WASTE MANAGEMENT REVIEW MARCH 2019



FEATURES

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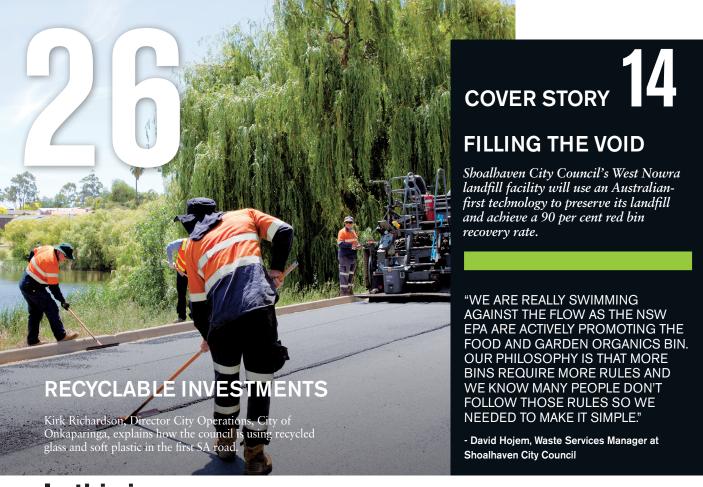
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In this issue

Features

MIXED REACTIONS
How will the NSW EPA's decision
to ban mixed waste organics
affect the waste industry in the
long term? Waste Management
Review investigates.

NSW'S LANDFILL GAP
Waste Management Review
explores the impact of NSW's
dwindling putrescible landfill
space and its effect on long-term
infrastructure planning.

ALTERNATIVE RUBBER
Eight members of Tyre
Stewardship Australia are taking
their role as tyre manufacturers a
step further by working towards a
circular economy future.

32 SEAMLESS INTEGRATION City of Mandura

The City of Mandurah has become the first local government area in WA to install moving floor technology.

4 ENDURING CAREER

Waste Management Review speaks to BOC's Jacquie Hiller about how the gas and engineering organisation has reduced its carbon footprint.

42 A NEW LOCAL INDUSTRY

The Fight Food Waste CRC lays out its strategy to reduce product losses across the supply chain.

MICROFACTORIES IN FASHION

Researchers at UNSW Sydney have developed a new microfactory to transform fashion into useful building products.

LIFTING THE BAR

Waste Management and Resource Recovery Association of Australia CEO Gayle Sloan highlights her experiences leading the association. 48 CENTRE OF EXCELLENCE

Retail property firm Vicinity Centres is taking great strides towards diverting more materials away from landfill.

57 CLINICAL ENERGY

Ace Waste is ramping up efforts to encourage best practice clinical waste management across hospitals.

54 LOOKING INTO A LATER LEVY

Waste Management Review examines some of the reasons the Queensland Government's waste levy was pushed back to 1 July 2019.

Regulars

NEWS

58 PROMOTIONAL FEATURES

65 LAST WORD



From the Editor

Sydney, we need to talk

THE NSW WASTE LESS, RECYCLE MORE INITIATIVE AIMED TO increase waste diverted from landfill from 63 per cent in 2010/11 to 75 per cent in 2021/22.

From 2016/17, the diversion rate sat at 62 per cent. That's despite the NSW Government investing more than \$800 million over nine years through work led by NSW EPA, according to an explanatory document on Waste Less, Recycle More, released in 2016.

As the 2018/19 half-yearly review budget shows, the NSW Government received \$769 million in revenue from its waste levy and predicts similar numbers across the forward estimates.

The question to ask is: where is this money actually going? A safe assumption would be it's sitting in state coffers, but the question we should be really asking is: how can the waste industry boost its capabilities to go above and beyond its recycling targets?

According to Colin Sweet, CEO of the Australian Landfill Owners Association, NSW is under pressure with a lack of putrescible landfill space. When we asked SUEZ about NSW's landfill space capacity, the company noted its extensive network across NSW, but expressed that to date, there has been extremely limited investment in energy recovery in the state.

Veolia's Marc Churchin, Group General Manager, NSW, says the state government must create optimal conditions for private and public investment in long-term infrastructure.

It's clear the industry needs some long-term planning for investment certainty, which Victoria seems to have a decent handle on with its Statewide Waste and Resource Recovery Infrastructure Plan.

The NSW EPA at the end of 2018 announced that it would be taking a greater step towards planning by developing a 20-year waste strategy for the state. The strategy will set a vision for reducing waste, drive sustainable recycling markets and identify and improve the state and regional waste infrastructure network.

It's expected this strategy will be completed by the end of 2019. In an article which touches on many of these issues, on page 24, *Waste Management Review* attempted to find out more about what the strategy will entail, but it appears for the time being, details are light on.





