

Chapter 4

Potential new waste management strategies

4.1 This chapter considers the issues under items (c), (d), and (e) of the inquiry's terms of reference. It deals with new strategies, the benefits and costs of such strategies, and policy priorities to maximise the efficiency and efficacy of efforts to reduce, recover or reuse waste from different waste streams.

4.2 The previous chapter highlighted state-level inconsistencies in areas such as landfill targets and landfill levies. Many submissions and witnesses raised concerns about the escalating problems created by this divergent and inconsistent approach across the country. There was an overwhelming call for consideration of a national strategy to guide the formulation of policies to better manage Australia's growing waste generation.

Establishing a national resource efficiency strategy

4.3 Over the past two decades the only national waste minimisation strategy that has been established was the National Waste Minimisation and Recycling Strategy (NWMRS). The over-arching goals of the NWMRS are to:

- encourage the ecologically sustainable non-wasteful use of resources;
- reduce potential hazards to human health and the environment posed by pollution and wastes; and
- maintain or improve environmental quality.¹

4.4 Now out-dated, the NWMRS was adopted in 1992 and included a target of reducing the amount of waste per capita going to landfill by 50 per cent by 2000 (with 1991 as the baseline year). There were no targets set beyond the year 2000.

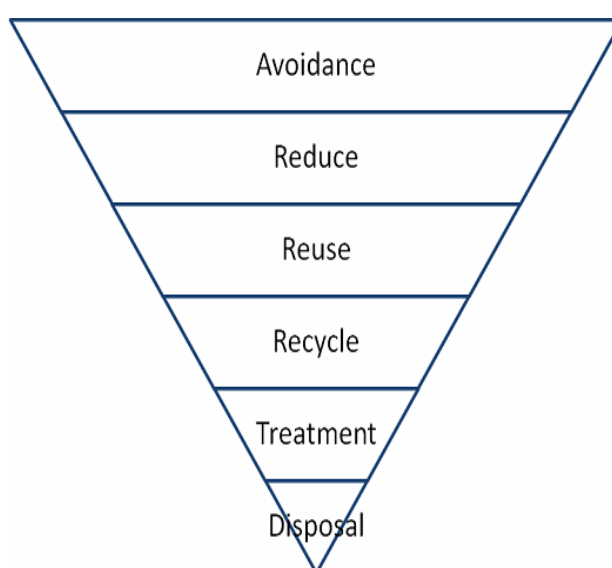
4.5 For completeness, the committee notes the existence of two other national strategies, but distinguished them from a holistic national strategy as they focus on specific waste streams or sectors, rather than on the entirety of waste generation. In the same year the NWMRS was established, governments agreed to the National Kerbside Recycling Strategy, which amongst other things, specified agreed recycling targets for municipal waste such as plastic, glass, aluminium, steel and liquid paper board containers, newsprint and paper packaging. The other national strategy is the Environment Protection and Heritage Council (EPHC) National Waste Framework. This strategy, which is discussed further in chapter 5, provides a systematic framework to assist the EPHC to identify and address waste management issues of national importance. Current examples of waste management issues of national

1 Quoted in Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 46.

importance under consideration by the EPHC are various e-waste streams, used oil and used tyres.

4.6 The two key principles of the NWMRS that continue to influence state and territory policy are the waste hierarchy and targets for the amount of waste going to landfill. The waste hierarchy specifies a preferred order of waste management options. It recognises disposal as the last and least desirable option, with waste avoidance the first and most desirable option. In accordance with this approach, many jurisdictions have established targets for diverting waste and include the objective of zero waste to landfill.² Whilst there are variations of the hierarchy, the common structure is demonstrated in Figure 4.1 below.

Figure 4.1—Typical waste hierarchy structure



4.7 Because of constitutional constraints, the Commonwealth Government's engagement in the solid waste arena is largely confined to working with the states through the EPHC and the National Environment Protection Council (NEPC) in the development of harmonised national approaches for significant waste issues.³ The Commonwealth does not have the constitutional powers to legislate and implement national strategies. It must work with the states which have the primary constitutional responsibility for waste management policy.

4.8 With the Commonwealth Government's limited ability to provide national leadership, the committee heard evidence that the states have tended to develop waste management policies in an uncoordinated and at times inconsistent fashion. Mr Mike Ritchie, New South Wales President of the Waste Management Association of

2 Although Mike Ritchie, National General Manager, Marketing and Communication, SITA Environmental Solutions told the committee that zero waste to landfill policies cannot be met with current technology at a reasonable cost, *Committee Hansard*, 3 July 2008, p. 17.

3 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 1.

Australia highlighted the problems created through the lack of an overarching national strategic framework. He told the committee:

In the absence of a national strategy, we have all state and territory governments going off and doing their own things. From a policy and infrastructure development and a program delivery perspective we need some leadership at the federal level.⁴

4.9 Mr Ritchie spoke of the importance of moving away from a pick-and-choose approach to waste management, towards providing an overarching framework for all waste streams. He stated that 'we have activity happening around particular product streams between state governments, but it is not coherent within any national framework'.⁵ This 'trophy-cabinet approach' to waste management implies that there have been some successes in pockets, but no overall national strategy to systematically address resource recovery in Australia.⁶

4.10 More specifically, the lack of a comprehensive national resource efficiency strategy, one that takes a holistic approach to the entire waste cycle, results in complexities that arise from the differences across jurisdictions in terms of legislation, definitions, targets, strategies and policies.

4.11 The widespread support for a national strategy was evident across waste managers, recyclers, the business sector and governments as the following quotes demonstrate.

