RANDELL ENVIRONMENTAL CONSULTING

Beneficial reuse and resource recovery of waste materials

An inventory of Australian over-arching objectives and guiding principles

Final Report

May 2012

Beneficial reuse and resource recovery of waste materials

An inventory of Australian over-arching objectives and guiding principles

Client

National Waste Policy Implementation

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)

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Report Disclaimer

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1 Introduction

In March 2012, Randell Environmental Consulting Pty Ltd (REC) was engaged by Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) to compile an inventory of the over-arching objectives and guiding principles that are used by Australian jurisdictions to promote beneficial reuse and resource recovery of waste.

Aims

This report aims to deliver the following.

- An inventory listing of the over-arching objectives and guiding principles that are used by Australian jurisdictions to promote beneficial reuse and resource recovery.
- A list of the key elements from these objectives and guiding principles.

Approach

The following approach was used to compile this report.

1. A desktop review was conducted of the over-arching objectives and guiding principles used by jurisdictions (in legislation, policy and strategies) to develop an inventory for each jurisdiction. Generally, legislation provided the objectives and principles which are then included in policies and strategies and therefore legislation was the main reference for the review. The references used are tabulated at the beginning of each jurisdiction's inventory.
2. The inventory listings were then summarised into a brief jurisdiction overview.
3. A summary table including each jurisdiction's overview was developed. The table includes a listing of the key elements included in the over-arching objectives and guiding principles.
4. The report is structured with the summary table first (see section 2) and is followed by the inventory (see section 3).

Scope and limitations

This report provides an inventory of the over-arching objectives and guiding principles used to encourage beneficial reuse and resource recovery in the states and territories. This report does not provide analysis of the inventory or derive a recommended set of national over-arching objectives and guiding principles.

The inventory only includes relevant regulations (and other instruments used to implement the objectives and principles) where they provide an additional objective or guiding principle to those identified in legislation, policy, and strategy.

The inventory does not include objectives and principles that may be listed in Australian Government legislation, policy, and strategy.

Issues to note

Over-arching objectives and guiding principles are often difficult to differentiate from one another and what is defined as an objective in one jurisdiction may be a guiding principle in another. This issue should not distract from the intent of this paper (to compile an inventory of the approaches used to promote beneficial reuse and resource recovery in each jurisdiction).

This paper has attempted to identify the objectives and principles that are directly related to beneficial reuse and resource recovery. The inventory also includes some objectives and principles that are indirectly related to beneficial reuse and resource recovery. These were included to provide a more complete inventory and also because some of the directly related objectives and principles were unclear in isolation from the complete text.

Definitions

The following definitions were used in completing the inventory.

Reuse is the use of products or materials for the same or a different purpose without reprocessing or remanufacture. These products may also be repaired to extend their use.

Resource recovery is the sum of materials sent to recycling and energy recovery facilities minus contaminants/residual wastes sent to disposal.

2 Summary table of over-arching objectives and guiding principles promoting beneficial reuse and resource recovery

Over-arching objectives and guiding principles promoting reuse and resource recovery

