

Submission
No 49

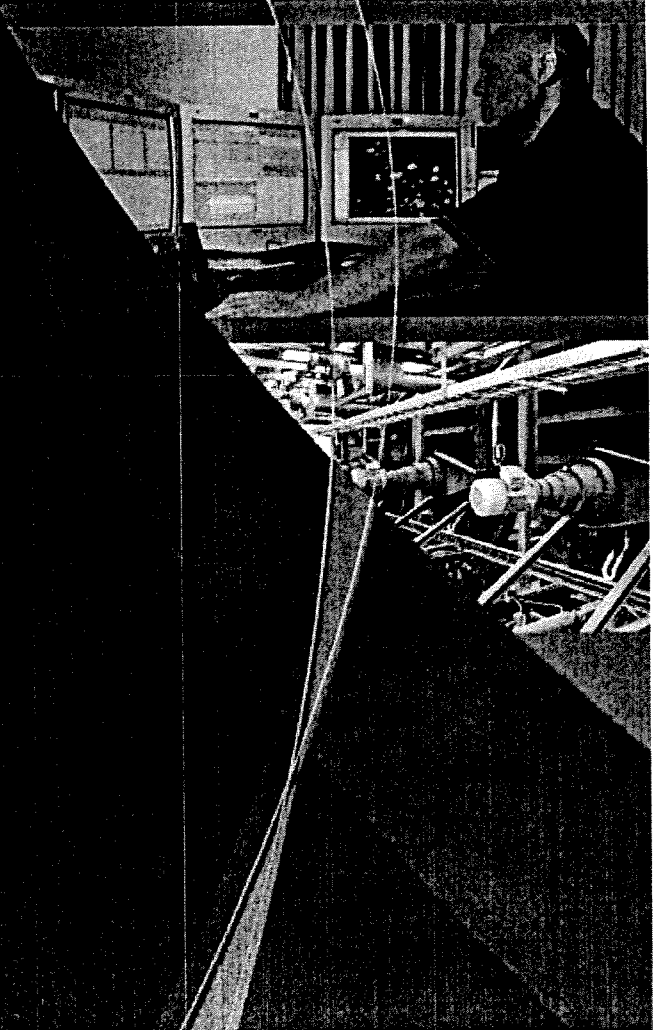


GRD

GRD Limited is a construction
and development company

**Submission to the Standing
Committee on Public Works'
Inquiry into Municipal Waste
Management in NSW**

31 March 2006



SUBMISSION TO THE STANDING COMMITTEE ON PUBLIC WORKS' INQUIRY INTO MUNICIPAL WASTE MANAGEMENT IN NSW

1. Introduction

GRD Limited, an Australian construction and development company which, through its subsidiary Global Renewables, has developed the UR-3R sustainable urban waste management solution and in partnership with the NSW Government-owned WSN Environmental Solutions, built the world's first UR-3R Urban Waste Management Facility at Eastern Creek, Sydney, is pleased to make this submission to the Inquiry into Municipal Waste Management in NSW

Our submission is based on seven years of research and experience by GRD and its subsidiaries GRD Minproc and Global Renewables in developing the UR-3R sustainable urban waste solution and in building and operating the Eastern Creek Facility which combines the most advanced technology for the optimum management of municipal solid waste and maximum recovery of resources from the urban waste stream. Global Renewables is also the preferred bidder for the Lancashire Waste Management Partnership Private Funding Initiative (PFI) Project in the United Kingdom and for the Western Region Waste Management Group Project in Melbourne.

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 has been undertaken. A copy of the Nolan ITU Report is attached and comprises a vital part of the GRD submission.

Despite the magnitude of the challenges in waste management in Australia, which have been identified by the Nolan-ITU Study and by a number of reviews or inquiries by several State Government environmental, sustainability or waste management agencies, there is insufficient public or political awareness of the economic, environmental and social cost of Australia's present piecemeal approach to the management of the waste produced by our consumer society.

The NSW Government has done more than any other state government to drive the adoption of more sustainable waste management systems and GRD Limited congratulates the Standing Committee on Public Works in their initiative in launching this Inquiry which has the potential to create a step change improvement from mere waste management to sustainable resource management in NSW.

