

insidewaste

A **WMA** Publication
Waste Management Association of Australia

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The Official Publication of the Waste Management Association of Australia

Waste Service in major breach

WASTE Service NSW has run into trouble with the EPA for dumping contaminated sludge at its Lucas Heights Landfill, for at least two years. The revelation saw it fined \$5,000 and the sacking of Waste Service's general manager of liquid waste, Peter Reddie.

The government business reported the breach to the EPA. Some 30,000-40,000 tonnes of the sludge from the Lidcombe Liquid Treatment Plant, which had high levels of oil and other organic contaminants, is reported to have been landfilled over the period.

But the practice may have gone on longer. Lidcombe has long experienced high levels of hydrocarbons and other contaminants, an industry source told *Inside Waste*. But it has had no ability to deal with them since the Castlereagh Waste Management Centre was closed in 1997. An Andritz drier installed to create fuel pellets from the oil-rich waste, believed to have cost Waste Service \$17 million, was never brought on-line for technical reasons.

State Liberal environment spokesman Michael Richardson was not satisfied with the EPA fine.

"If a private company had dumped 40,000 tonnes of contaminated sludge in a landfill they would be lucky if their

> Continued page 3

Study uncovers landfill costs

LANDFILLING putrescible waste in Australia's major cities costs the country \$624 million a year in net environmental and economic costs, according to the first such calculation in Australia.

Sustainability consultants Nolan-ITU have adapted the approach it developed in 2000 for the cost/benefit analysis of kerbside recycling. It assessed a life cycle inventory of inputs and outputs from a landfill over a 30-year span, covering more than 15 raw material inputs, greenhouse gases and more than 100 substances emitted to air and water, with new data developed for trace contaminants. Then monetary values were assigned to them.

The big costs are in the environmental impact, estimated at \$230 per tonne of waste. The major contributors are air and water emissions from landfill (46 and 44 per cent of the impact respectively) followed by greenhouse gases.

NSW bears the brunt of the impact, potentially \$238 million a year, as it generates almost half the country's waste and has higher landfill prices and MRF fees. Victoria (\$132 million) and Queensland (\$124 million) face similar costs, while WA (the biggest generator per household) could pay \$90 million and SA \$50 million. The ACT net cost is \$9 million a year.



The environmental impact of landfill costs around \$230 per tonne of waste.

The independent research was commissioned by Global Renewables, which has built an advanced waste treatment plant in western Sydney for Waste Service NSW (see page 18). The alternative approach was more sustainable due to fewer environmental impacts. Find the report at www.nolan-itu.com.au

Kerbside best practice recycling guide

KERBSIDE recycling should cost no more than \$445 per household per year – or \$170 per tonne – in Melbourne and major Victorian towns.

The new *Guide to Preferred Service Standards for Kerbside Recycling in*

Victoria developed by EcoRecycle Victoria says smaller centres should cost \$50 or less per house, up to \$200 per tonne. Both areas should collect around 3.5kg of materials per house.

Bin colours were also on the agenda,

with agreement that bin bodies must be dark green or black, with recycling bins to have yellow lids, organics to be bright green and garbage red.

Also, more than half the state's homes now have best practice recycling.

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Plastics and wood pulp will be captured from disposable nappies for reuse.

Nappy recycling service

MYPLANET Recycling has begun a fortnightly used nappy collection service from some Melbourne councils and plans to roll it out across Australia.

The nappies will be recycled using technology from Canadian company Knowwaste LLC, recovering plastics and wood pulp. The plastic will be purchased by Australian company Repeat Plastics, with the pulp bought by Amcor. Remaining materials will be discharged to the sewer.

Around 91% of parents used disposable nappies, which along with adult incontinence pads can make up 3.5% of municipal solid waste. They take up 145,000 m³ in landfill each year and

can take as long as 500 years to decompose.

MyPlanet parent company, the SGS Group, is also behind Pink Healthcare. The recycling facility will be located with Pink's headquarters in Noble Park.

In other nappy news, a Sydney researcher believes he has found a way to turn nappies into compost. Associate Professor Bruce Sutton from the University of Sydney's Faculty of Agriculture, Food and Natural Resources has isolated the moisture-absorbing molecule in nappies and says since it is non-toxic it could safely be used to bulk out and improve compost.

Mobile bin roll-out

COUNCILS in Victoria have begun rolling out mobile garbage bins following new WorkSafe Victoria rules banning the manual handling of crates and bundled wastepaper.

Melbourne City Council has unveiled its scheme giving residents a choice of recycling bin sizes, with 120 litres as standard. The City of Port Phillip has seen recycling jump 13.7% since introducing new bins in April and May.

"In an average year, nearly 9,000 tonnes of wastepaper and containers – about 33% of all household waste generated in Port Phillip – gets recycled each year. A 14% increase in the first full month of operation with the new bins is remarkable," said Mayor Dick Gross.

The council distributed around 19,000 bins, completing the change over within the \$644,000 budget.

> Continued from page 1

director didn't end up in jail," he said.

Rethmann's Erik v Forell says Waste Service has avoided millions of dollars in treatment costs.

"Assuming the lower tonnage (of 30,000) and treatment costs of \$300 a tonne – and that is on the low side too – that is \$9 million that they have escaped paying. For that they have been fined just \$5,000, which is just 12.5 cents per tonne," he said.

Waste Service said its monitoring picked up the breach, with oil concentrations in the sludge of 7-15%, well

above licence conditions of no more than 1%.

Department of Environment & Conservation Deputy Director General, Simon Smith, said an auditor would assess the environmental implications but he does not expect adverse impacts. Richardson, however, said he would ask questions in Parliament regarding the potential for leaks into the nearby Georges River.

Waste Service has agreed to upgrades to the Lidcombe plant to remove oils from the sludge and investigate reuse options for the oil.



In Brief

Councils spend up on waste

Australian councils spent \$2.6 billion on measures to protect the environment in 2002-03, up 6% from 2000-01. Half of that went on solid waste management, according to the latest figures by the Australian Bureau of Statistics.

Landfill-fired homes

Brisbane's Roghan Road Landfill has begun capturing gas to use as green energy. The 2MW joint council-Energy Developments Limited project is the city's biggest renewable energy generation project.

CDL survey gathers dust

A South Australian EPA survey on the impact of the expanded container deposit legislation is still awaiting government approval for public release. It was completed in mid-July.

Butts in the spotlight

The Butt Littering Trust is offering \$10,000-30,000 grants to launch cigarette butt ridding programs. Applications by mid-October. (www.buttlitteringtrust.org)

Upgrading the drop-off centre

The City of Greater Geelong has opened its new Drysdale Resource Recovery Centre. A \$300,000 grant from EcoRecycle Victoria helped fund the transfer station, which will be a drop off point for recyclables for businesses and residents.

SITA staff shake-up

SITA's West Australian state manager Marcus Geisler has resigned, joining Thiess Services from October. Victorian operations manager David Chick has also left, with the role now covered by Paul Fry.

Collex veteran retires

Collex's GM in South Australia, Dudley Williams, has retired after more than 35 years experience in the waste industry.

Bell goes solo on C&D

David Bell, who worked for Alex Fraser Group for 13 years, has left to start his own C&D waste consultancy. More from djmbell@westnet.com.au

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Profile
Bradley Nolan

Bradley joined the Macarthur Waste Board in NSW in 1999 to develop a waste audit program before being appointed its Commercial & Industrial Project Officer. He then joined Bega Valley Shire Council as Waste Minimisation Officer and was promoted three years later to Waste Services Manager.

What was your first job and how did you get it?

Trolley boy. I started by picking up what other people left lying around the streets – not too much has changed.

Favourite part of your job?

Working with the managers and senior managers and having a direct input into the development of council's Management Plan. The politics are really interesting, but more so, you can see your impact almost immediately.

Least favourite?

Red tape.

What's the strangest thing you've had to do (or found)?

My first day of work in Bega I had to take a dead goat to the landfill. The owner worked at council but was too distraught to take it herself. Ah, the country life.

Complete this sentence: Zero waste is ...

... a goal that will only be achieved through a full process of industry and community behaviour change.

How will your current job change in the next 5 years?

We will hopefully be winding up the development of an AWT/landfill and moving into the next phase of waste management for the shire. There will also be a substantial amount of infrastructure management and landfill rehabilitation.

Where will you be in 10 years time?

It's not the destination but the journey – I'll tell you when I get there.

Pastimes / hobbies / sports?

In my vast amounts of spare time (that was a joke) I work on my photographic business and enjoy being outdoors.

Best advice you've ever been given?

If at first you do succeed, try to hide the astonishment.

Favourite website?

Am I allowed a blatant plug - www.bradleynolan.com (I hear it has some great landscape images for sale!)

Minister bows to pressure



WA Environment Minister Judy Edwards

WA Environment Minister Judy Edwards recently announced the State Government would review its landfill policy, covering construction, design, operations and maintenance.

She was expected to announce the review panel and timetable at the *Waste and Recycle* conference in Perth. The announcement is the result of growing community pressure to limit or prevent future landfill growth.

She made an example of the South Cardup landfill operated by a joint venture of SITA and Pioneer, which wants to link two separate landfills. In an attempt to ease community concerns Dr Edwards placed restrictions on the landfill's operation, including a temporary ban on prescribed industrial waste.

"These measures . . . should assure the community that any potential environmental risks are minimised," she said.

Sims' sound barrier

SIMS Group in Queensland has been ordered to erect a noise barrier around a metal crusher at its Rocklea recycling plant in Brisbane. The EPA obtained a court order after several complaints from nearby residents, said EPA Southern Region Director Ron Anderson.

Sims will spend almost \$2 million on the acoustic barrier works and other associated noise reduction and operational improvement measures. The metal fragmentiser, an integral part of the metal recycling process, will be suspended from activity until the barrier is constructed early next year.

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Easy waste handling

SENNEBOGEN has introduced its 305 Multihandler, which is designed to make moving recyclables and waste easier.

Available through Case Equipment, the Multihandler has a powerful working arm capable of lifting loads of up to five tonnes. The arm also extends telescopically, reaching 3m from the front of the vehicle at ground level and up to 7m high.

To allow for this long-distance operation the cab can also rise to a height of 4m, improving visibility and performance.

