

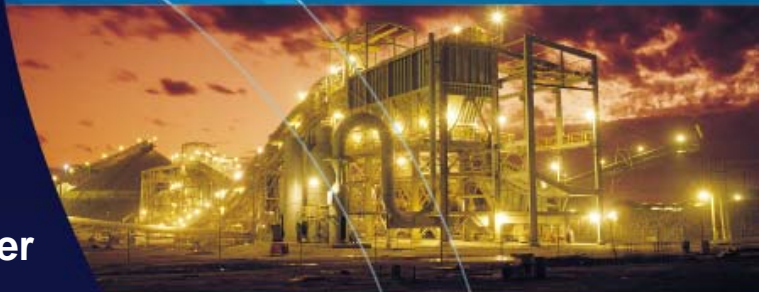


GRD

GRD Limited is a construction
and development company

**National Sustainability Charter
for Australia**

May 2006



NATIONAL SUSTAINABILITY CHARTER FOR AUSTRALIA

GRD LIMITED

MAY 2006

1. INTRODUCTION

GRD Limited is an Australian engineering and development company which, through its subsidiary Global Renewables, has developed the UR-3R urban waste management facility which offers a sustainable solution to the largely hidden problem of urban waste management in Australia.

GRD's first UR-3R Urban Waste Management Facility has been operating at Eastern Creek, Sydney for the past 18 months, converting around 10 per cent of Sydney's urban waste into useful resources; gas for energy, organic growth media for enriching arable land and recovering glass, aluminium, steel, paper and plastic recyclables.

In converting urban waste to resources, the Eastern Creek Facility is also diverting the waste from environmentally damaging and unsightly landfill and so avoiding, for that part of the waste stream it processes, the creation of major environmental, economic and social problems for future generations of Sydney residents.

A triple bottom line assessment identifying the economic, environmental and social performance of the UR-3R Process[®] by sustainability consultancy Nolan-ITU has demonstrated that the process can:

- provide a net benefit of \$130-\$150 a year for each household in Australia's major population centers;
- avoid or minimise the problems of toxic emission and climate impacts associated with landfill, and
- contribute to material and energy conservation.

In other parts of the world mechanical biological treatment of waste has also been proven as environmentally superior and cost competitive waste management solutions to incineration in terms of toxic emissions, climate impacts, material conservation and energy conservation.

The UR-3R Facility provides a functioning model of ecologically sustainable development; using, conserving and enhancing community resources so that ecological processes are maintained and quality of life for future generations is improved.

The Eastern Creek Facility is proven in Australia and accepted globally to be a success. GRD is now working with waste authorities in Melbourne and Lancashire, UK to build UR-3R Facilities in those places.

With the success of the UR-3R Facility we are both pleased and qualified to make this submission to the Inquiry by the House of Representatives Standing Committee on

Environment and Heritage on the Potential Development of a National Sustainability Charter for Australia.

We note that the objective of the Committee is to inquire into the key elements for a Sustainability Charter for Australia and to identify the most important and achievable targets, particularly in relation to the built environment, water, energy, transport and the ecological footprint.

The UR-3R Facility provides a readily achievable outcome for sustainability in relation to the built environment, water, energy and the ecological footprint and in this context can further serve as a functioning model for sustainability in Australia.

It addresses a major but largely unrecognised or ignored impediment to sustainability in Australia arising from the practice of dumping most of our urban waste into costly (taking account of the environmental externalities) and polluting landfill.

GRD and its subsidiaries GRD Minproc and Global Renewables have invested \$150 million and seven years in developing and operating a sustainable alternative to landfill which combines the most advanced technology for the optimum management of municipal solid waste and maximum recovery of resources from the urban waste stream.

In doing so we have established experience and knowledge of urban waste management and the problems of landfill which is unique in Australia.

In this submission we strongly support the development of a National Sustainability Charter for Australia and we recommend that:

- sustainable urban waste management should be one of the key initial goals of a National Sustainability Charter;
- dumping urban waste into landfill should be progressively banned in Australia, as it has been banned in Europe; and
- the Commonwealth Government should develop a major public awareness campaign to win the support of state and local governments and all Australians for a National Sustainability Charter, with the campaign addressing all elements of sustainability including urban waste management.

For clarity of presentation, our submission is arranged into the following sections:

1. Introduction
2. The challenges and opportunities to sustainability arising from urban waste management practices in Australia
3. GRD's credentials to address the issues involved for the most effective and sustainable management of the urban waste stream
4. How the UR-3R Process works for a sustainable future
5. Recommendations and suggested steps in the transition from unsustainable to sustainable waste management.