4.12 Mr Ritchie told the committee that an overall national strategic framework for waste is required with clear principles and goals rather than a piecemeal approach:

At the moment we have activity happening around particular product streams between state governments, but it is not coherent within any national framework. What are we trying to achieve here? What are our goals in terms of resource recovery, recycling, emissions, climate change et cetera? It is a complete vacuum.⁷

4.13 The Australian Council of Recyclers (ACOR) stated:

ACOR is calling for a national strategy for resource recovery, as opposed to waste disposal, that seeks to maximise the recovery of resources while continuously improving resource efficiency.⁸

4 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 17.

5 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 28.

6 Mr Mike Ritchie, National General Manager, Marketing and Communication, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 29.

7 Mr Mike Ritchie, National General Manager, Marketing and Communication, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 28.

8 Australian Council of Recyclers Inc, *Submission 81*, p. 3.

4.14 The Cement Industry Federation also supported a nationally consistent approach to resource recovery:

The most significant issue that is preventing a higher uptake [alternative fuels and alternative raw materials] is the inconsistent environmental regulations across all states. That is why we have said in the submission that we are interested in a nationally consistent approach to resource recovery to address the regulatory impediments to the uptake of secondary materials. We want to clarify 'resource recovery' with definitions and classifications that promote the recycling of materials and not the old adage of 'everything is a waste'. We regard materials as a resource; they have a value, so they are not a waste.⁹

4.15 The Queensland Environmental Protection Agency highlighted the benefits of national action:

Many strategies to reduce, recover or reuse wastes would benefit from a national approach, particularly end-of-life products where there are national or international companies involved in production or distribution where movement between jurisdictions may be impacted by a system in one jurisdiction or where economics of scale would result from national action.¹⁰

4.16 At the most practical level, greater national consistency would counter any 'jurisdictional' shopping undertaken on the part of companies to identify the lowest level of regulation.¹¹

4.17 In light of widespread support from both business and government, and acknowledging growing community expectations about reducing the environmental damage of waste generation and disposal, the committee considers that it is time for the establishment of a principles-based national strategic framework for waste which emphasises the objectives such as sustainability and resource efficiency rather than waste disposal.

Recommendation 8

4.18 The committee recommends that the Environment Protection and Heritage Council develop a national resource efficiency strategy. The strategy should seek consistent policies between the states and adopt a principles-based approach; including sustainability, the waste hierarchy, extended producer responsibility and user pays cost reflective pricing as guiding principles.

9 Mr Andrew Farlow, Sustainability Development Policy Manager, Cement Industry Federation, *Committee Hansard*, 4 July 2008, p. 3.

10 Queensland Environmental Protection Agency, *Submission 80*, p. 3.

11 Queensland Environmental Protection Agency, *Submission 80*, p. 3.

Fundamental principles of a national strategic framework

4.19 In the committee's view, a national resource efficiency strategy should be a principle-based tool providing guidance for all participants in the waste sector. The committee recognises that these principles are not absolutes. They must be balanced with each other as well as other social, economic and environmental goals.

4.20 Based on the evidence received throughout this inquiry the committee now enunciates a number of principles it sees as fundamental to a national resource efficiency strategy. Many of these principles were succinctly conveyed by the Australian Conservation Foundation (ACF):

ACF believes the need for ecological sustainability requires waste minimisation and pollution prevention to be the core drivers for a new national waste management strategy. Waste should be viewed primarily as a resource to be utilised by current or future generations, rather than as material for which society has no further use. The management of waste matter should be assessed within the hierarchy of avoidance, reduction, reuse and recycling. The environment does not have unlimited capacity to assimilate waste and pollution.¹²

Resource efficiency

4.21 One of the key issues repeatedly raised throughout the inquiry was the need to shift away from a linear extraction-production-consumption-disposal approach to waste management, to a life-cycle, closed-loop, resource efficiency model. According to many witnesses this will require a paradigm shift to valuing as a resource what is currently seen as a 'waste'. As Mr Timothy Rogers from the New South Wales Department of Environment and Climate Change succinctly put it 'waste represents a loss of valuable resources to the economy'.¹³ Representatives from the cement industry told the committee:

We want to clarify 'resource recovery' with definitions and classifications that promote the recycling of materials and not the old adage of 'everything is a waste'. We regard materials as a resource; they have a value, so they are not a waste.¹⁴

4.22 To a large degree this will require a change in the incentive structure of current waste management practices. According to Hyder Consulting, there is currently limited commercial benefit derived from the voluntary resource recovery

12 Australian Conservation Foundation, *Submission 71*, p. 5.

13 Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication, Department of Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 2.

14 Mr Andrew Farlow, Sustainability Development Policy Manager, Cement Industry Federation, *Committee Hansard*, 4 July 2008, p. 3.

activities encouraged by government for many businesses.¹⁵ This reality is reflected in the sale of recyclables which accounted for only two per cent of the total revenue in the Australian waste management industry in 2002–03.¹⁶ Without adequate financial incentives, the waste sector will continue to adopt the most cost-effective option, which is often disposal in landfill. As discussed elsewhere in this report, one of the key constraints is the non-inclusion of certain environmental and social costs in current waste management pricing structures. Allowing the market to target cost-effective resource efficiency options has the potential to improve the productive capacity of the Australian economy.

