

# waste

## MANAGEMENT REVIEW

FEBRUARY 2018

## The future of landfill

US engineer Neal Bolton  
explains the difficulties  
operators face in 2018.



### FEATURES

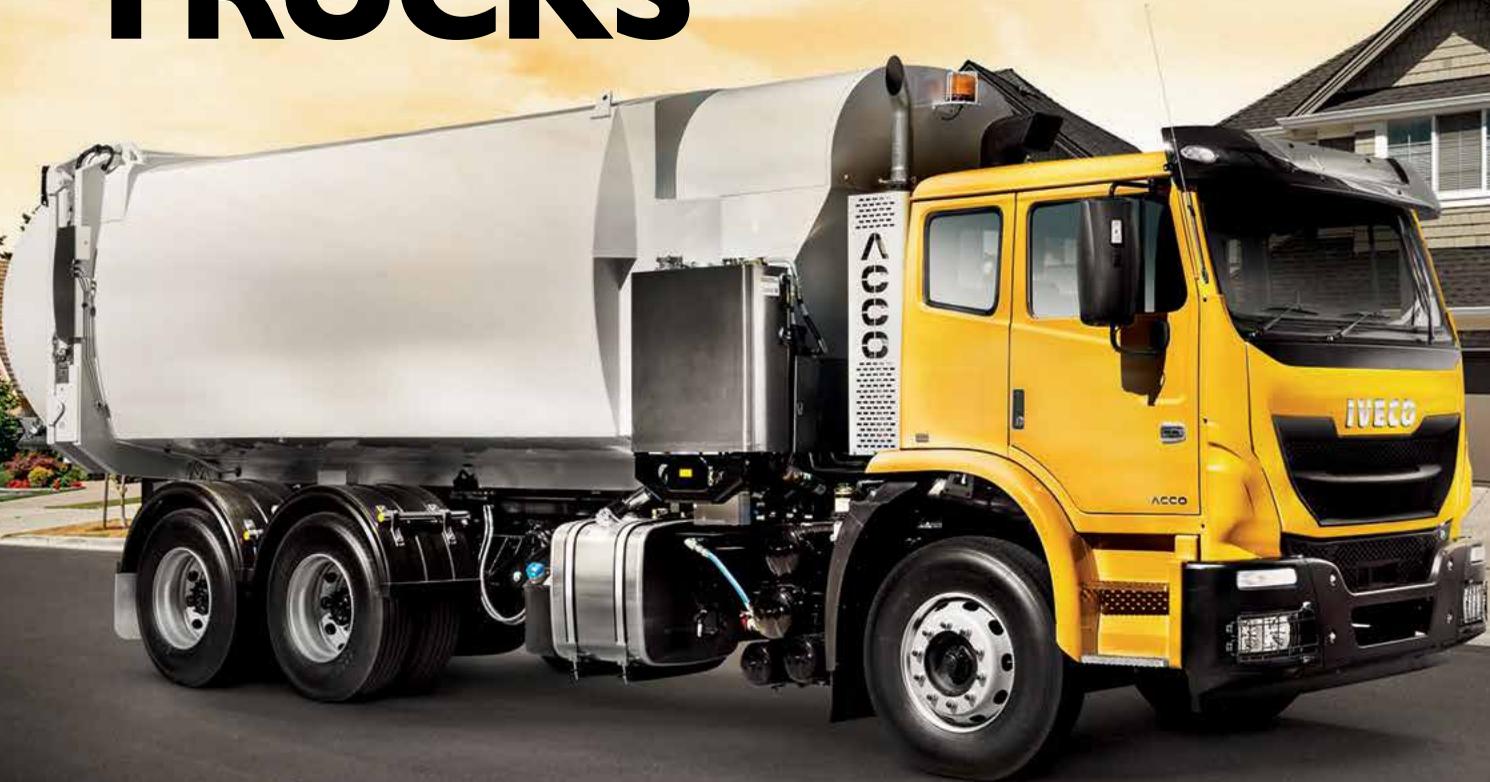
National Food Waste Report reviewed  
Waste and recycling inquiry's findings  
A new year for waste data  
Repurpose It's no landfill mantra

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# COVER STORY 14

## AIRSPACE: THE ENGINE OF A LANDFILL

*US engineer Neal Bolton explains the nuts and bolts behind landfill management and the difficulties operators continue to experience in managing their airspace into the future.*

“THAT BECAME A TURNING POINT FOR ME. WE DISCOVERED WE KNEW THINGS THAT MOST PEOPLE DIDN'T KNOW AND WE WANTED TO SPREAD THE MESSAGE TO INDUSTRY.”

—Neal Bolton, US author and waste consultant

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## From the Editor

# Waves of change

IT'S A NEW YEAR AND A NEW ERA FOR WASTE MANAGEMENT REVIEW, WITH its first-ever monthly edition hot off the presses and now in your hands.

In the first edition for 2018, we've aimed to cover all the hot topics industry has been talking about over the past few months, from the recent waste and recycling inquiry to the National Food Waste Strategy.

The Federal Government's senate inquiry into waste and recycling brought a number of issues to the forefront that industry and *Waste Management Review* have been talking about for quite some time, including incentives for recycling and improving the quality of products the industry produces. Find out what unfolded in the inquiry on page 20.

From pages 30-37, you'll find a series of stories dedicated to showcasing the industry's progress in the area of organics recycling, while highlighting the hard work and challenges that lie ahead. On page 30, we speak to Food Innovation Australia Limited, the organisation tasked with the challenge of helping the federal government meet its target to halve the nation's food waste by 2030. We also speak to food manufacturer Simplot about the work they are doing in this space, along with the Australian Packaging Covenant Organisation.

On page 34 we hear from sensor-based sorting leader STEINERT about how it is helping the industry grow through a unique technology which aims to increase the commercial value of compost product.

Environment Protection Authority NSW highlights the successes of its organics market development fund on page 36, with a new round open for 2018.

The landfilling industry is one that will continue to remain alive and well into the future, as discussed by US author Neal Bolton on page 14. In 1995, Neal wrote *The Handbook of Landfill Operations*, which aimed to bridge the gap between the engineering and landfill industry by highlighting how the two sectors align. Neal outlines how the industry can protect its bottom line in 2018.

With exciting times ahead for the waste industry, we look forward to following you on this journey.

For article ideas or general enquiries, you can contact me directly by email at [toli.papadopoulos@primecreative.com.au](mailto:toli.papadopoulos@primecreative.com.au) or phone 0403 626 353.

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# waste

MANAGEMENT REVIEW

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## Cleanaway agrees to acquire Tox Free Solutions

Cleanaway has agreed to acquire Tox Free Solutions (Toxfree) for about \$671 million.

Cleanaway is offering \$3.425 for each Toxfree share and the integration of the business is expected to deliver about \$35 million in annual synergies over a two-year period. Toxfree shareholders will be able to receive a 5c-a-share interim dividend.

To fund the acquisition, Cleanaway will launch a fully underwritten \$590 million 1-for-3.65 pro-rate accelerated entitlement offer and draw down debt from a new multi-tranche facility.

In a statement, Toxfree board of directors unanimously recommended

that shareholders vote in favour of the scheme, and will vote the shares they own or control in favour of it, in the absence of a superior proposal.

Cleanaway Chief Executive Officer Vic Bansal said acquiring Toxfree will consolidate Cleanaway's position as Australia's leading waste management company, balancing and re-weighting its integrated waste model.

"The acquisition will accelerate the implementation of our Footprint 2025 strategy by adding prized infrastructure assets across the country, as well as contributing an exciting new business in the form of a leading, vertically-integrated provider of healthcare waste

management products and services, including collection, transport and treatment of sharps, clinical and related waste," he said.

The scheme consideration values Toxfree's fully diluted equity at approximately \$671 million. The transaction will be subject to standard regulatory conditions, including Australian Competition and Consumer Commission approval. A scheme booklet, independent expert's report, reasons for the directors' recommendation and details of the scheme will be prepared and provided for review to the Australian Securities and Investments Commission, expected in February 2018.

## Chatswood Chase's new materials recovery facility

Sydney shopping centre Chatswood Chase has launched a "first-of-its-kind" recycling system which will reduce its waste to landfill by an additional 695 tonnes.

With a zero waste target, the reduction in waste is equivalent to 15,500 household wheelie bins of waste.

Justin Mills, Executive General Manager, Vicinity Shopping Centres, said this was the first recycling system of its kind at an Australian shopping centre.

"The materials recovery facility (MRF) makes great business sense and is a win for the community," Mr Mills said.

The MRF system starts in-centre, engaging retailers to use specific bins for

different items such as paper, plastic and organics. The rubbish is then taken to the waste dock where it is sorted, bundled and processed accordingly on-site.

Chatswood Chase launched the MRF during Recycle Week, in partnership with disability service provider House with No Steps.

"We have created seven new jobs, six of which help create meaningful employment for people living with disabilities, while also diverting 92 per cent of waste away from landfill," Mr Mills said.

The MRF is just one part of Vicinity's overall sustainability strategy which acknowledges that shopping centres are

the centrepiece of our communities and an important contributor to establishing smart and sustainable destinations.



The facility is part of Vicinity's overall sustainability strategy.

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## Bingo Industries to raise \$120m for acquisitions

NSW waste and recycling organisation Bingo Industries announced late last year it is raising \$120 million to acquire businesses National Recycling Group and Patons Lane.

The proceeds will also be used to fund organic redevelopment opportunities and repay debt used to fund its Has-a-bin acquisition in September 2017.

Bingo Industries floated on the stock market earlier this year. Approximately 63.2 million new shares are expected to be issued under the entitlement offer, with shareholders also offered

one share for every 5.55 held.

The acquisitions, along with organic redevelopment of existing assets, are expected to support the company's network capacity expansion across NSW and Victoria from 1.7 million tonnes per year to 3.4 million by 2020.

National Recycling Group is the parent company of DATS Environment Services, Melbourne Recycling Centres and Harpers Bin Hire.

In a statement, Bingo Industries said that the acquisition will further accelerate its recent

expansion into Victoria.

When commenting on the acquisition, CEO of Bingo Industries, Daniel Tartak, stated this venture will provide "compelling strategic benefits for Bingo".

The move has led to the attainment of two new recycling centres in Victoria, and an additional recycling centre in New South Wales.

Access to additional resources will be gained through DATS' 55 trucks and 3200 bins, in excess to Bingo's current fleet, bins and waste infrastructure.

## 7-Eleven and Simply Cups launch cup recycling initiative

A new initiative plans to collect and recycle 70 million takeaway cups annually.

It comes as Australians become increasingly aware of the number of disposable cups that end up in landfills every year.

The partnership between 7-Eleven and Simply Cups will see collection bins for takeaway cups installed in more than 200 7-Eleven stores nationally and 50 other busy locations such as universities and construction sites from March 2018.

"As Australia's second largest takeaway coffee destination we felt we had a responsibility to take the lead and find a solution to save cups from going to landfill," said 7-Eleven CEO Angus McKay.

Currently, more than one billion takeaway cups end up in landfill each year in Australia because there is no effective way for cups to be recycled. This is due to the polyethylene or liquid lining being a contaminant for regular paper recycling facilities. However, there is a way to treat plastic lined cups.

"Simply Cups now has access to technology that removes the plastic lining from paper-based cups so that both materials can then be processed in regular paper and plastic recycling facilities," explains Rob Pascoe, Founder of Closed Loop's Simply Cups.

"By collecting takeaway cups via a separate waste stream, Simply Cups can guarantee that cups collected through the dedicated 7-Eleven bins will be recycled."



The partnership between 7-11 and Simply Cups will launch in March.



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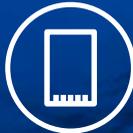
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## NT EPA recommends Chandler Hazardous Waste Facility approval

The Northern Territory Environment Protection Authority (NT EPA) has recommended approval of Tellus Holdings Ltd's hazardous waste storage proposal – the Chandler Facility.

The agency said it follows a rigorous environmental impact assessment.

The proposal includes a temporary hazardous waste storage facility, an underground salt mine, a permanent disposal facility for hazardous waste (in the mined out, underground salt caverns) and associated infrastructure such as salt stockpiles, haul roads and access roads.

The proposed site is approximately 120 kilometres south of Alice Springs and 25 kilometres from the nearest community – Titjikala.

NT EPA Chairman, Paul Vogel, said the NT EPA identified potentially significant environmental impacts and risks associated with the proposal and made 19 recommendations to avoid and mitigate those impacts.

“The NT EPA's assessment of Australia's first national hazardous waste repository has been informed by the operation, regulation and learnings from other deep geological waste repositories internationally as well as ongoing discussions with the WA EPA which is also assessing a similar, but smaller proposal,” Dr Vogel said.

The NT EPA's key recommendations focus on ensuring transparent, ongoing and rigorous regulatory oversight, including requirements for the public disclosure of any financial

assurance or security held in respect of the proposal, as well as public disclosure of independent auditor and process safety oversight reports.

“This proposal comes with environmental and financial risks to the community and the Northern Territory Government,” Dr Vogel said.

“To address these risks, the NT EPA has made recommendations consistent with the proponent's commitment to ensure appropriate financial assurance provisions are provided upfront to the NT

Government over the life of the proposal, should it be approved.

“A whole-of-project financial assurance would ensure that significant residual environmental impacts and risks are acknowledged, and financial risk to the NT Government is avoided, covering all financial obligations under an appropriate regulatory regime,” he said.

The NT EPA has provided its assessment report to the Minister for Environment and Natural Resources, Lauren Moss for consideration.



The proposed site is about 120 kilometres south of Alice Springs.



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## EPA Victoria conducts surprise skip bin blitz

Environment Protection Authority Victoria (EPA Victoria) in January conducted surprise inspections at 12 skip bin hire companies across Melbourne.

EPA Victoria's Illegal Waste Dumping Strikeforce spokesperson Chris Webb said the inspections were looking for evidence of activities that are giving the skip bin industry a bad name.

"EPA has targeted skip bin hire firms because the industry has attracted a number of operators who dump the waste illegally, often in our forests or on private land, which allows them to outcompete genuine skip bin businesses by avoiding paying the fees for proper disposal and recycling of

the loads," Mr Webb said.

"The inspections have gone well, with EPA staff working in teams with Victoria Police and staff from Hume City Council."

Mr Webb said the EPA has shared intelligence with the other agencies and are in communication with environment protection organisations in other states, as unscrupulous skip bin hire firms are a problem nationwide.

"There is a lot of waste being dumped in creeks and parks, in rented buildings and on private land, some of it including hazardous materials such as asbestos from construction and demolition sites around Melbourne."

During the past two years, the agency has undertaken nearly 350

illegal dumping related inspections, issued more than 170 legal notices requiring a clean up, conducted prosecutions through the courts and issued Infringement Notices that represent a fine of nearly \$8000 each. EPA Victoria believes the growth areas of Melbourne, such as the Cities of Hume, Brimbank and Whittlesea, are the hotspots in the metropolitan area, and it is working with local councils there and wherever illegal dumping occurs.

The agency believes illegal dumping is a problem across the state particularly regional areas such as Bendigo, Mildura, Ararat and Geelong where dumping commonly occurs on farmland or on public land such as in state or national parks.

"Anyone hiring a skip bin should ask questions. If the price seems suspiciously cheap in comparison to other quotes, it may mean the real cost is being dumped on the community and attracting possible prosecution," Mr Webb said.

EPA Victoria also encourages the community to watch out for suspicious activities – such as unusual truck movements at night, commercial properties or warehouses collecting piles of waste or very cheap offers of waste removal – and to report it to EPA.

It has advice for skip bin operators on its website about the handling, transport and identification of industrial waste, contaminated soil, clean fill, organic matter, asbestos and other contents of skip bins.



Mr Webb said unscrupulous skip bin hire firms are a problem nationwide.

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# Airspace: *the engine of a landfill*

US ENGINEER NEAL BOLTON EXPLAINS THE NUTS AND BOLTS BEHIND LANDFILL MANAGEMENT AND THE DIFFICULTIES OPERATORS CONTINUE TO EXPERIENCE IN MANAGING THEIR AIRSPACE INTO THE FUTURE.



Neal Bolton at Mariposa County Landfill, California, USA.

**E**steemed US author and waste consultant Neal Bolton has focused his 40-year career on changing the status quo in landfill management.

In 1988, at the age of 29, Neal became an engineer, having previously worked as an equipment operator managing landfill operations and projects. From there, he decided to set his sights on engineering-consulting work, and established his own company, Blue Ridge Services in California. Neal's experiences led him to believe that many landfilling practices were impractical or outdated, and he decided it was time to make a change.

"I was seeing a lot of things that weren't efficient and I would ask people: why do you do this that

particular way? Pretty often they wouldn't have any other answer besides 'that's the way we've always done it'," Neal explains.

As a waste consultant in the early 90s, Neal began to perform a cost-benefit analysis on daily landfilling practices across the US and soon discovered many businesses weren't operating as effectively as they could be.

In 1995, Neal wrote what he says was the only book in the world at the time on landfill operations, titled *The Handbook of Landfill Operations*. The book aimed to break down landfill operations and discuss how they align with engineering concepts. It was targeted at landfill engineers, owners and operators.

"That became a turning point for

me. We discovered we knew things that most people didn't know and we wanted to spread the message to industry," Neal says.

Neal's goal was to make landfill operators consider whether their operation was truly the most efficient or cost-effective. It remains the central focus of Blue Ridge Services today.

"I'm a really practical person. I like to put numbers to things that are abstract and a lot of my work has been based on boosting airspace and compaction rates," he says.

"We conduct financial and productivity analysis on practices people might never have even thought about."

As a result of his audits, Neal discovered that landfill economics largely boiled down to costs versus revenue. Costs involve labour, equipment and capital expenditure for facility development, while revenue revolves around one principle – a landfill's airspace.