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

1. Introduction
2. The challenges and opportunities for urban waste management in Australia
3. GRD's credentials to address the issues involved in the most effective management of the urban waste stream
4. GRD's response to the five key issues in the Inquiry's terms of reference.

We will also address another issue which we believe is critical to the ability of Federal and State Governments to manage the challenges and realise the opportunities in transforming

our waste to resources, namely the low level of awareness of the issues involved among the public, and therefore in political debate.

Attached to the submission, as noted above, is a copy of the report by Nolan ITU *The National Benefits of Implementation of the UR-3R Process, a Triple Bottom Line Assessment*.

2. The Challenges and Opportunities of Urban Waste Management

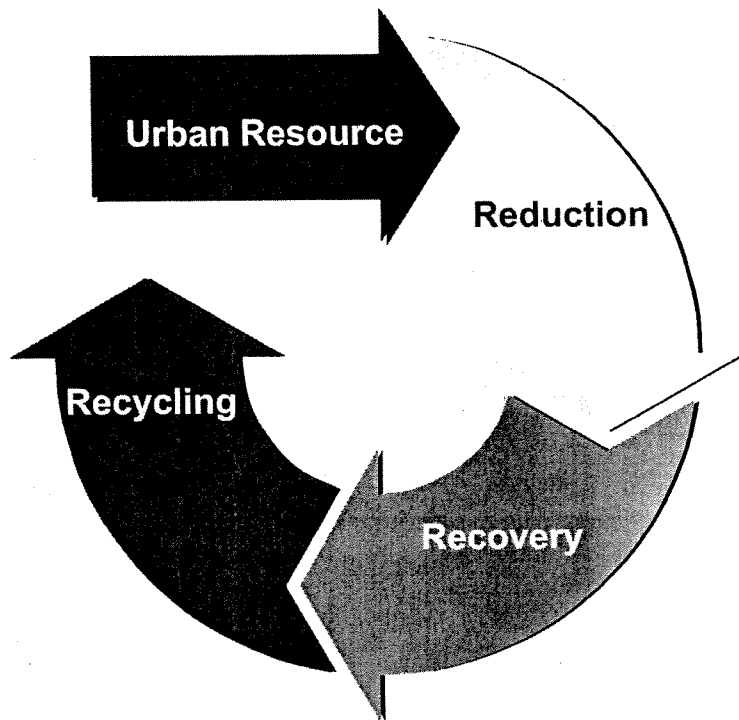
In Australia's urban consumer economy, 80 percent of saleable products become waste within six months, and most municipal solid waste goes to landfill where it can generate leachates and methane gas for many decades. This has adverse long-term environmental and economic impacts, mainly through production of virile greenhouse gases (methane is 21 times worse than carbon dioxide as an agent contributing to atmospheric warming), contamination of groundwater 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 us in the highest quartile of waste generators globally. "Urban Waste Management" needs to be transformed into "Urban Resource Conservation".

In Australia, as is the case throughout the Western world, the management of waste sits alongside energy supply, environmental management and water supply in terms of its importance to sustainability and strategic planning.

But in Australia, more than in many other parts of the world, much of our waste continues to be hidden from sight in landfill and there is only limited public and political awareness of the problems of waste management compared with the problems of energy, environment, and water supply.

At present in Australia, waste management is regulated by State authorities and managed by local councils guided by State waste management agencies and the landfill levies are low by global standards. NSW is the only state proposing significant incentives for council performance (none now exist even in NSW) but there is an urgent need for capital support for resource recovery infrastructure along the lines implemented in the UK. The emerging global trend towards banning recyclables and putrescibles to landfill and instead recovering the useful resources contained within this substantial 'urban ore body' would further drive progress.



“Urban Resource Conservation”

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

Though voluntary timetables have been adopted to reduce landfill disposal of waste in Australia, there are no strong drivers, or even guidelines to indicate how these timetables might be adopted.

New South Wales and Victoria have embraced the concept of resource recovery from municipal waste processing, but the other States have been slow in taking up this opportunity. The initiation of the Inquiry presents a great opportunity for New South Wales to strengthen its leadership in sustainability by going beyond waste strategy to an “urban resource conservation” strategy.

Beyond Australia (as Table 1 illustrates) the world is well advanced with changes in favour of resource recovery from municipal waste processing.