4.23 The Productivity Commission held that waste management policy should not be used to promote resource efficiency because such measures often involve aggregated quantities of different materials which does not take into account their individual market values or environmental impacts.¹⁷ However, the government response emphasised that resource efficiency is an important goal fundamental to environmentally sustainable policies:

Considerations such as potential improvements in the pattern of how materials are used within the economy, reductions in greenhouse gas emissions, water and energy savings, or recycling are important considerations in making decisions about optimal waste management solutions. They can help inform policies aimed at achieving long term environmental sustainability and economic efficiency and help achieve productivity gains. Policy in any given area should not be developed and implemented in isolation from other relevant policy goals.¹⁸

Waste hierarchy

4.24 The waste hierarchy was supported by many as a meaningful tool to guide waste management as it seeks to minimise waste generation and maximise resource recovery. As Councillor Samantha Dunn stated:

The waste hierarchy—refuse, reuse, recycle, recover energy, treat, contain, dispose—should be used to guide all community consideration and management of waste products.¹⁹

15 Hyder Consulting, *Waste and Recycling in Australia*, Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, 6 February 2006, p. 44.

16 The sale of organic and green-waste recyclables generates 1 per cent. Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 43.

17 Productivity Commission, *Waste Management*, Report no. 38, 2006, Recommendation 6.2, p. xlvii.

18 Department of the Environment, Water, Heritage and the Arts, *Government Response to Productivity Commission's Final Report on the Inquiry into Waste Generation and Resource Efficiency in Australia*, July 2007, pp 1–2.

19 Councillor Samantha Dunn, Yarra Ranges Shire Council, *Committee Hansard*, 2 July 2008, p. 37. See also Cement Industry Foundation, *Submission 47*, p. 3, and AMCOR, *Submission 57*, p. 3.

4.25 In commenting on the Victorian Government's waste management policy, *Sustainability in Action: Towards Zero Waste Strategy*, Dr Ruth Lane and Associate Professor Ralph Horne from RMIT University, reminded the committee that the waste hierarchy is already included in state government waste management policies:

In common with equivalent policies in other Australian states, it [the Victorian Government's waste management policy] also reiterates a commitment to the 'waste hierarchy' as a guiding principle, with its options based on environmental impact, ranking 'reduction' over 'reuse', over 'recycling', over 'recovery', with 'disposal' the last resort. Recycling, despite being only the third most desirable option in the waste hierarchy, has received the most attention to date with support for the establishment of bulk materials recycling industries.²⁰

4.26 Although the Productivity Commission recommended against using the waste hierarchy²¹ it was supported as a principle to guide policy-making by the government response which stated that:

...whilst the waste hierarchy should not be the sole guide to policy making it is a useful communication tool when used to provide information to the community about a range of alternative options for waste management...²²

Sustainability

4.27 In the committee's view, another guiding principle that ought to be adopted as part of a national resource efficiency strategy is sustainability. The committee was often reminded that waste management policy must be viewed in the broader context of sustainability, including its contribution to climate change, water scarcity and the management of renewable and non-renewable resource. In this regard Ms Mary Harwood, First Assistant Secretary, Environment Quality Division, Department of the Environment, Water, Heritage and the Arts stressed:

In the past, the main focus of waste policy has been on preventing or minimising the environmental impacts of particular waste on health and on the environment. Increasingly, other drivers are influencing waste policy—for example, sustainability, climate change, green design, resource recovery and resource efficiency.²³

20 Dr Ruth Lane and Associate Professor Ralph Horne, RMIT University, *Submission 21*, p. 1.

21 Productivity Commission, *Waste Management*, Report no. 38, 2006, Recommendation 7.1, p. xlvii.

22 Department of the Environment, Water, Heritage and the Arts, *Government Response to Productivity Commission's Final Report on the Inquiry into Waste Generation and Resource Efficiency in Australia*, July 2007, p. 2.

23 Ms Mary Harwood, First Assistant Secretary, Environment Quality Division, Department of the Environment, Water, Heritage and the Arts, *Committee Hansard*, 4 July 2008, p. 63.

4.28 Submitters acknowledged the importance of developing waste policy within a sustainability paradigm linking issues such as energy efficiency, resource efficiency, greenhouse gas emissions and water conservation to the waste agenda.²⁴

User pays, cost-reflective pricing

4.29 As a general principle those who benefit from activities which generate pollution and waste should bear the full costs associated with those activities. When the costs of waste management are either not reflected in the price (as is the current situation with greenhouse gas emissions) or alternatively spread across society more generally (such as the inclusion of municipal waste treatment cost in council rates) users and consumers do not experience a price signal for the waste they are generating. The Productivity Commission recognised this point and the resulting adverse environmental consequences:

Charging for waste services at less than the full cost, and failing to charge according to the quantity of waste disposed, tend to encourage too much waste generation and disposal, and can unnecessarily add to environmental impacts.²⁵

4.30 There are a range of market-based instruments (such as unit pricing or levies on disposal, advance disposal fees, deposit-refund schemes and tradeable property rights), that enable more cost-reflective pricing and provide more direct financial incentives to encourage the appropriate treatment of end-of-life materials.²⁶ One approach which encapsulates many aspects of a user pays, cost-reflective pricing principle is Extended Producer Responsibility which is discussed at length in chapter 5.

Improving waste data

4.31 Understanding and quantifying the impact of waste streams and their economic, social and environmental costs is central to effective national waste policy development. In this regard the Department of the Environment, Water, Heritage and the Arts (Environment Department) submitted:

...it is important that governments have access to sufficient data to support policy making for emerging government priorities, including the contribution that wastes and recycling make to national greenhouse accounts.²⁷

24 For example Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 17; Mr John Lawson, President, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 18;

25 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 125.

26 See for example: Productivity Commission, *Waste Management*, Report no. 38, 2006, pp 219–258.

27 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 2.