In researching the potential benefits of the UR-3R process, Global Renewables in 2004 commissioned Nolan ITU Pty Ltd to identify and communicate the economic, environmental and social benefits of the technology in a triple bottom line assessment conducted as an independent study. This is the first time that such a complete assessment of Australian waste management systems and their impacts on sustainability (ie. their environmental, economic and social impacts) has been undertaken. A copy of the Nolan ITU Report is attached and comprises an important addendum to the GRD submission.

2. The Challenges of Urban Waste Mismanagement to Achieving Sustainability in Australia

In Australia's urban consumer economy, 80 percent of saleable products become waste within six months, and most municipal solid waste goes to landfill where it can generate leachates and methane gas for many decades. Dumping urban waste as landfill has adverse long-term environmental, economic and social impacts, mainly through:

- production of virile greenhouse gases (eg. methane is 21 times worse than carbon dioxide as an agent contributing to atmospheric warming);
- contamination of groundwater;
- widespread disturbance of the feeding habits of native birds; and
- quarantining from other uses of land contaminated by waste.

Each Australian household generates an average of more than 850 kilograms of municipal solid waste every year, putting Australians in the highest quartile of waste generators globally.

Every day Australians commit 50,000 tonnes of non-renewable resources, complex manufactures, toxic wastes and essential biomass to wasteful disposal (excluding building materials). That is equivalent to filling a football field with a 20 m layer of waste every day or filling every football field in the country with urban waste in a decade.

Where landfill is practiced, the waste industry is actually concealing this huge volume of waste in landfills and disused quarries where the direct environmental impacts are closely managed but the enormity of the systematic wastefulness and lack of sustainability of the practice remains hidden from public view.

Most of the generic materials and resources, when disposed of to landfill, accumulate in concentrations greater than their respective concentrations in the natural environment – before their original extraction, mining or harvesting.

Their affects on the atmosphere, soil, groundwater, the built environment and the ecological footprint are among the major impediments created by urban man to our aspirations for sustainable living.

In Australia, more than in most other first world economies, the problem of waste management is left to under-funded and under-resourced local government, and there is only limited public and political awareness of the problems of waste management

compared with the many other impediments to sustainability which the Committee will be considering.



“Urban Resource Conservation”

Global Renewables has integrated world’s best resource recovery processes, creating the UR-3R Facility to provide sustainable waste management

The triple-bottom line assessment of the UR-3R Process by Nolan-ITU (attached to this submission) quantified the costs of landfill which are not included in calculations of waste disposal pricing. Nolan-ITU estimates the long-term environmental costs of leachate and landfill gas emissions at significantly more than \$150 per tonne of urban waste disposed of to best practice landfill. These are hidden environmental and social costs not reflected in current landfill prices. Some of these costs are borne by our community as environmental impacts, and some will be borne by future generations. In addition, where remediation is necessary, the responsible councils will carry this liability into the future.

But Australian landfill levies are low by global standards. Though voluntary timetables have been adopted to phase out landfill disposal of waste in Australia, there are no strong drivers, or even guidelines to indicate how these timetables might be adopted. Nor is there any provision for incentives to achieve sustainable urban waste management.

The Nolan-ITU study detailed the costs of landfill versus the UR-3R Process and the triple bottom line cost / benefit analysis indicated a very significant net benefit from the UR-3R Process[®] to the community of \$130-\$150 per household per year in Australia's major population centres.

When summed over the total number of households in the major population centres modeled, the annual net benefit from the UR-3R Process[®] over landfill disposal amounts to \$159 per household per year in Australia's major population centres, or \$741 million per year for Australia.

When applied to each major population centre, an estimated 353,000 tonnes per year of dry recyclable materials would be diverted from landfill and recovered for recycling by the UR-3R Process[®]. The processing of mixed waste through UR-3R facilities would therefore increase Australia's recovery of dry recyclable materials by an estimated 42% (ie. from 847,000 tonne per year to 1.20 million tonne per year).

In addition the analysis of social indicators provided a positive result – the UR-3R Process[®] is clearly preferred to landfill disposal in terms of social indicators including social cohesion and quality of life.

In order to compare the UR-3R Process[®] against a baseline, the study needed to determine the environmental cost of the landfill disposal of putrescible waste in Australia's major population centres. It was determined that the annual environmental cost of landfilling of putrescible waste in Australian major population centres may exceed \$640 million per year.