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.

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

The waste disposal industry, driven by public health concerns, environmental and aesthetic considerations is actually concealing this huge volume of waste in landfills and disused quarries where the direct environmental impacts are managed but the enormity of the systematic wastefulness of our society remains hidden from public view and the long term (detrimental) environmental impacts are not accounted for. Better landfills will not address the wastage of energy and depletion of resources that is represented in the landfilling of such vast amounts of potentially recyclable resources. Landfills are not stores of resources for future mining, but collections of unrecoverable resources, polluted beyond utilisation.

3. GRD Limited's Credentials

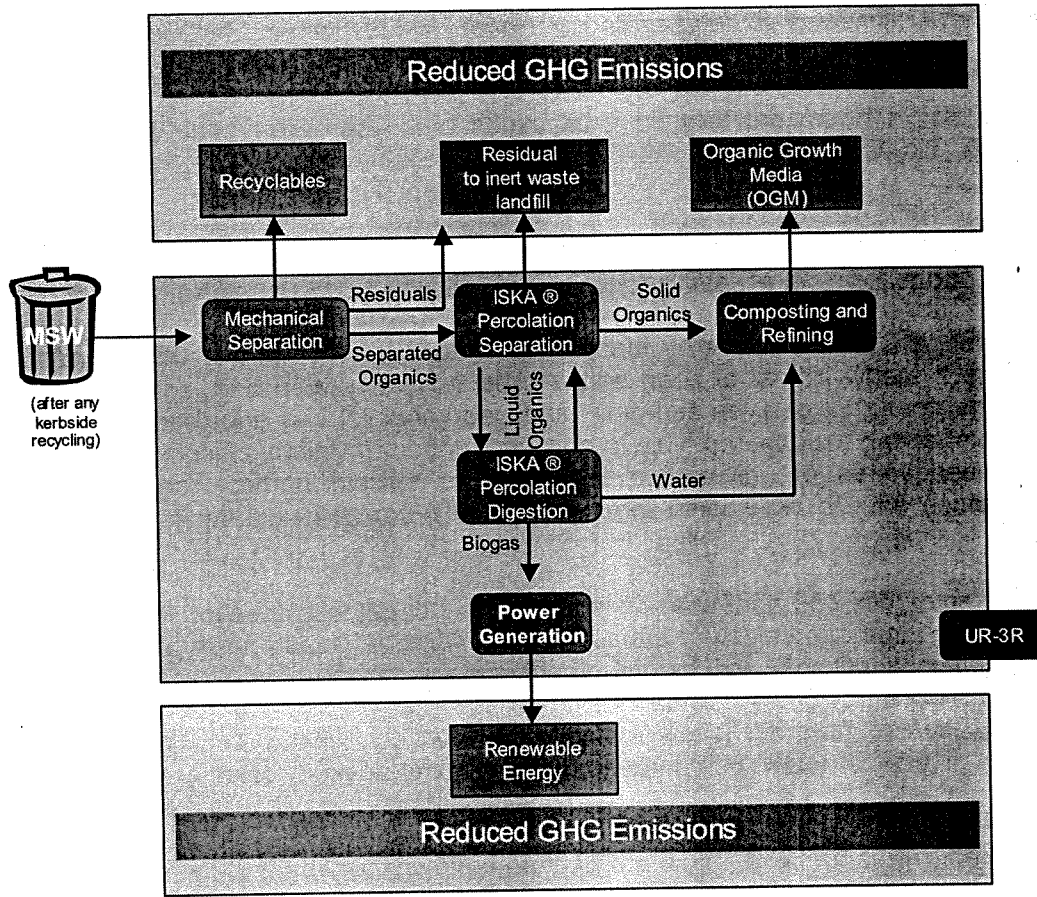
In the 1990s, GRD Limited, which has its foundations as a business in mining and in contract services to the mining industry, recognised the problems and the opportunities, created by the growing volume of urban waste. In 1998 the company began investing in research to find solutions for the problem 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 2002 Global Renewables contracted with the New South Wales Statutory Corporation, WSN Environmental Solutions (formerly Waste Service NSW), in a public private partnership to build, own and operate the Eastern Creek UR-3R Facility, which began operating in September 2004.