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News

1200 tonnes removed in Numurkah tyre stockpile clean-up

About one quarter of a tyre stockpile in the Victorian town of Numurkah has been removed – equating to an estimated tonnes of 1200 tyres.

Environment Protection Authority Victoria (EPA) used its powers at the end of last year under the Environment Protection Act 1970 to enter the site, with the assistance of Moira Shire Council and funding from the Victorian Government.

Located in Victoria's Goulburn Valley Highway, the stockpile on privately owned land has a stockpile of an estimated 500,000 tyres.

EPA Victoria North East Region Manager Emma Knights said the disposal of the tyres was going well. "The project has been carefully planned, and the tyres removed so far have come from the sides of the stockpile where the hazards are most critical," Ms Knights said.

"Aerial pictures taken by an EPA camera drone late last week show piles of waste tyres have been removed from the eastern side, closest to homes along the Goulburn Valley Highway.

"The southern side, which faces several business premises, is currently being removed."

The removal began in mid December with up to eight trucks a day leaving the site, five days a week, and the whole project is estimated to take approximately 10 weeks.

The stockpile has been a concern to the community for some time.

"Tyre fires are notoriously difficult to extinguish and produce considerable amounts of toxic smoke. With an estimated 5000 tonnes of waste tyres at the site, CFA has already warned of serious consequences if a summer grass or bushfire spreads to the stockpile."

The clean-up was carefully planned to include fire safety, security and wildlife and vermin management. Firefighting equipment is located on site for the duration of the clean-up, and no snakes have been observed so far during tyre removal. The waste tyres are going to a licensed facility in Melbourne for recycling.

QLD cracks 100 million returned containers with refund scheme

After four weeks, Queensland has celebrated 100 million returned containers from its popular Container Refund Scheme.

The Containers for Change program has already seen around \$10 million returned to Queenslanders, community groups and charities with more than 70,000 people registered with the scheme.

QLD Government Environment Minister Leeanne Enoch said the milestone shows just how well-received the scheme has been and the benefits it's having for Queenslanders and the environment. "This is a mammoth collective achievement with great participation from those who have returned containers and those who are running the scheme," Minister Enoch said.

"It is fantastic to see the number of Queenslanders embracing the new recycling initiative and choosing to be a part of the positive change."

Thousands of Queenslanders, community groups, charities, sporting clubs and schools are participating in the program, which aims to expand site numbers and capacity this year.

The boost in recycling numbers

has also bolstered the Queensland job market, adding at least 500 jobs throughout the state from the establishment of new refund points in more than 230 locations.

Chief Executive Officer of Container Exchange Ken Noye said the non-forprofit is excited to grow in 2019 and expand their network of Container Refund Points, provide more jobs and refund more containers.

"The scheme has already seen over 102 million containers returned and over 500 new jobs provided in under two months," Mr Noye said.



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News

ACOR releases agenda for 2019



The Australian Council of Recycling's (ACOR) focus for 2019 will be promoting the uptake of recycled content products through industryled projects, according to ACOR AGENDA 19 released by the peak body today.

Projects and partnerships under ACOR AGENDA 19 include an anticontamination initiative for kerbside recycling, starting with NSW, to improve the quality of materials needed for product manufacturing.

The agenda also comprises a recycling commodities index to provide greater certainty for recycled content manufacturing industry participants. ACOR will also launch a recycled contents products directory and online trading platform, in addition to a thought leadership initiative on incentives for the use of

recycled content.

ACOR's plan will see it compile and promote research on jurisdictional comparison of "waste" definitions, jurisdictional comparison of recyclate to roads specifications, jurisdictional comparison of waste levy reinvestment and the location of industry facilities by electorates.

A voluntary industry accreditation will also be rolled out across the supply chain and industry-provided training for regulatory and public policy partners.

ACOR CEO Pete Shmigel said that if society is not buying recycled content products, then Australians are not really recycling.

"The board of ACOR has decided our best contributions are positive and practical projects that increase the usage of products with recycled content. It is market demand that will ensure the full economic, social and environmental benefits of recycling, and put the circularity into the circular economy," he said.

Mr Shmigel said in its own businesses, the recycling sector is massively innovative, enterprising and results-driven, and ACOR AGENDA 19 initiatives reflect that industry ethic.

"While having the right public policy is important for recycling's future, and ACOR will continue to advocate, we are determined to positively and practically act, and not just talk, in the recycling sector's best interests," Mr Shmigel said.

"We are an industry that employs some 50,000 people and may generate some \$20 billion of value. It's time we and our partners take that to the next level, including through ACOR AGENDA 19."





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News

Metro Tunnel waste to help build Melbourne homes



Clay waste from Melbourne's Metro Tunnel Parkville Station project will be converted into new bricks for residential construction.