#### **A SIMPLE ASSESSMENT**

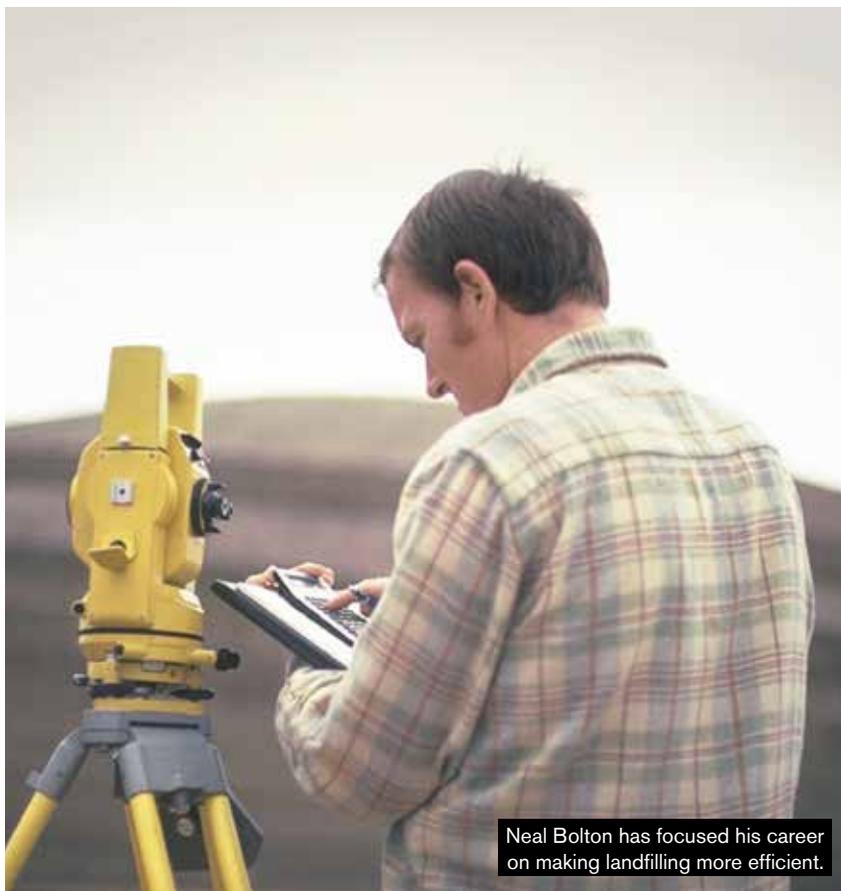
In 2015, Neal developed the company's trademark CORE Assessment, which stands for Comprehensive Operations Review.

"Every landfill has its own strengths and weaknesses and within that landfill is a unique quantity and value of airspace," Neal explains.

"We work on an array of projects, but the one we do most commonly is the CORE Assessment. I have personally worked at more than 500 landfills in the last 40 years."

It all begins with more efficient compaction, which can generate increased airspace, extending the life of the landfill and providing more revenue for the operator.

In a 2017 webinar, Blue Ridge



Neal Bolton has focused his career on making landfilling more efficient.



As a result of his audits, Neal discovered that landfill economics largely boil down to costs versus revenue.

“We have often recommended Tarpomatic to our clients, which is one of the most efficient and cost-effective tarping systems available on the market.”

Neal Bolton, **US author and waste consultant.**

Services polled 40 landfill managers, asking them how important compaction was, with 80 per cent highlighting it as their most important operational issue.

Neal says waste compaction is one of the most critical steps to optimising landfill airspace. It’s a simple concept: waste that is compacted better takes up less space, which means more available airspace to fill with more waste.

In Australia, optimising landfill airspace is of particular importance as the industry becomes constrained

by environmental requirements, according to the 2009 report by Hyder Consulting – *Australian landfill capacities into the future*. The report highlights the number of landfills have been declining as waste streams are consolidated in larger, regional sites.

While the report found no evidence of a critical shortage of landfill capacity at population centres, it argues as landfills close, they are replaced by sites that are further away, so that the cost and environmental impact

of transport is greater. Long-term problems with landfill capacity are deemed likely in two of the nation’s urban centres – south-east Melbourne and metropolitan Sydney.

Despite a push towards more recycling, Australia’s dependence on landfills remains firmly intact. The National Waste Report 2013, for instance, found landfills receive 40 per cent of Australia’s waste. Airspace therefore is a valuable commodity for operators and it’s why consultants such as Neal continue to emphasise its importance.

“Once you understand the value of airspace, then you can crunch the numbers to determine whether you need a larger bulldozer, compactor or alternative daily cover – or a combination of all of these.”

But he says achieving great compaction isn’t just about running a compactor longer, it’s about maximising the compactor’s effort and minimising waste. This is commonly achieved through equipment utilisation studies, where an operator is observed over a period of time. From this observation, areas of inefficiency can be identified and corrected.

“When we conduct these types of studies, we often recommend reducing machine work hours or even the number of machines which aims to improve the overall efficiency of the remaining machines. It’s all about working smarter, not harder,” Neal says.

#### **THE BUSINESS OF AIRSPACE**

As operators cover their landfill each day with alternative daily cover or soil, the value of airspace can vary. Neal says some landfills will have a higher cost of airspace in highly populated areas, while regional locations will process less waste and therefore the market value



is considered lower. Others will have varying soil requirements which can boost the value of airspace.

Many landfills use soil as daily and intermediate cover, but there is a range of options for alternative daily cover (ADC). Non-waste-derived ADC usually comes in the form of spray-on foam, geo-synthetic materials and tarpaulins.

Neal says most landfills can benefit by switching from soil to ADC, as it is often more cost-effective and consumes less airspace. He says it can take up to three hours to excavate, move, tip and spread soil. That's not to mention the difficulties satisfying environmental regulator authorities to cover landfills with a specific layer of soil and the challenges in actually measuring this.

He says one of the best ADC options is tarpaulins. This type of ADC is rolled out over the waste at the end of the day, and then removed at the start of the day.

"We have often recommended Tarpomatic to our clients, which is one of the most efficient and cost-effective tarping systems available on the market," he says.

According to Steve Brooks, Managing Director of Tarpomatic Australia, a landfill using a Tarpomatic with a working face of around 500 square metres might be preserving up to 500 cubic metres of airspace each week when compared to soil-based cover. That's in addition to the savings made in time, machine hours, fuel and labour. Steve has calculated that for a site with

### *Fast Fact*

#### **Blue Ridge Services**

How alternative daily cover can improve a landfill's life using US measurements.

Current operation:

- 40 years of remaining life
- Cover soil ratio is 3:1 (25 per cent)
- Effective landfill density (waste only) is 1200 pounds per cubic yard (0.7 tonnes per cubic metre).

A landfill operator can make some simple operational changes to increase the efficiency of their compactor and also implement an alternative daily cover program to minimise soil usage for daily and intermediate cover. Neal says some landfills will see dramatic changes from these types of adjustments, but even moderate improvement will show some impressive numbers.

Improved operation:

- 46.7 years of remaining life
- Cover ratio is 5:1 (16.7 per cent)
- Effective landfill density (waste only) is 1400 pounds/cubic yard (0.8 tonnes per cubic metre).



Tarpomatic's Steve Brooks has spent more than a decade communicating the value of ADC to the industry.

a gate fee of \$150 per tonne and a working face of 500 square metres, the value of the airspace that is filled with soil cover in just one week is around \$75,000. In Victoria, where the daily cover requirement is 300 millimetres of soil, this is \$150,000 per week.

A self-contained unit, the Tarpomatic ATM can be attached to the front of a landfill compactor or dozer, giving the operator the ability to seamlessly deploy or retrieve the specially designed heavy-duty tarpaulins over their working face. Each Tarpomatic ATM can be adjusted to suit the specific bulldozer or compactor, ensuring quick and easy attachment and removal.

Neal says the unique selling point of the Tarpomatic is its interchangeable spool, which allows for an unlimited amount of coverage with the one machine.

Among the host of benefits is also an odour control unit, which alleviates odours, litter, dust and leachate. Steve adds that alternative tarpaulin systems don't last anywhere near as long, so operators could end up spending more over time.

Another quality of the technology is its durability. Tarpomatic's tarpaulins are constructed using a heavy-duty dual-layer laminated polyethylene fabric and each tarp has more than 150 metres of heavyweight chain built in so they weigh 400 kilograms each. It means the tarpaulins remain in place in the event of strong winds.

### COMMUNICATING THE VALUE OF AIRSPACE

Neal believes one of the challenges in educating operators on the value of airspace has been a miscommunication between landfill operators and engineers.

He says he has worked in 45 states in the US, along with some Canadian

provinces, parts of Australia and other nations. In Neal's experience, changing archaic practices requires a strong communicator who can articulate the financial benefits in a simple way.

"You've got people who have been in the business a long time and operate landfills traditionally and then you have people who are scientific and engineering-minded that perform geotechnical and engineering work," Neal says.

"But those two groups don't communicate well together, because engineers speak in an engineering language and operators don't and that's where our company comes in as the translator."

He says Tarpomatic's Steve Brooks has done an exceptional job communicating the value of ADC to the industry.

"Steve has taken a personal approach to laying out the benefits of his product. He's in the same boat as



The spools on the Tarpomatic are interchangeable, allowing for unlimited coverage with the one machine.

us in taking an untapped technology and demonstrating its value to the industry.

“Fortunately for Steve’s customers, the benefit from Tarpomatic is phenomenal – it’s a very fast pay back.”

But all in all, Neal says the key benefit of the Tarpomatic is its cost savings.

“If you took a large landfill and looked at the capacity, and multiplied that against the gate fee, it’s not unusual to have large landfills show that they’ll generate more than a billion dollars over their lifetime,” Neal says.

“Aside from these considerations, there are safety issues, we need to make sure we’re working safely. There are environmental issues in protecting the groundwater and surface water and odours, but in the end if you don’t manage your airspace properly, you just won’t have the money to do those other things right.”

Faced with increasing pressures to reduce costs, Neal says he believes countries such as Canada and Australia are now playing catch-up to the US. He says they are up to a decade or so behind in applying efficiencies and techniques to their landfill, despite their effective use of liners, groundwater monitoring and, in some cases, ADCs.

“In Australia, you’re going to see over the next few years a tremendous increase in the awareness of the technology we have and learning how to compact better and use ADC better.”

As previously reported by *Waste Management Review*, in 2016, dozens of old Victorian landfills were suspected of leaking potentially toxic materials into soil and waterways.

While many landfill operators are operating to best practice, there have been some incidents of unlined landfills. Last year, the Environment Protection Authority Victoria (EPA) noted engineered landfill liners of a certain standard were not compulsory until 2004, when a new EPA policy came into effect.

Although, the EPA notes, the standards were previously well documented.

“When you talk about leachate or landfill gas that might not show up until closure, almost all of those can be traced back to practices during the operational phase of the landfill,” Neal says.

“If you have excessive leachate it’s probably because you weren’t maintaining good surface drainage as you constructed the landfill and filled it. This is the awareness I think Australian landfill operators are going to come to over the next few years.” ■

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# Government inquiry discusses recycling incentives

THE FEDERAL GOVERNMENT'S INQUIRY INTO WASTE AND RECYCLING SPARKED A CONSIDERATION OF WHETHER THERE ARE ENOUGH MARKET INCENTIVES TO ENCOURAGE INVESTMENT INTO RECYCLING.

Following a contentious *Four Corners* report into the waste and recycling industry, the Federal Government announced a senate inquiry to investigate issues that emerged from the program.

It asked industry to make submissions ranging from issues related to landfill, markets for recycled waste and the role of the Federal Government in providing a coherent approach to solid waste. Public hearings were held in November 2017. In November, the senate granted an extension for the government to report on the findings until 13 June, 2018.

*Waste Management Review* looks

at two key points in the terms of reference: the role of different incentives and collection methods to determine the quality and quantity of materials collected for recycling and the destination of material collected for recycling, including the extent of material reprocessing and stockpiling of collected material.

In public hearings, Visy, SKM Recycling, O-1 Australia, Equilibrium, the Victorian Waste Management Association and the National Waste and Recycling Industry Council all made submissions.

In its public submission, resource recovery company Visy addressed the

terms of reference by noting several participants in the recycling industry have exited the market predominately as a consequence of “unviable economics”. Visy attributes this to the volatility of end markets and the rising cost of landfill, particularly in New South Wales, South Australia and Victoria. The company also pinpoints the rise of China as a market for recyclables having historically provided a “large and steady outlet” for the sale and re-use of commodities. China’s proposed ban on the importation of recyclable plastic grades and kerbside recyclables will see a glut of materials with “no home” and a lowering of



Kerbside recycling was scrutinised at a recent senate inquiry into the waste industry.

commodity prices, Visy argued.

“Turning to end markets and the export volatility that we’re hearing about, a common and worrying trend across the industry is an overall decline in the commercial viability of recycling and recyclable feedstock markets globally,” Tony Monaco, Executive General Manager at Visy Recycling, told the inquiry in November.

“Most operators in the kerbside recycling industry have a heavy reliance on exporting and a large proportion of recyclable materials recovered from kerbside collections.

“Export-facing commodity sales are exposed to unavoidable volatility and financial risk. Visy is certainly uniquely positioned as it consumes, internally and domestically, 90 per cent of the mixed paper it processes from the kerbside stream.”

Visy’s public submission notes reforms are needed. These include having states and territories waive landfill levies on the disposal of residual waste from recycling operations, no landfill levies for organisations that utilise kerbside recyclable materials for raw material feedstock in further re-manufacturing and providing a “recycling bonus” for companies utilising recyclable materials. Visy also calls for local government tenders to prioritise factors that improve jobs and economic benefits from recyclables ahead of price.

“Rather than being incentivised for providing this environmentally sustainable essential service of landfill diversion, the recycling industry (as distinct from the waste disposal industry) is being penalised by being charged excessive waste levies for their disposal of residual rubbish that inadvertently ends up in the recycling stream due to householders incorrectly placing it into kerbside recycling bins,” Visy’s public submission says.

The company also calls for council recycling guidelines standardised to reduce contamination, along with standardised and consistent government-led education. This comes amid challenges to householder behaviour, with Visy noting in its submission that some householders aren’t complying with council recycling guidelines. Contaminated recyclable streams should be levied at councils, rather than recycling companies, Visy wrote. The Local Government Act or equivalent could also regulate local governments’ recyclable contamination limits in all contracts.

“Landfill costs should be levied at councils, not recycling companies; it is simply waste-shifting by householders moving the material from the waste bin to the recycling bin,” Tony Monaco told the inquiry.

The National Waste and Recycling Industry Council (NWRIC) shares some of these concerns, including the better utilisation of recyclable materials and landfill levy revenue used to support recycling.

The NWRIC has continued to advocate for landfill levy portability, which means that levies applicable should be based on where waste is generated, not where it is landfilled.

In his opening statement in the inquiry, Max Spedding, NWRIC Chief Executive Officer, highlights that waste is continuing to grow 4.5 per cent each year. By 2040, Australians will generate 138 million tonnes of solid waste per year. Assuming a future national diversion rate of 75 per cent, the industry’s recycling capacity will need to grow by 400 per cent.

## EDUCATION

Speaking to *Waste Management Review*, Max calls for better educational programs within local government.

“If you listen to talkback radio, there

will be a discussion once or twice a week about what is supposed to go in the right bin and where. There’s general confusion out there and it shouldn’t exist,” Max says.

“There really is a need for greater education to try and leave the level of contaminants down and Visy’s quite right, where this goes wrong, they end up paying for it.”

A spokesperson for the Australian Local Government Association (ALGA), which acts as an independent body for mayors, councillors and local government employees nationwide, tells *Waste Management Review* that local government is already bearing the cost of landfill levies in their contract price.

“It’s ALGA’s belief that if waste management companies are being hit by having to pay levies then they will pass that cost onto councils. So it’s not quite as simple as saying we’re bearing all the costs and the councils are bearing none of it,” they say.

The spokesperson says landfill levies sitting in state coffers should be returned to local government to help improve waste management services across the country.

On a question of standardising recycling guidelines, ALGA notes that



Max Spedding heads the National Waste and Recycling Industry Council.



Materials recovery facilities bear the brunt of negligent recycling practices.

council recycling capacity and markets differ across the various states and territories. It also adds that education programs are largely managed by the states and territories.

“ALGA’s view is that industry should be a partner in these recycling education programs...industry (waste generators) should be doing more to manage their waste.”

Speaking to the inquiry, Andrew Tytherleigh, Executive Officer at Victorian Waste Management Association, argued the recovery rate of municipal solid waste needed to be improved.

“The Victorian government has targeted the removal of household organics, which comprise quite a large fraction of the material left in the bin, and has recently released a paper about waste to energy as a way of looking at addressing the residual municipal solid waste,” Andrew said.

“Both of these policies, in our view, are designed to encourage greater resource recovery and, in the latter case, to try to stimulate discussion about further investment in new technology.”

Blue Environment’s National Waste Report 2016 shows in 2014-15, Australia produced the equivalent of 565 kilograms per capita of municipal waste, 831 kilograms of construction and demolition waste, 459 kilograms

of fly ash and 849 kilograms of other commercial and industrial waste. Of this, 51 per cent of municipal waste was recycled, while 57 per cent of commercial and industrial waste and 64 per cent of construction and demolition waste was recycled. The report indicates Australia is generating less municipal waste per capita and recycling more of what is generated. From 2006-07 to 2014-15, the resource recovery rate increased from 49 per cent to 58 per cent.

According to the Victorian Local Government Annual Waste Services Report 2015-16, contamination levels in the state average 5.6 per cent, down from 6 per cent in 2014-15. The report shows contamination rates have fluctuated year to year, but data valuation shows this is generally due to the accuracy of data reported by local government, as opposed to a change in contamination rates. In the National Waste Report 2016, contamination of kerbside bins is considered a problem for composters and recyclers and labelled a “significant waste management challenge”.

**RECYCLING INCENTIVES**

When it comes to recycling incentives to improve resource recovery, the NWRIC made a number of suggestions. Among these many suggestions were

the use of landfill levy revenue to create a “recycling bank” to support new infrastructure through low interest loans.

Speaking to the inquiry, Max pointed to the Chinese National Sword policy, which ran from 1 March 2017 until 30 November 2017. Much like China’s World Trade Organization announcement, National Sword involved a restriction on the importation of scrap plastic into China and builds upon its previous Green Fence policy.

“This has been a gradual change we’ve seen over the last two years, but it’s expected to ramp up in 2017 and could have quite dramatic impacts. To solve this challenge, the council proposes that landfill levy funds be used to stimulate the creation of domestic markets for recycled materials,” Max told the inquiry.

“To further stimulate recycling, the council supports the expansion of the Emissions Reduction Fund, the ERF, to support greenhouse gas reduction initiatives, including compost, landfill gas recycling and material efficiency.”