The Eastern Creek UR-3R Facility is designed to process 175,000 tonnes of municipal solid waste per annum (11 percent of Sydney's waste, and upgradable to 260,000 t/a or 16% of Sydney's waste) through integrated sorting, biological digestion and composting processes. The plant is designed to produce biogas sufficient to generate 17,000 megawatt hours of green energy (enough to power 2,250 households), 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.

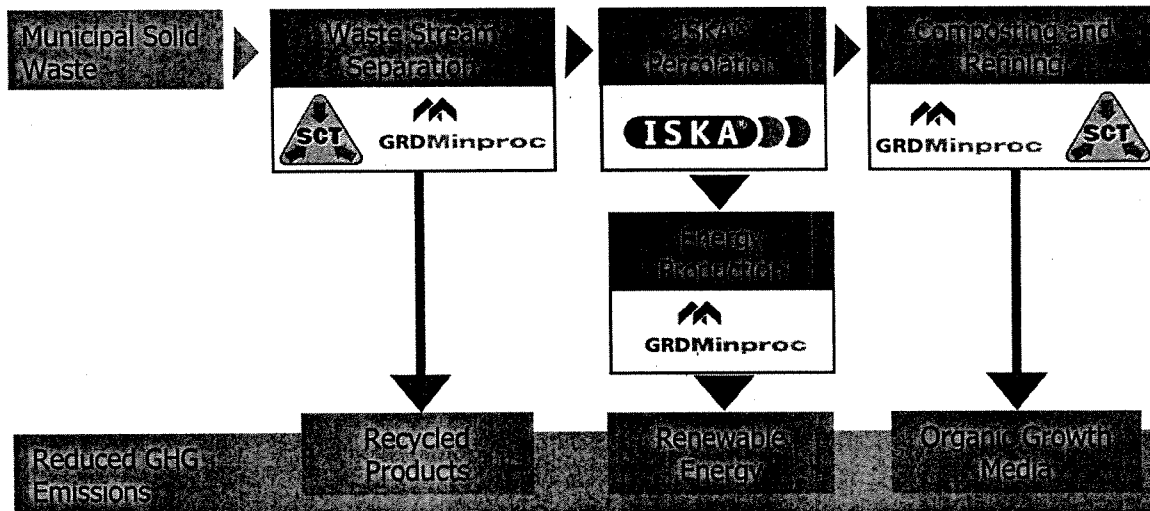
GRD's engineering contractor subsidiary, GRD Minproc, built the Eastern Creek Facility. Global Renewables also has technology licence arrangements with ISKA (of Germany) for use of the ISKA® Percolation system, and with Sorain Cecchini Techno SRL (of Italy) for resource separation and composting processes.



The UR-3R Process®

The UR-3R Facility receives and processes municipal solid waste (MSW), which includes collected household, commercial and green waste and is able to deliver a truly sustainable waste management solution by:

- **Reducing** waste generation through community education and recognition of the full life cycle cost of waste management
- **Reducing** greenhouse gas and leachate emissions by processing the putrescible portion of the waste stream
- **Recovering** valuable recyclables from the non-putrescible portion of the waste stream
- **Recycling** the organic portion of the putrescible waste stream into renewable energy and high quality organic growth media (OGM), thereby reducing greenhouse gas emissions and leachate, and helping to close the carbon cycle.



“Key technology to achieve Zero Waste Goals”

In September 2005, the Eastern Creek operation passed an important milestone in receiving AS4454 certification for the composts and soil conditioners it produces.



Organic growth media produced from municipal solid waste at the Eastern Creek UR-3R Facility

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

- Resource recovery 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 be quantified
- When the external costs of landfilling are taken into account, resource recovery technologies offer a highly competitive and fundamentally better treatment of municipal solid waste
- Resource recovery strategies, rather than mere waste management strategies have a higher propensity to fulfill sustainability principles, which have become the major plank in public planning policies throughout the world.