State	Overview of jurisdiction framework	List of key elements of the objectives and principles	Summary list of key elements
ACT	The ACT *Waste Minimisation Act 2001* includes the majority of ACT's over-arching objectives and guiding principles to encourage reuse and resource recovery. The implementation of the waste hierarchy is identified as the main objective and is en acted along with the need to minimise the consumption of natural resources by increasing reuse and recycling. The ACT objectives are to be implemented according to the principle of ecologically sustainable development (ESD). ACT defines ESD as "the effective integration of economic and environmental considerations in decision-making processes achievable through implementation of the following principles: (a) the precautionary principle; (b) the inter-generational equity principle; (c) conservation of biological diversity and ecological integrity; (d) improved valuation and pricing of environmental resources". The *Waste Minimisation Act 2001* also includes legislation that drives industrial efficiency and extended producer responsibility in the ACT. The *ACT Waste Management Strategy 2010–2025* also includes outcomes related to the ACT principles and adds the principle of carbon neutrality to ACT's inventory.	The waste hierarchy Reducing consumption of natural resources by decreasing waste generation and increasing reuse and resource recovery Shared responsibility of waste management Ecologically sustainable development Industrial efficiency Extended producer responsibility (product stewardship) Carbon neutrality	The waste hierarchy Reducing consumption of natural resources by decreasing waste generation and increasing reuse and resource recovery Shared responsibility of waste management Ecologically sustainable development The effective integration of economic and environmental considerations in decision-making Including: (a) the precautionary principle (b) the inter-generational equity principle (c) conservation of biological diversity and ecological integrity (d) improved valuation and pricing of environmental resources Industrial efficiency Extended producer responsibility Including: (a) product stewardship (b) life cycle principle Carbon neutrality Wastes to resources for beneficial reuse Support and implement national objectives The proximity principle Eliminate waste generation or disposal to landfill Best practice standards in environmental management Regulation to prohibit disposal (where resource recovery is practicable) Regulation to enforce the waste hierarchy (where practicable)
NSW	The NSW *Waste Avoidance and Resource Recovery Act 2001* includes the majority of NSW's over-arching objectives and guiding principles to encourage beneficial reuse and resource recovery. Implementation of the waste hierarchy in accordance with the principle of ESD is identified as a main objective and is en acted along with objectives to minimise the consumption of natural resources and waste generation. NSW defines ESD as including the following: (a) the precautionary principle, (b) inter-generational equity, (c) conservation of biological diversity and ecological integrity, (d) improved valuation, pricing and incentive mechanisms. The NSW *Waste Avoidance and Resource Recovery Strategy 2007* includes an extensive list of principles broadly focused on ESD, economic analysis, and community and industry involvement. NSW *Protection of the Environment Operations (Waste) Regulations* enable NSW to issue 'resource recovery exemptions' which allow for the beneficial reuse of wastes via land application or for use as a fuel. These regulations enable the principle of 'wastes to resources for beneficial reuse' (where the wastes are fit for beneficial reuse).	The waste hierarchy Reducing consumption of natural resources by decreasing waste generation and increasing reuse and resource recovery Shared responsibility of waste management Ecologically sustainable development Industrial efficiency Extended producer responsibility (product stewardship) Wastes to resources for beneficial reuse	
QLD	The QLD *Waste Reduction and Recycling Act 2011* includes the majority of QLD's over-arching objectives and guiding principles to encourage beneficial reuse and resource recovery. Reducing resource consumption (and the effects of), shared responsibility for achieving objectives, and support of national objectives are identified as key objectives. The principle of the 'waste and resource management hierarchy' is combined with the polluter pays principle, the user pays principle, the proximity principle, and the product stewardship principle. The Act also allows for the 'approval of resource for beneficial use' which enables the principle of 'wastes to resources for beneficial reuse' where the wastes are fit for beneficial reuse.	Reducing consumption of natural resources by decreasing waste generation and increasing reuse and resource recovery Shared responsibility of waste management Support and implement national objectives The waste hierarchy The polluter pays principle The user pays principle Extended producer responsibility (product stewardship) Wastes to resources for beneficial reuse The proximity principle	
SA	The SA *Zero Waste SA Act 2004* includes the majority of SA's over-arching objectives and guiding principles to encourage reuse and resource recovery. These objectives include the elimination of waste generation, or disposal to landfill, and the objectives are guided by the principles of the waste hierarchy, ESD, the application of best practice, and the principle of shared responsibility. The *Environment Protection (Waste to Resources) Policy 2010* provides a significant range of wastes that are prohibited from disposal to landfill. Prohibiting landfill disposal is more an implementation tool (than an objective or principle).The extent to which this tool is applied in SA warrants listing as principle of resource recovery. This principle is listed as 'regulation to prohibit disposal (where resource recovery is practicable).' The *Environment Protection (Waste to Resources) Policy 2010* also provides definitions of wastes and when a waste becomes a product. SA publish 'waste to product standards' that enable the principle of waste to resources for beneficial reuse to be implemented in SA.	Eliminate waste generation or disposal to landfill The waste hierarchy Ecologically sustainable development Best practice standards in environmental management Shared responsibility of waste management Regulation to prohibit disposal (where resource recovery is practicable) Wastes to resources for beneficial reuse	
TAS	*The Tasmanian Waste and Resource Management Strategy* provides the most complete summary of the objectives and guiding principles for Tasmania. Based on the core objective of sustainable development, the strategy promotes the principles of the waste hierarchy, environmental stewardship, precautionary principle, life-cycle principle, and the polluter pays and user pays principles.	The waste hierarchy Ecologically sustainable development Life cycle principle	
VIC	The Victorian *Environment Protection Act 1970* provides the majority of the over-arching objectives and guiding principles for Victoria. The Act includes an extensive range of principles, which can be summarised into: the principle of ESD, the principle of shared responsibility, the principle of product stewardship, and the principle of wastes hierarchy. The *Environment Protection (Industrial Waste Resource) Regulations 2009,* which applies only to industrial and hazardous industrial wastes, enables the principles of 'wastes to resources for beneficial reuse' and 'regulation to enforce the waste hierarchy (where practicable).'	The waste hierarchy Ecologically sustainable development Extended producer responsibility (product stewardship) Shared responsibility of waste management Wastes to resources for beneficial reuse Regulation to enforce the waste hierarchy (where practicable)	
WA	WA objectives and principles are set out in the *Waste Avoidance and Resource Recovery Act 2007* and the *Environmental Protection Act 1986.* They include objectives to use resources efficiently, to minimise waste generation, to implement the waste hierarchy, to implement product stewardship, and to have regard for the principles of ESD.	The waste hierarchy Ecologically sustainable development Extended producer responsibility (product stewardship)	

Table 1 Overview of over-arching objectives and guiding principles and summary listing of key elements.

3 Inventory of over-arching objectives and guiding principles promoting beneficial reuse and resource recovery

This section includes:

- a lists of the key references for each jurisdiction
- an brief overview of the over-arching objectives and guiding principles promoting beneficial reuse and resource recovery for each jurisdiction
- relevant content from the jurisdictions legislation, policies, and strategies.

3.1 Australian Capital Territory (ACT)

References list

Australian Capital Territory, *Waste Minimisation Act 2001,* 2011
Australian Capital Territory, *Environment Protection Act 1997,* 2011
ACT Government, *ACT Waste Management Strategy 2010–2025,* 2011.

3.1.1 Overview of ACT over-arching objectives and guiding principles

The ACT *Waste Minimisation Act 2001* includes the majority of ACT's over-arching objectives and guiding principles to encourage reuse and resource recovery. The implementation of the waste hierarchy is identified as the main objective and is en acted along with the need to minimise the consumption of natural resources by increasing reuse and recycling. The ACT objectives are to be implemented according to the principle of ecologically sustainable development (ESD). ACT defines ESD as "the effective integration of economic and environmental considerations in decision-making processes achievable through implementation of the following principles: (a) the precautionary principle; (b) the inter-generational equity principle; (c) conservation of biological diversity and ecological integrity; (d) improved valuation and pricing of environmental resources".

The *Waste Minimisation Act 2001* also includes legislation that drives industrial efficiency and extended producer responsibility in the ACT.