This costing includes air emissions from best practice landfill, leachate from best practice landfill, and greenhouse gases from best practice landfill.

In comparison, the cost of salinity (according to Commonwealth Government estimates) to Australia amounts to \$243 million per year). Nolan-ITU also demonstrated that on a State by State basis, the environmental cost of landfilling putrescible waste could potentially be as high as follows:

| | |
|-------------------|---------------|
| NSW | \$238 million |
| Victoria | \$132 million |
| Queensland | \$124 million |
| South Australia | \$50 million |
| Western Australia | \$90 million |
| ACT | \$9 million |

New South Wales and Victoria have now embraced the concept of resource recovery from municipal waste processing, but the other States with fewer population pressures and less resources have not yet taken up this opportunity, and show little interest.

This lack of interest is at odds with the emerging global trend towards banning recyclables and putrescibles to landfill and transforming a substantial part of the waste stream into resources. Beyond Australia (as Table 1 below illustrates) the world is changing in favour of resource recovery from municipal waste processing as a significant contribution to sustainability.

Table 1

| | |
|---------|--|
| EU | All EU countries must, pursuant to the 1999/3 EC Landfill Directive, reduce the amount of biodegradable waste disposed to landfill by 50% by 2010. |
| Germany | Ban on landfilling of material with greater than 5% organic content from 2005. |
| UK | Landfill tax of £15/t from 2004, rising by £3/t annually to a maximum of £35/t. 25% of all household waste to be recycled/ composted in England and Wales by 2010. |
| Sweden | Ban on putrescible waste landfilling from 2002. |
| Austria | Ban on landfilling of material with greater than 5% organic content from 2004. |
| Belgium | Plans to ban direct landfilling of combustible waste. |
| Denmark | Plans to ban the landfilling of combustible waste. |
| USA | California, Washington and North Carolina have adopted medium term zero waste policies. |
| Canada | British Columbia and Ontario have adopted medium term zero waste policies. |
| China | Plans to reduce landfilling and incineration to meet significant 2008 Olympic and 2010 World Expo diversion targets. |

3. GRD Limited's Credentials

In the 1990s GRD Limited, which has its foundations as a business in mining and in contract services to the mining industry, recognised the environmental, economic and social problems of the growing volumes of urban waste in consumer societies, the serious failings of landfill, and the potential opportunities in finding alternatives to these problems. In 1998 the company began investing in research to find solutions for the problem through its contracting subsidiary, GRD-Minproc.

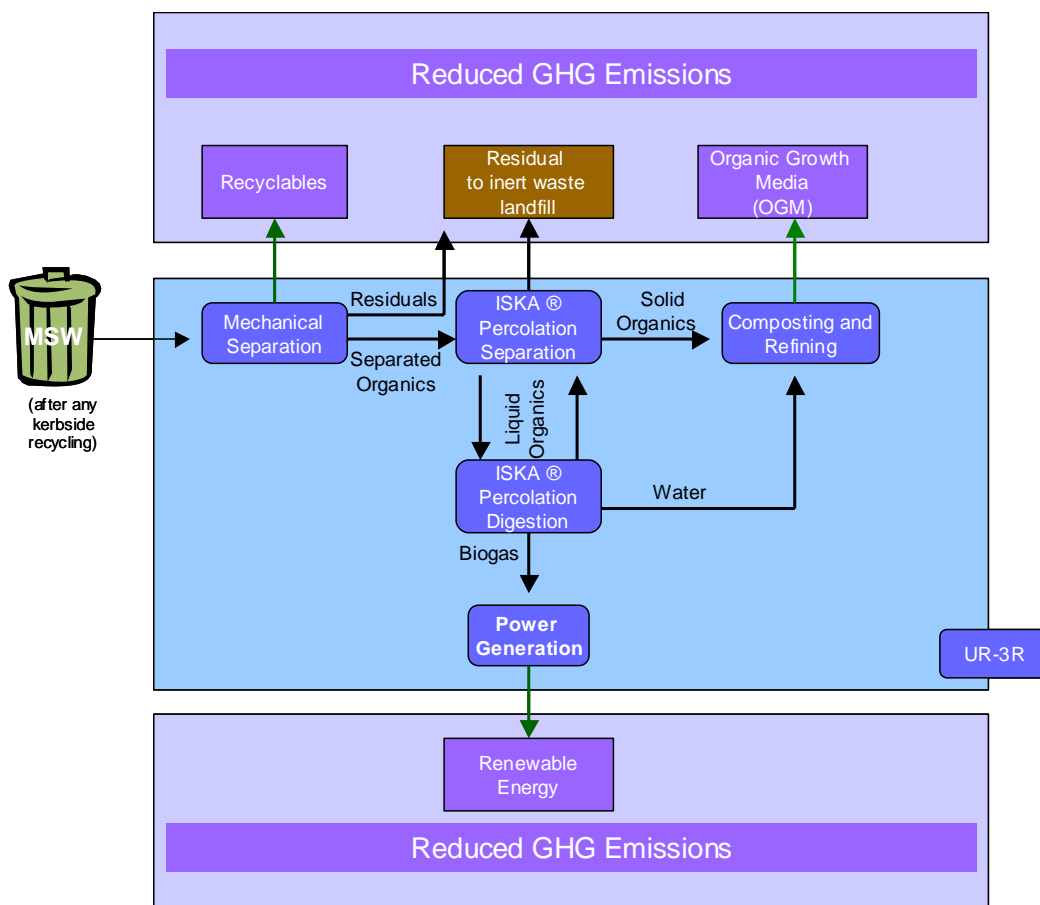
In April 2000, following the completion of a two-year global search and evaluation of the world's best alternative waste treatment technologies, GRD established Global Renewables to implement the development of UR-3R facilities in Australia.