The NWRIC also argues government procurement programs need to better utilise recycled materials, while greater support is needed for programs to develop domestic markets for recycled materials.

Looking at glass in particular, Max believes it is being recycled in greater volumes in Victoria when compared with states such as Queensland, due to the complexities of its specifications, resulting in what he classifies as loopholes.

He says Queensland’s Department of Transport and Main Roads document is much larger than Victoria’s. VicRoads’ technical note T107 provides guidance in the use of recycled materials in pavement works and is four pages long, while Queensland’s Department of Transport and Main Roads sits at 87 pages.

“What we are looking for is a greater demand for these recycled materials, but it isn’t necessarily a matter of having the Federal Government come along and say, ‘We must mandate this.’ It’s a matter of ensuring that we’ve got an environment that encourages industry to respond,” Max told the inquiry.

Alex Serpo, NWRIC Secretariat, also noted in the inquiry stockpiles of paper and plastics are a major concern, in addition to glass. When commenting on the issue of glass recycling, Alex said there is a current oversupply of glass in Australia. He explained 15 years ago most glass was recycled in Australia and there weren’t large imports of glass. Alex said it is now cheaper to produce a bottle overseas and bring it in.

“We have a real opportunity to use a lot more glass than we use now. In Victoria, the stockpile at Laverton that was in the *Four Corners* show has not grown in the last 10 years because one company, Alex Fraser, take about 150,000 to 200,000 tonnes of broken glass a year. They crush it and they include it in their asphalt and in their road-based material,” Max said.

Speaking to the inquiry, Andrew argued that a key driver for governments, given their large purchases of goods and services, would be to mandate minimum quantities of recycled materials in their purchasing policies.

“As state and local governments and the Commonwealth are large consumers of these goods and services, this would underpin what I mean about creating market demand,” he said.

“The general view from my experience of waste policies, and this applies to them all, is that they still focus very much on the front end of recycling and not enough on market development – the pull-through, if you like, of creating policies that create a demand, which creates investment by the private sector.” ■



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China's ban on foreign waste could mean an influx of recyclables with no end destination.

# Capturing disaster

THERE ARE VALUABLE LESSONS TO BE LEARNT ABOUT DATA CAPTURE AND MANAGING WASTE DURING NATURAL DISASTERS SUCH AS CYCLONE DEBBIE, EXPLAINS ANDREW BROWN, PRINCIPAL ENGINEER AT CQG CONSULTING.

**O**n 28 March, 2017, a severe tropical cyclone crossed the coast in the Whitsunday area, northeast Queensland.

Dubbed Cyclone Debbie, the slow-moving weather struck the region of Mackay, with strong winds and torrential rain causing significant damage to homes, infrastructure and agriculture. As Debbie tore through

northern Queensland, councils began to alert their communities of the impending danger through radio, websites and social media.

Cyclone Debbie crossed the coast as a Category 4 cyclone, considered the second most severe tropical storm, according to the Bureau of Meteorology. As a result of the devastating incident, more than 30

local government authorities were provided natural disaster relief and recovery arrangements. The events which unfolded were documented in the report *The Cyclone Debbie Review: Lessons for delivering value and confidence through trust and empowerment*.

The most vulnerable areas north of Mackay were urged to evacuate



Verena Lund, Field Technician at CQG Consulting, conducts an audit at a temporary green waste facility in Kolijo in Mackay.

by the district disaster coordinator, as Queensland Fire and Emergency Services, police, local groups and councils worked hard to reduce the damage inflicted. Rockhampton experienced slow-onset flooding and on 31 March, local groups prepared for the town's third major flood in six years. Evacuation centres were also established in Rockhampton and Yeppoon, and a range of other areas.

The subsequent devastation across northern Queensland as of May 2017 data saw 944 properties assessed as uninhabitable, 2360 properties damaged, more than 58,000 insurance claims, power disruptions to 65,000 premises and damage to coal exports and crops. Most significantly, there were 14 deaths.

The report concluded that five major themes emerged from the tragedy: planning, public information and engagement, information management, evacuation and capability.

Andrew Brown, Principal Engineer at CQG Consulting, was tasked with coordinating the waste clean-up with local government, working with Mackay Regional Council (MRC)

and Rockhampton Regional Council (RRC). The clean-up in the Mackay municipality ran from 29 March to 29 April and involved up to 3500 cubic metres of waste being collected per day, primarily green waste. Andrew explains that during tropical cyclones green waste is usually the most common waste stream, along with commercial and industrial, construction and demolition and food waste. The Mackay region clean-up saw 43,400 cubic metres of green waste collected – equivalent to 17 Olympic pools.

MRC, with assistance from CQG Consulting, mobilised more than 90 locals to collect the green waste spread across homes and neighborhoods. Contractors were engaged to collect and transport the green waste on for processing – now used in gardens across Mackay as compost.

Andrew says it wouldn't have been possible to collect quickly without an accurate reporting system. In the wake of the cyclone, software provider Mandalay Technologies were engaged by MRC to establish its waste tracking software. He says accurate information

is critical to project management which helps inform what collection and recycling resources need to be deployed. For example, waste volumes tend to taper off later in the clean-up, as was the case in Mackay, so resourcing is important early on.

He says that the most critical types of data required include waste volumes, vehicle types and tonnages. That's in addition to spatial information, which records what areas have been cleaned up and the resources that have been applied to specific locations, broken down by street.

"What we did at Mackay hasn't been done before. We provided daily waste data to MRC and Mandalay who established numerous databases, including for temporary sites," Andrew says.

He says data is critical to managing logistics, including whether the waste has gone to a landfill, recycler or transfer station.

"Each of those sites provided data to us as we needed to understand what waste was going into facilities and what was going out of those sites," he says.

## HARSH LESSONS

Andrew says some of the challenges of capturing data included transposing and reconciling manual collection systems onto a database. Unfortunately, there was no real-time data for some of the waste facilities, with MRC contractors of varying skills and training manually recording the information onto paper. The lack of onsite digital recording meant the process of recording the information was onerous, and Andrew says he and Mandalay have discussed the need for waste collection tracking systems to be deployed across all facilities during times of emergency.

Fortunately, Andrew had learnt from his experiences working on the clean-up



Household waste piles up as a result of flash flooding at Drapers Siding in Mackay, Queensland.



John Phelan, Project Manager at CQG Consulting, discusses the clean-up with contractors in Mackay.

for Severe Tropical Cyclone Marcia in 2015, which was recorded using manual systems on an Excel spreadsheet. As a result, he saw the value of using the Mandalay database to build a record of waste generation.

In collaboration with the councils, Andrew and the CQG team tracked the progress of the clean-up on visual maps posted on the project office wall. This provided an immediate display of progress for the team and enabled rapid decisions to be made.

Data capture was also used to rectify access problems to Mackay’s Hogan’s Pocket Landfill. As the cyclone made its way across the nearby Eton Range, Peak Downs Highway, it caused a rock slide and damaged the road. The damage cut off access to the region’s only landfill, and MRC had to establish a temporary landfill at one of the existing waste transfer stations.

“Using Mandalay’s waste tracking systems, MRC was able to accurately capture how much waste went into temporary facilities and was transferred to Hogan’s Pocket once the road was cleared,” Andrew says.

“The data helped inform decisions such as transport requirements, in addition to how much landfill top cover was needed to reduce contamination from the waste.

“MRC was able to account for the extra expenditure and resources required and not be faced with surprises down the track.”

### A NEW ERA

The forward-thinking response by MRC, RRC and the CQG team comes as greater accountability is placed on emergency services and local, state and federal governments to inform the public of their response. As noted in the Cyclone Debbie Review, previous natural disaster reviews, inquiries and research highlight the importance of managing and sharing information to support effective management.

Andrew says there is a much more rigid management structure at local government, with increased transparency as the public becomes aware of the challenges of recycling, including the risk of contamination.

“Council staff need to provide data

to their elected councillors who are asking questions such as: how will you organise the clean up? What has been collected so far? How many complaints have there been?”

In the Rockhampton region, the clean-up ran from 13 April to 3 May. Up to 2012 low-lying properties were inundated with flood waters.

As a result, approximately 265.3 tonnes of hard waste were collected, along with 22 tonnes of scrap metal and 4.7 tonnes of asbestos-containing material. RRC engaged local contractors to deal with flood-damaged waste (hard waste) at its Lakes Creek Road Landfill.

Andrew says historic flood peak maps and geographic information systems were used to determine the affected areas, coordinate contractors and estimate expected waste volumes.

To keep tabs on the overall picture, the clean-up team set up a project office and held daily tool box and team meetings, kerbside inspections, data collation, collection scheduling, checked contractor invoices and took more than 1000 photos, including drone aerial imagery.



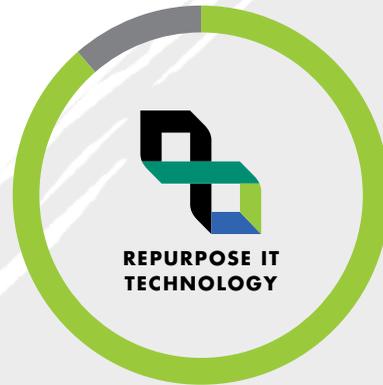
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## THE ROLE OF COUNCILS

When it comes to the preparedness of local government in post-natural disaster management, Kumar Kannan, Senior Implementation Consultant at Mandalay Technologies, says data quality varies from council to council. He says many councils are reactive, rather than proactive. Data can only be fed into a database if it is readily available post-disaster, he adds. If it isn't ready prior to clean-up it could take at least a week to be established, which only delays the clean-up process.

"Many councils are not ready to capture the data or don't have it set up at the time of disaster. This can impact on government funding, as you need to be able to provide information such as waste volumes and tonnages to receive additional resourcing," Kumar explains.

He says best practice involves having data ready to be accessed as the disaster unfolds of where waste is going within a cloud database.

"Capturing data by suburb through real-time dashboards allows you to go beyond tonnages and see just how bad the situation is in a particular suburb," he says.

"The consequences of not deploying your resources correctly can cost you more money down the track, not to mention the impact on residents health, homes and the environment."

According to the Cyclone Debbie Review, the Disaster Management Act (2003) covers information sharing through all levels of government. The report concedes that many data sets and information systems are not being utilised fully. The review argues the State Disaster Coordination Centre Event Management System (EMS) was for the first time used by the government for situational reporting and noticeably improved it. It notes that coordinating reports from others

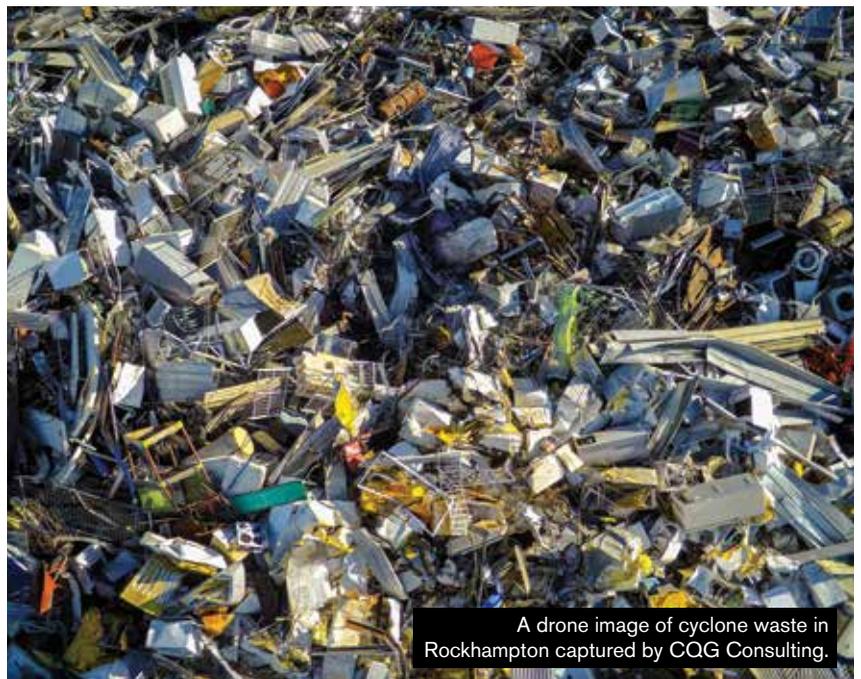
is difficult. Individual requirements changed often, reports were large and local groups were constantly asked for information. There were also issues of visibility of information as local situation reports were not visible in EMS. The report leaves agencies to ponder how they can make the best decisions if they're not aware of the information or resources of each entity. However, it argues the Debbie experience showed strong interoperability between groups, agencies and systems. While it recognises the barriers of a common system across agencies, it highlights the importance of continuing to expand in this area.

Kumar says greater collaboration is needed between companies such as Mandalay Technologies, local government, state government and emergency services to ensure data is better captured into the future.

"I think there should be state government standards for data management during natural disasters," he says.

A Queensland Government spokesperson told *Waste Management*

*Review* that the government accepted 17 of the recommendations made in the Cyclone Debbie Review Action Plan, which was tabled in parliament in October. They noted a whole-of-government action plan was developed by an Interdepartmental Committee to address recommendations and findings in the report. The spokesperson said the review arrived at 18 recommendations, incorporating themes such as the need to provide timely and contextualised information, consistent and understandable public messaging and the continued need for addressing information sharing in disasters and how systems worked together. The action plan supports the recommendation for a Local Government Association of Queensland (LGAQ) representative to be included on the Crisis Communications Network to ensure consistent messaging across levels of government. It highlights that LGAQ is already an optional member of the Crisis Communications Network. It says their involvement is "based on crisis and need." ■



A drone image of cyclone waste in Rockhampton captured by CQG Consulting.

# Compost as a sustainable solution



Compost can be a valuable input in sustainable farming and urban landscapes. Made from household food and garden organics waste, source separated compost can be processed commercially to Australian Standards (AS4454) to be safe and useable, free of contaminants and viable weed seed. Compost builds healthier soils, improves plant growth and increases productivity.



NSW has set a target to divert 75 per cent of all waste from landfill by 2021. To achieve it, there needs to be effective food and garden waste recycling because organics make up the largest single waste stream going to landfill. The NSW Government's Environment Protection Authority (EPA) is investing \$100 million through the waste levy-funded Waste Less, Recycle More for organics collections and processing as well as grants to develop new markets for the final compost product.

The first round of Organics Market Development grants, managed by EPA Organics, showcased the benefits of compost in multiple ways. The projects included agricultural applications using specified compost as a farm input into broadacre and horticulture industries and urban landscape applications using compost-based top dressing and specified compost blankets.



The projects demonstrated an array of compost's benefits from increasing soil organic matter to feed soil biology through to improvements in yields, soil health, nutrient and water retention, soil structure and root development.

In the compost blanket project, The Hills Bark Blower company in conjunction with Roads and Maritime Services used the product for erosion control, revegetation and rehabilitation of new and existing roadsides. The compost blanket can also be used for many other urban and agricultural landscape solutions.



MRA Consulting Group conducted a workshop series on farms across Central NSW that demonstrated the benefits of compost use in grazing and cropping. As a result 344 farmers have increased awareness, experience and confidence in compost as a regular farming input and more than 24,000 tonnes of compost is benefiting the region's soils.

In the Sydney basin, Greater Sydney Local Land Services, NSW Farmers and the Institute for Sustainable Futures joined forces to demonstrate compost's potential to boost crop yields and reduce input costs in horticulture through on-farm demonstration sites. The benefits included improved fruit yield, root size and structure; lower nutrient-leaching losses and increased beneficial soil biology.

Go to [epa.nsw.gov.au/organics](http://epa.nsw.gov.au/organics) to find out more about these projects and the next grant round and information sessions.



**Waste Less, Recycle More**

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# The future of **food waste** in Australia

## THE NATIONAL FOOD WASTE STRATEGY BRINGS TO LIGHT A RANGE OF CHALLENGES FOR REDUCING THE NATION'S FOOD WASTE, BUT WHERE TO FROM HERE?

It's estimated that food waste costs the Australian economy around \$20 billion each year, according to the recently released National Food Waste Strategy.

The strategy provides a snapshot of the state of the nation's food waste. Households throw away 3.1 million tonnes of edible food, equivalent to 17,000 grounded 747 jumbo jets. Up to 2.2 million tonnes of food from the commercial and industrial sector is going to waste, resulting in waste disposal charges and product losses.

The strategy argues that this has significant impacts on the environment through wasted resources in land, water, energy and fuel to produce and distribute food.

Food waste is also detrimental to the environment when disposed of to landfill, through the production of greenhouse gas emissions.

It has taken some years for the

strategy to eventuate, as the discussions gathered momentum in 2016, when Australia's state and territory environment ministers agreed to support the Federal Government's election commitment to halve the nation's food waste by 2030.

The government then began advancing work on a framework to achieve this goal – a National Food Waste Strategy and a National Food Waste Summit.

Months of consultation with industry, academia, the not-for-profit sector and all tiers of government led to the launch of the National Food Waste Report in November 2017.

The initiatives highlighted through the strategy will be advanced over the next two years, with \$1 million in funding afforded to an independent governance body – Food Innovation Australia Limited (FIAL).

FIAL has been selected to develop

an implementation plan and establish a voluntary commitment program for industry. In consultation with the Department of the Environment and Energy, a steering committee will be established in early 2018 to provide FIAL with guidance and advice to support the implementation of the strategy.

Dr Mirjana Prica, FIAL's Managing Director says one of the key roles for FIAL over the next 24 months will be to identify short, medium and long-term outcomes for the delivery of the strategy and how these outcomes will be measured against the 2030 target.

To support this, the government has committed \$370,000 for two projects – one to help set up a National Food Waste Baseline, which will develop an approach for the measurement of progress against the 50 per cent reduction target, and another to identify the best opportunities for businesses to



The government has committed \$1 million to an independent body to help identify solutions for stakeholders to reduce waste.

“It’s important the concept of shared responsibility is understood, because no one sector will have a solution – it has to be a collaborative effort.”

Brooke Donnelly, Australian Packaging Covenant Organisation Chief Executive Officer.



Brooke Donnelly, APCO CEO, says food packaging design can have a direct impact on reducing waste.

realise a return on investment in food waste reduction activities.

While state, territory and local governments are tasked with managing waste, the National Food Waste Baseline will measure progress for stakeholders to follow.

FIAL is working with the Department of the Environment and Energy to establish a steering committee by early 2018. In 2019, the Federal Government plans assess the work being done to ensure ongoing support for its implementation.