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

The Lancashire Waste Partnership PFI Project will:

- *Process enough household waste to fill Perth's Subiaco Oval to the roof every 6 months or bury Monaco in 22 level metres of rubbish*
- *Process the waste for 1.4 million people, equivalent to the entire metropolitan population of Perth*
- *Remediate land and create woodlands 2.5 times bigger than King's Park in Perth*
- *Recover enough steel to produce 10 Sydney Harbour Bridges*
- *The aluminium recovered will save enough electricity through recycling to power the lights of the MCG for over 3,500 years*
- *Recover paper equivalent to a phonebook that would stretch around the Earth 1.8 times at the equator*
- *Recover enough glass to produce around 120 pint glasses for every adult in Australia.*

4. Addressing the Terms of Reference

The terms of reference to the Inquiry designate five key issues for examination. These are listed below, together with GRD's views which, as previously stated, are drawn from seven years of research and practical experience in developing the UR-3R sustainable urban resource recovery solution.

4.1 The effectiveness and appropriateness of current municipal waste management

NSW has the most effective municipal waste management of any state, but progress has effectively plateaued.

The recently announced increase in the landfill levy is a welcome encouragement to proponents of resource recovery technologies, but it is not sufficient to drive the implementation of sophisticated processing facilities because these require long pay-back times to minimise gate fees to councils, and this implies stable long term contracts. The higher levy needs to be supported by commercially and financially solid ways of grouping council waste inputs.

As indicated below, it is now apparent that a step change improvement is necessary to the way resource recovery infrastructure is planned, delivered and operated.

Current state institutional arrangements where responsibility for infrastructure delivery in waste management is spread between environmental regulators and planners and local councils, but with no involvement of the state government's infrastructure and utilities departments needs to change. The large amount of additional resources that will need to be

recovered to meet the State's 2014 waste targets will not be established without the creation of "eco-industrial parks" that can recover around 2 million tonnes per annum of resources, using a range of service providers and a plethora of different, complementary technologies.

A single authority with planning, site development and contracting powers is needed to enable the achievement of the State's ambitious 2014 targets.

4.2 Impediments and incentives to best practice municipal waste management

The fundamental obstacle to "best practice waste management" strategy is its failure to grasp the opportunities available in focusing instead on resource recovery strategy.

A recent publication by the authoritative UK Institute of Civil Engineers recommended an end to waste management strategy and its replacement with a resource management strategy focused on delivering measurable environmental goods. The ICE strategy advocates a national approach that is as radical as the introduction of the national electricity grid or the national motorway network. The current waste management infrastructure in NSW is largely obsolete because it is focused on waste disposal and emissions reduction rather than emissions reduction through resource recovery.

What is needed is a reconfiguration and integration of state and local authorities across Australia so that integrated planning and delivery of the new infrastructure of resource recovery is enabled. New South Wales is in an ideal position to provide leadership in this direction.

Environmental Protection Agencies in the Australia States have traditionally focused on landfill as the only practical way of dealing with household municipal solid waste. This view has developed due to the lack of real alternatives. A fully integrated resource recovery option was not available in Australia prior to the development of the UR-3R Process[®] by Global Renewables Limited.

Our first UR-3R Facility has been operating in Sydney since September 2004 and is processing 175,000 tonnes of municipal solid waste per annum, with approximate diversion rates from landfill of 70%. European and UK parliaments have passed legislation to phase out landfill disposal for untreated municipal solid waste, made possible by the availability and proven viability of alternative waste technologies.

In Australia the legislation, policies, regulation, guidelines and strategies of state governments and environmental agencies have also focused on landfill, as this has been the primary method of disposal of municipal solid waste, and have not yet been adapted to accommodate resource recovery technologies.

We suggest that the Inquiry should recommend changes to the way in which landfill is assessed, regulated and valued so that:

- The external (hidden) costs of landfill will be fully accounted for by Local Government when evaluating landfill and alternative waste strategy competitive tenders.
- The value of avoided upstream impacts of virgin materials extraction and manufacture is accounted for.
- The legislation, policies, guidelines and strategies surrounding waste disposal will remove the assessment differential, which currently exists, and that assessment will be made on a fair and reasonable basis.
- Market mechanisms and incentives that favour resource recovery over landfill disposal are developed and implemented.

- Now that commercially viable and environmentally superior methods for processing municipal solid waste, are available, it is time for new policies to be established that provide guidance on alternatives to landfilling, based on the triple bottom line framework.