Three steering modes turn the 5m vehicle around in a maximum turning circle of radius 3.6m (without the fork). With a ground clearance of 0.4m and a width of 2.4m, the loader has the ability to go most places. Twelve attachments extend its versatility and range, while the 75kW engine means it can handle most jobs.

Case Equipment recommends the Multihandler for use in waste transfer



The Sennebogen 305 Multihandler.

stations, materials recovery facilities and landfills. More from Graham Murphy of Case Equipment on (02) 9833 6054.

AWT scorecards failed

COUNCILS need to look at integrated networks of waste treatment options rather than individual solutions, according to Matthew Warnken of Warnken Industrial and Social Ecology.

His study of the Alternative Waste Management Technologies and Practices Inquiry by Tony Wright, Australia's benchmark study on the topic, suggested such "scorecard" checklists of specific technologies are of limited value.

A systems approach is more useful. Councils should look at designing a

regional network of facilities for resource recovery capable of providing the highest resource value of the materials.

"The integrated systems approach follows the process of designing a network for optimal recovery as opposed to selecting a discrete technology option," he said.

Councils may need to combine waste flows and resources to improve expertise and bulk up domestic waste volumes to warrant the investment in technology. Get the report from Matthew Warnken on (02) 9571 4800.

Looking for best practice

THE TASMANIAN Government has launched six programs on waste management at the McRobies Gully landfill. The programs are jointly described as the *Controlling Waste* initiative and include a guide to best practice environmental management standards for landfills in Tasmania. It aims to provide "a consistent framework for minimising environmental impacts arising from landfills".

A spokesperson for the Department of Primary Industries, Water and Environment said development of the Landfill Sustainability Guide included extensive consultation with councils

and other interested organisations.

"The guide provides information to industry, local government and the community on acceptable standards for the siting, design, operation and rehabilitation of landfills. In addition to providing acceptable standards, the guide also offers recommendations on possible means of achieving those standards," she said.

While not legally binding, it will form the basis of permit reviews and assessments of new landfill proposals. In the next five years, existing landfills may also be required to comply with the guide.



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Company Profile

Iveco Trucks Australia

What are your main business activities?

Iveco Trucks manufactures a large range of heavy vehicles. The ACCO 2350G is the only Australian-built waste-specific truck on the market.

What is your annual revenue?

In Australia it was \$376 million in 2003.

How many employees do you have?

Approximately 690 people (90% are male).

How many trucks do you sell each year?

We sold 2,144 in 2003, with forecasts for 2004 closer to 2,500.

Where do you operate?

The national HQ and manufacturing facility is at Dandenong, but we have a nationwide dealer network, which also extends to New Zealand. We are also the centre for operations in South Africa and SE Asia.

When was the company started?

The global company began as International Harvester in 1912 and was bought by Fiat in 1992. We have been operating in Dandenong for over 50 years.

What are the future plans?

To return to the number one position in the Australian heavy truck market.

Website: www.iveco.com.au

Contact: Kathryn Senior, Communications,
(03) 9238 2200.

German recycler buys Sturton-Gill

ENGINEERING firm Sturton-Gill has been bought by German recycling and metal separation company Steinert. Sturton-Gill has operated in Australia since 1968 producing top belt magnetic separators and wet drum separators for the recycling, mining and minerals processing industries.

Peter Sturton-Gill said the Melbourne-based company had been looking for a partner that could provide access to international markets as well as technical and financial support to enable expansion.

Steinert was founded in 1889 and continues to operate in the hands of the founding family. It sees the acquisition as better servicing its customers in the Asia-Pacific region and helping extend its range of products and services in the scrap metal, waste disposal and recycling markets.

The company will operate as Steinert Sturton-Gill Magnetics. Sturton-Gill will stay as a consultant.



Steinert Sturton-Gill managing director Marcus Heinrich (left) with Peter Sturton-Gill.

Keeping track of medical waste

ULTRAHAWKE has developed a new software system to track medical waste.

The system consists of a weigh scale with specially designed barcode software. Each hospital is provided with wheelie bins and barcode labels with its name and department recorded on them.

The bins are collected from the hospitals and taken to the waste depot where they are weighed and scanned. Information gathered by the system can be provided with detailed reports as required. More from Michael Guillot of Ultrahawke on 03 9311 5555 or michael@ultrahawke.com.au



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Eurobodalla has gone with crates in response to community pressure to recycle.

Eurobodalla recycling

EUROBODALLA Shire sprang into recycling in August, introducing the NSW south coast region's first crate service. But it already plans to supercede the system.

Eurobodalla's manager for waste, Sarah Leighton, said the community had pushed for a recycling system but the region did not yet have the infrastructure or trucks for a bins system. Instead it introduced the crates, at a cost of \$52 per person.

"Our participation rate is quite good, considering it's only a few weeks

down the track. The only complaint is that people are ready for the wheelie bins," she said.

The council has teamed up with neighbouring Bega Shire Council with plans to introduce co-mingled recycling wheelie bins next year. The crates will then be used for garden clippings.

The councils have just closed the tender for the contract, which included construction of a 10,000 tonnes/year MRF. Staples Waste has the current MSW and recycling contract.

Collection code of conduct

COMPANIES must perform a risk analysis on kerbside collection to determine the best time to do it, according to a draft code of conduct released in NSW.

WorkCover NSW has released for comment the *Code of Practice for the Collection of Domestic Waste*. It says the noise impact on residents is just one factor, along with issues such as traffic, pedestrians and visibility.

Unlike Victoria, however, it does not ban manual handling, merely stating an employer must assess the risks involved in manual handling tasks and implement control measures.

The revised codes will be considered for adoption under the NSW *Occupational Health and Safety Act*. Find it at www.workcover.nsw.gov.au – comments open until October 25.

Brisbane goes in-house

BRISBANE City Council has decided to take back management of its waste system in a bid to increase flexibility and resource recovery.

It has extended its contract with Thiess for another year but after that will split up the operation and manage it in-house. It is one of Australia's biggest council waste contracts, including kerbside waste collection, four transfer stations and landfilling at the council's Rochedale site and Thiess's Swanbank facility.

Cr Helen Abrahams, chair of the Environment and Sustainability Committee, said the city was keen to reduce waste to landfill.

"Our strategy is to reduce waste, both generation at the wheelie bin and through increased recovery at the transfer station," she told *Inside Waste*.

It is currently trialing a kerbside green waste collection system in several streets and studying ways to recover white goods.



Overseas

China's mobile threat

About 70 million mobile phones were discarded in China in the first half of 2004, prompting warnings of environmental damage from the Ministry of Information Industry. Mobile phone makers are nominally responsible for disposing of their disused products, but in practice few offer the service.

Leading by example

The New Zealand Ministry for the Environment has slashed the waste it sends to landfill by 80% by introducing a simple employee education program asking people to recycle, reuse, compost food scraps and print double-sided.

Concern over delay in organic waste plan

A coalition of industrial and environmental groups has expressed "deep misgivings" over delays in EU plans for the management of organic wastes, or biowastes. With the timeframe looking like blowing out by a year, the coalition sent a letter to the European Commission's environment directorate warning that an unstructured and unreliable compost industry might fill the void.

Michigan contract for Onyx

Onyx has won a 20-year, US\$250 million (\$360 million) contract to provide a sort-at-source collection from 20,000 households and 210 commercial customers in Pontiac, in the US state of Michigan. It will build a new waste transfer station at the city's existing landfill.

Food waste scheme viable

Auckland City is considering a food waste collection program after a study by consultants URS found worthwhile environmental benefits and potential economic justification in a regional scheme.

IPPC regulations effective, report finds

A report from the UK Environment Agency has found regulations force companies to cut their waste. It said companies regulated by the 1996 Integrated Pollution, Prevention and Control directive had reduced the amount of waste by 25%, while the amount of waste being recovered increased by more than 50%.

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Collex is top waste performer, report finds

COLLEX has lead the pack in growth over the last three years at 14% per annum, easily outstripping the market average of 6%, according to a new finance report on the sector. *At Your Disposal – The waste industry in Australia*, prepared by Brisbane company PKF Strategic Financial Services, charts the recent fortunes and trends of the major players and the industry as a whole.

Collex has been most active in the market, making on average four acquisitions a year for the past three years, the most significant being an industrial cleaning company, the Vac-tech Group in Western Australia, for \$22 million in 2000. Include its take-overs and growth has topped 20% pa.

Despite this bustle of merger and acquisition activity, the report charts declining margins for the largest international waste companies, from 9.4% in 2000 to 7.6% in 2002. And PKF expects them to remain flat over the next three years. A big part of the problem is the slowing rate of waste generation. Locally, revenue from waste

collection decreased from 59% to 54% of the market over 2000/01. Globally, SUEZ in its 2002 annual report forecast growth in municipal waste of 1 – 3% a year, with volumes in the industrial sector remaining stable or declining.

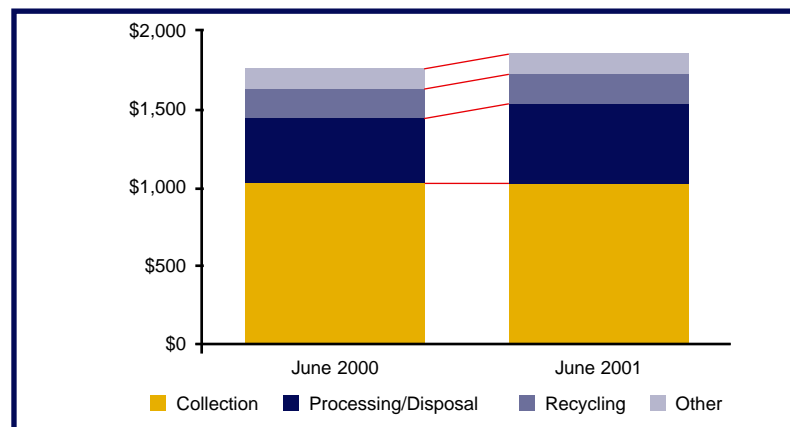
The report stresses that the richest opportunities lie in high value adding services such as process management, cleaner production and improved recycling utilisation. The share of revenue from recycling and processing is low but has increased from 10% to 12%, and there is increasing investment in recycling infrastructure such as material recovery facilities (MRFs).