4.32 However, there is currently a lack of national data on many waste issues that would otherwise underpin the sustainable management of Australia's waste streams.²⁸ The Environment Department noted:

Understanding the extent of the problem, or determining whether there is, in fact, a problem with particular waste streams in Australia requires good information. However, while there is some good sectoral information and some jurisdictions have better information than others, at a national level Australia lacks reliable, comprehensive, contemporary waste information.²⁹

4.33 The department noted the consequences of inadequate data:

In the absence of a full understanding of life cycle impacts, strategies may be selected which may move us away from more sustainable outcomes.³⁰

4.34 Initiatives to provide nationally consistent data and reporting have faced a series of obstacles in the past for reasons including the different regulatory and methodological approaches operating in each state.³¹ The Australian Waste Database (AWD) is one such initiative which was put on hold in 2005 because some jurisdictions were unwilling to release their data to the Commonwealth Scientific and Industrial Research Organisation (CSIRO).³² Originally designed to provide information to allow national reporting and facilitate the matching of waste generators and processes with potential opportunities for use of waste streams, the AWD provided three primary benefits identified by Professor Stewart Burn, Stream Leader, CSIRO:

The database has benefits for policymakers in that it provides the information needed to make valid policy decisions. It provides information to local manufacturers in that they can identify synergistic relationships for waste reutilisation—where you have a waste generator, it can be reutilised in a local area—and it also provides major benefits to the community in that landfill and other waste disposal processes should be minimised.³³

4.35 National waste policy should be informed and underpinned by national waste data derived from a national waste data system. Such a system, which could draw on the AWD model and lessons emanating from it, could provide not only standardisation in terms of definitions and classifications but also include

28 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 2.

29 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 4.

30 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 10.

31 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment A, p. 12, and Department of the Environment, Water, Heritage and the Arts, Commonwealth Government, *Submission 78*, p. 4.

32 Professor Stewart Burn, Stream Leader, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, 2 July 2008, pp 75–76.

33 Professor Stewart Burn, Stream Leader, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, 2 July 2008, p. 76.

methodologies to calculate volumes of waste generation.³⁴ In addition, such a database could be used as an eco-efficiency tool. Professor Stewart Burn, Stream Leader CSIRO noted of the AWD in this regard:

The Australian Waste Database is a project that is on hold at the moment. It was originally designed to provide information to allow national reporting and to provide information to allow eco-industrial applications, which means you link up waste suppliers and waste users at a postcode level.³⁵

4.36 The work undertaken by the Australian Bureau of Statistics in relation to establishing consistency in frameworks and standards and to facilitate the provision of consistent information across jurisdictions could also be drawn upon in the development of a national database.³⁶

4.37 The reinvigoration of a national data system should take into consideration the ongoing work of the Waste Management Association of Australia in relation to its review of the AWD.³⁷

4.38 The diversity and lack of consistency in relation to waste classification and methodology in calculating waste generation volumes is highlighted by the debate around national beverage container deposit legislation. Numerous studies and analyses over years and across jurisdictions have fed into the ongoing debate over the potential impact of national container deposit legislation (CDL) and of the actual volume of container waste generated that it would impact upon.³⁸ Comprehensive nationally agreed data sets and application across all waste streams have the potential to provide greater clarity to such debates and the policy decisions emanating from them.

34 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment A, p. 12.

35 Professor Stewart Burn, Stream Leader, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, 2 July 2008, p. 75.

36 Mr Denis Farrell, Division Head, Population and Environment Statistics Division, Australian Bureau of Statistics, *Committee Hansard*, 4 July 2008, p. 57.

37 Ms Lillias Bovell, National President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 16.

38 CDL is contentious partly because the data is open to interpretation and subject to manipulation. Mr John Phillips OAM, Executive Director, Keep South Australia Beautiful Environmental Solutions told the committee 'You can do anything with figures', *Committee Hansard*, 30 June 2008, p. 29. Many stakeholders including the Food and Grocery Council maintain that beverage containers represent less than three per cent of waste going to landfill. Food and Grocery Council of Australia, *Submission 56*, p. 2. Others such as the Boomerang Alliance and Total Environment Centre contend that the figure is actually over ten per cent and that the three per cent figure is aggregated across household, C&I and C&D waste streams rather than where major consumption actually occurs which is in the municipal sector. Mr Matthew Warnken, Managing Director, Crucible Carbon, *Committee Hansard*, 3 July 2008, p. 66.

Recommendation 9

4.39 The committee recommends that the Environment Protection and Heritage Council re-establish the national waste data system. Once the Waste Management Association of Australia's review of the Australian Waste Database is complete, governments should consider whether to fund the CSIRO and/or the Australian Bureau of Statistics to re-establish the national waste data system.

Infrastructure

4.40 A number of submitters emphasised the importance of providing adequate infrastructure across the country to support resource recovery initiatives. The need for infrastructure for recycling initiatives as well as specifically in relation to Extended Producer Responsibility (EPR) schemes are discussed in more detail in chapter 5.