The *ACT Waste Management Strategy 2010–2025* also includes outcomes related to the ACT principles and adds the principle of carbon neutrality to ACT's inventory.

3.1.2 Inventory of ACT over-arching objectives and guiding principles

Waste Minimisation Act 2001

Part 1, section 5 of the Act sets out the following objectives for the ACT.

"**The main objects of Act:**

The main objects of this Act are as follows:

(a) to establish a waste management hierarchy of the following order:

(i) avoidance;

(ii) reuse;

(iii) recycling and reprocessing;

(iv) disposal;

(c) to minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste;

(d) to ensure that industry shares with the community the responsibility for minimising and managing waste".

Part 1, section 6 of the Act, sets out the principles to be used in achieving the above objectives.

"**Principles of ecologically sustainable development**

(1) The objects of this Act are to be achieved in accordance with the principles of ecologically sustainable development.

(2) In this section:

ecologically sustainable development means the effective integration of economic and environmental considerations in decision-making processes achievable through implementation of the following principles:

(a) the precautionary principle;

(b) the inter-generational equity principle;

(c) conservation of biological diversity and ecological integrity;

(d) improved valuation and pricing of environmental resources.

the inter-generational equity principle means that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

the precautionary principle means that, if there is a threat of serious or irreversible environmental damage, a lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation."

Parts C and D (above) of ESD are not defined in the Act.

Part 2 of the Act includes legislative powers to drive industrial efficiency and to enable extended producer responsibility.

There are several definitions (from page 34) that are worth noting from the Act as follows:

"recycle, in relation to a product, means to recover the product and use it as a raw material to produce another product."

"reuse, in relation to a product, means to use the product for the same or similar purpose as its original use, without subjecting the product to a manufacturing process."

"**waste** includes the following:

(a) any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment;

(b) any discarded, rejected, unwanted, surplus or abandoned substance, whether or not intended for sale, recycling, reprocessing, recovery or purification by a separate operation from that which produced it;

(c) any other substance declared by regulation to be waste."

Environment Protection Act 1997

Part 2 of the Act includes the following objectives.

> "(1) The particular objects of this Act are—
>
> (b) to prevent environmental degradation and adverse risks to human health and the health of ecosystems by promoting pollution prevention, clean production technology, reuse and recycling of materials and waste minimisation programs; and
>
> (c) to require people engaging in polluting activities to make progressive environmental improvements, including reductions of pollution at the source as such improvements become practical through technological and economic development;
>
> (l) to control the generation, storage, collection, transportation, treatment and disposal of waste with a view to reducing, minimising and, where practical, eliminating harm to the environment".

Other relevant principles from this Act are included in the *Waste Minimisation Act* inventory (above).

ACT Waste Management Strategy 2010–2025

This strategy includes several aims that are relevant to reuse and resource recovery principles.

Part 5, A Sustainable Waste Strategy, includes the following.

"The aim of the ACT Sustainable Waste Strategy 2010–2025 is to ensure that:

The ACT leads innovation to achieve full resource recovery and a carbon neutral waste sector.

The four overarching outcomes of the *ACT Sustainable Waste Strategy 2010-2025* are:

Outcome 1: Less Waste Generated.

Outcome 2: Full Resource Recovery.

Outcome 3: A Clean Environment.

Outcome 4: Carbon Neutral Waste Sector."

3.2 New South Wales (NSW)

References list

New South Wales Government, *Waste Avoidance and Resource Recovery Act 2001 No 58,* 2009
New South Wales Government, *Protection of the Environment Operations Act 1997 No 156*, 2012.
New South Wales Government *Protection of the Environment Operations (Waste) Regulation 2005,* 2011.
Department of Environment, Climate Change and Water NSW *NSW Extended Producer Responsibility Priority Statement 2010,* 2010.
Department of Environment and Climate Change NSW *Waste Avoidance and Resource Recovery Strategy 2007,* 2007.

3.2.1 Overview of NSW over-arching objectives and guiding principles

The NSW *Waste Avoidance and Resource Recovery Act 2001* includes the majority of NSW's over-arching objectives and guiding principles to encourage beneficial reuse and resource recovery. Implementation of the waste hierarchy in accordance with the principle of ESD is identified as a main objective and is en acted along with objectives to minimise the consumption of natural resources and waste generation. NSW defines ESD as including the following: (a) the precautionary principle, (b) inter-generational equity, (c) conservation of biological diversity and ecological integrity, (d) improved valuation, pricing and incentive mechanisms.

The NSW *Waste Avoidance and Resource Recovery Strategy 2007* includes an extensive list of principles broadly focused on ESD, economic analysis, and community and industry involvement.

NSW *Protection of the Environment Operations (Waste) Regulations* enable NSW to issue 'resource recovery exemptions' which allow for the beneficial reuse of wastes via land application or for use as a fuel. These regulations enable the principle of 'wastes to resources for beneficial reuse' (where the wastes are fit for beneficial reuse).

3.2.2 Inventory of NSW over-arching objectives and guiding principles

Waste Avoidance and Resource Recovery Act

The relevant objectives are set out in part 1 of the Act, section 3, as follows.

"The objects of this Act are as follows:

> (a) to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development,
>
> (b) to ensure that resource management options are considered against a hierarchy of the following order:
>
> > (i) avoidance of unnecessary resource consumption,
> >
> > (ii) resource recovery (including reuse, reprocessing, recycling and energy recovery),
> >
> > (iii) disposal,
>
> (c) to provide for the continual reduction in waste generation,

(d) to minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste,

(e) to ensure that industry shares with the community the responsibility for reducing and dealing with waste…"

Part 4 of the *Waste Avoidance and Resource Recovery Act 2001* sets out the framework for industrial efficiency and extended producer responsibility schemes in NSW

NSW also publish the *NSW Extended Producer Responsibility Priority Statement* which provides an update on existing schemes (both regulatory and voluntary) and outlines 'wastes of concern' which are listed to provide an early indication of future wastes that may be included in a scheme.