"We believe an integrated business approach is most likely to succeed – integrated waste management, front-end waste management services, recycling and recovery, transfer stations, materials recycling facilities, landfill development and thermal facilities," notes the report.

For a copy of the report phone Colin Forker of PKF on (07) 3226 3559

Company	Revenue (2003)	Average growth (pa over last 3 years)
Cleanaway	\$438m	4%
Collex	\$360m	16%
Sembsita Australia	\$215m	(2)%
Thiess Services	\$191m	12%
Waste Service NSW	\$174m	10%

The big five have around \$1.4 billion or 72% of the market, with the rest spread among some 1,000 smaller operators, almost all with annual turnover of less than \$500,000 in 2003.



Revenue from recycling and processing increased from 10% to 12%



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Melbourne	Ian Clarke	(03) 9653 1234	National Coordinator	Geoff Thompson	(07) 3858 6700



insideWMAA

Waste Management Association of Australia

"Fostering best practice and innovation in resource management"

From the President

At its meeting in Paris on August 28 the ESPC Committee of ISWA (International Solid Waste Association) approved the establishment of an Asia-Pacific Regional Development Network (RDN), consisting of Australia, New Zealand, Singapore and Thailand.



ISWA is establishing these networks to more effectively implement programs outside its traditionally strong areas of Western Europe and North America. The aims of the regional development networks are:

- promotion of sustainable waste management in the region;
- networking for solving local problems;
- promotion of ISWA and linkage to ISWA programs;
- member recruitment and

Australia has agreed to host the secretariat for the Asia Pacific RDN for the first year of operation. It will provide members of WMAA with a new opportunity for networking and technology exchange in the region.

In other news, it has been almost four years since WMAA adopted its strategic directions document, which identified three areas of focus and opportunity: technology and communication; people and skills; and profile. These emerged from the key actions and roles that WMAA can play in the changing complexion of our industry and markets. They have formed the foundation for our current position and initiatives.

It is now time to review the document and a sub-committee has been formed to start the process. Our key challenges are effectively engaging the many different people in the industry with different interests, managing the diversity of opinions and needs, and stimulating their interest and participation in the association.

- Ian Coles

Old mattresses, zero waste, international perspectives: Victorian waste conference

While the waste management industry is learning to improve its processes more and more at the treatment end of the waste cycle, we now need to turn our attention to the core of the problem – excessive waste generation.

Through the Sustainable Waste Management conference in Melbourne in November the WMAA's Victorian State Executive Committee is keen to extend the waste management debate to this issue. Trends in waste generation rates across the developed world show we are not making much of an impact on the production/consumption treadmill, which is fuelled by consumerism and the attitude that the planet's resources exist for us to exploit.

If we can't be more innovative in this area, how can we expect the developing countries – with huge markets and potentially much larger waste generation problems – to be able to deal with the issue when consumerism takes hold?

The issue at the forefront, "How do we achieve zero waste?", will be one of the up front sessions at the conference. An interesting panel of presenters, each with a different perspective, will explore the issue. A session on education immediately follows, with various case studies outlining how individuals and groups have been able to bring their relevant communities towards a sustainable waste management approach.

A novel approach has been taken with the participatory workshop



The Warmer Bulletin's
Kit Strange



Susan Thorneloe
of the US EPA



Conference chair
Ed Horan

"Trends in waste generation rates across the developed world show we are not making much of an impact on the production/consumption treadmill."

titled "What happens to old mattresses?" designed to work through the problem of developing a strategy to deal with or process old mattresses. The concept has been developed by Sam Bateman, with panel members from groups such as landfill operators, EcoRecycle Victoria, mattress manufacturers and charitable institutions. The Victorian Executive Committee sees the session as a sustainability problem-solving activity where participants can be involved in the process and take a practical learning experience back to their own workplace, organisation or community.

Kit Strange will take a leading role in the workshop. Known to the industry through his editorship of the UK's Warmer Bulletin, the international journal on sustainable waste

management practices, he will be a keynote speaker at the conference, bringing a wealth of overseas experience and a lateral thinking approach to the event.

Another keynote speaker will be Susan Thorneloe, the senior US EPA project officer for research to develop a municipal solid waste decision support tool and life cycle inventory database. She adds another international perspective to the conference with her experience in waste management education for larger communities and knowledge of current industry technologies.

Two site tours have been planned for the final day. Check the conference website for latest updates on the tours, workshops, exhibition and the conference program itself.

Sustainable Waste Management is Victoria's first state waste conference. Melbourne, November 24-25. More information at www.wmaa.asn.au

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WASTE MANAGEMENT ASSOCIATION OF AUSTRALIA (WMAA)



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DISCLAIMER

Articles and papers submitted for this newsletter present an overview of the topic only and are not intended to be a detailed statement of the law. Views are those of the writers and do not necessarily represent the WMAA.

Good education is not wasted

WMAA's Waste Educators Working Group (Victoria) and AWARE Victoria conducted their first combined seminar, Making Waste Education Work for You. It focused on how education can help develop, implement and evaluate waste management plans, strategies and policies.

Randall Brouillette spoke on the role of evaluation in community change programs. Then Graham Brew from the Shire of Yarra Range, assisted by Shire mascot "Munchy the Worm", discussed the role of education in the council's waste management and environment programs.

Steve Malcolm concluded by presenting case studies from Monash

University and Masterfoods about the role of waste education in industry and the workplace. He described some exciting results showing the impact of the waste wise program on worker knowledge, action and behaviour. Key principles include active involvement, feelings of personal responsibility and ownership, communication, cooperation to achieve common goals, and obtaining input from supportive specialists.

The seminar was well attended and received. One participant later said: "I learnt that knowledge is power, measurement is proof of knowledge, [and] managers require proof".

- Pat Armstrong (pata@gould.edu.au)



Munchy the worm

Breakfast feedback

Compost SA has struggled in recent times to attract large numbers to its monthly meetings. A new format – a breakfast meeting with keynote speaker – is being trialed, with great success.

The first meeting featured Bob Paulin as a guest speaker and attracted well over 40 members and guests. He gave a great talk and then spent the remainder of his visit to South Australia meeting local processors and customers.

Our second breakfast featured Professor Andrew Ball from the UK, who was visiting Adelaide prior to taking up a Chair at the Flinders University in January. In November we have invited international speaker Herbert Giradet.

- Steven Marshall (0438 815 979)

Using urban wastes to fuel cement kilns

Discussion at the last EFW steering committee meeting largely centred on the development of the project plan for Task 36.

As previously explained this international initiative will focus on exploring the aims of extended producer responsibility/product stewardship programs, the impact of such schemes on MSW composition and what that means for energy recovery efforts.

In a related development, a proposal was put up to develop a program to fully explore the

issues and options for channeling certain high calorific residual urban wastes (as defined by the Sustainability Guide and Code of Practice) to conversion as process engineered fuels in cement kilns.

This will be major topic at the next meeting (21/09/04) and we would like feedback, ideas and input that could be considered. Contact Patricia Nicholls (patricia@c4es.com.au) or Mark Glover.

- Mark Glover (mark@ecowaste.com.au)

Funding sought for landfill capping research



Phytolink's Richard Yeates studies the performance of native plants as landfill caps.

The Australian Alternative Capping Assessment Program (AACAP) is a new research effort aimed at developing environmentally sustainable final covers for landfills using the moisture retention properties of native soils and the transpiration properties of native plants. Research in the US over the last five years is being transferred to Australia.

Landfill owners, consultants and regulators gathered at the end of July for a two-day seminar at the University of Melbourne to lay the foundations for the program. Lead by distinguished American researchers Bill Allbright and Craig Benson, delegates agreed to approach the Federal Government for funding for the five-year program.

The application is being coordinated by the National Landfill Division of WMAA, the University of Melbourne's Botany Department and Phytolink, a private consultant. More information from Mal Jones (mal.jones@maunsell.com) or Richard Yeates (yeates@phytolink.com.au)

- Sam Bateman

On-site learning inspires from waste energy group

A visit to a Visy paper recycling plant opened the door to knowledge sharing, say Mike Clarke, chair of Queensland EfW group and CEO of METTS, and John Crosher, steam & power generation manager at Visy.

One Friday in early June the EfW – Queensland, Special Interest Group (SIG) combined its second meeting with a site visit to the Visy Paper Recycling Plant in Brisbane. Both were successes, with the feeling that the group should continue to meet on a semi-regular basis and look for further opportunities for site visits.