More than 80-Olympic-sized swimming pools worth of material will be excavated as part of the project to make way for the new underground station.

There are three stages to the project, with the first stage expected to provide around 300,000 tonnes of clay, enough to produce around 10 million bricks.

PGH Bricks and Pavers Regional General Manager Andrew Peachey said with the other two potential stages, there is a potential to produce around 30 million bricks.

"We are very committed to recycling

this type of material as much as possible. Not only is it better for the environment – reusing waste rather than sending it to landfill – there's also the social benefit of its use to build homes for new residents in the suburbs of Melbourne," Mr Peachey said.

"Normally we would extract this clay from our own quarry, so recycling waste from construction sites also serves to provide longevity at our facility and continuity of work for everyone employed there."

Works began on the site on 14 January below Grattan Street, between Leicester Street and Royal Parade.

Victorian Acting Premier James
Merlino said significant work is ramping

up at the site of the station.

"The Metro Tunnel will make travelling to the renowned Parkville health, education and research precinct easier than ever before, slashing travel times by up to 20 minutes in each direction," he said.

Victorian Minister for Transport Infrastructure Jacinta Allan said the government is working on providing Victorians with project to improve transport infrastructure.

"We are undertaking a monumental engineering feat as part of the Metro Tunnel, including constructing new train stations deep beneath some of Melbourne's busiest areas," she said.

The first train is expected to run through the tunnel in 2025.



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News

SA Govt considers ban on straws, coffee cups and cutlery

The South Australian Government is considering banning single-use plastic products which includes straws, takeaway coffee cups and cutlery.

Along with a review into the more than 40-year-old Container Deposit Scheme, the government is seeking consultation on the ban of a number of single-use plastics with the release of a new discussion paper.

Turning the tide on single-use plastic products, a discussion paper, seeks feedback on whether the government should introduce measures to tackle a range of single-use items.

The paper asks whether government intervention is required for these items and what form it could take.

Among considerations in the paper is whether the existing ban on single-use plastic bags should extend to thicker shopping bags, raising the question as to whether they should be made of compostable material. It asks what the impact would be of manufacturers or importers.

According to the paper, plastic product has surged over the past 50 years, from 15 million tonnes in 1964 to 311 million tonne in 2014. It is expected to double again over the next 20 years.

The report also cites action on plastic in countries such as France and Italy, which has banned plastic cotton buds. France has also banned plastic cups and plates and the UK intends to ban straws, with Belgium and Ireland and Portugal considering similar measures.

According to the paper, estimates suggest that South Australians could

be using about 255,500,000 million straws per year.

Items excluded from the ban for the time being are microplastics/ microbeads, non-plastic single-use disposable items, single-use plastic beverage containers and sanitary applications such as wet wipes.

Further work will be undertaken to evaluate the impact of a proposed ban on manufacturers or importers of single-use products. The paper cites an opportunity for these producers to redirect production to reusable and recyclable items.

"With a shift to reusable items, a single upfront purchase by the retailer will avoid future regular costs of purchasing the single-suse items, and thus may lead to a saving," the paper says.

"There will be a cost to providing reusable items for consumption on site, but savings from not providing singleuse items. The balance of the costs and savings will vary for different retailers and determine whether a switch away from single-use plastics can 'pay for itself' over time."

Environment Minister David Speirs said South Australia is a national leader in recycling and resource recovery and it is important to have a discussion about single-use plastics and the Container Deposit Scheme.

"Increasing interest and action globally is calling for a halt to the impact of single-use plastics on the environment. In October 2018, the European Union announced its intention to ban a range of single-use plastic items," he said.

"We can take more immediate local action on items that are designed and intended for disposal after only a single use, are prone to being littered, are unlikely to be recycled and for which more sustainable alternatives are available."

Consultation ran until 22 February 2019.





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Filling the void

SHOALHAVEN CITY COUNCIL'S WEST NOWRA LANDFILL FACILITY WILL USE AN AUSTRALIA-FIRST TECHNOLOGY TO PRESERVE ITS LANDFILL AND ACHIEVE A 90 PER CENT RED BIN RECOVERY RATE.

long the coastal plains, about 200 kilometres south from Sydney, lies the City of Shoalhaven, a local government area bordered by mountains and 100 sublime beaches.

Home to almost 100,000 residents,

the total waste collected at the kerbside per capita was growing steadily.

Over the past two decades, resource recovery investment increased, but there was no solution to the council's landfill problem. Concerns

of dwindling airspace escalated and a long-term strategy was required.