Regional Waste Management Plans should be required to provide a schedule not for landfill disposal, but for the delivery of resource recovery, recycling, treatment and disposal of hazardous materials from household waste using resource recovery facilities.

The NSW government has been very helpful in clearly communicating to Councils that landfilling is not the long term planning direction for the management of municipal solid waste. It needs to go further now and provide the statutory structures that will facilitate, enable and require multi-council contracts which deliver resource recovery infrastructure.

4.3 Best practice methods, including cost effectiveness, of planning and providing municipal waste management services

GRD has provided a comprehensive response to the cost-effectiveness of waste management services in section 4.5 below, especially in terms of the Nolan ITU study referenced.

The best systemic structure that GRD has seen for delivering municipal waste management services of the order of sophistication required to meet the NSW Waste Strategy 2014 target is being rolled out in the United Kingdom. While bans on the landfill disposal of untreated organics or unprocessed recyclables would be helpful, this would still not be sufficient to deliver a comprehensive infrastructure outcome (because lowest gate fees presuppose a certainty of supply for the large investments required).

A working model of an incentive scheme to drive the targeted outcomes 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. Similar cap and trade markets have been established in Australia in the case of renewable energy certificates and salinity credits. Essential for this approach to be effective is precise annual targets which can drive local decision making.

A government sustainable infrastructure fund would help to facilitate the necessary urban waste infrastructure development.

Allocating funds to stimulate the development of sustainable waste and other infrastructure throughout Australia and supporting local government transition towards processing household waste is essential.

An excellent example of government policy and regulation that is used to deliver higher quality and more cost effective waste management services is the Private Finance Initiative (PFI) Scheme in the United Kingdom.

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). As such, the United Kingdom 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 implementing capital intensive infrastructure projects that enable the achievement of planned 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, addresses 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 NSW and Australia to remove the hurdles faced by the proponents of sustainable resource recovery technologies.

Targeted research, education and market development programs are required to develop a public awareness of, and support for, the transformation of waste to resources and to facilitate the process. The message of waste to resources should be linked with sustainability and top the highly developed public awareness of all issues concerning the environment.

4.4 The development of new technology and industries associated with waste management

The delivery of new industries and technologies in the waste management industry has been hampered by a lack of clarity regarding vision and goals. Is our envisioned future one of continuous landfilling until the whole surface of the planet is covered by landfills, or are we trying to sustain resources in the economy instead of emitting them into the environment? Is

our goal merely improved waste disposal technology, or are we striving for a different type of goal altogether?

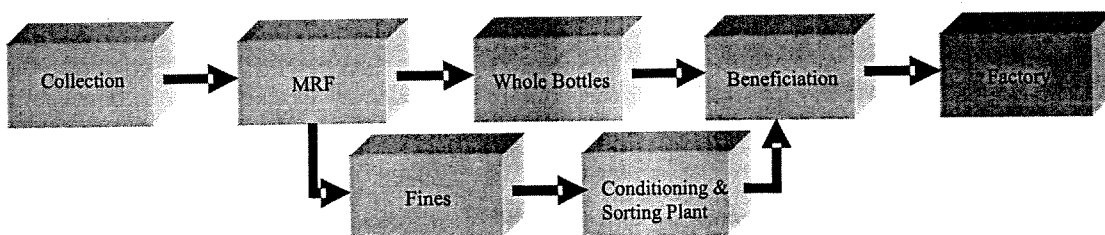
If waste strategy is replaced with resource management strategy, then our technology goals will be about developing improved resource recovery.

At present, while the focus remains on waste disposal, the question is asked of alternative technologies "how can this compete with landfilling?" If instead our focus is on resource conservation, there is no need to ask "can landfilling compete with resource recovery" because landfilling is fundamentally anti-recovery (recovering only a small proportion of gases emitted over the life cycle, and obviously nothing of what is disposed of in the landfill).

The starting point for the development of new technologies is the banning of untreated waste disposal to landfill as has been done in Europe. Given the projected increase in the New South Wales landfill levy, this will have little practical economic impact on waste disposers, but will provide the leadership required to drive new technology implementation.