4.41 In evidence before the committee, Mr Trevor Hockley, Consultant for Recyclers of South Australia, stated that national EPR schemes require a network of transfer stations which would serve as the infrastructure for the recovery of targeted materials.³⁹

4.42 The need for adequate infrastructure was highlighted by other witnesses before the committee including Mr David West, National Campaign Director of Boomerang Alliance, who stated that the establishment of necessary infrastructure was central to EPR schemes. Using an EPR scheme for packaging as an example, Boomerang Alliance maintains that the infrastructure required can serve for other waste reduction programs:

Because packaging is the most pervasive and widespread “waste of concern” it can provide the “critical mass” to develop recycling centres and new collection infrastructure. This infrastructure in turn allows governments to introduce cost-effective schemes for electronics, batteries, paint and chemical residuals, mobile phones etc. Our research indicates that if a national container deposit system was introduced over 2,000 convenience collection points would be established to collect common recyclables and a further 400 large scale “Drive Through Recycling Centres” to accept all forms of recyclables and problem wastes would be established at no cost to all 3 tiers of government. This level of infrastructure and investment would lead to the single largest improvement in recycling in Australia.⁴⁰

4.43 The benefits of national schemes in relation to EPR are not limited to coordination and consistency across jurisdictions. EPRs should also provide opportunities to improve broader resource recovery infrastructure. The committee encourages the EPHC to consider options that will provide waste generators with a

39 Mr Trevor Hockley, Consultant, Recyclers of South Australia Inc, *Committee Hansard*, 30 June 2008, p. 47.

40 Boomerang Alliance, *Submission 46*, p. 9.

convenient and accessible location to return a range of end-of-life products, in its current deliberations over products of national significance.

4.44 The need for greater investment in recycling infrastructure was also highlighted as a means of providing a more environmentally appropriate alternative to landfill. Adequate landfill levies were recognised as a means of contributing to investment in resource recovery infrastructure. Using the UK landfill avoidance scheme as one such example, Mr Nicholas Harford, General Manager, Environment, of VISY Industries Australia Pty Ltd noted:

That kind of scheme is about putting a price signal around the landfill to create that incentive for the investment in infrastructure not only to keep the material out of landfill but to manufacture it into some valuable product.⁴¹

4.45 Similarly, Mr Mike Ritchie of SITA Environmental Solutions, made the point that infrastructure and planning are fundamental:

We believe there needs to be a much more coordinated approach to waste and recycling infrastructure, both planning and funding, and we do not have a consistent planning regime for waste infrastructure in any state.⁴²

4.46 Evidence before the committee emphasised the importance of recognising waste within its wider environmental, social and economic context in order to understand and address its ramifications on the community. Similarly, such evidence focused on recognising the interrelationship between waste policy with other policy spheres such as infrastructure. The committee recognises that without adequate infrastructure, the potential and effectiveness of resource recovery initiatives will be limited. Indeed, without adequate infrastructure to support resource recovery initiatives, landfill is likely to remain the country's primary response to waste generation.

Recommendation 10

4.47 The committee recommends that the Commonwealth Government, and state and territory governments audit the adequacy of existing resource recovery infrastructure and commit funding or implement policy changes which will address any deficiencies.

Organic waste management

4.48 Organic waste (comprising timber, paper, cardboard, green waste and food) disposed in landfill is recognised as one of the 'big-ticket items' of waste due to its

41 Mr Nicholas Harford, General Manager, Environment, VISY Industries Australia Pty Ltd, *Committee Hansard*, 2 July 2008, p. 18.

42 Mr Mike Ritchie, National General Manager, Marketing & Communications, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 30.

significant carbon impact.⁴³ Table 4.1 provides a breakdown of the various types of organic waste including the weight and proportion recycled and landfilled. It shows that in aggregate, more than two-thirds of organic waste is currently disposed of in landfill rather than recycled. None of the sub-streams of organic waste achieve a recycling rate of greater than 50 per cent. The recycling rate of food waste, which makes up nearly one third of the total of organic waste, is extremely low (10 per cent).

Table 4.1—Organic waste generation in Australia 2002–03

	Total Generated (million tonnes p.a.)	Total Recycled (million tonnes p.a.)	% Recycled	Total Landfilled (million tonnes p.a.)	% Landfilled
Paper & cardboard	5	2.31	46	2.7	54
Garden organics	3.8	1.55	41	2.25	59
Food & other organics	3.2	0.3	10	2.89	90
Wood / timber	2.1	0.44	21	1.63	79
Total Organics	14.1	4.6	32	9.5	68

Warnken ISE, *Potential for Greenhouse Gas Abatement from Waste Management and Resource Recovery Activities in Australia*, March 2007, p. 3, submitted by Boomerang Alliance, *Submission 46*, Attachment F.

4.49 The committee acknowledges the strong commitment of certain councils which are bucking the national trend. For instance, the NSW Port Stephens Council composts approximately 81 per cent of its domestic waste, thereby diverting 16 200 tonnes (or 60 per cent) of its overall domestic organic waste from landfill.⁴⁴ The committee also heard evidence of three council areas in South Australia working with residents to separate organic waste out and to collect it separately.⁴⁵

4.50 Approximately half of the 20 million tonnes of waste going to landfill in Australia each year is organic material. Approximately half decomposes into methane which has up to 25 times the carbon impact of carbon dioxide.⁴⁶ Organic waste disposed of in landfill is primarily responsible for the 15 million tonnes of greenhouse

43 Ms Anne Prince, Chief Executive Officer, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 26.

44 Port Stephens Council, *Submission 5*, p. 1.

45 Mr Jeff Angel, Director, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 53.

46 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 21.

gas emissions (GHGE) each year of the waste sector.⁴⁷ Mr Vaughan Levitzke, Chief Executive, Zero Waste South Australia, explained what happens to organic waste in landfill:

If it goes into landfill it is an anaerobic environment. So this material is covered, usually within 24 hours, with soil. More waste goes in the next day on top and it is like a layer cake. Finally it is capped. Whilst it is being filled this material is breaking down, and the deeper you go in the landfill the more anaerobic the conditions and the more likelihood you have of methane generation. Landfills generate methane.⁴⁸