While the council had invested heavily in forward landfill disposal capacity and planning for missed waste, Shoalhaven had been evaluating its options since the early 2000s. In 2006, an investigation into reducing waste disposal demand to maximise Shoalhaven's Nowra Landfill facility showed limiting airspace and increasing waste were issues.

A number of trials were conducted in 2008 on domestic waste processing, including green waste, in addition to a cost benefit analysis into a resource recovery park. Over these years, an economic analysis of domestic waste processing costs and an alternative waste treatment facility was completed. By 2013, council resolved to call for expressions of interest for establishing a resource recovery park and alternative waste treatment facility.

The calls for tender arose as Shoalhaven City Council's West Nowra landfill facility was tipped to reach capacity by 2031 or earlier, prompting an industry-wide consultation phase.



TENDERING FOR TECH

David Hojem, Waste Services Manager at Shoalhaven City Council, says council was looking for a novel approach to solve its landfill problem.

"We went out to tender in a fairly open process that was available to experts in the industry to find a solution to recover our waste," he says. "My whole passion is to reduce our reliance on landfill...I feel this will provide opportunities for people to think about what they're buying from the supermarket and make the right decision."

Fred Itaoui Managing Director of Bioelektra Group

David says expressions of interest occurred around 2014, taking some years to find the right technology and site and go through the relevant approvals, including environmental impact statements.

Shoalhaven discovered Bioelektra Group's mechanical heat treatment process – an innovative technology used in Poland that sterilises and dries the mixed waste streams with steam before sorting them it into individual fractions and recycling. The solution would allow for the recovery of mixed waste from the red bin that was going to landfill.

The most common system for treating municipal solid waste using mechanical heat treatment is an autoclave, according to a UK Government document on the process. The 2013 document explains it is common for sanitising clinical wastes, prior to being sent to landfill, but its application in municipal solid waste is a relatively recent innovation.

As the technology would be an Australia-first, David says the council had to do extensive background research.

"We travelled to the only currently operating plants in Poland, spoke to their customers, downstream recyclers and regulators, and found out the recyclers the site was using, so we did some fairly thorough research on it," he says.

NET ENVIRONMENTAL BENEFITS

Shoalhaven in particular was looking to avoid having more vehicles on the road that could have occurred by introducing a third bin, in addition to diverting 90 per cent of its red bin waste from landfill and safeguarding its bins from contamination.

The additional cost to provide each household with a green bin would have been about \$150 a year. By taking a different approach, the council could avoid increasing rates. As a result of reducing its waste to landfill, the council's waste levy bill to the NSW Government is projected to reduce by nearly \$7 million (\$4 million for domestic waste) per year.

"We are really swimming against the flow as the NSW EPA is trying to actively promote the food and garden organics bin," David says.

"Our philosophy is that more bins require more rules and we know many people don't follow those rules so we needed to make it simple."

In January this year, Shoalhaven City Council announced it was entering in a long-term contract with Bioelektra Australia after the company won the tender. The new resource recovery facility will be constructed on councilowned land adjacent to the current West Nowra Landfill site. Works will commence in 2019 and the facility is expected to be fully operational by late 2021.

The facility will be funded and built by Bioelektra Australia. The 20-year contract allows for 130,000 tonnes per year of processing capacity, but the initial design capacity is 100,000. Bioelektra will apply to the EPA for an environmental protection license to operate the facility.

While council's projected landfill will be extended from 12 years to more than 50, Shoalhaven boasts that 100 per cent of recyclables placed in the red bin will be recycled. The facility will also have capacity to process material from neighbouring councils and reduce waste across the region. It will capture all recyclables, including green waste, and convert them into biomass that can be used as an additive for brick manufacture and cement rendering.

THE TESTING PHASE

Fred Itaoui, Managing Director of Bioelektra Group, says he aims for the technology to act as an adjunct to good source separation. Following a more-than-30-year career in facilities management, Fred's passion had been to find a solution to landfill. In 2006, Fred embarked on a research and development phase and came across a Polish engineer that had built the mechanical heat treatment technology.

Bioelektra Group ran a pilot program in Poland for its heat treatment facility from 2010 to 2012, located in the western Poland village of Róžanki. The success of the pilot led to the plant's commercialisation in 2012 and it has been fully operational since.

"My whole passion is to reduce our reliance on landfill and the amount of single-use plastics we use. I feel this will provide opportunities for people to think about what they're buying from the supermarket and make the right decision," he says.

Bioelektra entered the Australian market in 2017 as part of a global strategy mirrored in Chile, Argentina, India, Iran and Turkey. It followed testing and commercialisation of the technology over a five-year period.

"There were a lot of skeptics that said mechanical heat treatment had been tried in the UK and US and failed miserably, so we wanted to ensure we covered those aspects and answered those questions that did come up," Fred says.

He adds that other autoclaves had been larger and therefore it was harder to dry the material.