In December 2002 GRD established a \$500 million alliance with Hastings Funds Management, owned by Westpac, for part equity in the proposed roll-out of the UR-3R facilities around Australia. Agreement was reached in December 2005 for GRD to acquire the Hastings share of Global Renewables.

In 2002 Global Renewables contracted with the New South Wales Waste Management Authority, WSN Environmental Solutions, in a public private partnership to build own and operate the Eastern Creek UR-3R Facility, which began operating in September 2004.

Global Renewables has technology licence arrangements with ISKA (of Germany) for use of the ISKA® Percolation system and with Sorain Cecchini Techno SRL (of Italy) for resource separation and composting processes.

The plant was designed to produce biogas sufficient to generate enough electricity to power the plant with any surplus to the grid, 300,000 tonnes of Emission Reduction Units pa (carbon credits equivalent to taking 50,000 cars off the road), and more than 60,000 tonnes of compost products in addition to recyclable products (paper, glass, steel, plastics and aluminium). Mitsui & Co (Australia) Limited and BP Australia Ltd have entered into an agreement to forward purchase 1,500,000 tonnes of the Emission Reduction Units.



On 21 March 2006 the Eastern Creek UR-3R Facility successfully completed independently verified financial and technical bank completion tests, including for revenue and costs.

Throughput at the Facility has exceeded the nameplate capacity of 14,900 tonnes per month, and the first Renewable Energy Certificates (RECs) from the facility were sold in March 2006, bringing on stream another source of revenue.

This follows the successful completion during 2005 of load tests for throughput, diversion rates, power consumption and residual levels.

Last year the Eastern Creek UR-3R Facility also achieved independent certification of its organic product and began exporting green power from the bio-digestion of Sydney's municipal solid waste, substantially reducing greenhouse gas emissions compared to landfill.

The UR-3R organic growth media products are creating a new benchmark for the sustainable processing of organic waste resources into beneficial, soil enhancing products.

The certified organic growth media, which is subject to rigorous quality control and comprehensive batch testing to produce a safe, clean and consistent product, is being used in soil blends for landscaping applications.

Initial horticultural trials using the organic growth media to grow tomatoes, rockmelons and grapes have demonstrated significantly increased marketable fruit yield.

The UR-3R products manufactured at the Eastern Creek UR-3R Facility meet the Australian standard for agricultural grade organic growth media products for use as a composted or pasteurised soil conditioner, and as a rehabilitation and remediation organic product for use in forestry applications and in the remediation of landfills and quarries.

As a result of GRD's successful research and its operations at the Eastern Creek UR-3R Facility:

- alternative waste technologies such as the UR-3R process can now be viewed in Australia as a viable replacement for landfilling of putrescible waste;
- alternative waste strategies are able to divert around 80%, and possibly more, of household Municipal Solid Waste from landfill;
- the external costs of landfilling in Australia have now been quantified;
- when the external costs of landfilling are taken into account, alternative waste treatments offer a highly competitive and fundamentally better treatment and totally sustainable municipal solid waste; and
- most importantly for the submission, alternative waste strategies have a higher propensity to fulfill sustainability principles which are becoming the major plank in public planning policies in Australia and around the world.