The strategy notes the management of food waste is complex due to the large number of entities engaged in producing, moving, selling,

redistributing and disposing of food. In Australia, the agribusiness industry produces enough food to feed 60 million people, with its \$59.1 billion output equivalent to 3.6 per cent of gross domestic product.

It identifies four priority areas where improvements can be made: policy support, business improvements, market development and behaviour change. These priorities will be supported by all of the food industry’s relevant stakeholders: governments, industry, business, academia, food rescue organisations and the community. Stakeholders within the supply chain include: processors and manufacturers; distributors; retail; hospitality and food service; and households, which all have a role to play in minimising waste.

Numerous benefits can be gleaned from minimising food waste in Australia, including job creation, new products and services and markets. Among the host of benefits is added resources, waste management, lower disposal fees and increased profits. That’s not to mention the flow on to the consumer through potentially lower food bills and better food security for the global economy.

In order to make sense of the complex issues at hand, the report adopts a broad and inclusive definition of food waste. This covers solid or liquid food intended for human consumption across the supply chain, thrown away food and food imported and disposed of in Australia. It also encompasses food produced or manufactured for export which remains onshore.

Kaelene McLennan, Simplot Corporate Affairs and Sustainability Manager, says innovation around new markets for food waste is a critical part of the solution.

“The first step needs to identify what is in those waste streams and gathering data to understand that. The National

Food Waste Strategy is helping to identify data which can be used to help create new markets to address the waste issue,” she says.

She hopes this work will establish a consistent approach to dealing with food waste for the states and territories to follow.

Individual sectors cannot deal with the problem on their own, as this has led to inconsistent approaches in the past, she adds.

“Understanding the broader issue of food waste and how it impacts the whole of Australia is important. I haven’t seen a lot of that work being done yet,” Kaelene says.

FIAL’s Mirjana agrees a greater alignment is needed between the states and territories on both food waste initiatives and policy.

“Legislation is not always the best solution to achieve change and can impose additional burden on business,” she says.

“It is important that where legislation is being considered that there is evidence to support any legislative changes, to ensure that we act in the best interests of the country.”

Kaelene says a voluntary product stewardship approach, akin to products such as tyres which have been handled through the Product Stewardship Act 2011, would be a step in the right direction.

“Whether or not this type of approach is suitable for all food waste is probably yet to be determined.”

Mirjana also notes FIAL believes it’s important to learn from other voluntary product stewardships such as tyres, along with looking overseas to use these learnings to shape future schemes.

Part of the strategy’s priorities is to identify where to target its investment, and one of its plans is for the Federal Government to commission a study



Food waste is estimated to cost the Australian economy about \$20 billion per year.

which may investigate how fruit or vegetables that do not meet market specifications can be converted into a higher value-added product.

Another solution is to establish a voluntary commitment program that requires signatories to commit to reduction in food waste targets, as well as amending legislation to give more incentives to redirect food waste to charities or recycle it.

Technological innovations such as better intelligence for farmers and improvements in the way we package food for longer shelf life are also among the host of other priorities.

Furthermore, the market development of food waste to energy, organic fertilisers and nutrient extraction is also noted.

However, when looking at the figures of food waste’s \$20 billion cost to the economy, Kaelene argues more research is needed.

“Until we can interrogate that data and really understand what food waste is and where it’s coming from, it’s difficult to estimate.

“The way that companies like Simplot are approaching it is to interrogate our own data and we’ve started to get a

good handle on what creates waste for us and how we can address that.”

She says she is working with Australia’s largest food relief organisation, Food Bank, to ascertain ways to reduce Simplot’s food waste. One area Simplot is working in is trying to have a better understanding of food fit for consumption.

The cost implications of moving food from one area to another is a major barrier.

“The biggest challenge for us has been logistics. How do we engage with logistics operators? As a company we have manufacturing sites that are geographically spread out.

“It’s where we’ve got regional and rural sites with food that can be donated that creates challenges, but it’s getting the logistics to have that food distributed to those in need.”

Kaelene says tax exemptions are one solution that could help the supply chain distribute food before it goes to waste.

Simplot has set a target of zero waste to landfill, but has yet to identify when this will be the case, as it is in the early phases of raising awareness.

“As we have set that goal, we are now identifying the barriers and

“It is important that where legislation is being considered that there is evidence to support any legislative changes, to ensure that we act in the best interests of the country.”

Dr Mirjana Prica **Food Innovation Australia Limited**

trying to work through those.”

There are also financial implications for creating excess waste and Kaelene says efficiency is critical to the future of Simplot.

FIAL is undertaking research with the Department of Environment and Energy to provide further information on supply chain barriers.

It will also be working with co-regulatory organisations such as the Australian Packaging Covenant Organisation to improve food distribution outcomes through sustainable packaging.

Brooke Donnelly, Australian Packaging Covenant Organisation (APCO) Chief Executive Officer, says out of the four priority areas, business improvement is one where APCO feels it can make the greatest contribution.

“Encouraging collaboration to identify a solution is critical. Quite often you will see you don’t have a conversation about food waste unless you talk about how it works with packaging,” Brooke says.

“It’s that balance between a sustainable and functional package

and how it impacts on food without creating a food waste issue.”

She says APCO is trying to understand where food waste fits into the sustainable packaging cycle and where the potential lies to leverage that across the supply chain. At the same time, packaging can increase food waste. An example of this is developing lightweight packaging to minimise material usage. While it reduces waste at the packaging level, it may affect its functionality and reduce food shelf life, which in turn creates additional waste.

“I hope we can get to a stage where we understand the leverage points because there are some mutual benefits to be gained in the food supply chain. Otherwise you’ve got this silo effect where one is looking at one part of the chain and they’re not integrating,” Brooke says.

Composters could work with the coffee industry, for example, and develop initiatives to recycle used coffee grounds into compost.

APCO is also launching a standardised labelling scheme for consumers, called the Australian Recycling Label, which will educate people on how to correctly recycle product packaging after use.

It has also developed 13 assessment criteria for sustainable packaging, considering the areas of resource recovery, design, supply chain and end-of-life, which all contribute to a circular economy approach.

Brooke says there are about 240 food and beverage companies and nearly 60 manufacturers that are members of APCO – and it hopes to continue to foster collaboration across these sectors to improve environmental outcomes.

“It’s important the concept of shared responsibility is understood, because no one sector will have a solution – it has to be a collaborative effort.” ■



The Federal Government set a target to halve the nation's food waste by 2030.

# Sorting treasure from trash

STEINERT'S KURT PALMER EXPLAINS HOW THE COMPANY'S UNISORT BLACK TECHNOLOGY WILL ALLOW COMPOSTERS TO IMPROVE THEIR PRODUCT, WITH POTENTIAL TO SELL IT TO NEW MARKETS.

**D**iverting organics from landfill is increasingly becoming a higher priority for governments and councils across Australia.

The Victorian Government in 2017 highlighted it was diverting more than half a million tonnes of food and garden waste away from Melbourne's landfill annually, while the NSW's Waste Less, Recycle More Organics Infrastructure grant program will fund \$55.67 million in projects over its nine-year life span. The National Waste Report 2016 shows 51 per cent of organics was recovered in 2014-15 across the country, indicating there may still be some work to be done in this area.

It's exactly why STEINERT, a world leader in sensor-based sorting, has developed a sorting technology to help councils, materials recovery facilities, paper plants and composters keep more organics out of landfill. STEINERT's UniSort Black technology hit the market in late 2017 and the company's Business Development Manager – Environmental, Kurt Palmer, says companies in Australia are eagerly queuing up to test the machine locally. What sets STEINERT as a company apart from others, Kurt says, is its ability to offer both magnetic and sensor-based sorting technology.

He says the diverse sorting technology is suited to both small and large composting operations. Despite the best efforts of households in putting their organics in the correct bins, Kurt



STEINERT's Kurt Palmer says the lack of sorting technologies puts commercial composters at risk due to foreign particles.

says the lack of sorting technologies has continually put commercial composting operations at risk due to foreign particles. It means that the markets for compost have previously been limited to remediation works and industrial applications. Kurt says he hopes UniSort Black will open the market up to composters seeking to sell their products to retail outlets. It's all due to the technology's capacity to rectify mistakes made by residents at the kerbside.

"Human beings will always want to take the easiest route possible and so there will always be contamination, particularly as we see more councils roll out food and garden organics

collections across Australia," Kurt says.

"Innocent mistakes can be made by households. For example, when you are disposing of garden waste there may be bits and pieces within that waste that fails to catch the resident's attention."

Kurt says the UniSort Black serves as a supplementary quality assurance technology for organics processing facilities. Depending on the organics waste stream and kerbside service, household bins can contain foreign particle contaminants such as glass, plastics and metals. Not only this, Kurt adds that a compost that isn't aesthetically pleasing also frequently fails to appeal to the retail sector.

He says STEINERT has ensured the technology it distributes to the composting market adheres to rigorous standards. According to the German standards for composting, RAL-G2-251, only 25 square centimetres of foreign particles are permitted per litre of fresh substance in fresh and finished compost.

Kurt explains that after the raw materials have undergone initial composting, magnets above the belt remove any ferrous metal components prior to reaching the UniSort Black.

The next phase of pre-processing allows sieves and wind sifters to pre-condition the material for processing in the UniSort Black. Sieves remove the fine material, such as dirt, and wind sifters remove the light fraction of objects such as plastic films.

"Essentially, these wind sifters

separate the heavy fractions from the light fractions. The UniSort Black processes the heavy fraction of organics, as that's where the majority of contaminants are," Kurt says.

Once this process is finished, conveyor belts move the material to the UniSort Black, which separates out all plastics, including all dark-coloured and black plastics, as well as any remaining foils and metals. Kurt says the technology removes more than 98 per cent of foreign particles. At this stage, the technology can also sort and remove any broken glass, stones and ceramics.

"The UniSort Black sorting system consists of a near infrared sensor, which allows us to detect these potential contaminants," Kurt says.

Kurt says particles reflect light within a certain range and, for these reasons the system is able to identify contaminants within a near-infrared electromagnetic spectrum of 750-950



The UniSort Black separates foreign particles out of organic materials.

nanometres. The electromagnetic spectrum is a collective term to refer to the entire range of frequencies of electromagnetic radiation. Near-infrared can identify unknown substances with a spectrum of frequencies, which can be measured in either reflection or transmission. Nanometres is the unit of measurement for the wavelength of electromagnetic radiation.

"We can identify organic material, we can identify plastics by type, in addition to all sorts of other materials," he says.

"The beauty of the technology is we can also identify unidentifiable objects. If something doesn't reflect that nanometre spectrum, we don't see it, but we know something is there. Because organics is within that range, we can reject anything else because we know it can't be organics. This applies to materials such as rubber and black plastic."

Kurt says the use of hyper spectral imaging technology enables UniSort Black to recognise multiple types of material simultaneously, setting it apart from other technology. He says the hyper spectral imaging camera within the UniSort Black is able to detect more than 27 million particles per second when placed on the conveyor belt.

"The reason that's important is it gives us a lot more information about the material that's on the belt and the more information you have, the better sorting decisions you can make

– such as whether you want to keep or remove the materials.

"Compared to other technologies, hyper spectral imaging technology is the difference between an old 20th century camera and an iPhone camera."

Following this process, the material is ready to undergo final composting and be sold to retailers.

Depending on the application, the technology can process organics at a throughput rate of six to 10 tonnes per working hour at a width of 2.8 metres. The grain sizes it can process at any one time are adjustable and range from about 10 to 70 millimetres and from 70 to 350 millimetres.

So what does the future hold for the technology in 2018?

Kurt says the company will be speaking with the Australian Organics Recycling Association to ascertain whether there will be any local standards established for foreign particle size requirements. As the organics processing sector continues to grow, STEINERT will continue to offer its technology to emerging markets.

"We want to give composters the flexibility to expand their operations. The retail market has a lot more value and we want organics processors to be able to produce bagged compost which is almost identical to virgin materials." ■



### Fast Fact

#### An overview of UniSort Black technical data:

- Application: Removal of plastics, foils, metals, ceramics, stones and broken glass from organic material
- Technology: Hyper spectral imaging (HSI), near-infrared sensor and metal sensor
- Application-related analysis software
- Spectral resolution: Less than three nanometres
- Spatial resolution: HSI chip with 320 measuring points
- Number of detections per second: More than 27 million
- Light source: Halogen
- Grain size: adjustable, e.g. 10 to 70 millimetres and 70 to 350 millimetres
- Valve distance: 12.5 millimetres and 31 millimetres available
- Working widths: 1000, 1400, 2000 and 2800 millimetres

# Stimulating organics recycling

AMANDA KANE, MANAGER ORGANICS, NSW ENVIRONMENT PROTECTION AUTHORITY, SPEAKS TO *WASTE MANAGEMENT REVIEW* ABOUT ITS INFLUENTIAL ORGANICS MARKET DEVELOPMENT GRANTS AND THE AGENCY'S PRIORITIES FOR 2018.

**T**hrough the multimillion dollar Waste Less, Recycle More initiative, the NSW Environment Protection Authority (EPA) continues to drive organics recycling outcomes.

According to the NSW EPA, almost half of household waste going to landfill in NSW consists of food and garden organics waste.

Through its \$100.5 million Organics Infrastructure Fund, the EPA has supported numerous programs, from its Organics Market Development grants, which stimulate growth in the sector, to its Love Food Hate Waste education support program focused on reducing edible food waste.

Amanda Kane, Manager Organics, NSW EPA, says an additional \$4.5 million will be dispersed into organics market development from 2017-21. It builds on previous funding which has already helped stimulate demand for an additional 90,000 tonnes of recycled organics into NSW markets since the program began.

She says that it's all part of the EPA's multipronged approach to dealing with organics under the NSW Government's Waste Less, Recycle More grant programs.

"We're tackling food and garden recovery from every angle," she says.

"We are looking at avoidance through our Love Food Hate Waste program: increasing kerbside collections and funding infrastructure to boost processing capacity. The market

development grants are focused on markets for the recycled product."

She says the previous round of grant funding proved the benefits of recycled organics products to the agricultural, sporting, horticultural, roads and other sectors. This understanding within the sector has driven an increased demand for recycled products in 2018. Building on the previous \$2.5 million round, Amanda says the goal of the EPA will be to expand existing markets and create new ones.

Applications for the next round are closing at the end of March. She says one of the aims of the funding will be to support projects that bring processors and a potential customer base together to showcase the benefits of compost in that market. She says this could include a project that works with graziers around improved pastoral health, which demonstrates the effectiveness of recycled organics. Amanda says she hopes it would generate local sales, taking the findings to as a wide an audience as possible.

In the previous round, the EPA funded an array of projects across the agriculture and horticulture sectors.

One project, supported by the NSW Football Association, saw the development of compost to enrich the soil health of sporting turf. AgEnviro Solutions was provided with \$350,000 to apply the compost as topdressing. With 2620 hectares of council-managed sporting fields in greater Sydney alone,



Amanda Kane stands next to a compost tunnel at Soilco's facility in Kembla Grange, Wollongong, NSW.

the project has the potential to build markets for up to 83,800 cubic metres of this compost product annually.

"In 2015, the NSW Football Association nominated 408 playing of fields in NSW which required attention to improve resilience and the length of the playing season," Amanda says.

AgEnviro provided a comprehensive report on each field, recommending to councils where application of compost in top dressing or underlay would improve the field's performance.

"Compost works particularly well on turf because it provides most of the nutrients that that turf needs. It can also save money, reducing the need for

irrigation and patching, which can be an expensive way of fixing damaged turf,” Amanda says.

She says part of expanding markets for organics is also reducing any barriers to extensive use. The previous round of funding allocated \$46,836 to MRA Consulting Group to address the restrictions of recycled organics use within the horticultural industry in its Freshcare code of practice, a voluntary quality assurance code of practice for the fresh vegetable industry.

The code is used by the major supermarket chains in developing their own approved supplier compliance systems. The project brought key stakeholders together in a working group to identify the market barriers, and demonstrate how recycled organics are safe and effective inputs. A set of guidelines is now available which show how recycled organics can meet code requirements for users and producers.

“Companies like Coles and Woolworths require growers to meet Freshcare standards. Until now, vegetables grown in recycled organics wouldn’t be eligible under the code so we changed that. There are a multitude of benefits for growers, including greater water retention, soil health and crop yield,” she says.

In a separate project with MRA Consulting, a recycled organics specification was also developed for vegetable and fruit production. Two existing product specifications were upgraded to include organics for use in the vegetable and orchard industries. It was also promoted to the recycling processing industry and horticulture sectors to encourage the manufacture and application of products tailored for use in fruit and vegetable production.

Amanda says going forward there will be further specifications developed for sporting fields and weed suppressants.

In the area of weed health, the first round grants began this work following a trial for the control of African Lovegrass, a drought-tolerant perennial grass species growing in the Monaro region in NSW. The weed covers more than 80,000 hectares and threatens the long-term viability of farms in the region. The EPA provided \$50,000 to Australian Soil Management to develop the specification for an amended compost application to rein in the infestation.

Snowy Monaro Regional Council provided the compost, sourced from its new kerbside food and garden waste service, collected from the town’s 8000 residents and supported through other components of the EPA’s Fund.

So what are the next steps for the EPA’s organics market development grants?

When it comes to reforming the organics recycling industry, Amanda says the EPA will let the market do the talking.

She says the production of specifications is the ultimate step in opening up these markets for the agricultural, horticultural and other industries.

“The main market barriers are

knowledge and awareness. Our research shows there is very low awareness among the key markets for recycled organics, specifically agricultural markets and their understanding of compost in general.

“The more aware people are of the product, the more likely they are to buy it. The agricultural and rural markets in particular need to see how it works before they become interested in buying, so it’s about demonstrating multiple uses in different circumstances.”

Innovation is at the forefront of the EPA’s decision making, as the agency hopes to discover how organics recycling applies to a range of applications.

Off the back of the EPA’s successes, Amanda adds that NSW is very well placed to meet the federal government’s target to halve the nation’s food waste by 2030.

“We’ve had this funding since 2013 under Waste Less, Recycle More, so we’re already stimulating the investment in food recovery and these grants build on that. They are a crucial component. Unless there’s a market for the end product, organics recovery is not going to be sustainable.” ■



A sporting ground in southern Sydney after AgEnviro’s compost application and winter football season.