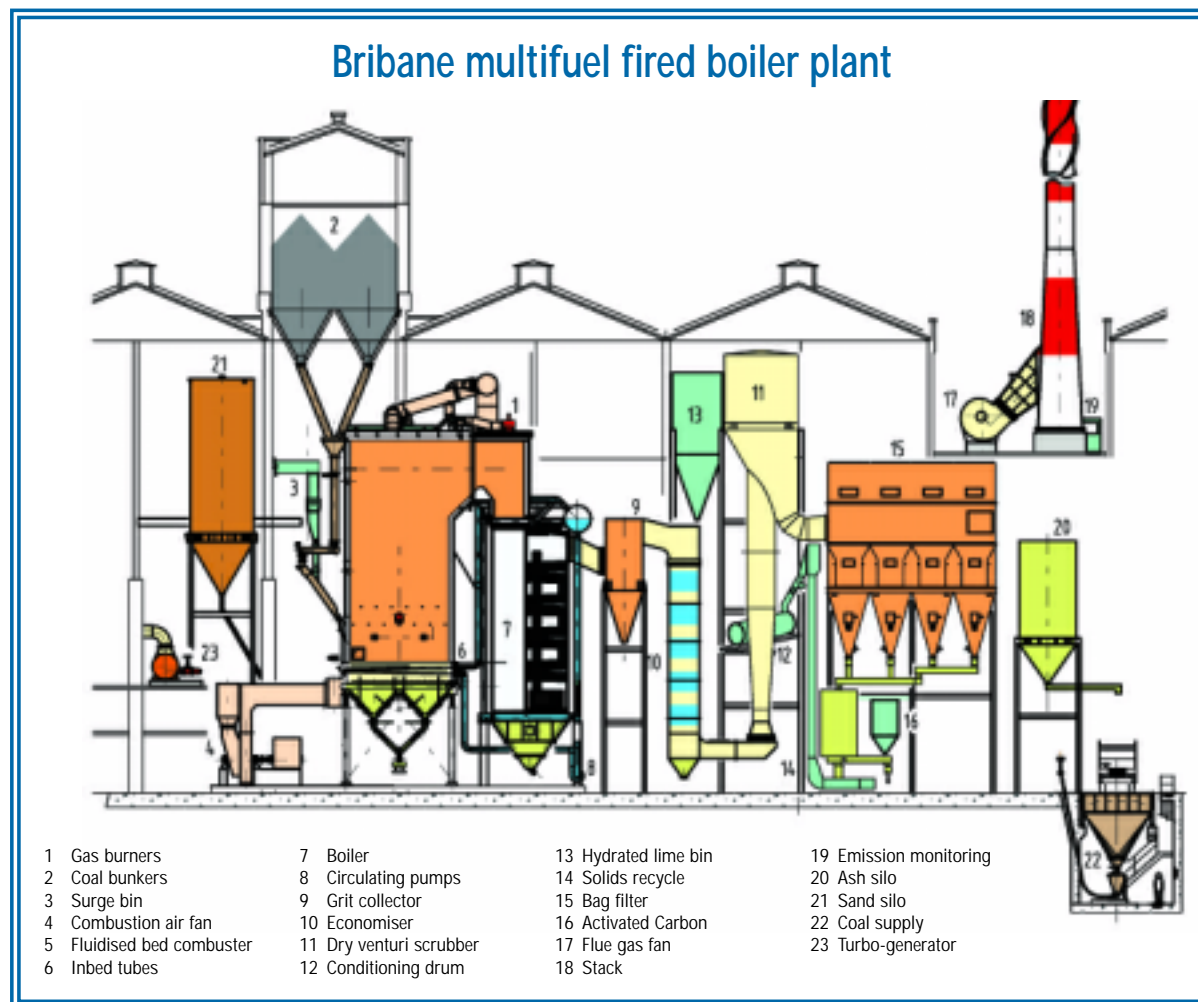
The Visy plant is situated in an old power station at Bulimba on the Brisbane River. The plant produces 140,000 tonnes per year of packaging paper from around 160,000 tonnes of waste paper sourced from south-east Queensland.

In producing recycled paper, waste material is rejected from the process stream. The rejects consist of non-combustible “dirt”, chips and flakes of mixed plastic, metal fragments, rag and thread, non-pulpable fibre and other assorted items. This reject material from the washing process – in the order of 22,000 tonnes per year – is a real waste of a waste.

Papermaking requires considerable energy and the Bulimba plant would use the equivalent of 72GWh/year. The energy is needed as electric power for operating the many motors and drives on the plant, and as steam and hot water for making the paper. If all the energy was sourced from the electricity grid the annual power bill would be more than \$4 million.

To save on energy, Visy has installed an atmospheric, non-circulating, fluidised bed combustor (FBC), which can produce 37MWt of steam from the waste heat boiler. All the steam is passed through a turbine-generator to produce 2MWe of electrical power (out of a plant demand of 12.5MWe) and reduce the pressure to a level, after desuperheating, suitable for the drying cylinders of the paper machine.

Good coal is used as the primary fuel for the combustor, with the paper processing waste and a bio-gas input as auxiliary fuels. The plant uses around 40kt of coal and 28kt of



Fuel type	Energy Content (Approximate)	Percentage Contribution to plant energy
Coal	26 MJ/kg	72.88%Th
Paper Waste	12.5 MJ/kg (NCV)	26.35%Th
Bio-gas	4.25 m ³ /hour @ 26.1MJ/m ³	0.77%Th
Electricity	11.5 GWh/year	16% of Electrical Demand

“Using rejects and bio-gas has created considerable savings in greenhouse gas emissions by avoiding the importation of electricity (derived primarily from coal combustion) to produce steam.”

waste, plus around 36,800GJ/year as bio-gas from the anaerobic digestion of the liquid waste stream of paper-making. The final liquid product is discharged according to EPA licensing to the Brisbane City Council sewage treatment plant next door. The gas is lightly sulphuretted (0.6%).

Using rejects and bio-gas has created considerable savings in greenhouse gas emissions by avoiding the importation of electricity (derived primarily from coal combustion) to produce steam. These would be of the order of 300kt CO₂ equivalent based on a boiler heat recovery effi-

ciency of 90% at Visy. Further savings on GHGs are found by directing bio-gas to the combustor (thus converting methane to CO₂) and by sending paper processing wastes to a combustor rather than landfill, where part of the carbon content would end up as bio-gas emissions to the atmosphere.

Question time

We were invited to ask questions towards the end of the site visit. We asked why coal was used as a primary fuel rather than natural gas. The answer was two-pronged: the gas price in south east Queensland is

high and would see the fuel costs rise by 400%; secondly, natural gas is not as efficient in raising steam since it burns with low radiance, therefore reducing boiler efficiencies.

The second question was also related to fuel: why use ‘good’ coal, and not waste or lower quality coal? The answer to this one was that the coal comes from the port loader and Visy saves on coal transport costs (money and emissions) by piggy-backing on the port’s coal supply.

In reply to a question on the fate of the ash from the combustor, we were told: “Coal ash is utilised by a local waste group as an absorbent for hydrocarbon sludges produced at nearby industrial facilities. And in fact the ash is taken away at no cost to Visy”.

Another member asked if more energy could be derived from the waste streams. The definitive reply was that Visy was close to the limit in terms of the energy that could be derived from the wastes it generates. The plant could be made more sustainable and produce less final waste, but only if the community takes greater care in what it puts into the waste recycling streams.



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2. FL4 Front Loader

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3. VT605 - SUCTION SWEEPER

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Price rise carrot to raise PVC recycling



The PVC industry is recycling bottles into pipes and other products.

By Linda Terry

THE PVC industry's bottle recycling program has just announced new prices for baled PVC bottles of \$600 per tonne ex gate, up from \$380-400.

Vinyl Cycle, an industry funded initiative, aims to further increase the collection rate over the next three years to more than 50 per cent of all PVC bottles sold and, in particular, to significantly increase the local sorting and processing rate.

When compared to PET and HDPE the volume of PVC used in bottles is relatively small and this can lead to reluctance by MRF operators to sort it from their plastic recycling stream. Vinyl Cycle has recognised the need to offset this higher volume cost to sort PVC bottles by offering a higher return to the sorter. Hence the new price of \$600 per tonne for baled PVC bottles in Victoria, NSW, Tasmania, Queensland and SA.

Vinyl Cycle has recognised the need to offset this higher volume cost... by offering a higher return

There are several advantages for MRFs looking to pull out PVC bottles. They are easy to recognise, most commonly being large, clear bottles with a built in handle for cordial and edible oil. They are also heavier than similar sized PET or HDPE bottles, meaning fewer bottles per tonne. Lastly, the removal of PVC from mixed plastics can increase the value of the mixed

plastics stream, depending on the end use application or destination.

The kerbside recovery rate of PVC bottles is estimated to have increased from around 15% of all PVC bottles sold in Australia to around 47%, equivalent to about 30 million bottles. This has been achieved with the help of an active campaign by Vinyl Cycle to increase awareness throughout the community of the recyclability of PVC. However, only 10% of the recovered bottles are sorted and supplied to the Vinyl Cycle program for processing and reuse in Australia. The remainder are mostly sent offshore as part of the mixed plastic stream, for similar separation and reprocessing into useful PVC products in countries such as China and Indonesia.

Clean white powder

PVC bottles separated from kerbside bottle collections are baled and purchased by Vinyl Cycle through its contractor, Cryo Grind (Aust). The company processes the bottles into a clean white powder using special cryogenic technology and then sells it to PVC resin users as a substitute for virgin PVC resin in long life applications.

The recycled PVC powder is currently used in two applications. Armstrong World Industries (Australia) uses it to replace a percentage of the virgin resin in the manufacture of its vinyl flooring and floor tiles, commonly used in supermarkets and hospitals. These are sold throughout Australia and exported to Asia, Africa and the Pacific Islands.

Perth company Independent Plastics uses the resin in rigid PVC stormwater pipe fittings. Independent's Wayne

Tibbits says " the use of PVC recyclate in our fittings helps keeps our costs down, but more importantly, is a way of us contributing towards the conservation of energy and resources otherwise used in the production of virgin resin".

There are other opportunities for the use of PVC recyclate in pipes and

extrusions, but they depend on increasing the supply of recovered bottles.

Linda Terry is project manager for Vinyl Cycle. More from her at Australian Vinyls on (03) 9368 6206 or linda.terry@av.com.au [iw](#)

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The **best** in the long run



This small-scale, mobile crusher at Tenterfield in Melbourne's northwest brings the advantage of reusing C&D materials on-site.

Kiwi import a crushing C&D success story

By Sara Phillips

A COMMON problem with C&D waste is that many of the major construction jobs are on the urban fringes, miles from the nearest C&D recycling facility. However, City Circle Recycle, a Melbourne-based C&D recycler, seems to have come up with a solution using technology from New Zealand.

Scott Lynch, manager of recycling for City Circle, said the company had been looking to add to its existing stable of equipment. As a member of the Waste Management Association of Australia's C&D working group, he became aware of grants offered by EcoRecycle Victoria to part-fund machinery that could reduce waste going to landfill.

Realising the opportunity, Lynch applied for - and won - a grant which knocked the \$400,000 purchase price of a cone crusher down by \$75,000.

The TC1200c Mobile Cone Crusher, from SCS in New Zealand, can crush 600-700 tonnes per day. Since taking delivery of the machine in December last year City Circle has crushed around 145,000 tonnes of rock, concrete and brick, reducing waste to landfill by 80-90%.

The machine is fitted with a

feed opening of 220mm and closed side setting of 16mm. It is currently producing material from 16mm upwards. Powered by a Cummins M11-C350, 6-cylinder, diesel 4-stroke with direct injection, the water-cooled diesel engine has 350hp.

For demolition waste City Circle also requested it be fitted with magnetic head drum and take off rail for removing steel contaminants from material.