Protection of the Environment Operations Act

The relevant objectives set out in chapter 1 of the Act, part 3, as follows.

"The objects of this Act are as follows:

(a) to protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development,

… (d) to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote the following:

(i) pollution prevention and cleaner production,

(ii) the reduction to harmless levels of the discharge of substances likely to cause harm to the environment,

(iia) the elimination of harmful wastes,

(iii) the reduction in the use of materials and the re-use, recovery or recycling of materials,

(iv) the making of progressive environmental improvements, including the reduction of pollution at source,

… (g) to assist in the achievement of the objectives of the Waste Avoidance and Resource Recovery Act 2001."

There are several definitions (from page 257) that are worth noting from the Act as follows:

"ecologically sustainable development has the same meaning as in section 6 (2) of the *Protection of the Environment Administration Act 1991*.

waste includes:

(a) any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment, or

(b) any discarded, rejected, unwanted, surplus or abandoned substance, or

(c) any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or for recycling, processing, recovery or purification by a separate operation from that which produced the substance, or

(d) any processed, recycled, re-used or recovered substance produced wholly or partly from waste that is applied to land, or used as fuel, but only in the circumstances prescribed by the regulations, or

(e) any substance prescribed by the regulations to be waste.

A substance is not precluded from being waste for the purposes of this Act merely because it is or may be processed, recycled, re-used or recovered.

waste facility means any premises used for the storage, treatment, processing, sorting or disposal of waste (except as provided by the regulations)."

Section 6 (2) of the *Protection of the Environment Administration Act* defines ESD as:

"… ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs:

(a) the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(ii) an assessment of the risk-weighted consequences of various options,

(b) inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,

(c) conservation of biological diversity and ecological integrity— namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,

(d) improved valuation, pricing and incentive mechanisms— namely, that environmental factors should be included in the valuation of assets and services, such as:

(i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

(iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems."

Protection of the Environment Operations (Waste) Regulation 2005

These regulations enable NSW to issue 'resource recovery exemptions' which allow for the beneficial 'reuse' of wastes via land application or for use as a fuel. These regulations enable the principle of 'wastes to resources' where the wastes are fit for beneficial reuse.

Applicants must demonstrate that the waste reuse is genuine, beneficial, and will cause no harm to the environment or human health.

NSW can issue both general and specific resource recovery exemptions. "A general exemption can be issued for commonly recovered, high-volume and well-characterised waste materials. These exemptions may be used by anyone, without seeking approval from OEH, provided the generators, processors and consumers fully comply with the conditions they impose.

… Where no general resource recovery exemption is available for the intended use, an application may be made to the Office of Environment and Heritage for a specific exemption, which would then be issued by the agency, if appropriate."[1]

Waste Avoidance and Resource Recovery Strategy 2007

Section 4.1 of the *Waste Avoidance and Resource Recovery Strategy* (WARR) includes a list of principles which are included below. Whilst these principles are covered within the NSW principles discussed above, they are included as there is some differences in wording and emphasis.

"4.1 Principles

Waste must continue to be tackled across the whole life cycle of goods and materials including extraction, manufacturing, distribution, consumption and recovery for reprocessing or disposal. Action to avoid and prevent waste needs to be considered at every step in this cycle with a focus on those points in the chain where the impact and results will be most effective.

Waste Strategy 2007 continues to recognise the importance of the waste hierarchy to guide effective resource management. It acknowledges, however, that different materials require different approaches. The choice of approach, including re-use, recycling and energy from waste, will depend on a balance of factors including economic and environmental considerations. Other factors that will influence the approach adopted for specific materials include: availability of supply; markets for recyclate; economic; environmental and social impacts; community responses to different collection; reprocessing and disposal options; and emergence of new technologies. All other principles identified in *Waste Strategy 2003* remain important and will continue to underpin NSW policy and actions to conserve resources and reduce waste. These principles include a commitment to ecologically sustainable development as well as other principles set out in NSW legislation and international instruments. In summary these principles are:

- *the precautionary principle* – lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation if there are threats of serious or irreversible environmental damage;
- *inter-generational equity* – the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations;
- *polluter pays* – those who generate pollution and waste should bear the cost of containment, avoidance or abatement;
- *full life cycle costing* – users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste;

[1] NSW Government Office of Environment and Heritage *Resource recovery exemptions Fact Sheet,* August 2011.

- *market incentives* – environmental goals should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems;
- *shared responsibility* – industry should share (with the community) the responsibility for reducing and dealing with waste;
- *system integration* – waste and resource management planning, programs and service delivery need to be integrated on a State-wide basis ;
- *sustainable production and consumption* – environmentally sound waste management must go beyond the mere safe disposal or recovery of wastes that are generated, and should seek to address the root cause of the problem by attempting to change unsustainable patterns of production and consumption;
- *public involvement in decision-making* – environmental issues are best handled with the participation of all concerned citizens, who should have full opportunity to participate in decision making processes, including appropriate access to all relevant information on the environment held by public authorities;
- *economic development* – environmental protection should constitute an integral part of the development process and cannot be considered in isolation from it;
- *continuous improvement* – policy and actions should support and seek to deliver continuous improvement in the frameworks, infrastructure and systems established to support waste reduction and resource recovery;
- *contribute to other environmental sustainability issues* - policy and actions on waste should support and identify their contribution to other key environmental issues such as greenhouse gas abatement and reduction in energy and water use."