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# A new world city

WASTE MANAGEMENT REVIEW TALKS TO COUNCILLOR PETER MATIC ABOUT HOW BRISBANE CITY COUNCIL AWARDED ITS LATEST WASTE CONTRACTS TOTALLING \$3 BILLION.

**Q. What makes Brisbane City Council unique to others out there?**

**A.** As Australia's new world city, Brisbane is a local government area that occupies over 1300 square kilometres, with a permanent resident population of more than 1.1 million. Brisbane City Council is committed to its vision of a clean, green and sustainable city and manages waste and resource recovery services for almost 500,000 properties across the city, managing approximately 2000 tonnes of waste each day.

Being Australia's most sustainable city requires commitment, innovation and investment. Brisbane can be proud of what has been achieved but a significant amount of work lies ahead. Council is ambitious in its resolve to stay at the leading edge of city sustainability and recognises that this is a hallmark of a new world city. Council will take advantage of emerging trends and innovations to sustainably manage its increasing urban population. Our efforts towards keeping Brisbane clean, green and sustainable were recognised in 2014 and 2016 by the national Keep Australia Beautiful organisation when

we were awarded Australia's Most Sustainable City.

**Q. Council was awarded \$3 billion worth of waste contracts for 2018. How were the tenders planned?**

**A.** In 2014, a small multifaceted project team within council was tasked with upgrading the tenders for four categories: collections; operation and maintenance of four resource recovery centres and its Rochedale Landfill; third party waste disposal services; and green waste processing.

Council consulted with its colleagues and the waste industry both locally and internationally to inform its four tender categories and possible candidates, leading to their publication in July 2016.

During the intensive industry consultation phase, council, with the help of consultants, analysed and modelled a number of possible contracting and governance options.

These models were tailored to local conditions, as comparing international conditions can be difficult due to factors such as legislative disparities; and environment, climate and customer expectations. This was an important step to allow council to seek international expressions of interest.

**Q. What were some of the tender categories and how were they evaluated?**

**A.** The first tender category included waste, recycling and green waste collection services, encompassing the collection of general waste, recyclables and green waste from wheelie bins, kerbside or the designated collection spot. This included the collection of general waste and recyclables from bulk bins in multi-unit dwellings and general waste and recyclables from public place bins.

The second tender category focused on the operation and maintenance of council's four resource recovery centres in Willawong, Chandler, Nudgee and Ferny Grove, two tip shops as well



Councillor Peter Matic stands proudly at Brisbane City Council's Rochedale Landfill.

as council's Rochedale Landfill and transporting waste between the different facilities.

The third category focused on waste disposal services and our panel of suppliers and the final category looked at green waste processing services and a supplier panel.

Council's key evaluation criteria included experience and track record, capability and capacity, compatibility, commercial matters, innovation and best value for money. The evaluation of tenders involved multiple stages with rounds of feedback being undertaken with tenderers to clarify and fully understand offers.

**Q. What was the timeframe for the rollout of the contracts?**

**A.** One significant change with Brisbane's contracts was to the length of the collection contract. While most collection contracts in Australia are eight years in duration, council sought to change the contract structure to 16 years. The reason for this was that

Brisbane's structure required a mix of different collection vehicles that have varying lifespans, indicating contract durations beyond eight years would yield better value for money. Supporting the contract length change was the life expectancy of vehicles. The different collection vehicle types have varying expected service life. Side arm collection vehicles generally last between eight and 10 years, while rear or front lift can reach up to 12 years. By combining a longer contract term and fleet flexibility, as well as the use of some used vehicles under strict conditions, council is better able to cater for the significant service growth and at the same time maintain the fleet in the best possible condition to ensure service high standards are met.

With 16-year contracts, contractors welcomed the opportunity to invest in infrastructure, generate savings with longer-term thinking and offer long-term employment for staff.

The successful tenderers were:

- Waste, Recycling and Green Waste Collection Services – SUEZ
- Resource Recovery Innovation Alliance – Cleanaway
- Waste Disposal Services panel of suppliers – REMONDIS Swanbank Renewable Energy and Waste Management Facility and Veolia and J.J. Richards Ti-Tree BioEnergy facility
- Green Waste Processing Services panel of suppliers – NuGrow Metro, Phoenix Power Recyclers and Wood Mulching Industries.

These four contract categories were awarded earlier than usual, with up to a year before the contracts commence in July 2018. This was planned in order to minimise disruption to services across the city.

Council also recently renewed major arrangements with resource recovery company Visy for the processing

of recycling to align with the commencement of the other contracts in 2018. We also have a long-term strategic agreement with SULO in 2016 for the supply and maintenance of council's wheelie bins and public place waste infrastructure.

**Q. What have been some of the key achievements from council in diverting waste from landfill over the last few years?**

**A.** Council has made great progress in the areas of waste and resource recovery with a 13 per cent reduction in domestic waste to landfill per person since 2008, 50 per cent less litter on city streets since 2009 and a more than 20 per cent reduction in green waste being sent to landfill since the introduction of dedicated green waste bins in 2010.

**Q. What does the future hold for council and reducing waste to landfill?**

**A.** Council will continue to work towards reducing waste to landfill and increase resource recovery to reduce carbon emissions. Council is also building on its commitment to reduce litter to help protect the city's waterways, open spaces and quality of life.

Exploration into new technologies over the coming years will take a value for money approach and utilise learnings from around the world.

Most collection vehicles have an operational life of eight to 10 years and at present the use of electric or hybrid vehicles for waste collection do not represent the best value for residents.

However, when the next round of collection vehicles is due to be procured, the equipment and technology available will be reviewed and a decision made as to the best value at that time, demonstrating the flexibility of the contracts to cope with a changing and evolving industry. ■



**Fast Fact**

Some key insights into Brisbane's waste and resource recovery:

- More than 550,000 wheelie bins are serviced Monday to Friday, including all public holidays
- Almost 920,000 customers pass through the four resource recovery centres each year
- Council receives around 80,000 tonnes of green waste at the resource recovery centres per year, and its green waste processor recycles this into potting mix, compost and soil improvement products
- Almost 50,000 customers pass through the two tip shops per year, which sell quality used, recycled and second-hand products, in the two Brisbane suburbs of Geebung and Acacia Ridge.

Repurpose It is working to create value from waste.

# A new era of procurement

REPURPOSE IT'S GEORGE HATZIMANOLIS EXPLAINS WHY THE COMPANY IS BUILDING AUSTRALIA'S FIRST CONSTRUCTION AND DEMOLITION WASHING PLANT.

**M**ore than 15 years in the civil works and construction industry led George Hatzimanolis down the path of recycling.

Working for Downer in asphalt surfacing and business management, George found his passion in developing asphalt made from recycled materials. One such project was asphalt made from 99 per cent recycled materials, including waste toner, which was used across municipalities in Melbourne.

Ultimately George realised his vision was to reduce the construction industry's reliance on extractive resources and instead re-use its existing resources.

"My goal is to re-use more waste material which will ultimately form a large part of procured products in the construction industry moving into the future," George says.

"For us we see huge opportunities to open up other avenues to re-use these

materials in energy, earthworks and road resurfacing."

George knew it was possible to close the loop on construction and demolition (C&D) materials such as aggregate, sand and asphalt – he just needed the right technology. It's a process he says is recoverable via wet processing, which means the materials

road maintenance and street sweeping, the directors saw potential to convert a 150-acre clean fill they recently acquired into a world-class resource recovery park. George says Repurpose It was founded on the goal of introducing international best practice technology to convert traditionally difficult to treat waste streams into a valuable resource.

**"We will be working to gain wider endorsement and acceptance of our sustainable products. Some of these (current) specifications are up to 20-30 years old."**

George Hatzimanolis **Director, Repurpose It**

need to be washed and separated before it can be made into new products.

In March of last year, he and his four business partners established Repurpose It. With experience in logistics, organics,

Located in Melbourne's north in the City of Whittlesea, the site's standout service will be home to Australia's first construction and demolition washing plant, expected

to open in late 2018. The company received a \$500,000 grant through the Victorian Government's Resource Recovery Infrastructure Fund to build the plant. George attributes the success of the grant funding to having a first-mover advantage on the unique technology. It all aligns with the state government's plans to tackle waste volumes in metropolitan Melbourne, which are predicted to grow by 63 per cent by 2042, according to the 2016 Metropolitan and Resource Recovery Implementation Plan.

The plant will separate waste materials by density as well as washing them for re-use in sand and aggregates across the construction materials industry. The washing plant will wash materials which include rail ballast, glass, excavation materials and demolition waste fines.

George says that Repurpose It's low-emissions washing plant will process 200,000 tonnes of material per annum. The washing plant will generate 17,000 tonnes of CO<sub>2</sub> emissions, compared to the standard 22,000 tonnes across other industry operations. George explains it will all take place through advanced screening, scrubbing and water treatment.

"Unless you can separate the materials by density and float them in water, which is what our technology does, C&D waste is problematic to treat," George says.

In the coming year, the challenge for George will be to ensure the construction industries can access the product nationwide through the various state and territory-based specifications, which stipulates a list of acceptable materials for use in state roads and infrastructure. He says discussions are already underway with the Australian Road Research Board, Cement Industry Federation, VicRoads and the Infrastructure Sustainability Council of Australia to change the specifications to accept recyclable materials of a higher grade – akin to virgin materials. Talks are also underway with universities such as Swinburne University of Technology to further test the materials with the road authorities. This would modernise the specifications, he says, as the industry has traditionally only used recyclables when utilising low-grade materials.

"We will be working to gain wider endorsement and acceptance of our sustainable products. Some of these specifications are up to 20-30 years old," George says.

"Sustainability in construction is starting to move in the right direction with certification processes such as the Green Building Council of Australia's Green Star certification process. We're finding the specification aspect of it has been slow to progress, but we are working towards improving that." ■



### *Fast Fact*

#### **About Repurpose It**

Established in 2017, Repurpose It's fundamental belief is that landfills are a thing of the past, and that all waste can be converted to valuable resources. The company's services range from: multiple transfer stations, including operating one of Australia's largest; to waste management consulting; construction materials and soil amendments, organics and green waste processing, waste transport and collection, resource recovery and bin supply and collection.

It owns no landfills and prides itself on the concept of industrial ecology – which focuses on shifting industrial processes from linear systems to a closed loop process.

Repurpose It has already employed 20 full time staff. George says the business is still actively recruiting and its workforce is growing rapidly.



Construction and demolition waste comprises debris from construction, renovation and demolition of buildings, roads and bridges.

# Tyrecycle's call to end stockpiling

A STOCKPILE IN EXCESS OF A MILLION TYRES SHOULD SPUR ACTION FOR THE SAFER AND SMARTER MANAGEMENT OF END-OF-LIFE TYRES, TYRECYCLE'S JIM FAIRWEATHER SAYS.

**O**n the outskirts of Stawell at the base of Victoria's Grampians mountain range lies a stockpile of an estimated one to two million tyres.

In May 2017, the Country Fire Authority issued a Fire Prevention Notice on the owner of the stockpile to manage the risk of fire, with a deadline to take action over several months.

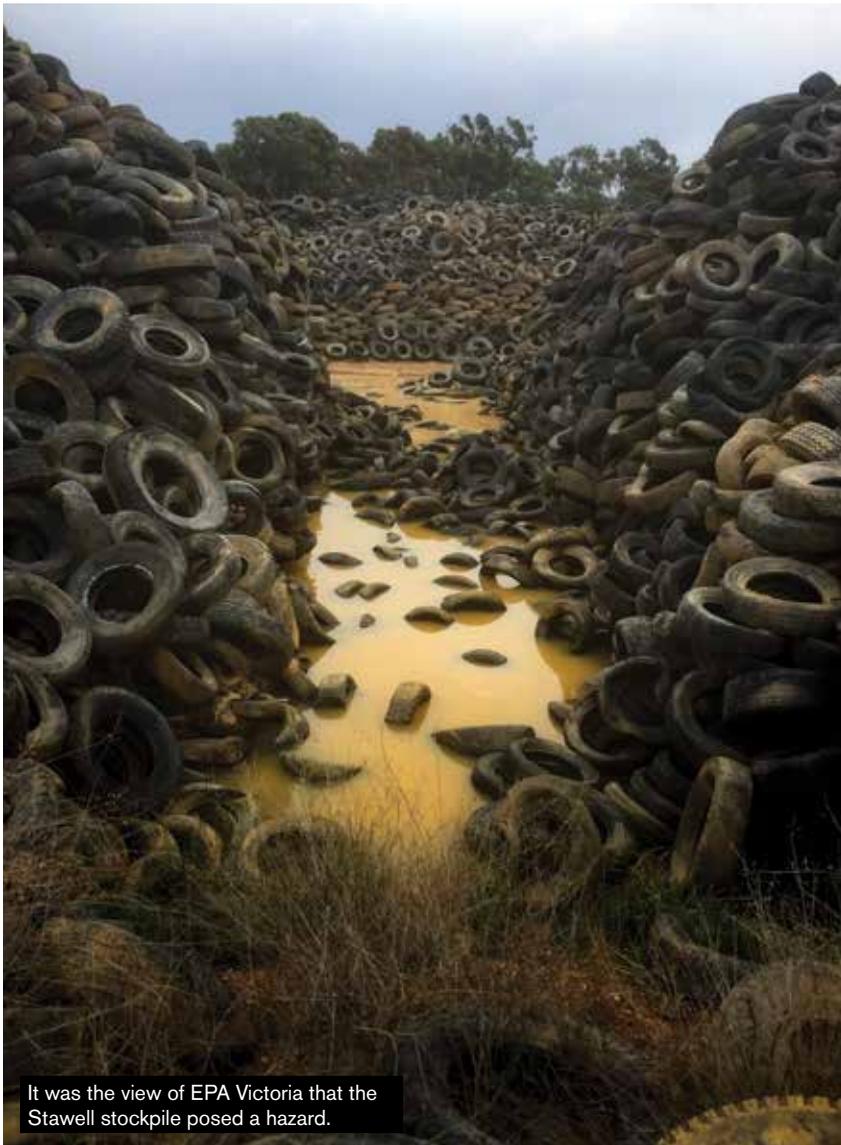
This was followed by three statutory notices by Environmental Protection Authority (EPA) Victoria and a notice of contravention after the owners failed to adhere to the requirements of the statutory notice. By the end of July, the CFA confirmed the duty holder had not complied with the requirements of the Fire Prevention Notice.

In August 2017, EPA Victoria took control of the site after the owners failed to act on EPA and CFA notices. EPA exercised its powers under Section 55 to secure the site, and under Section 62 to conduct a clean-up.

EPA CEO Nial Finegan said that it was the view of EPA Victoria that the stockpile had been abandoned or was being handled in a manner by the owners that was likely to cause an environmental hazard. Continued inaction from the owners posed both a risk to the community and environment. The safety risk remained ever-present as rubber tyres made of compounds can cause rapid combustion. EPA Victoria notes that although tyres are not easy to ignite, once alight, it can be difficult to extinguish them.

One of Australia's largest tyre recyclers, Tyrecycle, was recruited for the clean-up. Jim Fairweather, Tyrecycle CEO, says the company remains the only licensed tyre collector and recycler in Victoria. He says the organisation brought a demonstrable track record of project management for the size and scale required to remove the stockpile.

Tyrecycle has on its own removed 9500 tonnes of tyres from Stawell



It was the view of EPA Victoria that the Stawell stockpile posed a hazard.



At its peak, Tyrecycle was accepting 200 tonnes of tyres daily from the site.

as of November 2017, while also removing more than a million tyres from the site, with support from the state government, Northern Grampians Shire Council and other state agencies. The work was all conducted under the guidance of the EPA and CFA.

“In total, 381 truckloads of tyre waste were removed from the site and at our peak we were accepting 200 tonnes daily, which equates to approximately 25,000 tyres,” Jim says.

The tyres were transported to Tyrecycle’s EPA-licensed processing facility in Melbourne where they were cleaned, sorted, shredded and recycled. Tyrecycle recycles truck tyres into rubber crumb (less than one millimetre) and granules (one millimetre to 10 millimetre) for use in roads, playgrounds, sporting fields and civil engineering applications. Conversely, the company converts passenger tyres to tyre-derived fuel for use in high energy applications.

With the Stawell site now clear, Jim says the community response has been overwhelming one of great relief.

“The locals have been forthcoming in

their gratitude for our combined efforts in making them feel much safer in their homes, particularly as the warmer months were approaching,” he says.

“This project is a shining example of what can be accomplished when regulators, authorities and industry work collaboratively and professionally in support of better community outcomes.”

Mr Fairweather hopes the outcome at Stawell will spur action on other dangerous legacy stockpiles across the country and lead to an eradication of the practice altogether.

“We would like to see far greater penalties and even custodial sentences (as is the case in NSW) for offences that create the mess we’ve just cleaned up at Stawell – it’s nothing short of land pollution.

“As with every sector, the end-of-life tyre collection and recycling market has some rogue operators and these are the people that need to be held to account.”

He says stockpiling tyres is the easiest and the most lucrative form of rogue behaviour in the industry.

“These rogue operators collect the

gate fee to receive end-of-life tyres and then have no further expense, unlike the legitimate recyclers who do the right thing and absorb the significant costs to process the tyres into something of value.

“Quite often it’s the taxpayer who’s left to foot the bill when these rogue stockpilers abscond.”

However, Jim says he is encouraged by the fact that waste tyres seem to be gaining visibility with regulators.

In November last year, the Tasmanian Government, which is home to one of the country’s largest stockpiles at Longford, introduced regulatory changes to crack down on the stockpiling of used tyres. The new regulations stipulate that any proposal to store more than 100 tonnes of waste tyres will be assessed by the Environment Protection Board and regulated by the director of the EPA. The regulations mean that the environmental impacts of proposed tyre stockpiles will now be comprehensively assessed before approval will be granted, including consideration of how the tyres will be processed or recycled.

“It is pleasing to see regulators across

?

**Fast Fact**

Established in 1992, Tyrecycle collects and processes more than 110,000 tonnes of end-of-life tyres each year. The Australian business has processing facilities in every state and has partnerships with more than 1000 tyre retailers across the nation.

Australia looking at ways to continually tighten end-of-life tyre regulations, be that in relation to collection, storage and/or processing.”