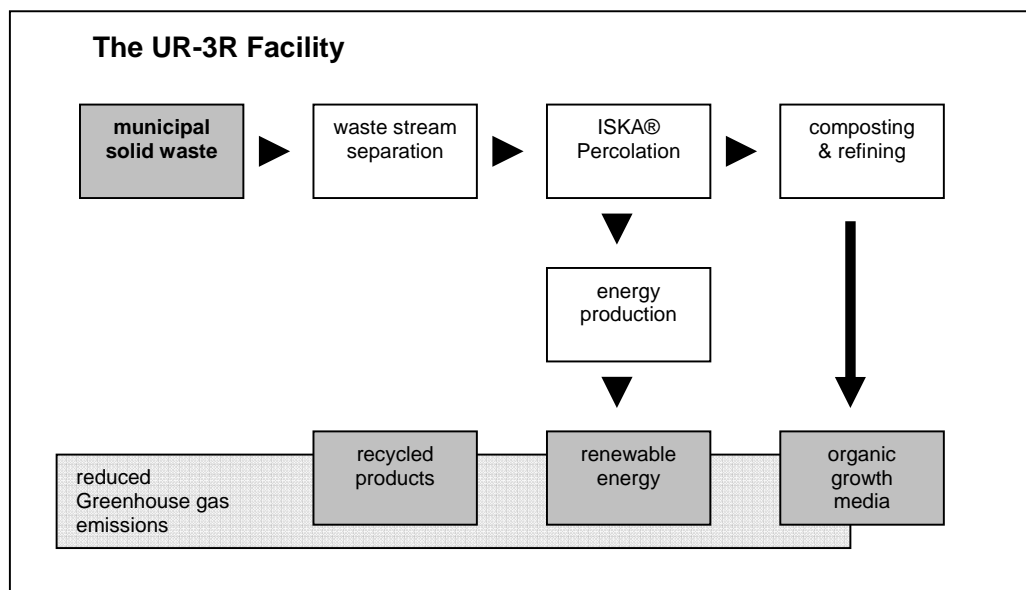
In the meantime, GRD's combination of leading edge waste treatment technology in the UR-3R process has received international recognition through its selection as preferred bidder for the Lancashire Waste Management Partners, Privately Funded Infrastructure Project, in the United Kingdom and, within Australia, for the Western Region Waste Management Group Project in Melbourne.

From this background GRD is well qualified to make this submission.

4. How the UR-3R Process Works for a Sustainable Future

The Greenpeace Trust report, *Cool Waste Management – A State of the Art Alternative to incineration for Residual Municipal Waste*, February 2030, provides an overview of mechanical biological treatment of waste such as the UR-3R process as a preferred approach over landfill and thermal processes. It concludes that mechanical biological processes are an environmentally superior and cost competitive waste management solution in terms of toxic emissions, climate impacts, material conservation and energy conservation.

The UR-3R Facility: Urban Resource – Reduction, Recovery, and Recycling A solution for resource recovery and greenhouse gas reduction



Fundamental to the social acceptance of replacing landfilling is the community's confidence that the replacement will make positive contribution to sustainability.

In its report, Greenpeace concurs with the authors' conclusion that the state-of-the-art plant proposed in the study that generates all its own electricity and reduces the mass of waste requiring landfill by the same amount as a modern incinerator is cost competitive and offers an extremely high environmental performance.

Other case studies, including the Mays Report *Corporate Sustainability – An Investor Perspective*, October 2003, and a Victorian Government *Innovation Statement* have commented on the extensive range of sustainability outcomes that the UR-3R Process delivers. The May's Report states that the UR-3R technology is not only sustainable, but also a highly efficient way to deal with the problems of growing waste streams and land scarcity issues for disposal sites.

More recently, in May 2006, Friends of the Earth, released a report on incineration and climate change, *Dirty Truths*, where it points to research showing that from a climate

point of view mechanical biological treatment processes is the preferred option. It points to anaerobic digestion generating power from the biomass portion of residual waste as being truly renewable.

5. Recommendations and suggested steps in the transition from unsustainable to sustainable waste management

GRD supports the development of a Sustainability Charter for Australia and in the first part of this submission we have identified that the phasing out of landfill and use of mechanical biological processing of urban waste is a readily achievable target in the quest for sustainability.

We have also pointed out that there is little public (or political) understanding of the problems arising from our present management of urban waste disposal.

The Committee's invitation for submissions on the potential Development of a National Sustainability Charter indicated that while the Charter should be aspirational, the Committee was interested in the steps necessary to achieve the targets suggested.