However, the biggest plus is that the machine is small and mobile, weighing just 30 tonnes and mounted on crawler tracks. The crusher can be set up in two hours, meaning it is suitable even for small jobs.

City Circle won a recent tender to crush rock excavated in the development of a new residential suburb in Melbourne's metropolitan area. The developer, VicUrban, will reuse all this material for road and pavement construction.

Lynch says the machine has performed exactly as it had hoped, moving from site to site and crushing material that can be reused on the spot rather than shipped to landfill.

More information from Sarah Nichols of Screening and Crushing Systems at info@scsnz.co.nz



Wastes are fueling the fire

WASTES are very much on the mind of the Australian cement industry as it searches for alternative fuels.

It currently replaces 6% of its traditional fuel source (gas and coal) with alternative fuels such as waste tyres, waste oils, tallow, demolition timbers and solvent-based fuels (waste paints, waste oils, and waste greases).

It has now added another to the list, with Cement Australia's Gladstone plant launching a new alternative fuel process using spent cell liners from the Gladstone aluminium smelter. The new fuel will assist in meeting the cement industry's goal of deriving 18% of its fuel from waste sources.

MCG sets its sights on waste goal



A new waste system at Melbourne's MCG is expected to increase the stadium's recovery rate from around a third to more than 90%.



Wastech Engineering was forced to create a unique lift system at the main waste dock to raise transit bins to the compactor.

By Ross May

FEW could spend a day in Melbourne without catching a glimpse of the Melbourne Cricket Ground (MCG), a Melbourne institution and national icon. It hosted the first cricket test match against England in 1862 and was where Tom Wills invented Australian Rules Football in 1858 to keep cricketers fit during winter.

The stadium has just undergone a massive renovation with some 55% of its stand area being re-built in preparation for the 2006 Commonwealth Games. Behind the scenes, Melbourne firm Wastech Engineering has been working with architects and builders for more than three years in the planning and design of world-class waste handling infrastructure.

The \$1m+ waste handling project reflects the goal of the MCC, which owns the ground, to build environmental best-practice into every aspect, including minimising waste and maximising recovery at each stage of the process. It is no small task given the MCG can hold 100,000 people and total waste from a major event can run at more than 20 tonnes per day.

Facilities manager Scott Butler says the MCC believes it is possible to recover all waste for recycling or further processing, fully eliminating the general waste stream. It has been working with Visy and food and drink vendors to create packaging to achieve this end. Based on a preliminary audit of contamination levels, Visy believes the goal is realistic with modification to some drink containers, notably the plastic beer cups.

Diversion from landfill to recycling

A large slice of the packaging waste is currently recovered at the receiving dock, with catering and merchandising unpacked prior to distribution into the stadium. Waste from catering operations around the ground is sorted at source into cardboard, co-mingled recycling, green waste and general waste.

The new system is designed to recapture waste from the stadium 'bowl' – the stands themselves. Wastech has built special waste/recycling stations to capture waste during an event. The post-event clean-up is handled by a 100-member cleaning team who walk the seating area to complete the waste collection cycle.

In the new Northern stand Wastech is currently constructing waste chutes that connect the four levels of the stadium to in-line compactors which drop "plugs" of waste into 3m³ bins. They are then towed to the main waste dock for loading via a compactor into a 31m³ bin.

The key challenge was in the main waste dock. The stadium construction varied from the draft plans, with a lift of 4m needed to raise the bins off the dock floor to the compactors. This was further complicated by the infringement of a toilet block into the roof area of the dock.

Wastech's engineers created a one-off lift system that lifted and turned the bin in one movement to reach the compactor. The 3m bins also had to be modified to reach the compactor without hitting the toilet block overhead.

If the packaging redesign is successful then the system of chutes and compactors will stop handling general waste and instead will be used to divert waste for recycling. Early esti-

mates indicate this could triple waste recovery to more than 90%.

More information from Neil Bone on (03) 9794 7155.

[iw](#)

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By Anne Prince
ACOR's CEO

The Australian Council of Recyclers (ACOR) was established in 1983 to encourage and promote recycling achievements to the wider community. Today, ACOR is a primary resource to government and industry in developing and communicating more effective approaches to consumer and industrial recycling.

Today our member's recycle in excess of 11 million tonnes of material annually and directly employ over 5,000 staff.

ACOR's vision is to optimise resource recovery and achieve the highest resource value of Australia's secondary materials. To achieve this vision, the organisation operates under the following principles:-

- Seeks to encourage government, industry and community to take actions to advance effective and feasible resource recovery.
- Seeks to ensure government policy is practical, flexible, equitable and promotes optimal resource recovery outcomes.
- Seeks to maximize the uptake of recovered resources by the processing of secondary resources to internationally recognised standards.

The Council's member's span a vast array of sectors including:-

- Batteries - car and mobile phones
- Mobile garbage bins
- Cardboard
- Mobile telephones
- Computers
- Plastics
- Construction and demolition materials
- Tyres
- Electronics
- Whitegoods
- Ferrous and non-ferrous metals
- Alternate Waste and Energy Technologies
- Glass packaging
- Paper and newsprint

Current members of ACOR include:-

- ACI Packaging
- GEO Fabrics Australasia
- Alcoa Australia Rolled Products
- MRI
- AMCOR
- Norske Skog
- Alex Fraser
- ResourceCO
- Australian Vinyls
- Sell and Parker
- Bluescope steel
- Sims Group
- Boral Recycling
- Smorgon Steel Recycling
- EDL
- Sulo
- Fisher and Paykel
- Global Renewables Ltd
- Visy

To become a member of ACOR you must meet the four criteria's which are:-
1. Have a significant investment in

proven operational resource recovery infrastructure

2. Be a significant operator by material, stream or market share
3. Be focused on adding value to recovered resources
4. Add value to ACOR through participation, ideas and promotion of the association

Governments have and should continue to recognise the critical importance our members contributions have into the development of waste and resource recovery policy. Our members have significant expertise in resource recovery with considerable commitment to research and development, infrastructure, technology and strategic planning to identify obstacles to further improving recovery rates

Our members have three Key Priority Areas, which we believe will significantly influence resource recovery. These are:-

- Legislation - Restructuring landfill levies to reduce the cost of 'closing the loop' and maximize recycling
- Quality - Improving the quality of feedstock through producing to well recognised standards thereby improving acceptance and higher uptake of recycled materials in new products.
- Siting of Infrastructure - Ensuring due and practical consideration is given for the need for recycling infrastructure and to ensure such businesses can operate effectively without unnecessary limitation.

Landfill Levies

ACOR is appalled that the NSW Government has not honored its commitment to hypothecate 55% of the approximately \$100 million currently collected in waste levies annually from New South Wales landfills, and allocated these monies to waste minimisation activities. Instead all these funds simply went into consolidated revenue to help balance the ailing state budget.

Waste levies were originally created as a tool to encourage greater resource recovery and increase diversion from landfill.

The levy has reached \$21.20/ tonne for metropolitan Sydney and \$13.20 in the Extended Regulated Area of Newcastle, Central Coast and Wollongong.

The NSW government has raised \$478 million since 1993 from the waste levy.

The hypothecation of a percentage of the monies collected to spend on projects designed to lift resource recovery, only became a reality in 2000 after much agitation by the NSW Local Government and Shires Association. Since 2000, \$125 million has been diverted to run the NSW Waste Boards and administer Resource NSW now part of Dept Environment and Conservation and its programs.

In 2004 no funds were diverted from the levy fund and government pocketed \$89 million dollars. The levy effectively acts as a TAX on recycling with nothing returned to do the research and development needed to make the next big improvements in resource recovery rates!

The government budget papers this year have identified \$29 million of the anticipated income stream of approximately \$102 million levy pool will be diverted to waste management activities. This equates to a hypothecation ratio of just 20.4%.

The disposal of the waste generated from attempting to maximize the amount of materials recycled is a significant cost to our business. In NSW alone our members pay in excess of \$4,000,000 in levies and over \$20,000,000 in landfill fees disposing of contaminants accompanying the primary materials we are trying to recover. These contaminants attract both a disposal charge as well as the waste levy.

Whilst the levy maybe an effective tool to support landfill diversion behaviour amongst waste generators unfortunately, when applied to recyclers, the levy only serves to add costs which erode the margin on recovered materials which draws the recovery net closer to the major metropolitan centres, where lower collection costs can offset the levy's impact. The levy therefore tends to most affect the outlying regional areas due to higher transport costs. ACOR would like to see some of the levy funds used to support transport of resources from rural and regional centres back to the metropolitan areas where recovery facilities re located.

ACOR would also like to see the levy

ACOR members include:



Alcoa Kaal
Australia



resource recovery sector

rebated to recyclers who are attempting to recover more 'contaminated' materials, which would normally go to landfill. These recyclers are naturally hit with higher waste bills, but made all the worse by the additional cost of paying the levy on top.

ACOR intends to engage with other stakeholders and lead representations to the government on this matter.

Quality, Quality, Quality

The level of contamination in material is a key issue as the quantity of material increases and the tolerances to accept contamination reduce. To remove contamination is a costly and time consuming exercise but a necessary one.

Contamination can cause impurities in the finished product and create substandard products. For example a client of ACI Glass recently set their performance indicator as one failure in 1,000,000 glass bottles. To meet this standard ACI Glass require a feedstock that is free of ceramic and Pyrex as these materials melt at a lower temperature than glass and therefore create a "stone" in the product which creates a point of failure in the bottle which could lead to ultimate failure on a filling line.

To assist council's, contractor and MRF Operator's ACOR has developed an industry recycling Materials Specification document for recovery of all post-consumer materials from kerbside and industrial collection points.

The need for this document is exemplified by the increasing complexity of packaging and the demands of recycled material processors to meet the higher quality standards spoken of earlier as the recyclet is in the direct competition with virgin raw materials.

The Manual contains specifications for the following materials; Aluminium; Glass; HDPE; LDPE; PET; PVC; Paper; Steel

The Manual was mailed to every council in Australia on CD and is posted on the ACOR website www.acor.org.au



Siting of infrastructure

It is imperative that facilities are located close to collection sources to reduce transport costs in the industry. State Governments across the nation are setting ambitious targets of working towards zero waste e.g. NSW have identified a target of 68% diversion from landfill by the year 2014 while Victoria has set it's sights on 75% by the year 2013.