Equally important is the definition of the purpose of the technologies that will replace untreated waste landfilling in waste management. The Institute of Civil Engineers paper recommended that measures of materials intensity be developed, starting with greenhouse gas abatement. But these could easily be developed into embodied energy measures or even a full life cycle assessment using the Nolan/Hyder Ecodollar approach. At the very least, the greenhouse abatement impacts of resource conservation need to be factored into state plans for climate protection.

With a current focus on waste management strategy, the DEC is describing "best practice waste management systems" in terms of sizes and types of garbage bins. Under a future resource recovery strategy, "best practice" would be described in terms of a full reverse logistics system of not only bins and other collection infrastructure, but resource recovery facilities and beneficiation plants linked to factories that are currently using virgin resources at higher than optimal levels.



A new Resource Recovery Authority will need to develop an understanding of how to measure the materials intensity of urban consumption and wastage, and both facilitate and support the implementation of infrastructure to optimise resource conservation.

Rather than merely setting "aspirational targets" for reduction in waste disposal, a Resource Recovery Authority would need to justify the level of resource recovery that is affordable, and then plan for the infrastructure necessary to deliver fit for purpose recovered resources to replace virgin resources.

This is not an impossible task, as it can be split into the recovery of:

- Organics
- Metals
- Paper
- Plastics
- Energy and
- Hazardous waste,

thus leaving only inerted residues for disposal.

At the beginning of the 1990s there was a realisation that the disposal into the ocean of untreated sewerage biosolids was not acceptable, and that this resource should be recovered and beneficially used in agriculture. This program has been very successful, with new infrastructure and systems delivering over 200,000 tonnes per year of biosolids to fertiliser and soil conditioner applications. The same "resource recovery rather than waste disposal" focus is needed now.

Global Renewables' own work with agricultural trials of our recycled organic product OGM shows that significant crop yield increases and water consumption decreases are available with quality soil conditioners targeted for specific applications. There is now the exciting possibility to replace the current obsolete municipal waste disposal system with purpose built resource conservation infrastructure designed to reduce greenhouse impacts, resource depletion, pollution, energy and water use.

4.5 Minimising harm to the environment in the provision of waste management services

GRD believes that the best way to minimise harm to the environment is by configuring waste management systems as resource recovery systems, therefore avoiding both the negative impacts of waste disposal emissions and the upstream environmental impacts of extraction and manufacture from virgin resources.

In 2004 GRD Limited commissioned Nolan-ITU to carry out a Triple Bottom Line Assessment of the UR-3R Process[®] with the overall aim to identify the economic, environmental and social performance of the process. It did this by addressing the cost/benefit of each aspect of performance – economic, environmental, and social – and then combining them for an overall net result.

Nolan-ITU (now Hyder Consulting) is a sustainability consultancy with expertise in the waste/resource arena, and was selected because it has a long track-record of working with and for a variety of environmental technology proponents, Federal and State Governments, major corporations, local Councils, local communities, and environmental; non-government organisations.

In commissioning the project, GRD requested it be conducted as a fully independent study. The study, a copy of which is attached to this submission, modeled the operation of UR-3R facilities across Australia's major population centres.

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, in addition to organic resource recovery, 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 tonnes per year to 1.20 million tonnes per year).