GRD recommends that:

- sustainable urban waste management should be one of the key initial goals of a National Sustainability Charter for Australia;
- dumping urban waste into landfill should be progressively banned in Australia, as it has been banned in Europe; and
- the Commonwealth Government should develop a major public awareness campaign to win the support of state and local governments and all Australians for a National Sustainability Charter, with the campaign addressing all elements of sustainability including urban waste management.

We suggest that adopting a policy of banning all putrescible and recyclable waste to landfill in Australia by (say) 2010, supported by transitional step targets must be the first step towards an ultimate goal of zero waste to landfill.

A working model of an incentive scheme to drive the targeted outcomes of sustainable waste management in Australia is the Landfill Allowance Trading Scheme (LATS) adopted in the United Kingdom, which facilitates the achievement of waste diversion targets through a cap and trade system only accessible by local government. The local government councils that can most economically introduce resource recovery technology to exceed their LATS targets can trade their excess credits, while those which do not meet their targets can either purchase landfill credits from other councils or face a substantial penalty. The principles are similar to the cap and trade schemes established in Australia for renewable energy certificates and salinity credits.

We also suggest that a government sustainable infrastructure investment fund would facilitate the necessary urban infrastructure required for the establishment of sustainable waste management and point to the UK's Private Finance Initiative (PFI) Scheme as a practical example of government policy and regulation used to deliver higher quality and more cost effective waste management services.

The PFI Scheme achieves positive outcomes by directly involving the private sector in asset provision and operation – which changes the focus away from the procurement of capital assets, to access to, and use of, a serviced asset by the public sector.

The PFI approach recognises that the private sector takes the business risk (and that significant capital is invested) in committing to supply the service (for contracted levels of payment). The U.K. central government has set aside funds for allocation to specific projects for the purpose of ensuring appropriate provision of sustainable waste management initiatives across England. During the 2004–2006 period, GBP135 million will be made available (in the form of PFI Credits) in respect of which local authorities may bid for “projects” to receive revenue support.

The PFI process requires that projects seeking revenue support are first submitted to the central government for review against a specific “framework” before a local authority can commit to it. This framework is designed to ensure that all procured projects are affordable, deliverable, will achieve service delivery goals, will provide value for money, and are consistent with policy priorities (such as the United Kingdom Waste Strategy 2000). Successful projects will then be endorsed as being eligible to receive revenue support (in the form of PFI Credits), and the local authority can then proceed to procurement.

A PFI Credit effectively provides an assurance that once the contract is signed, there will be subsequent payment of revenue in support of the project. This process is efficient and effective, in that it ensures both the private and public sectors do not waste resources in promoting and procuring projects that will ultimately not be supported and will not go ahead.

The procurement phase of the PFI process is not unlike the tendering process in Australia, in that a local authority will seek to purchase a capital intensive service from a private sector provider over a long term period. The private sector provider is paid for the performance of the service in accordance with specified levels of performance and/or usage of that service. The private sector provider is responsible for the investment in capital assets, financing that investment and ongoing operation and management of the facilities to provide the specified levels of service.

In summary, the PFI and LATS schemes are a well structured approach to fostering public private partnerships as a means to achieving sustainability targets while delivering cost effective public services. More importantly, the PFI and LATS schemes are designed to provide greater certainty for both the private and public sector during project procurement, and in doing so, address the market and regulatory failures that otherwise exist in the context of the waste management industry.

GRD suggests that a funding and market based policy approach similar to the PFI and LATS should be used to drive more positive government policy and regulatory intervention in Australia to remove the hurdles faced by the proponents of sustainable waste management technologies.

Nationally targeted research and education programs are required to develop a public awareness of, and support for both the proposed National Sustainability Charter and the key goals for that Charter, which should include achieving a sustainable urban waste management system.

In addition, research and education programs are required specifically to develop markets for some of the products of the process of sustainable urban waste management such as an agricultural market for organic fertilisers, produced by alternative waste treatment facilities.



The Eastern Creek UR-3R Facility is processing around 11 per cent of Sydney's household waste

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Attc: National Benefits of Implementation of UR-3R Process[®], A Triple Bottom Line Assessment, July 2004 – Nolan-ITU Pty Ltd

ADDITIONAL INFORMATION HELD BY THE COMMITTEE

ATTACHMENT TO SUBMISSION NO. 55

**ATTACHMENTS, APPENDICES AND PHOTOGRAPHS PROVIDED WITH
SUBMISSIONS ARE HELD IN THE COMMITTEE OFFICE**