4.51 In comparison, aerobically composed organics have a carbon neutral impact as Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia explained:

If the plant matter, the organics, are aerobically composted in the presence of oxygen then it has zero effect on the carbon cycle. It is a natural process that would have happened in a forest anyway, so its effect is zero. If you put those same organics into landfill, half of that organic matter decomposes into methane. That methane has a 25 times carbon-forcing effect. That contributes 15 million tonnes of emissions to Australia's emissions profile today.⁴⁹

4.52 A number of stakeholders are successfully engaged in efforts to extract methane gas generated in the current landfill stock. In 2005, gross waste sector emissions were reduced by about 3.9 Mt CO₂-e through the capture and flaring of methane gas from landfill sites.⁵⁰ An estimated 26 per cent of methane emissions from landfill sites is either flared or used to generate renewable electricity.⁵¹

4.53 There are around 450 active solid-waste handling sites in Australia, however most waste volume is managed by the larger landfill sites. Fewer than 100 sites (around 20 per cent) account for more than 80 per cent of waste volume.⁵²

47 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 18.

48 Mr Vaughan Levitzke, Chief Executive, Zero Waste South Australia, *Committee Hansard*, 30 June 2008, p. 20.

49 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, pp 20–21.

50 Australian Greenhouse Office, *Analysis of recent trends and greenhouse indicators 1990 to 2005*, September 2007, p. 45, www.greenhouse.gov.au/inventory/2005/pubs/trends2005.pdf (accessed 22 July 2008).

51 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006, cited in Department of Climate Change, *Carbon Pollution Reduction Scheme Green Paper*, July 2008, p. 106.

52 Hyder Consulting, *Review of Methane Recovery and Flaring from Landfills*, October 2007, cited in Department of Climate Change, *Carbon Pollution Reduction Scheme Green Paper*, July 2008, p. 106.

4.54 However, many landfills have inadequate gas capture and management systems, which are not a regulatory requirement of some jurisdictions, whilst other landfills have no gas capture system at all.⁵³ In Western Australia, for example, whilst there are commitments on the part of the State Government to require landfill sites to capture or destroy methane gas emissions, there is no regulatory requirement for gas extraction systems in Western Australian landfills.⁵⁴

4.55 The committee was told that even the most effectively run landfill cannot capture enough gas to be carbon neutral.⁵⁵ Mr Gerry Gillespie of Zero Waste Australia told the committee of recent research in the United States which estimates that capture rates may be as low as eight to fifteen per cent.⁵⁶ The overall effect is that an estimated 15 million tonnes of GHGE are generated from landfills each year.⁵⁷

4.56 However, a contrary opinion was presented by LMS Generation who stated that emissions from well run landfills were now minimal:

The United States Environment Protection Agency (1998) calculated that with a 75% gas collection efficiency (which is low compared to Australia) and where electricity generation from landfill gas replaces fossil fuels, it is possible to reduce the net greenhouse gas emissions from landfilled municipal waste by as much as 92%.⁵⁸

4.57 The committee questions the logic of continuing to put organics in landfill without restraint and thereby creating an environmental liability for future generations. This is particularly so given the available alternatives which are either carbon neutral or carbon negative, including converting organics to compost, anaerobic digestion, pyrolysis to form biochar, and alternative waste treatment.⁵⁹ As long as price signals dictate that sending organic waste to landfill is the cheapest option, it will remain the primary response. Yet, the environmental costs are substantial as Mr Lawson, President of the Australian Council of Recyclers submitted to the committee:

The issue with putting organics into landfill is that about a third of the mass of those organics decays anaerobically into methane. It has 23 to 25 times the carbon impact of carbon dioxide. So by landfilling those organics in the first place you are purposely designing to multiply your impacts by at least

53 Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 20.

54 Western Australian Department of Environment and Conservation, *Submission 76*, p. 5.

55 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 20.

56 Mr Gerry Gillespie, President, Zero Waste Australia, *Committee Hansard*, 4 July 2008, p. 41.

57 WSN Environmental Solutions, *Submission 31*, p. 6.

58 LMS Generation, *Submission 54*, p. 2.

59 Mr John Lawson, President, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 20.

eight times if you do not convert that gas to something or other. Even if you capture 75 per cent of the gas—75 per cent of that eight times—you still have double the [climate change] impact of recycling those organics, using the nutrients on land, building organic matter in Australian soils, stopping the acidification of soils and holding water...⁶⁰

4.58 The committee takes the view that a range of measures are required to utilise rather than dispose of organic waste. As a first step, national standards in relation to gas capture of landfills must be established and applied to all landfill sites above an agreed threshold. The committee recognises the efforts of the Western Australian Government at the EPHC in this regard and encourages the EPHC to develop a nationally consistent approach for regulating landfill gas emissions.⁶¹

Recommendation 11

4.59 The committee recommends that the Environment Protection and Heritage Council establish national minimum environmental standards in relation to emissions from landfill operations including the reduction, capture and use of landfill gas emissions. Such standards should be applied to all landfill sites above an agreed threshold.

