented for the periods 2003-2006 and 2007- 2010.

With each period of formal review new priorities and targets will be set and a program developed to deal with the priority wastes determined at that time. A report covering the review of the preceding periods targets and achievements will be provided to government before the end of each planned review period. A new program will be outlined at the same time, which sets targets and goals to deal with the priority wastes.

The Next Step programs will be reviewed in 2002 and a series of new programs implemented for the following period 2003-2006. In 2006 another review will be conducted and new targets and priorities will be set to ensure that the ACT is on track to achieve the goal of No Waste by 2010.

This program is supported by the Commissioner for the Environments recommendation number 5 in which he has recommended that at least two reviews be conducted of the progress of the strategy.

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