3.3 Northern Territory (NT)

References list

Northern Territory Government, *Department of Natural Resources, Environment, the Arts and Sport, Annual Report 2010–11*, 2011.

This review did not identify any over-arching objectives or guiding principles to promote reuse and resource recovery in the NT. The *Department of Natural Resources, Environment, the Arts and Sport, Annual Report 2010–11* report does identify the following target relating to waste disposal.

"Target EN2.11 Reduce the amount of waste being taken to our rubbish dumps by 50% by 2020."

3.4 Queensland (QLD)

References list

Queensland Government, *Waste Reduction and Recycling Act 2011,* 2011.

Queensland Government, *Environmental Protection Act 1994*, 2012

Queensland Government, *Queensland's Waste Reduction and Recycling Strategy 2010–2020,* 2010.

3.4.1 Overview of QLD over-arching objectives and guiding principles

The QLD *Waste Reduction and Recycling Act 2011* includes the majority of QLD's over-arching objectives and guiding principles to encourage beneficial reuse and resource recovery. Reducing resource consumption (and the effects of), shared responsibility for achieving objectives, and support of national objectives are identified as key objectives. The principle of the 'waste and resource management hierarchy' is combined with the polluter pays principle, the user pays principle, the proximity principle, and the product stewardship principle. The Act also allows for the 'approval of resource for beneficial use' which enables the principle of 'wastes to resources for beneficial reuse' where the wastes are fit for beneficial reuse.

3.4.2 Inventory of QLD over-arching objectives and guiding principles

Waste Reduction and Recycling Act 2011

Part 2, section 3, of the Act sets out the following objectives.

"The objects of this Act are the following—

(a) to promote waste avoidance and reduction, and resource recovery and efficiency actions;

(b) to reduce the consumption of natural resources and minimise the disposal of waste by encouraging waste avoidance and the recovery, re-use and recycling of waste;

(c) to minimise the overall impact of waste generation and disposal;

(d) to ensure a shared responsibility between government, business and industry and the community in waste management and resource recovery;

(e) to support and implement national frameworks, objectives and priorities for waste management and resource recovery."

Part 2 section 4 continues with the following regarding the principles used to achieving the above objectives.

"… the achievement of the objects of this Act must if practicable be guided by—

(a) the waste and resource management hierarchy; and

(b) the following policy principles (the waste and resource management principles)—

(i) the polluter pays principle;

(ii) the user pays principle;

(iii) the proximity principle;

(iv) the product stewardship principle"

Part 3, division 2 of the Act includes detailed definitions for all of the terms used above, some of which are included below.

"**9 Meaning of waste and resource management hierarchy**

The waste and resource management hierarchy is the following precepts, listed in the preferred order in which waste and resource management options should be considered—

(a) AVOID unnecessary resource consumption;

(b) REDUCE waste generation and disposal;

(c) RE-USE waste resources without further manufacturing;

(d) RECYCLE waste resources to make the same or different products;

(e) RECOVER waste resources, including the recovery of energy;

(f) TREAT waste before disposal, including reducing the hazardous nature of waste;

(g) DISPOSE of waste only if there is no viable alternative.

10 Meaning of polluter pays principle

(1) The polluter pays principle is the principle that all costs associated with the management of waste should be borne by the persons who generated the waste.

(2) The costs associated with the management of waste may include the costs of—

(a) minimising the amount of waste generated; and

(b) containing, treating and disposing of waste; and

(c) rectifying environmental harm caused by waste

11 Meaning of user pays principle

(1) The user pays principle is the principle that all costs associated with the use of a resource should be included in the prices of the goods and services (including government services) that result from the use.

(2) In deciding what are the costs associated with the use of a resource, an amount received from a government as a subsidy, incentive payment, grant or similar payment, that would otherwise reduce the costs, must be disregarded.

12 Meaning of proximity principle

The proximity principle is the principle that waste and recovered resources should be managed as close to the source of generation as possible.

13 Meaning of product stewardship principle

(1) The product stewardship principle is the principle that there is a shared responsibility between all persons who are involved in the life cycle of a product for managing the environmental, social and economic impact of the product.

(2) The product stewardship principle recognises that different roles and responsibilities may apply at each stage in the life cycle of a product..."

Chapter 8 of the Act 'Approval of resource for beneficial use' allows for the beneficial use of wastes which enables the principle of 'wastes to resources' where the wastes are fit for beneficial reuse.

Environmental Protection Act 1994

Part 2, section 3 of the Act includes the following objective:

"The object of this Act is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (***ecologically sustainable development***)."

This Act includes other relevant broad principles related to reuse and resource recovery, however, they are provided for in the inventory of the *Waste Reduction and Recycling Act 2011* (above).

Queensland's Waste Reduction and Recycling Strategy 2010–2020

This strategy includes a set of principles that are broadly based on the *Waste Reduction and Recycling Act 2011.* They include: the waste and resource management hierarchy, resource efficiency, engagement, and capacity building.

3.5 South Australia (SA)

References list

South Australia Government, *Environment Protection Act 1993,* 2010.
South Australia Government, *Environment Protection (Waste to Resources) Policy 2010,* 2010.
Zero Waste SA, *Zero Waste SA Act 2004,* 2010.
Zero Waste SA, *South Australia's Waste Strategy 2011-2015,* 2011.