To achieve these targets substantial additional diversion from landfill of resources will be required In NSW an additional 700,000 tonnes of municipal waste, 1,000,000 tonnes from the commercial and industrial sector and a further 300,000 tonnes from construction and demolition.

To process this material will require new and improved technologies and facilities.

At odds with this direction is planning constraints that the resource recovery sector generally face when trying to identify sites which comply with planning requirements.

Recently Botany Bay City Council released a Development Control Plan No. 42 for Waste and Recycling Industrial Development. The DCP treats waste and recycling as the same activities and is discriminatory in a number of ways including specifying only daylight hours for operation. Many MRF's and reprocessing facilities operate 2 - 3 shifts on a 24 hour cycle to maximise equipment efficiency and to cope with the processing of feedstock during peak periods.

The Rethmann saga is well known to the industry whilst not a member of ACOR, we support them in this matter on principle. Rethmann submitted a Development Application to construct a MRF to target the CBD waste stream in an area zoned for industrial activity. Council refused to deal with the application and did want trucks entering the area at night. Waste can only be collected from the CBD during night time hours due to access. Rethmann took Botany Council to the Land and Environment Court after council failed to deal with the application within a reasonable time and the application was approved by the Court. However, Council has lodged an appeal to the Supreme Court.

ACOR appointed to the NSW EPR Expert Reference Group

We welcomed the release of the Extended Producer Responsibility (EPR) Priority Statement 2004. Through ongoing dialogue ACOR has endeavoured to make policy makers aware of the issues and implications for the resource recovery sector by sharing our combined knowledge and experience in recycling and reprocessing.

In recognition of the expertise within ACOR Mr Vince Chaplin, Group Manager Environment with Smorgon Steel Recycling has been appointed to join the New South Wales EPR Expert Reference Group.

Currently ACOR membership spans 11 of the 16 Wastes of Concern noted in the EPR Priority Statement and it is our members who will play a significant role in delivery to the state of NSW and nationally the outcomes sought from this policy approach.

Mr Chaplin will join Mr Michael Bennett from Refrigerant Reclaim Australia and Dr Tony Wilkins of News Limited as industry representatives on this committee.



Mr Vince Chaplin
Group Manager
Environment
Smorgon Steel Recycling

Another company has been forced to relocate a major piece of recycling infrastructure out of an area it has operated in for over a quarter of a century due to Local Government allowance of residential incursion across traditional buffer zones, to within metres of the plant. .

We object to resource recovery facilities being grouped in with the waste disposal industry and as such subject to the same planning framework as that afforded to old tips and landfill sites.. This classification approach implies we are receivers of putrescible matter with the associated offensive odours and potential to attract vermin. Visy have located a Materials Recovery Facility (MRF) in Melbourne in a residential area, bordering a school, and within 100 metres of a Hospital and to date the plant has received no complaints in respect to noise, odour or traffic.

We acknowledge the need for sensitive design to protect the amenity of the neighbourhood. We fundamentally believe there is a lack of understanding of what we do and how we do it by State and Council Planners nationally. It is our job to educate them.

Feedback on issues - ACOR are interested in your views and feedback on the issues raised in this issue. To submit anonymous responses please go to www.acor.org.au/feedback

*Australian Council of Recyclers
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Sydney's waste wars



By Richard Collins

SYDNEY'S waste disposal market has been turned on its head. National competition policy ended the monopoly of the government-owned Waste Service NSW in September and two big-ticket developments have just come on-line.

Collex has launched the \$60 million Woodlawn Bioreactor landfill it developed in a disused open-pit mine 250km south of Sydney. And NSW Premier Bob Carr opened Waste Service's \$70 million UR-3R facility in western Sydney, which promises to recover up to 80% of the domestic waste stream. Between them they can take a third of Sydney's municipal solid waste each year.

The companies will go head to head as they seek feedstock for these ambitious projects, each of which has broken new ground. Collex is moving its waste by rail, planning one train load a day hauling up to 55 shipping containers, all up some 1,200 tonnes of waste. Woodlawn, with a capacity of 25 million cubic metres, will be one of Australia's first bioreactor landfills, and by far the biggest.

Where it differs from traditional landfill is in its use of a 3D grid of extendable sleeve pipes which will be layered through the waste to optimise recirculation of leachate and capture the bio-gas. The pipes will be at nominal 40 metre centres horizontally and 15 metre centres vertically. The waste will be tipped into a series of cells, each tightly controlled for moisture, pH, temperature and microbe levels to optimise decomposition.

Where a typical landfill may get up to 65% gas capture, Collex is shooting for 90%. It will use the gas mostly to generate energy but also to warm greenhouses and aquaculture farms.

Inside the UR-3R

Waste Service commissioned Global Renewables Ltd (GRL) to build the Urban Resources – Reduction, Recovery and Recycling (UR-3R) facility in western Sydney. It is a highly engineered plant, but the two European technologies at its heart have not been run together before.

GRL's John Lawson says it has done plenty of waste composition testing and process trials to ensure compatibility. An advanced MRF separates the organics and is designed to pick out hazardous wastes. Some 80% of the organics will be removed within the first few minutes in a bid to minimise contamination. The organic scraps go through a giant percolator, what Lawson describes as "a biological washing machine" which quickly breaks down the waste and separates volatile organics, sand and other small solids. The organic-rich wash water fuels a digester to create energy. This is a potentially tricky stage as digesters can be temperamental.

The solids will be de-watered and then composted in a giant shed using automated technology from Italian company Sorain Cecchini Techno. It will have a residence time of four weeks, with the higher quality compost left to mature for another eight weeks before refining. The lower quality is refined immediately for use as

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begin with the launch of new facilities



Head to Head

	UR-3R	Woodlawn
Capital	\$70 million	\$60+ million
Capacity (tpa)	175,000	400,000
Initial gate price (per tonne)	\$99 (possible)	\$102.52
Core technology	Anaerobic-aerobic digestion and composting	Bioreactor landfill
Key issues	Combining technologies	Optimising gas generation / capture
Annual outputs (at full capacity)	23,500 tonnes of dry recyclables 23,500 tonnes compost 34,000 tonnes landfill cover 17,500 MWh	160,000MWh

The UR-3RV facility (l) and Woodlawn bioreactor will between them handle one-third of Sydney's waste.

alternative daily cover on landfill.

The UR-3R process is more expensive than landfill but far better environmentally, according to a new triple

bottom line comparison of the UR-3R and landfill (but not a bioreactor landfill).

"If the major population centres of

Australia had access to a similar alternative to landfill disposal of household garbage, there would be an environmental benefit of up to \$740 million per year, or around \$160 per year per household," said Nolan-ITU director

Hannes Partl.

The net benefit for Sydney alone amounts to \$238 million a year.

Find the full report at www.nolan-itu.com.au



Look for Number 3 and recycle me!

Did you know that used PVC bottles are a valued resource in Australia?

Manufacturers of pipe fittings & floor tiles use recycled PVC bottles, like Vinnie Vinyl, in some of their products, but there are not enough bottles being recycled to keep up with demand!

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So remember Vinnie Vinyl, look for Number 3 and recycle PVC.

A Unique Degradable Bale Wrap for Municipal Solid Waste

Enviro® Wrap is a unique, specially engineered degradable plastic film for sealing compacted municipal solid waste (MSW) prior to disposal of the waste in landfills. It will contain the waste and act as an alternative daily cover for landfills. Enviro® Wrap can be used in MSW transfer and material recovery facilities that compact MSW and transport the baled waste to landfills.

Impermeable Bale Wrap

Enviro® Wrap, with EPI's patent pending method of using a degradable film for wrapping and sealing the compacted waste, controls odours, leachate, and disease vectors with its strong, tough, and impermeable polyethylene film, and produces a rigid, clean, odour- and leachate-free bale for easy and cost-effective handling, storing and transportation.

Degradable Alternative Daily Cover



Enviro® Wrap, with EPI's patented Totally Degradable Plastic Additives™ (TDPA®) Technology, is a degradable alternative daily cover and does not require any removal when the baled waste is placed at the active working face of landfills. It satisfies the

regulatory requirements of many countries for alternative daily cover for controlling blowing litters, odours, fires, disease vectors, and scavenging. No additional cover is required.

Enviro® Wrap starts to degrade when subjected to heat, sunlight, and/or mechanical stress. A combination of, or any one of these environmental factors is sufficient to trigger the degradation process. Enviro® Wrap continues to degrade within the landfills by the heat generated by biodegradation of waste and the stress within the landfill. It will become brittle and fragmented and will allow movement of landfill gas and leachate within the landfills. Enviro® Wrap will ultimately be digested by micro-organisms back to the basic elements of carbon dioxide and water with no harmful residues at the end of the life cycle.

Enviro® Cover arguably provides the greatest revenue enhancing qualities of any landfill cover, not only conserving valuable air space, but significantly reducing leachate treatment requirements while mitigating against leachate outbreaks, and providing a mechanism for the proper control and containment of landfill gas leading to gas-to-energy projects. It does "round the clock", without needing to be removed, re-exposing the waste to rainwater infiltration and allowing landfill gas to escape uncontrolled.



Enviro® Wrap - Frequently Asked Questions

1. What is so special about Enviro® Wrap?

Enviro® Wrap is a degradable stretch film produced with EPI's patented Totally Degradable Plastic Additives (TDPA®) Technology. It possesses extra high initial tensile and elongation properties for wrapping municipal solid waste (MSW) bales. Unlike other stretch films that remain unchanged for a long time, Enviro® Wrap will gradually lose its mechanical properties upon exposure to heat, mechanical stress and/or sunlight, and will become brittle and fragmented, producing non-toxic by-products.

2. Where should Enviro® Wrap be used?

Enviro® Wrap is specially designed for the MSW bales that will ultimately be disposed of in landfills. Before Enviro® Wrap loses its tensile and elongation properties, it acts as an impermeable wrapping, minimising odours, gas emissions, leachate, litters, disease vectors, and scavenging. The bales may be temporarily stored, handled, and transported to its final disposal location as ordinary wrapped bales. When the bales are placed in the landfill, Enviro® Wrap acts as alternative daily cover for a designed coverage period. There is no need of providing separate daily cover to the waste. Enviro® Wrap will continue to degrade inside the landfill, eventually allowing the gas and leachate to migrate to their designated collection points.