The new regulations also force market operators to have a “plausible re-use” for the tyre-derived products they generate. It means producers of tyre-derived fuel must have realistic and existing markets to sell products into.

Further measures Jim would like to see adopted nationally include the strict prohibition of stockpiles altogether and the banning of whole-baled tyre exports. Tyrecycle believes thousands of tonnes of whole baled tyres are being exported out of Australia with little or no governance over where the material goes and how it is treated, despite the World Health Organization citing waste tyres as a key source of Dengue fever outbreaks worldwide.

Jim says there should also



Jim would like to see the strict prohibition of tyre stockpiles altogether.

be mandatory licensing for all collectors and recyclers and increased environmental and fire prevention controls.

“By increasing the infrastructure requirements and tightening the fire control measures required for a licence,

we can then significantly reduce risk,” Jim says.

“Ultimately, we need to put an end to legacy stockpiles and ensure everyone along the supply chain takes responsibility for dealing with end-of-life tyres appropriately.” ■

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# Solid waste

GCM ENVIRO'S BACKHUS WINDROW TURNER IS HELPING SA WATER TURN WASTEWATER INTO A VALUABLE RESOURCE.

Managing Adelaide's water supply requires best practice technology, as SA Water aims to recycle a growing body of sewage, parts of which may have otherwise gone to landfill.

Garry Smith, Allwater Land Manager, works closely with SA Water as part of the organisation's metropolitan alliance partnership.

Garry manages Allwater's biosolids program, which processes and recycles sewage at SA Water's three major metropolitan wastewater treatment plants: Bolivar, Glenelg and Christies Beach. Collectively, the three facilities process more than 250 megalitres of sewage each day, with Bolivar treating the most at about 150 megalitres. Biosolids are treated sewage sludge that can be used as a soil conditioner for both broadacre and horticulture applications.

To help develop its biosolids product, Allwater has been using the Backhus Windrow Turner for the past 15 years. Allwater produces 40,000 tonnes of

treated biosolids per annum, and of that, 15,000 tonnes goes through the Backhus Windrow Turner each year.

Garry says the biosolids are processed under Environmental Protection Authority-approved guidelines, with the majority of its biosolids material provided to broadacre farmers in the state free of charge. He says the material is used by farmers to improve their yield of wheat, barley, canola, vines and fruit trees.

To bring its machines in line with contemporary operations, SA Water in 2017 purchased two new windrow turners from the Backhus A-series, the A 50. The purchase was secured through a competitive tendering process with equipment specialists GCM Enviro.

SA Water's large sewer pipe system connects to 400 pumping stations and 25 treatment plants across the state. After the wastewater is filtered at a treatment plant for large and small solid materials like plastics and grit, it's separated into sludge and water. Garry explains the sludge is then converted

into gases like methane to help power the treatment plant, or begin a process to transform it into biosolids. This material is either stockpiled for further processing or put through centrifuges which transform the sludge from approximately four per cent solids and 96 per cent water to 20 per cent solids and 80 per cent water.

"After this, we take the material and spread it out on a hard stand of about 6.5 hectares. It's then placed in rows and we put the Backhus Windrow Turner through these rows for composting and accelerated drying," he says.

Garry says the sludge must be at least 75 per cent solids before it can be re-used.

The windrow turners are used once a week in summer and once a fortnight in winter. The windrow turner operates for eight hours twice a week to process





The Backhus A-Series helps Allwater develop a dry biosolids product.

the materials. As the surface of the sludge dries naturally, it's turned to develop a product of up to 85 to 90 per cent solids in the summer.

The Backhus A-Series helps Allwater develop a robust dry biosolids product from the wet heavy materials, with a turning capacity of 3600 cubic metres per hour.

"We needed a robust machine that could turn soil-like material which weighs about 0.8 tonnes per cubic metre and we turn roughly three cubic metres to every metre per row," Garry says.

"One of the key features of the

turning drum is we can control the height of the rotating member and the rest of the machine stays where it is."

The machine also offers high performance diesel, which Garry says is key to prudent environmental management.

Garry says the comfortable, easily accessible and panoramic cab has been improved for the operator with smart dashboards for real-time data of the turning process, along with improved access to motors and radiators for added safety.

He says while Allwater has yet to

measure its fuel consumption savings, it is working its machines much harder and is hopeful this will be improved.

Designed for the challenges of the future, the Backhus A 50 has been developed to be customisable for any scale of environmental composting. The A 50 offers a windrow width of up to 4.3 metres and a windrow height of up to 2.3 metres, allowing the operator to turn more materials quicker.

It's all part of Allwater's plan to expand its biogas operations as it has also commenced its next phase of accelerating the drying of sludge in lagoons.

Garry says Allwater is now using the new windrow turners to dry material in the lagoons and in the stockpiles. He says the new machines have a wider landfill track, which ensure it remains stable on wet ground.

"The end game is we want to put the windrow turners inside the sludge lagoons when we can get them dry enough to accelerate the drying process."

Garry says the Backhus Windrow Turner meets all of Allwater's specifications and GCM Enviro is on hand to deal with any maintenance issues should they arise. ■



The windrow turners are used once a week in summer and once a fortnight in winter.

# Manufacturer's pipe dream COMES TRUE

RPM PIPE EXPLAINS HOW APPLIED MACHINERY HELPED IMPROVED ITS PROCESSING CAPACITY, ALLOWING IT TO DEVELOP A CLEANER COMMERCIAL-GRADE PLASTIC MADE ENTIRELY OF RECYCLABLES.

It's been a 20-year journey for manufacturer-recycler RPM Pipe.

In 1991, Chris Kay began manufacturing flood irrigation products in Lancaster, located in the Goulburn Valley region of Victoria. Chris' son Terry joined him at 16 and completed his boiler maker apprenticeship while working in the business. One year later, Chris proposed an innovative way of making large diameter agricultural drainage pipe from recycled plastic scrap.

More than two decades later, Terry has taken over the business, focusing his efforts as Director of RPM Pipe on developing a product made of recycled components akin to virgin materials. RPM recycles HDPE (high density polyethylene) plastics into commercial-grade pipes. The organisation takes wheelie bins from councils and milk bottles from kerbside recycling collectors, milk factories and a variety of other products from other sources and re-manufactures them into plastic pipes suitable for culverts, drainage and flood irrigation pipelines.

RPM Pipe also processes car bumper bars and a number of other plastic materials that cannot be used to produce pipes, and on-sells them in granulated form ready for use and storage.

Over the past few months, the company's recycling process has become cleaner, quicker and more durable thanks to a new Genox



processing plant purchased from equipment supplier Applied Machinery. RPM's capability to handle challenging agricultural waste streams from regional areas has also expanded, as it now has the capacity to process 200-litre plastic dairy containers used in heat spray and acid wash and other dirt-ridden waste. With the new plant in operation, Terry estimates the company can handle between two to three times more material per hour. After 20 years of development, RPM Pipe is now able to boast a commercial-grade pipe made of 100 per cent recyclable materials. It also provides a full processing service of many other types of bulky plastics.

The company has worked with Applied Machinery for a number of years. Four months ago, Terry invested in a shredding, granulating, washing and drying line by Genox. The system complements RPM's own float sink

tanks, which allow the materials to be cleaned before they are manufactured into new products.

"Our old system couldn't handle contaminated products, whereas now, with the friction washer, two float sink tanks and the dryer, we can process a variety of plastics and more material that has been contaminated with soil," Terry says.

"It's taken two years of talking with Applied Machinery and others to get the right system to suit what we wanted to do – we wanted equipment that could work with an array of products."

With more than 100 resellers of its pipe in Tasmania, South Australia, Victoria, Queensland and New South Wales, RPM is now consistently developing a product which Terry says meets council, government and environmental protection authority regulations.

“Being in a regional area far away from extensive markets means we have to be able to recycle as much as possible and reduce our transportation costs. What we can’t use in our pipe we aim to recycle and process for others to use,” Terry says.

He explains that the materials arrive on pallets from various recycling contractors and are shredded before being placed in a float sink tank which separates plastic waste from contaminate materials such as steel, glass and rock. The plastic is then granulated and reduced to corn flake-sized particles.

It is then placed into a friction washer to remove any dirt, before being placed into a second float sink tank where it sits for another two minutes to remove any residues or polyvinyl

chloride plastic labels stuck to the materials. Finally, the materials are placed into a Genox centrifugal dryer which dries the flake-sized materials.

“It blows up into a cyclone, which drops it out into some bag stands and we bag it off into bulker bags from there. Some of the material will be sold off to others to use in their process. The majority of the material will be used in the manufacturing of our pipes,” Terry says.

As a steelmaker, RPM has developed its own processes and equipment to transform the recyclables into its own six-metre pipes of up to 315, 400, 450 and 630 millimetres in diameter.

Terry notes a strong relationship with Applied Machinery is crucial to getting the job done, and says he is able turn to the company should any

products break down.

“Some time ago, we put a couple of chunks of steel into the first shredder that we bought from Applied and had no dramas at all getting it fixed. We received our parts immediately on request and they assisted us despite the three-hour journey from the Goulburn Valley to Melbourne.”

Terry’s fabrication business has also seen him turn to Applied Machinery for other machinery, such as saws and steel benders and rollers.

“We’ve been through the development of getting the process of manufacturing the pipe correct and we’re now in the process of expanding and developing our sales and markets. We’d have no hesitation turning to Applied Machinery should we require more equipment in the future.” ■

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# The road ahead

TYRE STEWARDSHIP AUSTRALIA OUTLINES PLANS FOR THE NEXT PHASE OF ITS TYRE STEWARDSHIP RESEARCH FUND IN 2018.

With its re-authorisation from the competition regulator up for renewal, an opportunity exists for Tyre Stewardship Australia (TSA) to work with stakeholders in putting their research into practice.

That's according to Liam O'Keefe, TSA's Market Development Manager. TSA's central investment mechanism to support the market is its Tyre Stewardship Research Fund. From recycled rubber improving road stability, to the manufacturing of tyre crumb composite commercial piping,

the possibilities of tyre-derived products are endless.

The Tyre Stewardship Research Fund was developed primarily to support collaborative research and the growth of Australian end-of-life tyre markets.

Recycled tyres can be used in road surfacing, soft fall playground surfacing, brake pads, industrial and commercial flooring, explosives, civil engineering and for biofuels in energy recovery. Across its two years of operation, the Tyre Stewardship Research Fund has invested in numerous research and development (R&D) projects,

including the Geelong based high-tech manufacturing company, Polymeric Powders and Austeng, which turns discarded tyres into a new rubber plastic composite material, and a project by the University of Melbourne which looks at using recycled tyres in permeable paving.

The 2016-17 year saw \$540,000 distributed across a range of projects, with an additional \$320,000 worth of projects approved to bring the total R&D investment that year to \$860,000.

Liam says that TSA is now looking at how the fund can be utilised on

a larger scale, including innovative infrastructure projects. For TSA, an emerging priority is supporting the procurement of these products in state and local government roads. It comes as TSA begins the process of applying for its next Australian Competition and Consumer Commission Authorisation approval, which will look at re-authorising the scheme in April.

TSA in its annual report 2016-17 notes updates to the scheme guidelines will better reflect future market development opportunities and industry expectations.

Liam says R&D is beneficial as it proves performance benefits and supports specification development to enhance and increase recycled tyre-derived product use on state roads. With plenty of R&D completed, the next stage for TSA is to utilise the research outcomes to support the scaling up of production and consumption of tyre-derived product.

“Initially, the focus was more on the R&D, because we didn’t want to be too overt and influence the market unduly. But now we are more familiar with the markets – we know the road and rail sectors better, so we feel we’re better able to work with the appropriate bodies,” Liam explains.

As part of this advancement, TSA is already developing a training course for road engineers around the utilisation of crumb rubber binder in spray seal and asphalt applications and is working with the Australian Asphalt Pavement Association, a peak body for the flexible pavement industry. Bitumen modified with crumb rubber from used tyres aims to improve the properties of the binder and boosts its ability to hold the aggregate.

“In many instances crumb rubber performs better, if not as well as many conventional asphalts. The issue is there’s a lot of production and utilisation bottlenecks in being able to service and supply the product

universally across the country.”

Liam says TSA will continue working with local government in 2018 to establish stronger partnerships that support R&D technologies funded by TSA. He notes that this would help council reduce issues of stockpiling by strengthening procurement policies that require tyre-derived products in local government roads.

One such project with potential was orchestrated by the University of Melbourne and Australian manufacturer Merlin Site Services. Researchers at the University of Melbourne investigated the use of recycled tyres in permeable pavement. The researchers found a waste tyre mix could be used in permeable pavement applications to reduce storm water runoff, as permeable paving allows water to pass through the surface of the pavement. The surfaces were all evaluated for skid resistance, pavement movement, water infiltration and run-off. The pilot trial used four different pavement recipes, which could be used on different surfaces, including footpath, bike path, car park and low-volume traffic road.

“There could be some really big possibilities with that. The University of Melbourne has strong partnerships with industry,” Liam says.

“We’re looking for partners, particularly in the local government sector, to run trials with it to use it in bike tracks and car parks. If there are innovative councils out there interested in the benefits this can offer, we’d be interested in collaborating with them and the University of Melbourne.”

Liam says TSA has also approved the next phase of funding with the Geelong-based manufacturers Polymeric Powders and Austeng. The companies have worked on a process that turns a polyolefin-rubber-based composite into high quality pipes for a range of industrial uses, including in the building and construction sector, mining, oil and gas and flexible electronics.

TSA’s annual report 2016-17 notes the pipes have passed stringent standard performance tests, marking the first-time plastic/rubber composite pipes using 50 per cent modified tyre crumb have passed such tests. The new composite material has desirable properties when compared with traditional acrylonitrile-butadiene-styrene (ABS) plastics, including increased shock absorption, resistance to cracking, thermal insulation and acoustic insulation.

Liam says the next stage will involve producing the pipes on a larger scale, which has also received support from Sustainability Victoria. Phase two is set to upscale production in Geelong to service the local market.

“In 2018, we will continue our focus on R&D. In order to get a broader portfolio of projects and more immediate consumption of tyre-derived product further direct funding support, including for infrastructure projects, is being considered.

“We want to demonstrate the value of tyre-derived products for recyclers and we want to capitalise on the research of the past two years.” ■



### *Fast Fact*

TSA was formed in 2014 after the Australian Tyre Industry Council applied to the Australian Competition and Consumer Commission (ACCC) to establish a national Tyre Stewardship Scheme. The ACCC authorised the move in 2013 and agreed that it would be administered by a new association, known as Tyre Stewardship Australia. In January 2014, the association officially formed.

The scheme is funded through a levy of 25 cents per equivalent passenger units (standard passenger car tyres, known as EPU) on the importation of new tyres by voluntary member companies of the scheme. The Tyre Stewardship Research Fund commenced in 2015.

# Achieving Total Construction

AS WE PROGRESS TO A RENEWABLE ENERGY FUTURE, REFUSE DERIVED FUEL AND WASTE TO ENERGY WILL INCREASINGLY REDUCE WASTE TO LANDFILL. IT'S WHY COMMERCIAL BUILDER TOTAL CONSTRUCTION HAS NOW ENTERED THE MARKET.

**M**echanical biological treatment systems have been processing biodegradable waste across the globe for more than 10 years. The concept, which combines sorting facilities with processes such as composting, is nothing new.

According to a 2007 report by German consultants Wasteconsult International, more than seven million US tons, equivalent to more than six million metric tonnes, of mixed municipal waste was treated annually in Germany.

Likewise, there are reports of refuse-derived fuel being used in the US since the early half of the 20th century, as indicated by a 1987 report by Harvey Alter, former manager of the Resource Policy Department of the US Chamber of Commerce.

Just over 10 years ago, the Waste Management Association of Australia finalised the EfW (Energy from Waste) Sustainability Guide, which provided a vision for a sustainable Australia with systems, facilities and infrastructure working together to recover valuable resources and energy. The South Australian Environment Protection Authority also developed a set of standards for the production and use of refuse-derived fuel in 2010.

As organisations and regulators pave the way for change in Australia, only now are we beginning to see a trend towards more alternative forms of waste infrastructure.

Over the past few years, we are starting to see a range of new facilities cropping up. For example, Veolia

Group's Mechanical Biological Treatment facility in the town of Tarago became fully operational in 2017.

Yarra Valley Water is also diverting 33,000 tonnes of commercial food waste from landfill annually to its energy to waste facility in Melbourne, which was commissioned in 2016 and operational by 2017.

It's why commercial builder Total Construction has entered the waste industry. James Bolton, General Manager Renewable Energy Division, says the lines between renewable energy facilities and waste are increasingly blurring as municipal solid waste becomes a valuable resource.

"We're no longer dealing with just transfer stations and landfills any more.

"In the past, construction companies were essentially building industrial sheds for the waste industry. Now

facilities are high-tech processing plants. Specialist builders and consultants are required to ensure appropriate services and utilities are accounted for," James says.

"There is potential to see an influx of waste infrastructure in Australia off the back of macroeconomic issues such as China's ban on a range of plastics and limits on contamination."

He says Total Construction is preparing for additional growth in this area over the next few years as many projects, currently undergoing stringent approvals, transition to a design, build and commissioning phase. The company is able to assist throughout all of these stages, including working on development applications and design, through to site management and building. James says Total Construction's team draws on a wealth

Total Construction is able to assist with a range of waste infrastructure projects.





James Bolton has experience in power generation.

wet environments – and that hones our expertise in planning and risk management,” he says.

He says that Total Construction’s work often begins by managing the development application process for a client and advising them of any risk that could emerge. This may include additional costs that could be incurred post-approval.

“We work with the Department of Planning and the environmental regulator to ensure all aspects of the site are under control, from emissions reduction to air quality, leachate and catchment management and the noise of the facility,” James says.

“We want to reduce as many unknowns as possible. This may involve accounting for an additional 15 per cent contingency budget, or advising the client to install better odour control systems.”

With this in mind, the team at Total Construction is able to leverage its network of waste consultants across Australia should it require specific industry information. When the company helps with the design of a site, it ensures it aligns with the concept design, size of the plant, and anticipated machine throughput, person-hours, daily tonnage rates and processing capacity. It’s all

a collaborative process for Total Construction, which also engages architects and electrical and structural engineers when required.

“The client will generally have in mind a design capacity and we will guide them through a preliminary design, identifying the limitations which evolve through that process,” he says.