3.5.1 Overview of South Australian over-arching objectives and guiding principles

The SA *Zero Waste SA Act 2004* includes the majority of SA's over-arching objectives and guiding principles to encourage reuse and resource recovery. These objectives include the elimination of waste generation, or disposal to landfill, and the objectives are guided by the principles of the waste hierarchy, ESD, the application of best practice, and the principle of shared responsibility.

The *Environment Protection (Waste to Resources) Policy 2010* provides a significant range of wastes that are prohibited from disposal to landfill. Prohibiting landfill disposal is more an implementation tool (than an objective or principle).The extent to which this tool is applied in SA warrants listing as principle of resource recovery. This principle is listed as 'regulation to prohibit disposal (where resource recovery is practicable).'

The *Environment Protection (Waste to Resources) Policy 2010* also provides definitions of wastes and when a waste becomes a product. SA publish 'waste to product standards' that enable the principle of waste to resources for beneficial reuse to be implemented in SA.

3.5.2 Inventory of South Australian over-arching objectives and guiding principles

Environment Protection Act 1993

Part 2, section 10 of the Act includes the following objectives relevant to reuse and resource recovery.

"(1) The objects of this Act are—

… (b) to ensure that all reasonable and practicable measures are taken to protect, restore and enhance the quality of the environment having regard to the principles of ecologically sustainable development, and—

(i) to prevent, reduce, minimise and, where practicable, eliminate harm to the environment—

(A) by programmes to encourage and assist action by industry, public authorities and the community aimed at pollution prevention, clean production and technologies, reduction, reuse and recycling of material and natural resources, and waste minimisation; and

(B) by regulating, in an integrated, systematic and cost-effective manner—

- activities, products, substances and services that, through pollution or production of waste, cause environmental harm; and
- the generation, storage, transportation, treatment and disposal of waste…"

Environment Protection (Waste to Resources) Policy 2010

Part 2, section 7 of the policy includes the following objectives related to reuse and resource recovery.

"**7—Waste management objective**

(1) The objective of this policy (the waste management objective) is to achieve sustainable waste management by applying the waste management hierarchy consistently with the principles of ecologically sustainable development set out in section 10 of the Act.

(2) In order to meet the waste management objective, waste management in this State should also—

(a) promote best practice and accountable waste management, taking into account regional differences within the State; and

(b) include effective recording, monitoring and reporting systems with respect to waste transport, resource recovery and waste disposal; and

(c) promote environmental responsibility and involvement in waste avoidance, waste minimisation and waste management within the community."

Part 1 section 4 of the policy includes the following, which enables the principle of 'wastes to resources for beneficial reuse' in SA.

"**4—Certain material declared to be waste**

For the purposes of the definition of waste in section 3(1) of the Act, waste or material resulting from the treatment of waste continues to be waste except insofar as—

(a) it constitutes a product that meets specifications or standards published from time to time or approved in writing by the Authority; or

(b) if no specification or standard published or approved in writing by the Authority applies to such waste or treatment of waste—it constitutes a product that is ready and intended for imminent use without the need for further treatment to prevent any environmental harm that might result from such use."

SA have developed several 'standards' which detail the specifications required for a waste to be fit for purpose as a product.

The policy does not provide further objectives or guiding principles. Schedule 4 of the policy does provide a significant range of wastes that are prohibited from being landfilled. Prohibiting landfill disposal is more an implementation tool (than an objective or principle).The extent to which this tool is applied in SA warrants listing as principle of resource recovery. In figure 1, this principle is listed as 'regulation to prohibit disposal (where resource recovery is practicable)'.

Zero Waste SA Act 2004

Part 2, section 5 of the Act outlines the objectives and guiding principles of Zero Waste SA.

"**5—Primary objective and guiding principles**

(1) The primary objective of Zero Waste SA is to promote waste management practices that, as far as possible—

(a) eliminate waste or its consignment to landfill; and

(b) advance the development of resource recovery and recycling; and

(c) are based on an integrated strategy for the State.

(2) Zero Waste SA, is, in the exercise of its functions, to be guided by—

(a) the waste management hierarchy; and

(b) the principles of ecologically sustainable development as set out in section 10 of the Environment Protection Act 1993; and

(c) best practice methods and standards in waste management; and

(d) the principle that government waste management policies should be developed through a process of open dialogue with local government, industry and the community in which local government, industry and the community are encouraged to contribute to decision making."

Part 1, section 3 of the Act defines and discusses the waste hierarchy as follows.

"In this Act, a reference to the ***waste management hierarchy*** is a reference to an order of priority for the management of waste in which—

(a) avoidance of the production of waste; and

(b) minimisation of the production of waste; and

(c) reuse of waste; and

(d) recycling of waste; and

(e) recovery of energy and other resources from waste; and

(f) treatment of waste to reduce potentially degrading impacts; and

(g) disposal of waste in an environmentally sound manner,

are pursued in order with, first, avoidance of the production of waste, and second, to the extent that avoidance is not reasonably practicable, minimisation of the production of waste, and third, to the extent that minimisation is not reasonably practicable, reuse of waste, and so on."

South Australia's Waste Strategy 2011-2015

The objectives and principles of the strategy are based on the *Zero Waste SA Act 2004* and are covered in the inventory above.

3.6 Tasmania (Tas)

References list

Tasmanian Government, *Environmental Management and Pollution Control Act 1994.*

Tasmania. Department of Environment, Parks, Heritage and the Arts, *The Tasmanian Waste and Resource Management Strategy,* 2009.

3.6.1 Overview of Tasmanian over-arching objectives and guiding principles

The Tasmanian Waste and Resource Management Strategy provides the most complete summary of the objectives and guiding principles for Tasmania. Based on the core objective of sustainable development, the strategy promotes the principles of the waste hierarchy, environmental stewardship, precautionary principle, life-cycle principle, and the polluter pays and user pays principles.