"Since then, Shoalhaven Council has applied to council for its own forensic analysis of the technology. It was pleasing they did that, as it showed what was scientifically proved, was also proved operationally."

He says that as the technology makes waste inert, whatever material is sent to landfill will have no pathogens. Over the long term, this means environmental risks such as leachate, landfill gas, odour and litter associated with putrescible waste will be significantly reduced. Fred says this makes it not only easy to compact, but the land is more able to rehabilitate into parks and gardens post-closure.

"Sending the material to a facility like ours further enhances the recyclability of the product and extracts resources. Even if people make a mistake in the yellow bin, that waste has an alternative rather than sending 20 to 30 per cent of it to landfill because of wrongful contamination."

He says that Bioelektra wants to solve the global challenge of landfill shortages.

HOW DOES IT WORK?

The process involves several stages. Yellow bin recyclables will continue to go to a materials recovery facility, with the residuals sent to the mechanical heat treatment facility and landfilled if required. Red bin materials will be sent directly to the site.



The process of treating mixed municipal solid waste begins after the material is loaded into a reception hall. From there, it is reviewed to ensure there is no construction waste, metals or hazardous materials the system is unable to process.

It then gets placed into a shredder and autoclave, known as the RotoSTERIL BEG7000, which sterilises the material. The material remains in the autoclave for up to three hours at 150 degrees Celsius and five bars of pressure, which evaporates the waste by subjecting it to steam under pressure, and significantly reduces its volume.

The moist material then goes through an air dryer conveyor belt and the sanitised waste is separated.

After the natural sterilisation process is complete, waste is unloaded to a buffer zone.

Through a lifting feeder integrated with a magnetic separator, waste is transported to a set of mechanical pneumatic screens equipped with an eddy current which isolates any metal. Organics, metals, glass, plastics and paper are processed on site and recycled into various end products. Refuse-derived fuel, produced from combustible wastes such as non-recyclable plastics and paper, is isolated by near-infrared sensors.

Glass is meanwhile separated and broken down in the form of a cullet.

Fred says the process complements recyclers as the dry waste allows for sorting lines to be able to separate the material more accurately.

Among the cost savings offered to councils are not paying waste levies, in addition to lower operational costs through an automated process and improved safety by not having to employ picking staff.

"My aspiration is really to have more sites around regional areas, as well as metropolitan," Fred says.

"We are looking at two to three plants around NSW, as well as in Queensland and a similar plant in Victoria."

For David, the main goal for Shoalhaven City Council is waste avoidance.

Having worked at council for the past 15 years, he has been involved in numerous strategies to boost resource recovery, including the Waste Reduction Management Strategy.

With the right conditions at play, David says the only real challenge now is getting support from state agencies.

"Technology all comes with some hype and you have to cut through it to see what will really work. But having looked at the facility, I think it really will," he says.





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Mixed reactions



HOW IS THE NSW EPA'S DECISION TO BAN MIXED WASTE ORGANICS AFFECTING THE INDUSTRY MONTHS ON? WASTE MANAGEMENT REVIEW INVESTIGATES.

t the end of last year, the NSW EPA's (EPA) announcement to stop the restricted use of mixed waste organic material on agricultural land sent shockwaves through the industry.

The EPA had also ceased its use on plantation forests and mining rehabilitation land until further controls could be considered.

The decision to stop the material was justified by the EPA as being made after a comprehensive, independent research program that concluded that there were limited agricultural or soil benefits at the current regulated rates. The EPA as a result revoked the Resource Recovery Exemption Order – a regulatory instrument that permitted the material to be applied to specific land uses. It said there were physical contaminants and potential environmental risks. The regulation covers processing and distribution

and prohibition from urban and domestic use.

In a joint letter to Environment Minister Gabrielle Upton by the Waste Management Association of Australia, Australian Organics Recycling Industry Association, Waste Contractors Association of NSW, Australian Council of Recycling and the Australian Organics Recycling Association (AORA), the associations expressed their disappointment at the decision.

In particular, the 24 hours' notice given was deemed disappointing, noting the consistent advice of the NSW Government since early 2000 had been that there was a shortage of alternative waste treatment (AWT) processing capacity.

"There are several existing longterm contracts that include AWT infrastructure, contracts that represent millions of dollars spent throughout the lengthy planning and development process. We are also aware of ongoing local council tenders that included AWT which are now left hanging in the balance, significant council and industry funds have been expended in getting to this point. This is also the case for recently signed long-term contracts, such as that for the Northern Beaches Council," the letter said.

The fact that the findings of EPA's internal research have not been published was also criticised.

"It sends the message that despite the tens of millions of dollars invested in planning and development of infrastructure, government can wipe out an entire industry with no consultation or further explanation at the stroke of a pen," the letter noted.