4.60 Organic waste can also be recycled for fertiliser and soil conditioner. The benefits of compost in terms of improving plant growth and soil structure are well known. According to the Environment Department, modern agricultural techniques have depleted organic carbon levels in Australia's soil from an estimated three per cent to less than one per cent.⁶² In addition to replenishing organic carbon levels, applying recycled organic material can provide water savings in excess of 25 per cent, reduced chemical and fertiliser inputs, reduced run-off and consequent soil erosion and waterway pollution, and increased plant vitality.⁶³

4.61 Organic waste returned to the food chain through farmland application as a quality composted product would eliminate the problem of landfill contamination, create local employment, provide some relief to the degradation of soils through the overuse of chemical fertiliser, boost agricultural production and save money.⁶⁴ As Mr Gerry Gillespie, President of Zero Waste Australia noted in relation to the state of the country's agricultural land:

60 Mr John Lawson, President, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 20.

61 Environment Protection and Heritage Council, *Communiqué*, 17 April 2008, p. 3.

62 Department of the Environment, Water, Heritage and the Arts, *Organics and horticulture*, www.environment.gov.au/settlements/waste/organics.html (accessed 11 August 2008). The department does not, however, elaborate on the length of time over which that this depletion has occurred.

63 Department of the Environment, Water, Heritage and the Arts, *Organics and horticulture*.

64 Zero Waste Australia, *Submission 28*, p. 6.

Seventy-five per cent of the agricultural land in this country has less than one per cent organic material, and farming is a mining, extractive industry. It takes between 60 to 90 minerals, nutrients and trace elements to grow a plant. So we are taking out to 60 to 90 and we are putting back three [nitrogen, phosphorus, and potassium by way of chemical fertilisers].⁶⁵

4.62 According to the Fertiliser Industry Federation of Australia, around 50 per cent of the five to six million tonnes of fertiliser used in Australia each year is manufactured in Australia with the remainder imported.⁶⁶ The cost of high-nitrogen phosphate fertiliser has risen in the last twelve months from \$600 a tonne to \$1,700 a tonne.⁶⁷ Initiatives such as Zero Waste's *City to Soil Project*, demonstrate that organic waste in the form of compost could be substituted for expensive fertilisers. However, current price signals remain a critical obstacle to increased composting, as they indicate that it is more cost-effective to dispose of organics in landfill. As Mr Mike Ritchie, National General Manager, Marketing and Communications, of SITA stated in relation to the use of organics for compost:

At the end of the day, that is of course the solution that Australia needs. It is amazing that, in the driest continent with the worst quality soils in the world, we did not wise up to that 50 years ago. Hopefully, as part of an emissions-trading scheme and a debate about waste and elevating these issues, that kind of cost economics would come to the fore. At the moment, it is so much cheaper to dispose of green garden waste into a dry-waste landfill in Sydney or leave it in the residual waste and send it to a putrescible landfill than it is to take it out, compost it and transport it those distances.⁶⁸

4.63 Increasing fuel costs have ensured that it is even harder for compost to compete with nitrous fertilisers. According to Mr Gillespie, there is a stockpile of 680 000 tonnes of Australian Standard certified compost in Sydney without a market primarily because of the transportation costs.⁶⁹ Price signals need to change if compost is to become more economically viable.

4.64 The committee is of the view that the evidence adduced provides compelling reasons to reduce the large quantities of organic material going into landfill. The committee notes that there is a range of policy options that would achieve this outcome. Consideration should be given to these various options, including utilisation of Alternative Waste Technology and a landfill cap and trade scheme. These options are discussed below. The committee makes a recommendation in this regard at the end of this chapter.

65 Mr Gerry Gillespie, President, Zero Waste Australia, *Committee Hansard*, 4 July 2008, p. 41.

66 Fertiliser Industry Federation of Australia, *Fertilizer Prices Continue to Rise*, Media Release, 5 February 2008.

67 Senator John Williams, *Committee Hansard*, 3 July 2008, p. 35.

68 Mr Mike Ritchie, National General Manager, Marketing and Communications, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 36.

69 Mr Gerry Gillespie, President, Zero Waste Australia, *Committee Hansard*, 4 July 2008, p. 39.

Alternative Waste Technology

4.65 Warnken ISE has claimed that Alternative Waste Technology or Advanced Waste Treatment (AWT) has better GHGE performance than landfill.⁷⁰ AWT applies a combination of mechanical, biological and in some instances, thermal processing to recover resource value from mixed municipal waste. In Australia, AWT has generally focused on addressing the organic fraction, which is comprised of approximately half food and half garden organic waste.⁷¹ The various options compared to landfill and their respective GHGE per 1000 tonnes of food waste are detailed in Table 4.2. This demonstrates that landfilling organic matter, even with very high levels of methane capture, are approximately twice as greenhouse intensive as the best AWT technology. Whilst AWT and other initiatives which divert waste from landfill have a demonstrated greenhouse gas benefit, the scale of the benefit will depend on the nature of the alternative.

Table 4.2—Comparative GHGE for processing 1000 tonnes of food waste

	Aerobic Compost (including AWT Mechanical Biological Treatment)	AWT Mechanical Biological Treatment combination of compost and Anaerobic Digestion	AWT Anaerobic Digestion	Landfill with 70 per cent gas capture	Landfill with best practice cap and no gas capture
Gross GHGE (tCO ₂ -e)	275.0	353.2	431.3	521.4	1,096.3

Warnken ISE, *Potential for Greenhouse Gas Abatement from Waste Management and Resource Recovery Activities in Australia*, Prepared by Warnken ISE for SITA Environmental Solutions, Draft for Review, March 2007, p. 33 submitted by Boomerang Alliance, *Submission 46*, Attachment F.