3.6.2 Inventory of Tasmanian over-arching objectives and guiding principles

Environmental Management and Pollution Control Act 1994

Schedule 1 of the Act provides the following objectives.

"… 3. The objectives of the environmental management and pollution control system established by this Act are …

(a) to protect and enhance the quality of the Tasmanian environment; and

(b) to prevent environmental degradation and adverse risks to human and ecosystem health by promoting pollution prevention, clean production technology, reuse and recycling of materials and waste minimization programmes; and

(c) to regulate, reduce or eliminate the discharge of pollutants and hazardous substances to air, land or water consistent with maintaining environmental quality; and

(d) to allocate the costs of environmental protection and restoration equitably and in a manner that encourages responsible use of, and reduces harm to, the environment, with polluters bearing the appropriate share of the costs that arise from their activities; and

(e) to require persons engaging in polluting activities to make progressive environmental improvements, including reductions of pollution at source, as such improvements become practicable through technological and economic development; and

(f) to provide for the monitoring and reporting of environmental quality on a regular basis; and

(g) to control the generation, storage, collection, transportation, treatment and disposal of waste with a view to reducing, minimizing and, where practicable, eliminating harm to the environment, and

(h) to adopt a precautionary approach when assessing environmental risk to ensure that all aspects of environmental quality, including ecosystem sustainability and integrity and beneficial uses of the environment, are considered in assessing, and making decisions in relation to, the environment…"

The Tasmanian Waste and Resource Management Strategy

Chapter 4 of the strategy elaborates on the objectives above, providing the following guiding principles for Tasmania.

"The Tasmanian Waste and Resource Management Strategy is developed and guided by the overarching framework of the Resource Management and Planning System (RMPS) which also provides the framework for Tasmania's environmental and planning legislation and policies. The cornerstone of the RMPS is the promotion of sustainable development requiring the effective integration of economic, social and environmental considerations in decision-making processes and strategic planning.

Further to the principle of sustainable development, there are other guiding principles in the Strategy which form its foundations and also of other industry-specific, waste-specific, or region-specific strategies and action plans aligned with it. The principles are as follows:

4.1 Waste Management Hierarchy

The Waste Management Hierarchy is a hierarchy of actions which are, in order of preference: waste avoidance, reduction, reuse, recycling, energy recovery, treatment and disposal

… 4.2 Environmental Stewardship

In a waste management context, Environmental Stewardship recognises our roles and responsibilities to appropriately and effectively manage the wastes we produce to reduce any adverse environmental impacts and to protect the environment now and for future generations.

… 4.3 Precautionary Principle

Where there is a lack of scientific information relating to the impact of certain activities, and there is the potential of serious and irreversible damage, or unknown risks associated with these activities, a precautionary approach to waste management should be taken to protect the environment and human health and safety.

…4.4 Life-Cycle Principle

The Life-Cycle Principle is the notion that a fair, holistic assessment of environmental impact requires the assessment of raw material production, manufacture, distribution, use and disposal including all intervening transportation steps necessary or caused by the product's existence.

…4.5 Polluter Pays and User Pays

In the context of waste, the Polluter Pays Principle is based on the premise that those who generate waste or cause pollution from inappropriate waste management practices should bear the cost of its treatment, containment, or disposal. The User Pays Principle is similar but is based on the premise that those who use services pay for them."

Chapter 5 of the strategy continues by listing and describing the key objectives for Tasmania. The list of objectives is as follows:

- "Improved Partnerships, Coordination and Planning
- Waste Avoidance and Sustainable Consumption
- Waste Minimisation and Resource Recovery
- Improved Regulation and Management of Residual Wastes
- Improved Data Collection and Management Systems
- Reduction of Greenhouse Gas Emissions"

3.7 Victoria (Vic)

References list

Victorian Government, *Environment Protection Act 1970,* 2011.
Victorian Government, *Environment Protection (Industrial Waste Resource) Regulations 2009,* 2009
Victorian Government, *Towards Zero Waste Strategy,* 2005.
Victorian Government *Sustainability Victoria Act 2005,* 2011.

3.7.1 Overview of Victorian over-arching objectives and guiding principles

The Victorian *Environment Protection Act 1970* provides the majority of the over-arching objectives and guiding principles for Victoria. The Act includes an extensive range of principles, which can be summarised into: the principle of ESD, the principle of shared responsibility, the principle of product stewardship, and the principle of wastes hierarchy.

The *Environment Protection (Industrial Waste Resource) Regulations 2009,* which applies only to industrial and hazardous industrial wastes, enables the principles of 'wastes to resources for beneficial reuse' and 'regulation to enforce the waste hierarchy (where practicable).'

3.7.2 Inventory of Victorian over-arching objectives and guiding principles

Environment Protection Act 1970

Part one of the Act includes an extensive list of guiding principles most of which are included below.

"**1B Principle of integration of economic, social and environmental considerations**

(1) Sound environmental practices and procedures should be adopted as a basis for ecologically sustainable development for the benefit of all human beings and the environment.

(2) This requires the effective integration of economic, social and environmental considerations in decision making processes with the need to improve community well-being and the benefit of future generations.

(3) The measures adopted should be cost-effective and in proportion to the significance of the environmental problems being addressed.

1C The precautionary principle

(1) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

(2) Decision making should be guided by—

(a) a careful evaluation to avoid serious or irreversible damage to the environment wherever practicable; and

(b) an assessment of the risk-weighted consequences of various options.