The associations are collectively seeking clarification on a number of areas. This includes the grants, refunds and exemptions available to industry, in addition to the potential loss of carbon credits under the

Federal Government's Emissions Reduction Fund. They are also seeking clarification around how the loss of landfill levy, gate fees, loss of income and carbon credit losses will be compensated.

THE BACKGROUND

The use of mixed waste organic material has already been restricted in NSW since 2010 when the NSW EPA's predecessor agency stepped in to regulate the industry. It imposed strict regulations on processing and distributing the material and prohibited use for urban and domestic purposes. The controls included maximum application rates of 10 tonnes per hectare for broadacre agricultural land and limited to one-time application. The EPA's predecessor also commissioned six independent studies, commencing in 2011, after regulation of the industry commenced.

With its most recent ban, the EPA received a final technical advisory report in late May that was reviewed and collaborated with industry, including records of the amounts and distribution of material, as well as operational information about the AWT facilities. The EPA had also sought specialist advice from an interagency committee which included the Department of Primary Industries, NSW Health, NSW Food Authority and the Office of the Chief Scientist and Engineers. This comprised a review of the information and commissioning a human health and ecological risk assessment and the impact on waste collections, stakeholders and the community.

For local governments, the EPA on its website acknowledges the decision could result in short-term diversion of general household waste to landfill. It says it will work closely with local and regional councils and the alternative "Our waste diversion rate has dropped from being the best in the state to just about average, but meanwhile our ratepayers are still paying amongst the highest garbage charges in NSW."

Michael Coulter General Manager of Nambucca Shire Council

waste companies to support them as they manage the impact of the changes. This support package includes a 12-month waste levy exemption for the outputs from alternative waste treatment facilities, and targeted funding to cover the cost of sending outputs to landfill in the short term. The EPA will be in touch with each council to discuss their contracts.

AORA met with the NSW EPA and helped finalise and distribute a flyer at the end of December. The flyer points out that biosolids and compost are still beneficial resources available to help improve soils and water retention and boost crop yields. As long as the main ingredients are followed in accordance with EPA rules, the organic product is safe to be applied to land and can be derived from source separated food and garden waste.

Councils affected by the change include Nambucca, Bellingen and Coffs Harbour City Shires which collectively process about 12,000 tonnes per annum of mixed waste organics. The contract, which has been in place since 2004, is binding until 2027, placing the councils in a difficult position. The contract comprises a mixed waste processing plant with an autoclave in Coffs Harbour using mechanical sorting to develop a material supplied to some farms in the regional area.

According to Michael Coulter, General Manager of Nambucca Shire Council, a significant reason the three councils entered into mixed waste processing was because it was recommended by the EPA as "best practice". He says the three councils have multi-million dollar contractual commitments.

"Our waste diversion rate has dropped from being the best in the state to just about average, but meanwhile our ratepayers are still paying among the highest garbage charges in NSW," he says.

He says the councils met with the EPA at the end of last year and noted their concerns and will be calling for them to fund the cost of the decision.

Michael explains that processing mixed waste costs Nambucca Shire Council \$164.60 per tonne plus a fixed availability charge. He says that by way of example, in September 2018 the council paid to process 229 tonnes of mixed waste at a cost of \$37,693, plus paid an availability charge of \$20,000, with a total processing cost of \$57,693.

"As a consequence of this decision by the EPA, the council is now locked in to a redundant, wasteful expenditure of approximately \$700,000 per annum of ratepayer's funds for the next nine years.

"The EPA announcement will also

significantly impact on available landfill space. As you appreciate, it takes years and years to undertake the planning and approval process for new landfills."

Waste Management Review posed a series of questions to Blacktown City Council to see if it was affected by the decision. In late January, a spokesperson for Blacktown City Council said it was still too early to comment on the full implications of the EPA's ban on mixed waste organics.

"Council is continuing to work with our contractor and alternative waste treatment to provide the best outcome for our community both in the short and long term," the spokesperson said.

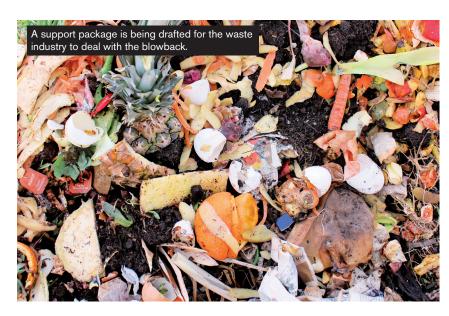
Northern Beaches CEO Ray Brownlee said the Northern Beaches Council is currently in negotiations with its service providers and cannot comment further on the impact of the EPA decision to ban processed mixed waste organics from land application.