3. What are the main benefits of Enviro® Wrap over ordinary stretch films?

Enviro® Wrap is both a stretch film and an alternative daily cover. It saves cost, time and labour in removing the non-degradable stretch film and applying daily cover/alternative daily cover in the landfill. It allows the waste to degrade, thus reducing the waste volume and long-term liability of the landfill.

4. What is the designed coverage period of Enviro® Wrap?

The designed coverage period of Enviro® Wrap is the period that Enviro® Wrap is intended to act as a cover (Wrapping material) for the baled waste. Enviro® Wrap starts to degrade when it is first exposed to heat and/or mechanical stress. The process is gradual and continuous. Enviro® Wrap will not disappear overnight. It will keep losing its tensile and elongation properties, well past the designed coverage period, and even after the film is buried in the landfill.

5. Will the coverage period be affected by periods of rain, snow, sunlight, extreme hot or cold temperatures?

EPI determined the designed coverage period of Enviro® Wrap based on laboratory tests using high temperatures and strong summer sunlight conditions and field tests. The exposure period quoted is applicable to the summer condition of most countries. Rain and snow do not have any effect on the degradation of Enviro® Wrap. Sunlight will have minimal effect on the degradation process during the designed coverage period. Extreme hot temperature will speed up while extreme cold temperature will slow down the degradation process. Because of different environmental factors, the coverage period for countries with cooler temperatures may be longer.

6. Is there any special storage and handling instruction for Enviro® Wrap?

Enviro® Wrap is typically stored on site with a quantity sufficient for up to 6 months. Enviro® Wrap should be stored indoors, away from direct sunlight and heat source. Proper storage increases the shelf life of the product.

7. Is special protective clothing or protective equipment required for site personnel working with Enviro® Wrap?

No special protective clothing or equipment is required for site personnel working with Enviro® Wrap. Enviro® Wrap does not cause eye or skin irritation. There is no hazardous material in Enviro® Wrap.

Mystery loads a "headache"

By Richard Collins

LIQUID waste transporters can't assume their clients know in depth what is in their waste or even what their legal responsibilities are.

EPA guidelines in most states lay some responsibility on industry to know what it is discharging, but the reality is all too often different. Companies, particularly smaller ones, often have little knowledge of the characteristics of the liquid waste they generate and rely heavily on transporters for classification and treatment.

Two years ago, Rethmann Environmental Services ran into trouble in Sydney when it picked up several incompatible liquid loads in the one tanker, partly due to poor disclosure by the client. It started with wash water from a food flavouring plant, then picked up hazardous wash water from

tion. After a year-long investigation it copped a \$75,000 fine from the EPA and was ordered to pay costs totaling \$150,000.

The flavouring company, which had provided a generic description of the waste, was audited by the EPA but escaped punishment.

"Generators should be obliged to provide as detailed a description as possible," Klostermann said. You can only share responsibility if the information is accurate and descriptive."

Lifting the bar

In NSW, transporters are required to perform a risk assessment but characterising liquid waste is a complex business. Waste Service NSW, for example, has some 1,200 active identification codes.

Rethmann has updated manuals and introduced strict guidelines to prevent

try and waste generators. This includes a letter from the executive director of operations, Joe Woodward.

"As a producer of waste you are responsible for ensuring that your waste is disposed of at a facility that can lawfully accept that waste. Know what type of waste you generate. Inform your transporter of any changes to your waste streams. Don't risk a fine or prosecution," he wrote.

Rethmann's liquid waste manager, Claudio Alcaino, said too many smaller companies still tended to go for the cheapest quote they could get over the phone. Some transporters still provide such low-cost services, but he argues the risks are too great for all concerned. **iw**



// You should not mix any hazardous load with any other hazardous waste because of the potential for an incident.

an air conditioning manufacturer and lastly oily groundwater from an old service station site. It created a chemical cocktail.

"There were traces of nitric and hydrochloric acid in the second load, which reacted with the alcohol in load one," said Rethmann director, Frank Klostermann.

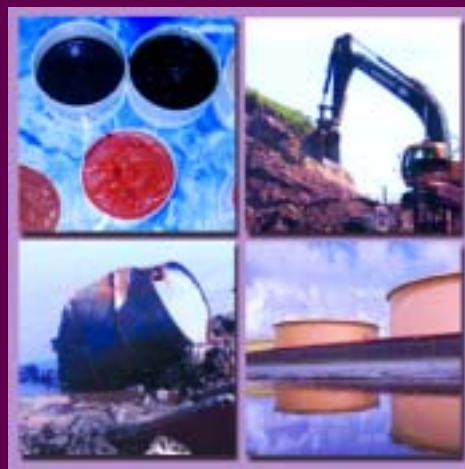
When air was evacuated from the truck to begin pumping at the final site, the fumes escaped into nearby offices, creating nausea, vomiting and headaches among workers. Some 15-20 people were hospitalised as a precau-

a repeat accident. It tests all samples before accepting them and refuses to mix hazardous loads, no matter the size. A recent run picked up only 800 litres in a 14,000 litre tank rather than run the risk of incompatibility.

"You should not mix any hazardous load with any other hazardous waste because of the potential for an incident. This is best practice," said Klostermann, although the NSW EPA makes no direct reference to it.

The EPA has increased its enforcement and education role in recent times, fronting both the waste indus-

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Liquid waste on-line

REUSE rates high in the waste hierarchy, but liquid waste is seldom reused. CSIRO's *Water for a Healthy Country* program aims to change that by creating a new database listing liquid waste streams available for reuse.

It is developing a website where companies can list their liquid waste discharges, allowing others to find resources they may be able to use in their processes. The site will list wastes by industry, site and location.

CSIRO plans to start early next year by covering Melbourne, reports Environmental Manager, and then roll it out across other state capitals.

More information about *Water for a Healthy Country* at www.cmis.csiro.au/healthycountry/

Versatile efficient and cost effective: skid-steer loaders

THE MAIN attraction of skid-steer loaders, commonly known in the trade as bobcats, is their versatility.

Graham Murphy, director of Case Equipment, describes the machines as "a power pack that can do a myriad of different jobs". Paul Barnes, disposal facilities manager for Collex, calls them "a useful, flexible bit of ancillary equipment".

Their versatility stems from the multiple attachments that can be clipped on to the front or back of the machines. These include brooms, augers, grapplers, backhoes, chippers, concrete mixers, pumps, diggers, graders, pallet forks, caterpillar tracks, rollers, snow blowers and any number of different buckets.

Murphy sees skid steers, with their compact size and manoeuvrability, as essentially replacing teams of workers: "They are equivalent to 20 men with shovels. They do the same jobs [and] they can squeeze into small spaces. And machines are cheap. For 40 or 50 grand you could employ a man for a year, or buy a machine that will last you 10 years."

Inside Waste takes a look at some of the skid-steer loaders around the 55HP mark. The details are generally for skid-steers fitted with a four-in-one bucket.

Next issue: truck bodies and odour control units

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Mustang



Dimensions include the bucket
 ##SAE = Standard Australian Engineering

Engine make: Isuzu 4JBI
Cylinders: 4
Gross horsepower: 62 @ 2,600rpm (46.3kW)
Dimensions (w x l x h - in m): 1.7 x 3.3 x 2.1#
Operating weight (kg): 3,311
SAE operating load (kg): 862##
Hydraulic pressure (bar): 172
Dump angle (at full height): 38°
Bucket rollback (at ground): 28°
Cost (standard model): \$47,000 (approx)
More information: Rod Hale of BT Equipment on (02) 9780 7246

2064

John Deere



Engine make: John Deere
Cylinders: 3
Gross horsepower: 53 @ 2,400rpm (39.5kW)
Dimensions (w x l x h - in m): 1.6 x 3.2 x 1.9#
Operating weight (kg): 2,796
SAE operating load (kg): 681##
Hydraulic pressure (bar): 214
Dump angle (at full height): 45°
Bucket rollback (at ground): 35°
Cost (standard model): \$50,000 plus GST (approx)
More information: Jon Battersby of Hitachi on (02) 9780 6900

240 Series II

Dimensions include the bucket
 ##SAE = Standard Australian Engineering

Case



Engine make: Case 4-390 diesel
Cylinders: 4
Gross horsepower: 60 @ 2,000rpm (44.7kW)
Dimensions (w x l x h - in m): 1.5 x 3.4 x 1.9#
Operating weight (kg): 2,593
SAE operating load (kg): 681##
Hydraulic pressure (bar): 207
Dump angle (at full height): 40°
Bucket rollback (at ground): 32°
Cost (standard model): \$40,000-\$45,000 (including GST)
More information: Case Equipment on (02) 9833 6054

40XT

Dimensions include the bucket
 ##SAE = Standard Australian Engineering

Caterpillar



Dimensions include the bucket
##SAE = Standard Australian Engineering

Engine make: Cat 3024C T
Cylinders: 4
Gross horsepower: 62 (46kW)
Dimensions (w x l x h - in m): 1.5 x 3.22 x 1.9#
Operating weight (kg): 2,646
SAE operating load (kg): 680##
Hydraulic pressure (bar): 214
Dump angle (at full height): 40°
Bucket rollback (at ground): 25°
Cost (standard model): \$50,000
More information: Caterpillar on (03) 9953 9333

226B

Bobcat



Dimensions include the bucket
##SAE = Standard Australian Engineering

Engine make: Kubota V2003-M-DI-TE2B-BC-3
Cylinders: 4
Net horsepower: 56 (41.8kW)
Dimensions (w x l x h - in m): 1.7 x 3.3 x 1.9#
Operating weight (kg): 2,635
SAE operating load (kg): 839##
Dump angle (at full height): 42°
Bucket rollback (at ground): 25°
Cost (standard model): \$45,000
More information: Bobcat Australia on 1800 643 853

S185

New Holland



Dimensions include the bucket
##SAE = Standard Australian Engineering

Engine make: New Holland N844T Turbo
Cylinders: 4
Gross horsepower: 52 (38.8kW)
Dimensions (w x l x h - in m): 1.6 x 3.2 x 1.9#
Operating weight (kg): 2,513
SAE operating load (kg): 800##
Hydraulic pressure (bar): 179
Dump angle (at full height): 46°
Bucket rollback (at ground): 36°
Cost (standard model): \$43,000 (approx.)
More information: Paul Hood or Gilbert Marcel on (02) 9673 7777

LS170

A new all-terrain conversion kit for the poly-dolly drum handling/decanting trolley.