1D Principle of intergenerational equity

The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

1E Principle of conservation of biological diversity and ecological integrity

The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making.

1F Principle of improved valuation, pricing and incentive mechanisms

(1) Environmental factors should be included in the valuation of assets and services.

(2) Persons who generate pollution and waste should bear the cost of containment, avoidance and abatement.

(3) Users of goods and services should pay prices based on the full life cycle costs of providing the goods and services, including costs relating to the use of natural resources and the ultimate disposal of wastes.

(4) Established environmental goals should be pursued in the most cost effective way by establishing incentive structures, including market mechanisms, which enable persons best placed to maximise benefits or minimise costs to develop solutions and responses to environmental problems.

1G Principle of shared responsibility

(1) Protection of the environment is a responsibility shared by all levels of Government and industry, business, communities and the people of Victoria.

(2) Producers of goods and services should produce competitively priced goods and services that satisfy human needs and improve quality of life while progressively reducing ecological degradation and resource intensity throughout the full life cycle of the goods and services to a level consistent with the sustainability of biodiversity and ecological systems.

1H Principle of product stewardship

Producers and users of goods and services have a shared responsibility with Government to manage the environmental impacts throughout the life cycle of the goods and services, including the ultimate disposal of any wastes.

1I Principle of wastes hierarchy

Wastes should be managed in accordance with the following order of preference—

(a) avoidance;

(b) re-use;

(c) re-cycling;

(d) recovery of energy;

(e) treatment;

(f) containment;

(g) disposal…"

Environment Protection (Industrial Waste Resource) Regulations 2009

Note: these regulations only apply to the management of industrial and hazardous industrial waste in Victoria (defined as Prescribed Industrial Waste (PIW)).

Part 1 of the regulations includes the following relevant objectives to promote reuse and resource recovery.

"The objectives of these Regulations are to—

(a) assist industry to implement the principle of wastes hierarchy as set out in section 1I of the Environment Protection Act 1970;

… (c) encourage industry to utilise industrial waste as a resource through exempting material from categorisation as prescribed industrial waste where a secondary beneficial reuse is established…"

Part c, above, enables the principle of 'wastes to resources for beneficial reuse' for hazardous waste to be implemented in Victoria."

The regulations define 'direct beneficial' and 'secondary beneficial reuse' as follows:

"**direct beneficial reuse** means use as an input or raw material substitute in a commercial, industrial, trade or laboratory activity without prior treatment or reprocessing"

"**secondary beneficial reuse** means use as an input or raw material substitute in a commercial, industrial, trade or laboratory activity following any form of treatment or reprocessing".

Part 2 of the regulations includes legislation that has the potential (where the technology and facilities are available) to require that PIWs wastes be avoided or reduced, reused or recycled, or treated or reprocessed. This appears to be the only example of legislation that can potentially enforce the waste hierarchy. In figure 1, this approach has been termed 'regulation to enforce the waste hierarchy (where practicable).'

Towards Zero Waste Strategy

This strategy sets out over-arching objectives and principles, which are included within the Victorian inventory (above).

Sustainability Victoria Act 2005

This Act does not include over-arching objectives and principles that are directly related to reuse and resource recovery of wastes.

3.8 Western Australia (WA)

References list

WA Government, *Waste Avoidance and Resource Recovery Act 2007,* 2010
WA Government, *Environmental Protection Act 1986,* 2011.
WA Government, *Western Australian Waste Strategy: "Creating the Right Environment",* 2012.

3.8.1 Overview of WA over-arching objectives and guiding principles

WA objectives and principles are set out in the *Waste Avoidance and Resource Recovery Act 2007* and the *Environmental Protection Act 1986.* They include objectives to use resources efficiently, to minimise waste generation, to implement the waste hierarchy, to implement product stewardship, and to have regard for the principles of ESD.

3.8.2 Inventory of WA over-arching objectives and guiding principles

Waste Avoidance and Resource Recovery Act 2007

Part 1, section 5 of the Act includes the following objectives.

"**5. Objects of this Act**

(1) The primary objects of this Act are to contribute to sustainability, and the protection of human health and the environment, in Western Australia and the move towards a waste free society by —

(a) promoting the most efficient use of resources, including resource recovery and waste avoidance; and

(b) reducing environmental harm, including pollution through waste; and

(c) the consideration of resource management options against the following hierarchy —

(i) avoidance of unnecessary resource consumption;

(ii) resource recovery (including reuse, reprocessing, recycling and energy recovery);

(iii) disposal.

(2) The principles set out in the EP Act section 4A apply in relation to the objects of this Act."

Part 5 of the Act provides a framework for product stewardship (extended producer responsibility).

Environmental Protection Act 1986

The Act provides additional principles that are included below.

"**4A. Object and principles of Act**

The object of this Act is to protect the environment of the State, having regard to the following principles —

1. The precautionary principle

Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

In the application of the precautionary principle, decisions should be guided by —

(a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and

(b) an assessment of the risk weighted consequences of various options.

2. The principle of intergenerational equity

The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

3. The principle of the conservation of biological diversity and ecological integrity

Conservation of biological diversity and ecological integrity should be a fundamental consideration.

4. Principles relating to improved valuation, pricing and incentive mechanisms

(1) Environmental factors should be included in the valuation of assets and services.

(2) The polluter pays principle — those who generate pollution and waste should bear the cost of containment, avoidance or abatement.

(3) The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes.

(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.

5. The principle of waste minimisation

All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment."

Western Australian Waste Strategy: "Creating the Right Environment"

Under the 'Vision, Scope and Key Approach' section of the strategy the WA inventory of principles is included as follows.

"Principles

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

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