A spokesperson for SUEZ said that since the announcement of the change, the company has worked with the EPA to ensure household waste collections and recycling continues as normal.

"SUEZ is committed to developing resource recovery solutions that align to the principles of the circular economy and will continue to engage with the NSW EPA to develop a longer term solution," the spokesperson said.

In a January statement to Waste Management Review, Diana De Hulsters, AORA National Executive Officer, and David Bonser, AORA NSW Chair, said the association received communications confirming the minister and EPA were aware of the impact their decision had on industry.

It said they were committed to working closely with AWT facilities to ensure they were well positioned to respond.



"We know the operators of these facilities are in direct contact with the minister's office and the NSW EPA to facilitate the implementation of a support package, which includes a 12-month waste levy exemption for mixed waste organics outputs."

The statement also said that AORA looks forward to to continuing its relationship with NSW EPA and the minister's office on behalf of the members of AORA, who range from the negatively impacted AWT operators to processors who can benefit commercially from the decision.

"The remaining and very important issue for AORA members is that some farmers don't seem to understand the change in regulation and that there may be a perception that all composts made from urban waste can no longer be applied to land.

"This understanding is incorrect and would negatively impact our members in their relationship with the market and the entire industry."

The statement said this was raised successfully with the NSW EPA which resulted in the Applying Compost and

Biosolids to Land fact sheet.

A spokesperson for the EPA in late January reaffirmed the research's conclusions that there were limited agricultural benefits from applying the material at the regulated rates, in addition to potential environmental risks.

"Simply put, the potential risks outweighed the limited benefits."

"The Technical Advisory Committee Report, which reviewed all the research, was published in October on the EPA's website. Individual research reports are being published by the authors in due course following peer review."

It noted that a review of an independent health risk assessment found that the use of mixed waste organic material on agricultural land is unlikely to present any health risk to the general public.

"Further work is currently being done, overseen by an independent panel formed by the Office of the Chief Scientist and Engineer and in consultation with NSW Health, and is expected to be completed in the coming months."





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NSW's landfill gap

WASTE MANAGEMENT REVIEW EXPLORES THE IMPACT OF NSW'S DWINDLING PUTRESCIBLE LANDFILL SPACE AND ITS EFFECT ON LONG-TERM INFRASTRUCTURE PLANNING.

ollowing the lead of Victoria and South Australia, the NSW EPA (EPA), in partnership with Infrastructure NSW, announced it was developing a waste strategy.

The strategy aims to set a 20-year vision for reducing waste, drive sustainable recycling markets and identify and improve the state and regional waste infrastructure network.

It will also aim to provide the waste industry with certainty and set goals and incentives to ensure the correct infrastructure decisions are made to meet community needs.

Stakeholders, including local government, industry experts and the broader community, will work with the EPA over the next six months to provide an evidence base and address the key priorities for the waste and resource recovery sector.

The NSW EPA had released a Draft NSW Waste and Resource Recovery Needs Report 2017-21 in 2017 but the document never went past the consultation stage.

According to the NSW Government's half-yearly review at the end of 2018, Treasury will collect an extra \$133.4 million in the current fiscal year alone from its waste levy and an additional \$726.7 million over four years. The extra finance suggests additional waste is being landfilled. According to the National Waste Report 2018, core waste (municipal solid, commercial and industrial and construction and demolition waste) in NSW has grown over the past 11 years by 14 per cent.

FRUSTRATED PROPONENTS

Colin Sweet, Chief Executive Officer of the Australian Landfill Owners Association, says that as old landfills filled, they weren't replaced with new ones. He recalls the last approval for a putrescible waste landfill was Veolia's landfill at Woodlawn well over 15 years ago.

"A number of operators have tried to get new landfills up and running, but they were either refused or the applicant run out of patience through the planning approval process," he says.

"You could argue that waste companies looked at how difficult it was to get an approval and how much money was spent to try and get approval and be unsuccessful, and that they had very little appetite to commence their own application."

As a result, Colin says there are no putrescible landfills that receive waste from the Sydney metropolitan area other than SUEZ's Lucas Heights facility and Veolia's landfill at its Woodlawn site. The most recent putrescible landfill servicing the Sydney metro area to be approved was the Woodlawn Bioreactor in 2000 and was commissioned in 2004.

Colin says that regional areas lack the capacity to fill the void, with many facing airspace shortages.

He says that the problem is compounded in the event of a bushfire, derailment for Woodlawn, flood or other problems that place either landfill sites temporarily out of action.

"If one of those facilities shuts

down, the other facility doesn't have the capacity to accept the waste that can no longer go to the facility that is shut down."

A spokesperson for the NSW EPA said natural disasters and other serious incidents can occur at any time or location and the NSW Government has plans in place to respond to such events.