- A new all-terrain conversion kit for the poly-dolly drum handling decanting trolley .
- The modification is manufactured by spill station australia and comes complete with 10" pneumatic wheels , sealed precision bearings and milled polyurethane bushes .
- The new conversion makes the poly-dolly even easier to handle over sealed surfaces and makes for trouble free transportation of a loaded dolly over sort surfaces such as dirt or sand .

For more information contact: Spill Station Australia Pty Ltd on 1300 66 42 66 .



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All the buzz on weighbridges

PEOPLE usually picture a lightning rod as a metal pole on a skyscraper, not a flat sheet of metal half buried in the ground.

Yet lightning is one of the most common problems with weighbridges: a lightning strike on solid ground anywhere in the vicinity can travel through the earth towards a metal attractor such as a weighbridge, blowing its delicate electronics. Just ask Goulburn Council, which recently suffered a direct strike on its weighbridge, putting the two-month-old unit out of service.

Michael Guillot, senior sales consultant at Ultrahawke, says councils and waste companies in the market for a weighbridge should always ask whether the electronics include lightning protection. Not all of them do.

"Some are more successful than others. Ask about the history of the equipment, it's earthing, whether it has in-built lightning protection and, of course, get a referral," says Guillot.

The Ultrahawke system is similar to most on the market, featuring a 10,000 Volt gas surge arrester. Any power surge significantly over the usual 15V operating current short-circuits the system back into the earth, thereby protecting the load cells.

Another development being adopted by the industry is to use less steel and more concrete in the weighbridge design to prevent the lightning attraction in the first place.

On this page, *Inside Waste* weighs up several local weighbridge companies and their products.

Accuweigh

Weight range of weighbridges sold: 30-200 tonnes

Country of origin: Australia

Measurement increments: 10kg-100kg

Brand of load cells: Avery

Cost (18m weighbridge, installed): \$50,000

More from: Jason Ferguson on (03) 9548 5512



Ultrahawke

Weight range of weighbridges sold: 30-200 tonnes

Country of origin: Australia

Measurement increments: 10kg-100kg

Brand of load cells: Flintec

Cost (18m weighbridge, installed): \$43,000

More from: Michael Guillot on (03) 9311 5555



Queensland Weighing Machines

Weight range of weighbridges sold: 10-200 tonnes

Country of origin: Australia

Measurement increments: 10kg-50kg

Brand of load cells: Precision Transducers

Cost (18m weighbridge, installed): \$40,000

More from: Malcolm Packer on (07) 3260 7555



Mettler Toledo

Weight range of weighbridges sold: 30-250 tonnes

Country of origin: Australia

Measurement increments: 10kg-100kg

Brand of load cells: Mettler Toledo

Cost (18m weighbridge, installed): \$40,000 (approx)

More from: Garry Cornish on (03) 9644 5712



Australian Weighing Equipment

Weight range of weighbridges sold: 20-250 tonnes

Country of origin: Australia

Measurement increments: 5kg-200kg

Brand of load cells: ACP4s (own brand)

Cost (18m weighbridge, installed): \$35,000

More from: Tim Baillie on (02) 9724 5366



Australian Weighing Systems

Weight range of weighbridges sold: 10-100 tonnes

Country of origin: Australia

Measurement increments: 10kg-50kg

Brand of load cells: Avery

Cost (18m weighbridge, installed): under \$50,000

More from: Craig Bury on 1300 366 131



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or go down here,

you must
go here



Know your **'NO GO ZONES'**. As an employer, you have legislative obligations when working near overhead or underground utility assets.

To help you meet these obligations, industry, the Office of the Chief Electrical Inspector, the Office of Gas Safety and WorkSafe have prepared two guides that provide essential information about the **'NO GO ZONES'** that will help you comply.

To access the guides, call either your gas, electricity, water or telephone company or visit www.workcover.vic.gov.au

Developed with the assistance of the Office of Gas Safety and the Office of the Chief Electrical Inspector



WorkSafe Victoria is a Division of the Victorian WorkCover Authority

VWA994689B

Disposal and Recycling Facilities / Services

**Clyde Transfer Facility –
Alternative Putrescible
Waste Option**


The Collex Transfer Terminal at Clyde is now open and ready to take your waste to Woodlawn for conversion into green energy.

The Clyde Transfer terminal is the most technically advanced waste transfer facility in Australia. It is purpose built to receive and containerise residual wastes from the Sydney metropolitan area, which are then loaded onto a train for transport to the Woodlawn Bioreactor.

The Clyde facility has a limited volume and it is anticipated that most of this will be taken up with contracted volumes. Therefore we are pleased to offer the following disposal rates.

GATE RATE (Price per tonne)
 \$93.20 – Excluding GST
 \$102.52 – Including GST

- Reduced Prices are available for large volumes of waste - subject to negotiation;
- Reporting and document information can be tailored to your companies' individual needs - including dockets printed with either gate rate or no rate showing;
- The terminal is operational **24 hours per day 7 days per week**, however limited access is available during evening and early morning periods.
- Long term contract options available

Collex are pleased to offer your company an alternative for the disposal of putrescible waste and look forward to developing and strengthening our relationship into the future.

For further information contact:
 Jim Hennessy
 Sales Manager – NSW Disposal Facilities
 02 9709 6435 or 0429 128 368

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Diary

September

21-24 Waste and Recycle 2004 - "Setting outcomes and measuring performance"; Perth. WA Local Government Association and WMAA. Details at www.wasteandrecycle.com.au
 22-24 Waste 2004 - "Working Together for Better Resource Management"; Coffs Harbour, NSW. Impact Environmental. Details at www.impactenviro.com.au

October

2-16 WMAA Study Tour. More from (02) 9599 9133 or veronica@wmaa.asn.au
 17-21 ISWA 2004 World Congress; Rome, Italy. International Solid Waste Association. Details at www.iswa2004.org
 25-5/11 Methane oxidation and bio-covers tour with US expert Jean Bogner. More from 1300 651 026 or veronica@wmaa.asn.au

November

10-12 2nd National Buying Green Conference & Expo; Sydney. Impact Environmental and the Dept of Environment & Conservation (NSW). Details at www.impactenviro.com.au
 9-11 WasteMINZ Conference 2004, Auckland, New Zealand. Waste Management Institute of New Zealand. Details at www.wasteminz.org.nz
 24-26 Sustainable Waste Management; Melbourne. Details at www.wmaa.asn.au
 29 - 1/12 Bioenergy Australia Conference

Event Preview

September

21-24 Waste & Recycle 2004; Fremantle, WA.
 The theme this year, "Setting outcomes and measuring performance", focuses on making sure we are moving in the right direction. Keynotes among the 60 speakers include Mary Ann Curran, a life cycle specialist with the US EPA, and Andrew Walford from the UK's Audit Commission.
 Two days of workshops and tours will precede and set the scene for the regular conference.
 More from www.wasteandrecycle.com.au

September

22-24 Waste 2004; Coffs Harbour, NSW
 Steve Hall of the UN Environment Program and Susan Hubbard from Eureka Recycling in the US will kick off the conference, with its theme of "Working Together for Better Resource Management". The first two days will run concurrent streams and workshop sessions, which will cover waste contracts and AWTs. The final day will be workshops only. More from <http://tinyurl.com/5cezf>

Got an event you would like listed in our diary? Email it to: insidewaste@wme.com.au or fax it to: (02) 9804 1788.

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Footy fever: show your true colours

AS FOOTY finals fever consumes the country, waste education theorists should take the opportunity to learn a lesson.

Boffins in the industry have been talking for years about the best way to get the public to take notice of waste and get involved in waste reduction and resource recovery. They've tried everything from smaller bins, three bins, one bin and charging by weight, to packaging covenants and establishing a waste education division down at the Waste Management Association. All told, tens of millions of dollars are being spent by government to get the average Joe interested in waste.

Well, I reckon they've all got it wrong. The answer is right under our noses: it's time for the Footy Bin. Whole communities could display their teams' colours proudly on their wheelie bins for all to see.

Imagine the impact. All of a sudden people will start thinking a lot more carefully about what they put in their bin – no one wants to soil their beloved team after all. We will start to see a radical shift in social dialogue as neighbours who had never talked before discover they are kindred spirits as they meet around their bins to talk about last week's game. Even Richmond and Rabbitohs supporters could find comfort with a neighbour who shares their pain.

Car wash day will extend to bin wash day as teenagers eager for a bit of extra pocket money keep the team colours sparkling.

Neighbourhoods would come alive after school and on weekends as kids set up the bins as goal posts on the road. Previously deserted streets would turn festive each September as supporters of the finals contenders compete to dress up their bin with their favourite players' number and poster.

And what a boon for the bin makers. An industry that has seen margins shrink will have a dynamic new marketing tool to kick start sales, bringing new life and profits into the game. The dull old wheelie bin would be gone forever, replaced with a symbol of family pride and affection, a bold statement about the footy tribe they belong to.

The process of putting out the waste would take on a whole new, almost spiritual meaning. Everyone becomes a team player. No longer would waste languish as a boring, smelly service. Let's forget the theory and get on with a proven model – it's time for the footy bin. [iw](#)

Hooked on waste

WASTE collectors in Guangzhou, China had to haul off 20 tonnes of garbage collected by an elderly woman after neighbours in her apartment block got fed up with the stench wafting from her home.

Residents described the woman's daily rubbish hunt as an addiction and said very few of the articles she had kept were recyclable.

But the woman tried desperately to stop the garbage men, clutching at a tattered garment. "The clothing's still clean, it's still wearable," she reportedly said.

A bill of 4,500 yuan (\$776) was issued to the woman for the clean-up.

(Reuters)



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