He adds that a key challenge for site operators are the unexpected time constraints such as the ordering of technologies and/or equipment.

For example, an MBT site could require certain technologies to be imported from overseas and transported to site, which can take anywhere between six months to a year.

Total Construction is able to assist in anticipating these delays and help navigate this process with regulatory authorities.

With a vision to develop progressive waste management infrastructure, Total Construction hopes to position itself as a leader in the rapidly growing waste to energy market.

“Our point of difference is our ability to offer the whole process of design and construction in-house in a cost-effective manner,” James says.

“Risk mitigation is offered across the whole project as opposed to just individual sections or disciplines.” ■

of knowledge in process engineering and renewable energy, which will have increasing relevance to the industry going forward.

With a background in chemical engineering and extensive experience in power generation, James’ own experience saw him work on major projects ranging from the project development of a waste to energy power plant to be located in Sydney’s Botany Bay to the construction of a district energy plant in Chippendale, part of the Central Park Development.

“We understand that when you’re building waste infrastructure, you’re dealing with corrosive and



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# Built to last

JON JUPP OF TRASH N' STASH WASTE & RECYCLING HAS CONTINUED TO WORK WITH MOBILE BIN AUSTRALIA OVER THE YEARS DUE TO THE COMPANY'S ABILITY TO OFFER A MULTIPURPOSE AND DURABLE COMMERCIAL-GRADE BIN.



A colour-coded system helps identify a variety of commercial bins.

Jon Jupp, Trash N' Stash Waste & Recycling Managing Director, knows all too well how important it is to invest in a durable, commercial-grade standard bin.

Jon has worked with leading bin supplier Mobile Bins Australia for more than a decade, but regularly communicates with other waste transportation contractors, who have experienced the pitfalls of working with inferior products.

"If the bin has weight on it, such as in a restaurant, or it's not strong enough, a rear lift truck can rip the front out of it. It's a common problem in the industry," Jon explains.

"You could probably travel to any waste contractor in Australia and visit their depot and find damaged or broken bins. You won't find any of the European grade bins that Mobile Bins Australia stocks in there."

Mobile Bins Australia is a supplier of strengthened European standard bins to the construction, medical, local government and waste transportation sector. Trash N' Stash Waste & Recycling uses its front lift, rear lift, hooks lift and skip lift trucks to transport waste across Victoria. Jon has continued to buy 120, 240, 660 and 1100-litre plastic bins, deploying them to commercial shops, factories

and care facilities. The multipurpose bins are used for general waste, along with cardboard recycling and organics. Jon has been in the waste and recycling industry since 1984 and says over that time he has developed an eye for quality.

He says he continues to work with Mobile Bins Australia due to its competitive prices and prompt turnaround time.

"They deliver the bins directly to our depot. Mobile Bin Australia is one of few businesses in my experience that deliver bins themselves rather than using a courier," Jon explains.

"It's always a really fast turnaround

“I believe business is all about friendships and I’ve worked with Richard for many years and never had a drama to pick up the phone if there is a problem and solve it quickly.”

Jon Jupp, *Trash N’ Stash Waste & Recycling, Managing Director.*

from ordering bins to having them delivered. It’s quicker than anyone I’ve ever worked with in the past and delivered within a week.

“Sometimes with other bin companies, it can take weeks to receive a bin.”

Being a durable bin, Jon can use them for any application he requires. He says he is particularly drawn to the fact the bins are built to last, and is happy to pay more for such a product.

“They stock the strongest bins

available in the market in Australia. We don’t have to replace the bins six to 12 months later – they last years.

“It’s not so much the mould or shape of the bin, it’s the ingredients in the plastic and design that provides strength and weight. That’s how they’re building a name for themselves.”

He was able to get his bin hot stamped by Mobile Bins Australia, which slows theft and saves money in having to brand each bin individually.



“It saves you having to have stickers made and stuck on the bins which can be easily peeled off or fall off. While they may only cost a couple of dollars, once you start putting them on hundreds of bins it adds up.”

Jon explains that he is able to turn to Mobile Bins Australia’s Managing Director Richard Smith should he encounter any issues.

“I believe business is all about friendships and I’ve worked with Richard for many years and never had a drama to pick up the phone if there is a problem and solve it quickly.” ■



### *Fast Fact*

Since 1994, Mobile Bins Australia has provided bins to councils, schools and businesses. Mobile Bins Australia can tailor-make a product to its customers’ needs, including specific colours or designs and hot stamping logos.

The company stocks plastic bins in 120, 240, 360, 660, 1100-litre and 1100-litre lift pocket.

Its 120 and 240 two-wheeled bins aim to withstand Australia’s harsh weather conditions and are made using additional plastic in its bin bodies. Its 360-litre two-wheeled bins are suitable for those who prefer a two-wheel bin, but not ready for a four-wheel bin. The company’s 660-litre bins are made of high-density polyethylene and are impact resistant with a reinforced comb lift and moulded handles. The 1100 and 1100 lift pocket bins are made from high-density polyethylene and built using stabilised colours to counter the effects of water and the sun’s UV rays (Ultraviolet Radiation).

# Increased local production gives **IVECO Australia a boost**

IVECO'S LOCAL PRODUCTION WILL BE FURTHER SUPPORTED BY THE STRALIS ATi – A PREVIOUSLY IMPORTED MODEL.

Last year, IVECO announced it would increase the range of models manufactured at its Melbourne facility. The company says the decision was welcomed by customers and the broader commercial vehicle industry.

The vehicle was previously sold in Australia as the Stralis ATi – a fully imported model. But from the first quarter of 2018, the Stralis ATi began local assembly, changing its model nomenclature to 'AT'. The removal of

the 'i' signifies the end of its previous import status.

In welcomed news for the broader local manufacturing industry, selected components are now all sourced locally, including mirrors, fifth wheel mounting angles, trailer connections, batteries, wheels and liquids (oils and lubricants, radiator and brake fluids).

## THE BIGGER PICTURE

IVECO believes the addition of a second Stralis model to the local

manufacturing mix creates a strong business case to further increase the scope of local manufacturing works. In the future, IVECO's Australian workers will have greater involvement in the assembly process of these models.

The addition of the Stralis AT to the local production mix has seen investment in tooling and software at the Dandenong facility to calibrate the AT's adaptive cruise control and lane departure warning systems. The company has also introduced new



The Stralis ATi has been rebranded to Stralis AT.

technology to the site that could be used for other models in the future.

The Stralis AT and AS-L ranges join several other of IVECO's locally-manufactured commercial vehicle models, including the ACCO, which has been built in Dandenong for over 40 years.

Australian buyers will see several benefits from the local production of AT models: including reduced lead times from vehicle order to delivery and the ability to customise orders with factory-fitted special options and local accessories.

IVECO's local engineers are also heavily involved in the installation of new Euro 6-rated Cursor engines for both the AT and AS-L variants.

The Australian engineering team is now continuing its real market testing on a selection of these engines. For months, a number of vehicles have been amassing hundreds of thousands of validation, compliance and general

## “This latest expansion in Australian-based production demonstrates the company's commitment to having a strong local manufacturing presence.”

Darren Swenson, IVECO Australia Marketing Manager.

testing kilometres in real-world fleet conditions prior to their introduction to the production line later this year.

During the evaluation phase, the vehicles will cover a minimum of 300,000 kilometres each, with performance data being downloaded and analysed on a weekly basis. The trucks' fluids are also being sampled every 25,000 kilometres.

The local development and validation is being undertaken in conjunction with FPT (Fiat Powertrain), which has the ability to monitor the vehicle

from the other side of the world with a telematics system.

IVECO Australia Marketing Manager, Darren Swenson, said the increase in local production and development highlights the company's commitment to Australian manufacturing, and was proof of the high importance in which this market was held by IVECO globally.

“IVECO is one of a limited number of commercial vehicle brands that continue to manufacture here – this latest expansion in Australian-based production demonstrates the company's commitment to having a strong local manufacturing presence,” Mr Swenson said.

He said the addition of Stralis AT variants to the local production mix, along with the validation of new power plants and other initiatives, will ultimately see a modest increase in the facility's manufacturing workforce. He said this is good for the local workforce, not only for third party parts suppliers, but also for Australian truck buyers who can further reap the benefits that locally-manufactured vehicles provide.

“The expansion of local production not only reflects a strong belief from IVECO Australia that local manufacturing is sustainable, but the initiative is also strongly supported by IVECO's parent company – CNH Industrial,” Mr Swenson said. ■

The addition of the Stralis AT has led to additional investment in tooling and software at IVECO's Dandenong facility in Melbourne.



# Waste collection via social media

ACMS GROUP'S GERARD KISSANE EXPLAINS THE POTENTIAL COST SAVINGS BEHIND A NEW TECHNOLOGY THE COMPANY IS TRIALLING WHICH WILL ALLOW RESIDENTS AND COMMERCIAL ENTERPRISES TO SCHEDULE THEIR COLLECTION SERVICES THROUGH SOCIAL MEDIA.

The decline of billion-dollar camera giant Kodak represented a historic shift in the transition to digital photography.

In 1976, Kodak commanded 90 per cent of film sales and 85 per cent of camera sales in the US market, according to a 2005 case study for Harvard Business School by Rosabeth M. Kanter.

Professor Kanter believes Kodak was slow to respond to the rise of digital photography. In January 2012, Kodak filed for Chapter 11 bankruptcy in the United States District Court for the Southern District of New York. The company emerged from bankruptcy in 2013 and now earns a modest revenue, reporting \$1.798 billion in 2015, according to the US: Securities and Exchange Commission 2015.

The harsh lessons learnt from the decline of Kodak can be applied to the waste industry, according to Mark Abbas, CMO & Director of Business Development at AMCS.

In a 2016 presentation to the Clearer Planet Convention, Mark argued digital transformation was a challenge for many companies and even a threat to some. He advised waste companies to develop a strategy for ICT to ensure they can grow their business in an age of competition.

Mark's advice is that digital transformation is not just about IT – it's a business model and a strategy. Beyond



the world of waste analytics is a need to understand how consumers are interacting, and provide a service where customers can collaborate, interact online and expect services available no matter the location or point in time.

Gerard Kissane, Head of ANZ Region at AMCS Group, says linking reliable services with the digital tools, platforms and apps to transform a waste business is what AMCS is about.

Internationally, companies like Rubicon Global have disrupted the waste industry. Rubicon Global's platform works by connecting its customers with an independent network of waste transporters to bid on their business, akin to the popular share ride service Uber through a

cost-competitive digital platform.

"One of the concerns in the industry at the moment, particularly from some of the major players, is the "uberisation" of waste. As a result, we're putting a lot of focus into our intelligence optimisation software.

"We think a lot of consumers are prepared to pay a premium for an online on-demand platform, where they feel they are in full control of the process," Gerard says.

One of AMCS' major projects in 2018 will be using social media as a platform to allow customers to schedule their collection services automatically without any input from a dispatcher or customer service representative. AMCS will be trialling its intelligence

optimisation software in the US, and is currently deciding which platforms it will leverage for the service, including Google Home, Amazon Echo, Facebook and Twitter. It also plans to leverage the growing list of Internet of Things and fill level technology solutions.

Currently, many customers have a weekly or fortnightly collection route. Gerard says the technology would offer potential to allow customers to drop their collection company a message via social media and have their collection automatically scheduled. At the back end, the collection company could automate the way the messages are processed and dispatch the request to its vehicles off the back of this.

Gerard says the algorithm of monitoring fill levels has been successfully used internationally to allow the fuel industry to ascertain when tankers need to arrive at petrol stations for replenishment.

“It’s really taking the technology we already offer to our customers in other verticals and being able to provide a more dynamic solution to our waste collectors for their customers.

“You have a generation of consumers that have grown up in an age of instant messaging and they expect their providers will be available on those platforms to communicate with them.”

Gerard says the technology provides the ability to reduce overheads for the waste collection industry and save time for the commercial and industrial waste industry, while also offering the collection company a digital platform to engage with their customer base.

“Currently businesses scheduling a waste service have to call through to a call centre, somebody has to take your call, who will then put you onto dispatch and dispatch has to work out where they will schedule the collection.

“Through intelligence optimisation and having visibility of one’s fleet and its capacity in the background through one of the management software packages, companies will be able to schedule waste collection automatically, by having real-time visibility of vehicle and route capacity,” he says.

Intelligence optimisation would figure out where the nearest vehicle is and the most efficient vehicle to pick up the container, schedule it and provide confirmation to the customer without any manual intervention from anyone within an organisation.

However, Gerard doesn’t foresee the technology will see the end of call centres and dispatchers, as many companies would still be reliant on a regular and established collection service. He says he hopes the technology will be rolled out in 2018 in Australia and overseas.

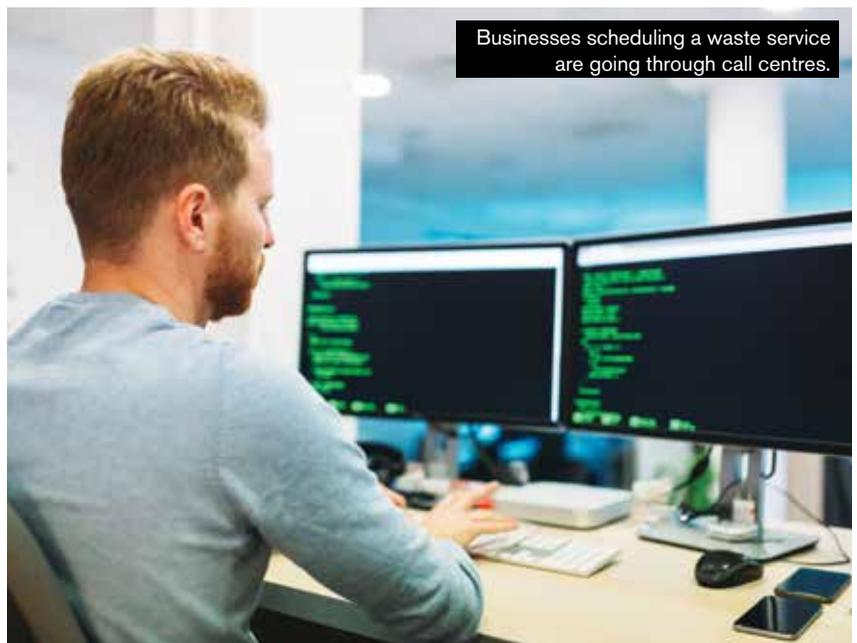
“I imagine over time it’s quite possible you may be able to save a salary or two within an organisation.



### *Fast Fact*

AMCS Group specialises in providing integrated software and vehicle technology for the waste, recycling and material resources industries. The company can help provide pre-built web portals, mobile apps integrated with records, online analytics to present and analyse fleets, landfill, collection and recycling statistics, and an Internet of Things setup to treat the big data that customers will generate.

“I don’t see it as a technology that will disrupt overnight, but rather augment and support existing collection offerings. At the same time we can’t be complacent and the waste industry needs to get ahead of potential disrupters eyeing the industry.” ■



Businesses scheduling a waste service are going through call centres.

# A new year of data

JOE PICKIN, DIRECTOR AT BLUE ENVIRONMENT, EXPLAINS THE CHALLENGES OF IMPROVING THE NATION'S WASTE MANAGEMENT DATA, WITH A NEW NATIONAL WASTE REPORT TO BE RELEASED THIS YEAR.

In 2013, the Australian Bureau of Statistics (ABS) introduced the nation's first waste account.

The data was heralded at the time by the ABS as an "experimental environmental economic account", which created a valuation for the waste sector. The first account valued the supply of waste management in 2009-10 at just over \$9.5 billion, and was released at the beginning of 2013.

The ABS data provided information on waste generation and its management, treatment and disposal in tonnage. This was also considered a pilot program based on the United Nations System of Environmental-Economic Accounts (SEEA). Using the SEEA framework, the ABS estimates were developed using solid waste and recycling data published by the states, territories and the waste

industry. The data provided to the ABS was compiled by environmental consultancy firms Blue Environment and Randell Environmental Consulting into the National Waste Report and commissioned by the Federal Government.

However, in response to externally-imposed budget requirements, the ABS was forced to end its waste account. In a submission to the senate inquiry into waste and recycling, the ABS said that should user demand require and "concomitant resources" become available, the organisation would consider reinstating the collection.

Blue Environment and REC have continued to compile a bi-annual report for the Department of the Environment and Energy and are currently working on the 2018 report, to be released at the end of the year, which will utilise data

from the 2016-17 financial year.

Dr Joe Pickin, Director Blue Environment, says a majority of the data is obtained from states and territories, with some supplementing with national industry data or other national estimates. Joe says there is now a nine-year national data time series, of which only three years were interpolated.

Blue Environment's National Waste Report 2016 notes that to obtain a national picture of waste, a common set of assumptions and categories were applied to the collected data in consultation with the states and territories. As well as presenting national data, the report presents tonnage flows and recovery rates by state and territory. It discusses influences on waste generation and fate, including population and economic





Any delayed data may be published online later.

growth, access to recycling markets, carbon policy and state and territory policies. It divides waste sources into municipal solid waste, commercial and industrial waste and construction and demolition waste. It subsequently includes corresponding data on the generation and fate of masonry materials, metals, organics, paper and cardboard, plastics, glass, hazardous waste and fly ash. The report adds the end destination of waste is divided into disposal, which “overwhelmingly means landfill”, recycling and energy recovery. Data in the report may differ to the state and territory data due to differences in scope and categories, and because the national approach presents landfill gas collection as a form of recovery, together with recycling.

Joe says Blue Environment aims to improve the data quality, scope and analysis and is working to iron out any past issues with the information.

In 2017 and early 2018, Blue Environment undertook a series of workshops with relevant agencies in each state and territory to discuss ways to improve national waste reporting. At the same time, an industry consultation program was undertaken.

“Following on from the *Four Corners* report and the *War on Waste*, being able to distinguish materials that have been used for recycling, rather than just processed, is an area we’d like to improve on,” Joe explains. He notes that the voluntary nature of much of

the national recycling data can also limit data accuracy.

“Most of the states and territories will collect data from the waste industry asking them what they processed but they’re not always able to find out: what did you process and sell?”

Joe adds that New South Wales has made reporting of recycling data sets compulsory. Western Australia is due to follow and other states and territories could do the same.

### DATA IMPROVEMENTS

He says a key issue for Blue Environment is ensuring the states and territories deliver their data sets on time to the firm’s deadline.