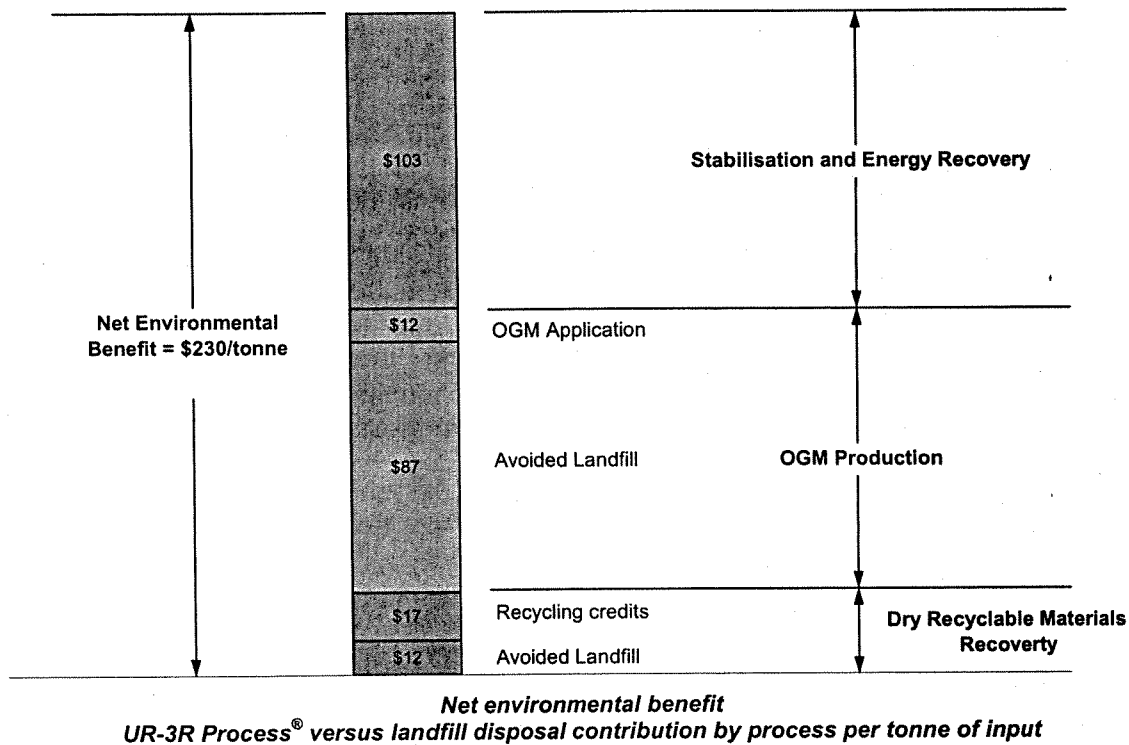
In addition the analysis of social indicators provided a positive result – the UR-3R Process® is clearly preferred to landfill disposal in terms of social indicators including social cohesion and quality of life.

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 best practice 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 estimated that on a State by State basis, the environmental cost of best practice landfilling of 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



This theme was identified in one of the key findings of *The Public Accounts and Estimates Committee Report*, in Victoria in 2005, which states that: *Pricing decisions being made by landfill operators may not be indicative of the true cost of landfill operation in the long term.*

This document goes on to say:

Lack of accessible and competitively priced alternatives to landfill can be the greatest obstacle to resource recovery. Landfill disposal is sometimes discounted below the full costs required to cover site rehabilitation and aftercare. Where this occurs, it is difficult for recycling services to successfully compete.

And further:

Despite the work being done by the EPA in conjunction with the ICAA and the Commonwealth Department of Environment and Heritage, the Committee believes the prices charged at landfills do not take account of the full cost of operating a landfill (including site remediation and after care). The Committee believes that this is acting as a barrier to the development of economically viable landfill alternatives.

The Committee noted for example, that the financial statements of all landfill operators do not make provision for site remediation and after care. If these expenses are significant, but not factored in to pricing decisions, then the current differential between the price paid to deposit waste in landfill and the cost of alternatives is unrealistically large.

This analysis still does not take into account the reduction of upstream impacts from virgin resource extraction and manufacture that is avoided through recycling.

As indicated above, the Nolan-ITU report quantified the costs of landfill not included in calculations of waste disposal pricing. They estimate the long-term environmental costs of

leachate and landfill gas emissions at significantly more than \$150 per tonne of municipal solid 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 or state governments will carry this liability.

The cost structures of alternative waste treatments, including the costs of the higher standards imposed on such facilities, can result in higher gate prices than current land fill prices. When the external costs of best practice landfill, as identified by Nolan-ITU, are included, however, alternative waste treatments can be implemented at around half the total cost per tonne of waste processed, compared to landfilling. Councils are still relying on the landfill gate fees, however, as the only cost they need consider when making decisions on how to manage their municipal solid waste. This is evidenced by the recent applications by groups of Sydney councils to the ACCC for authority to sign long term agreements for the disposal of waste to landfill. Such agreements preclude the adoption of alternate waste treatment and, in the light of the inadequate pricing regime of landfill operators, are anti-competitive by nature.

While effective alternative waste treatments solutions are very recent in Australia, they now exist and the regulatory regimes must adjust rapidly to ensure that such solutions can be implemented and not prevented by anti-competitive long-term commitments to landfill disposal.

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