4.66 AWTs generally recover more resources than materials recovery facilities (MRFs). However, the principal advantage of AWTs over landfill is the environmental benefit of stabilising the material to reduce leachate formation and landfill gas generation and the production of outputs including energy, compost and other recyclables, and gas. Indeed, the New South Wales Department of Environment

70 Warnken ISE, *Potential for Greenhouse Gas Abatement From Waste Management and Resource Recovery Activities in Australia*, Prepared for SITA Environmental Solutions, Draft for Review, March 2007, Executive Summary, submitted by Boomerang Alliance, *Submission 46*, Attachment F.

71 Mr John Lawson, President, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 21.

and Climate Change expect that their investment in twelve AWT facilities will provide 'substantial gains in both reduction to landfill and greenhouse gas capture.'⁷²

4.67 AWT have generally focused on diverting municipal waste from landfill and whilst there are substantial opportunities for diversion of C&I waste, the price signals are currently discouraging. According to WSN Environmental Solutions, AWT can recover approximately 70 per cent of materials from household residual waste by extracting recyclables whilst creating products including compost, combustible fuel, water and green energy.

4.68 The waste management industry argues that economic incentives are required if the industry is to invest in AWT facilities in any substantial way.⁷³ Estimates suggest that Australia requires approximately \$4 billion of investment in modern waste infrastructure if it is to meet the various state government waste reduction and recycling targets.⁷⁴ This would amount to approximately fifty 100 000-tonne C&I material recovery facilities and at least fifty 100 000-tonne AWT.⁷⁵ In other words, without a substantial paradigm shift to resource recovery, and away from disposal, coupled with significant investment in infrastructure such as AWT, jurisdictions are unlikely to achieve their diversion from landfill targets.⁷⁶

4.69 Advanced waste processing and treatment technologies designed to decrease the volume of waste disposed of in landfill are largely dependent upon the minimisation of the input of hazardous waste into the domestic waste stream. Campbelltown City Council has recently entered into a contract for the construction of an advanced waste processing and treatment facility which is expected to result in the re-use or recycling of 88 per cent of domestic waste. However, the success of this project, like any other of its kind, will depend on minimising inputs such as paints, oils, treated timber, computer hardware, motor vehicle tyres and batteries.⁷⁷ The presence of hazardous waste in the municipal waste stream can contaminate otherwise re-useable waste. One solution to addressing this potential risk is the introduction of extended producer responsibility (EPR) schemes involving take-back arrangements where waste generators can return hazardous items free of charge to the point of sale. EPR schemes are addressed specifically in chapter 5.

72 Mr Timothy Rogers, Executive Director, Sustainability Programs Division, Department of the Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 3.

73 WSN Environmental Solutions, *Submission 31*, p. 5.

74 Waste Management News 21 April 2008 cited in WSN Environmental Solutions, *Submission 41*, p. 5.

75 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 24.

76 GRD Limited, *Submission 36*, p. 7.

77 Campbelltown City Council, *Submission 18*, p. 3.

Landfill cap and trade schemes

4.70 The Productivity Commission established that initiatives imposing a cap on activities such as landfill disposal, when strengthened with penalties for non-compliance would 'effectively guarantee that the target is reached.'⁷⁸ Such initiatives, termed tradeable property right (TPR) mechanisms, work by setting a quota or cap on the aggregate level of a certain activity and allocating shares of that quota to those undertaking the activity. One such initiative identified as a possibility during the course of the inquiry was the UK Landfill Allowance Trading Scheme (LATS).

4.71 Initiated in 2005, LATS sets a cap on the volume of biodegradable municipal waste sent to landfill. It was initiated as part of the European Commission Landfill Directive which sets targets for the total volume of landfilled biodegradable waste of 75 per cent by 2010, 50 per cent by 2013 and 35 per cent by 2020 relative to the 1995 level. The Schedule to the Landfill Allowances and Trading Scheme (England) Regulations 2004 determine the proportions of certain waste types deemed to be biodegradable. These range from card, paper and putrescible (green) waste at 100 per cent, to footwear, furniture and textiles at 50 per cent, to glass, plastic and metal waste at 0 per cent.⁷⁹

4.72 Under the LATS, allowances are allocated to local government bodies responsible for municipal waste on the basis of historic landfill volumes. These allowances can be traded and surplus entitlements can be banked for future use except in target years. A credit of five per cent of entitlements from the following year's allowance is permitted except in target years. The penalty for non-compliance is £150 per tonne (equivalent to AUD \$324 in August 2008). However, at the end of each scheme year (1 April to 31 March), authorities have the opportunity to trade or borrow allowances over a six month reconciliation period to ensure that they comply with their obligations.⁸⁰

4.73 Whilst the committee recognises that differences apply in the Australian context, it recommends the consideration of a cap and trade scheme for landfill of organic matter drawing on the lessons learnt from the LATS scheme.

4.74 As noted above the committee considers there is strong evidence that authorities should seek to reduce the quantities of organic material going into landfill, and that there are different policy options that would achieve this outcome. In the

78 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 255.

79 Department for Environment, Food and Rural Affairs, *Landfill Allowance Trading Scheme (LATS), a practical guide*, February 2005, p. 4, www.defra.gov.uk/Environment/waste/localauth/lats/pdf/lats-leaflet-0405.pdf (accessed 28 July 2008).

80 Department for Environment, Food and Rural Affairs, *Landfill Allowance Trading Scheme (LATS), a practical guide*, February 2005, p. 8.

committee's view, the relative merits of each of these options should be given due consideration, including environmental, economic and social externalities.

Recommendation 12

4.75 The committee recommends that the Environment Protection and Heritage Council recommend measures to reduce the quantities of organic material going into landfill. The options considered should include utilisation of alternative waste technologies and a cap and trade scheme.