“We’re also looking at improving the timeliness of the data. The report we released in mid 2017 was for 2014-15 data, which is not very timely. We couldn’t get NSW 2014-15 recycling data so we had to estimate it, which was unexpected. I’m confident we’ll do better this time and we’re looking at ways we can not be held up by the slowest state or territory,” he says.

“We’ll put together a timeline and if we don’t get the data in, we may need to use previous data with some estimates attached to it.”

Joe says any delayed data may be published online later.

Another issue is the poor historical data of hazardous waste, and Joe says the 2018 report will try to tighten this data set. Landfill composition data could

also be improved, he says, through more judicious compilation of audits.

In regards to returning the National Waste Accounts, Joe notes there is potential for the ABS to use the Blue Environment reports for its estimates, should the data set be re-instated.

For Nicholas Harford, Managing Director of environmental consultancy firm Equilibrium, issues in data quality relate to the definitions of waste across different states and territories, along with their varying legislative differences. Nicholas worked with the Federal Government on its National Waste Policy in 2009-11, which he says was the catalyst for bringing these data issues to the forefront.

“We as a company have looked at data capture systems and big data technologies that can in some instances assist in gathering data and reporting, but you still need a combination of survey/site-based gathering, along with assumptions and calculation,” he says.

“The industry is always changing. Materials are changing, waste arising is changing, so you need to be able to adapt.”

Nicholas adds the ABS carries strong expertise and it would be of benefit for it to return the National Waste Accounts. At the same time, the National Waste Report continues to improve, he adds.

“The National Waste Report has continued to show refinement. The latest report in particular now identifies why and where there are differences between state-based data and reporting,” he says.

Nicholas says a lack of an overarching definition of waste and recycling causes problems for businesses working across a range of states and territories.

“The lack of data is problematic only in the sense that in general economic terms, the more informed the market is, the more efficient that market can be in unlocking greater resource recovery.

“In the waste and recycling sectors, the data may be sufficient at a higher level, but at times there’s not enough detail to enable policy makers and investors to make a secure decision.”

Nicholas says this can be an issue by material source, stream and location. For example, he says, mattresses have for many years been widely collected through sources such as local government and the commercial and industrial sectors, however, until recently there has been no state or national consolidated data.

“This has led to regulatory and policy inertia, lack of investment and poor environmental outcomes. Now that this data has been compiled, it shows government that mattresses present a significant waste challenge that warrants intervention and shows industry that investment opportunities exist,” Nicholas says.

Joe says Blue Environment is also looking at its methodology and various definitions of waste.

“We’re looking at things like what is recycling: what is the definition of it? What is the scope of what’s included? What do we include in municipal solid waste? We’re trying to tighten our definitions so we can be sure everyone’s data means the same thing,” he says.

“One thing we’re also now trying in this version is to assess the proportion of the reported waste that went over a weighbridge rather than is estimated from volumetric measures.”

He says the organisation was working on gathering data which further breaks down each source sector and where it is collected from, especially commercial and industrial waste, which is currently grouped.

“We hope to have a bit more disaggregation into the types of waste rather than just the broad categories, including the types of organics. And we’re looking at enhancing the

“In the waste and recycling sectors the data may be sufficient at a higher level, but at times there’s not enough detail to enable policy makers and investors to make a secure decision.”

Nicholas Harford **Managing Director of Equilibrium**

standardisation of those issues.”

Joe notes the states and territories have become more responsive in recent times to coordinating language, as regulatory harmony will help achieve better outcomes for waste in Australia.

**CHALLENGES**

While improving the quality of the data set poses a significant challenge, Joe says Blue Environment has a solid plan to improve the data and the ways it is presented, in consultation with government and industry. He is confident the next report will improve on the last, strengthen the time series record and add more detail.

“We’re going to be pushing hard to get the data on time. To pull all this data together, make it uniform, get the states and territories to sign off on it in our timeframes and present it as a coherent national picture is always a very large challenge.”

When asked if the ABS had discussed the need for additional resources with the federal government to restore the National Waste Accounts, an ABS spokesperson said it prioritises its statistical collections to ensure it can meet current and future requirements within its resources.

“To do this, the ABS constantly reviews its work program, in consultation with governments and other key stakeholders,” they said.

“The primary focus of the National

Waste Account was on solid waste.

Data on the physical supply and use of waste is now primarily derived from reports commissioned by the Australian Government Department of Environment and Energy such as the National Waste Report.”

*Waste Management Review* also asked the Federal Government if it would re-consider providing the ABS with additional resources to allow it to return the National Waste Accounts and we asked if they were satisfied with the National Waste Report.

A spokesperson for the Department of the Environment Energy said that in late 2017, the Department commenced a national consultation on options for improving Australia’s national waste data and reporting. “The results of this consultation will be presented to the states and territories in February of 2018 and will inform the development of the 2018 National Waste Report and the Hazardous Waste in Australia 2019 report,” they said.

The spokesperson added issues being investigated in that consultation included how Australia can improve its compliance with relevant international standards for waste data and reporting, such as for waste accounts under the SEEA.

“We are also looking at options for better data on key waste management issues such as the prevention and clearance of waste stockpiles.” ■

## WASTE TRANSFER TRAILERS

In *Waste Management Review's* April edition, we speak to Australia's leading providers of waste transfer trailers, as they explain how their products can provide maximum payload and are built to last, safe and reliable.



As a key communication platform to waste generators, service providers, manufacturers, councils and consultants, *Waste Management Review* is the ideal medium to reach a major market and detail exactly what makes your product stand out from the rest.

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# Future supply chain solutions

MEGATRANS2018 – AN EXCITING NEW INTERNATIONAL TRADE EVENT – WILL BRIDGE THE GAPS BETWEEN INDUSTRY SEGMENTS THAT HAVE PREVIOUSLY BEEN OPERATING IN ISOLATION.

**T**he future of supply chain and logistics is drawing closer, as stakeholders come together for MEGATRANS2018 – an exciting new international trade event.

The show makes its debut 10 to 12 May, 2018, at the Melbourne Convention and Exhibition Centre, based in the heart of one of Australia's major logistics hubs and one of the world's most liveable cities – Melbourne.

Connecting the Australian and international supply chain, the three-day expo, delivered in partnership with the Victorian Government, will bring together those who plan, implement and control the efficient and effective forward flow and storage of goods, services and related information between the point of origin and point of consumption.

The diverse range of exhibitors comprise road transport, sea, rail, air, warehousing, infrastructure, materials and handling and safety. As the borders between industry are blurring, these sectors are evolving to explore new multi-dimensional concepts. MEGATRANS2018 aims to improve service quality by understanding the latest trends, streamline processes by exploring new technologies, reduce development costs and lead time with best practice, accelerate market entry by finding new joint venture partners and create new services by discovering new innovations.

One such example of diversification is Tramanco's further expansion of its modular CHEK-WAY electronic

weight monitoring and data logging systems. The technology is used by waste transporters to improve productivity, safety and in-service compliance issues. Tramanco's Managing Director Roger Sack says the company, which he began in 1975, is supplying and installing on-board weighing systems for a range of commercial vehicles with a growing proliferation across the waste industry.

Roger says Tramanco is unique in that it designs, develops and writes its own software, thus providing total solutions for all those set to attend MEGATRANS2018.

"Because of this fact there is no planned obsolescence built into our systems. Some of our systems have been re-installed on their fourth vehicle by simply upgrading the software during the re-installation," Roger says.

"And because our products are Australian made, they're built for Australian conditions."

He says a major benefit of the show covering all aspects of the supply chain is that it will highlight the interconnectivity between different facets of the supply chain.

Roger says Tramanco's systems demonstrate this with its "plug and play" interfaces, which allow the operator to monitor vehicle weights in real-time such as the verified gross mass of containers. He says this saves time by having compliance issues resolved at the point of loading and not on the highway or when the vehicles arrive at their destinations.

"The show just makes it all click together," he notes, adding that as the company deals with myriad light and heavy vehicles, this event covers everything the company has to do with the movement of goods from collection to destination.

Roger says attending just one trade show, rather than many, to engage with a wide range of clients is another bonus of exhibiting at MEGATRANS2018.

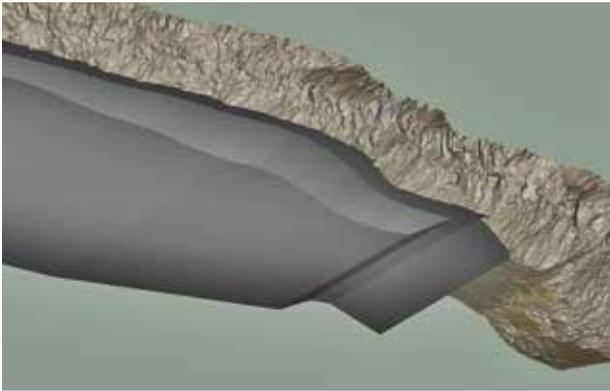
Isuzu Trucks, a market leader in the Australian transport industry for 29 consecutive years, has a technology-driven display in the works for MEGATRANS2018.

Phil Taylor, Director and Chief Operating Officer of Isuzu Trucks, says the focus comes as discussion and hype surrounding autonomous, or driverless vehicles and connected technologies continue to build overseas and in Australia.

"Disruptive technologies appear to be becoming more prevalent with each new year, fundamentally changing the way the market will look at the road transport industry over the next few decades.

"There is one thing that I know for certain. Whatever the technology, or the timeframe – Isuzu will ensure that Australian truck operators have access to the latest innovations in truck technology that are suitable for Australian operating conditions, driving better safety outcomes for all road users and improving air quality, productivity and the bottom line for the operator." ■

## VIEW YOUR LANDFILL IN 3D



No longer limited to intensive gaming or high-end architecture, virtual reality is making in-roads in the landfill sector.

Landair Surveys, a leading surveying firm in Australia, has introduced a new way for their landfill clients to interactively view their site data.

Previously, waste managers relied on 2D plans and concept drawings to visualise the relationship between existing site

conditions and future operations. However, the rise of 3D viewing platforms has led to the possibility of creating virtual landfills where many different spatial data sets can be viewed simultaneously.

The surveyors at Landair now offer prospective clients virtual landfill models that can be tailored to individual landfill sites or operational requirements. The models can be as simple as an online visual tool to a downloadable interactive viewer allowing the user to take basic measurements and create clipping planes.

Examples of current virtual files created for landfill operators include:

- Design top of waste contours overlaid on existing landfill surfaces
- Design clay sideliner files overlaid on existing rockface surveys
- View of proposed finished top of cap levels from site boundaries
- Month by month landfill cell flyover comparisons
- Composite as built clay liner and subgrade checks.

[landair.com.au/landfills](http://landair.com.au/landfills)

## STREET SWEEPINGS RECYCLING

The composition and potential contamination of street sweepings and catch basin cleanings adds a layer of complexity to their disposal. The average breakdown of street sweepings includes grit, plastic, paper, cardboard, wood, litter and glass. Catch basin cleanings comprises sand, grit, coarse organics and silt/fine organics. As a result of multiple materials blending together, street sweeping waste and catch basin cleanings can often be contaminated with trace amounts of chemicals. The challenges are compounded by the increase in landfill taxes globally, which means disposal costs are higher. To solve these challenges, CDEnviro's specialist street sweeping recycling systems recover reusable materials such as clean, dewatered sand and aggregates. These materials work in a variety of applications, including sand and stone as recycled concrete, road fill and landscaping; organics in anaerobic digestion, low grade composting and incineration; and fine clay in landfill capping and restoration. Depending on the application and site capacity, CDEnviro offers numerous technologies, from its G:Max vibrating platform screen technology for dewatering and HYDRO:GRADE system for producing stone, sand and organics fractions. Washed grit is suitable as a non-structural fill or secondary aggregate, while sand, grit and gravel can be used to offset virgin resource extraction. Oversized gravel/grit can be used as recycled aggregates, and organics can be used in

composting or go to landfill at reduced volumes. CDEnviro notes excessive disposal costs can be incurred for landfilling these materials in high volumes, which has historically been the case. The company estimates its systems are processing more than 500,000 tonnes of street sweepings material across the UK, Central Europe, Australia and North America per year.

[cdenviro.com](http://cdenviro.com)



## TELEMATICS

Telematics aims to improve safety and promote standardisation across the waste transportation industry. *Waste Management Review's* April edition explains how these technological innovations are being leveraged by the sector to plan and monitor fleet movements and mitigate risks.



As a key communication platform to waste generators, service providers, manufacturers, councils and consultants, *Waste Management Review* is the ideal medium to reach a major market and detail exactly what makes your product stand out from the rest.

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# It's time for a national recycling bank

A NATIONAL RECYCLING BANK WOULD HELP FUND INFRASTRUCTURE FOR THE INDUSTRY, WRITES ALEX SERPO, NATIONAL SECRETARY AT THE NATIONAL WASTE AND RECYCLING INDUSTRY COUNCIL.



Commodity prices have created a perfect storm for recyclers.

**T**he need for a national recycling bank has never been more critical. Despite efforts by industry and government, waste generation rates continue to grow exponentially. While it's difficult to predict the future, it's hard to imagine a scenario where Australia's waste stops growing, given waste generation is a function of population and economic growth.

By 2040, national waste mass should fall within the range of 70 to 140 million tonnes with a high degree of confidence – assuming we don't fall into economic disaster. This means we will need a lot more infrastructure. Increasing resource recovery rates requires a double effort, as new recycling infrastructure is required to maintain diversion

alone as waste volumes grow.

For example, if we generate 140 million tonnes of waste per annum by 2040 with a recovery rate of 75 per cent (energy and material), waste tonnes that will need to be landfilled will increase by 38 per cent, while tonnes to recovery increase by just over 400 per cent. So in the high generation scenario, we will need to build three new recycling plants for every one we have today, and 20 or more large landfills – in 23 years.

Landfills fill up, so even if total waste to landfill falls substantially, we will still need more landfills. Even with resource recovery rates of 95 per cent or more – the need to build new landfill cells doesn't completely disappear. Some materials also have no fate other than landfill, including

asbestos, contaminated soils and heavy metal contaminated materials. And don't forget that a natural disaster can generate huge waste volumes which need to be cleared quickly.

So the mantra for improving Australia's waste and recycling system is infrastructure, infrastructure, infrastructure. More recycling and waste infrastructure leads to large capital investments.

But this challenge is compounded by a poor economic climate for recyclers. Right now global commodity prices are at record low levels – including the price for oil, plastic, paper and scrap metals. Recyclers are also subject to a tough labour market and difficulty sitting and licensing facilities. There is also the looming Chinese 'National Sword' (formerly Greenfence) policy,

which means the world's largest importer of recyclate will impose strict new contamination and import standards.

There are opportunities inside every challenge. State government landfill levies are now raising more than \$1 billion per year. Here are approximate figures:

- NSW: \$660 million
- Victoria: \$200 million
- South Australia: \$100 million (with an additional \$64 million raised as the levy rises to \$103 per tonne from \$63)
- Western Australia: \$60 million (rising to close to \$90 million as the levy reaches \$70 per tonne).

With the reelection of a Labor Government in Queensland, the introduction of a levy there would likely raise around \$40-60 million, bringing the 2020 total close to \$1.2 billion per year. It's essential this large capital flow be deployed effectively. As landfill levies are 'levies' and not 'taxes', the proceeds should be returned to industry to solve our growing waste and recycling challenges.

**HOW LEVIES ARE SPENT TODAY**

The National Waste and Recycling Industry Council (NWRIC) is an industry body that meets four times per year.

Our members are the largest and most forward thinking operators in the industry. They include both 'waste and recycling' companies and 'pure recyclers'. This year we debated the best mechanism to spend landfill levy revenue.

While the application of landfill levies vary, they are always spent in four ways:

1. To fund EPAs
2. To fund sustainability agencies (such

as Sustainability Victoria or Green Industries SA)

3. On grants programs
4. The remaining capital returned to general revenue.

Industry supports points one, two and four. Even handed enforcement of standards across all industry players is essential. Ongoing waste education is important. However, industry broadly believes that the existing grants programs are flawed. Here are some of the reasons:

1. Grant schemes benefit some players and not others
2. They lack 'commercially viable' check and balance measures, with some previous grants supporting projects which later failed
3. Grants have a limited time window, which can clash with investment cycles, market fluctuations and the needs of businesses.

Instead, industry would like to see funds deployed through a 'national recycling bank', which would see the government offer recyclers low or no-interest loans to fund new infrastructure. Grants could still be utilised, but limited to the most critical innovation projects.

**IT'S TIME FOR A NEW NATIONAL RECYCLING BANK**

This approach has a proved precedent. The Clean Energy Finance Corporation (CEFC) has been a quiet achiever in the energy infrastructure space. It's one of the few initiatives that has survived the 'Clean Energy Futures' package first pitched in 2011, largely because it has consistently performed. The CEFC is a specialist financier, investing with commercial rigour to increase the flow of finance into new infrastructure. While EPAs are skilled, they are not independent, specialist financiers.

Here are some of the reasons a 'recycling bank' would be better than grants programs:

1. Funds would be repaid, so the important capital raised from levies could generate ongoing value
2. Money would be available to all players in the industry equally
3. Funds would only go towards 'bankable' projects – therefore fitting the criteria to receive a loan from a commercial bank
4. Loans would always be available to industry – solving the 'timing' and 'type' issue of grants
5. Another point to consider is – if the 'bank' was national – then larger amounts of capital could be available to fund larger and better projects. It could fund projects where they are most needed, rather than where revenue is available.

What are your views on this idea? I welcome feedback to Alex Serpo: [secretariat@nwr.com.au](mailto:secretariat@nwr.com.au) ■

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*Fast Fact*

The NWRIC is a new body working to create a cohesive national vision for Australia's waste management and recycling industry. It was formed in Sydney on February 13, 2017. Collectively, the council's founding members operate the majority of Australia's private sector waste and recycling assets.

The council's members are Alex Fraser Group, Cleanaway, J. J. Richards and Sons, Solo Resource Recovery, SUEZ, Toxfree, REMONDIS, ResourceCo and Veolia.

A yellow Tarpomatic machine is shown at a landfill site. The machine is a tracked vehicle with a large roll of white tarp mounted on its frame. The tarp is partially unrolled, showing its heavy-duty construction and black reinforced edges. The background shows a typical landfill environment with dirt, rocks, and some vegetation.

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