"That planning includes alternative emergency waste management processing and disposal options are available."

Colin says he's not aware of any such plans.

The NSW EPA spokesperson also highlighted plans for a 20-year waste strategy for NSW.

"The strategy will set a roadmap towards an integrated waste and resource recovery network across metropolitan and regional NSW, set setting medium-term targets to enable certainty and guide investment by government and industry and strengthen data collection to inform future reform," they said.

Colin notes that cascading plans exist in Victoria, which provide the waste and resource recovery industry with certainty. Sustainability Victoria has a Statewide Waste and Resource Recovery Plan, while the Metropolitan Waste and Resource Recovery Group also has the Metropolitan Waste and Resource Recovery Implementation Plan.

Colin explains that the fact that the EPA is designing an infrastructure plan is not without its flaws.

"The EPA will probably come up with a very good plan from a technical perspective, but it's the planning department which will effectively decide whether those projects proceed or not," he says.

A government agency responsible for land use planning across the metropolitan area known as the Greater Sydney Commission has responsibility for planning, but Colin says it does not even come close to Victoria's quality of waste infrastructure plans.

As landfills could take up to 10 years to approve, Colin says the commission needs to establish a solution as there are no available voids suitable for putrescible landfill in the metropolitan area.

"If you're going to spend that kind of money over that period of time, you need to have some confidence you will get approval for an environmentally compliant facility which the community needs," Colin says.

Colin cites Dial-a-Dump's The Next Generation proposal as one example of the challenges facing NSW landfill planning.

"The Malouf facility made sense because he was going to put his waste to energy facility next to his landfill and could have sent the ash to the landfill via a conveyor belt."

"Other waste companies would look

at that and how much money he spent on trying to get an approval and then ask themselves if they want to spend the same amount of dollars and be unsuccessful," he says.

IDENTIFYING LAND

Colin says there is virtually no suitably zoned land allocated in NSW for waste management facilities.

As far as the interstate transport to Queensland issue is concerned, Colin questions whether a \$70 levy will stop waste from flowing to NSW, which has a \$140 levy and higher gate fees for non-putrescible waste.

He notes that Sydney will have a gate fee of about \$250, including a \$140 waste levy versus QLD's \$100 gate fee, including a levy of \$70. He says carting waste to Queensland may therefore slow waste movement down, but he could not foresee it stopping completely.

"The ideal scenario is that areas within NSW and metropolitan Sydney need to be identified as potential waste management facilities. That also means that within NSW, there needs to be areas marked which are going to be future landfills and those areas would obviously be former or current mining sites," Colin says.

"There are other mine sites across NSW, including coal mining, where there are enormous voids, which could be safely used for landfilling."

Rose Read, CEO of the National Waste and Recycling Industry Council (NWRIC) says that the difficulty in getting planning approvals over the line is timing.

"The most recent approval was granted in 2017 for the expansion of the Lucas Heights facility. This took between four to five years to get approved.

"Based on past experience approval, the construction of a new landfill would take around 10 years, allowing for two years of site selection, four to five years of planning approval and two to three years' construction."

TARGETED INVESTMENT

Rose says that the NSW Government has completely dropped the ball on waste and recycling in the state.

The NSW Waste Less, Recycle More initiative aimed to increase recycling from 63 per cent (2010/11) to 75 per cent (2021/22) diversion from landfill.

"At 2016/17 the diversion rate is 62 per cent even though the government through its Waste Less Recycle More initiative has invested over \$500 million from June 2012 to July 2017," she says.

"In 2017-18 alone the NSW Government received \$769 million in revenue from the waste levy. Why is there so little of the waste levy going back into waste and recycling – an essential community service?"

Rose notes that a needs analysis completed in 2017 by the NSW EPA clearly shows a lack of capacity across the current waste infrastructure to achieve the diversion targets for 2021.

"What has been the government's response? In 2018, NSW actually reduced its capacity to divert waste from landfill by stopping the application of mixed waste organics and putting a hold on any progress to establishing energy recovery capacity within the state."



She says these are two key resource recovery processes essential to diverting more waste from landfill and extending the life of the current putrescible landfills servicing Sydney.

Rose notes that only recently has the NSW Government flagged it will prepare a 20-year NSW Waste Infrastructure Plan and it won't be completed until the end of 2019.

"This is on top of the impacts of China's National Sword, the impending introduction of the Queensland levy and the vast amount of construction going on in NSW which will put substantial pressure on landfill capacity in the state."

The main planning challenge that needs to be addressed is the commitment to protecting existing, and identifying new, locations for waste management and resource recovery.

Rose says that while the performance, particularly over the last two years, of the NSW Government in waste avoidance and resource recovery does not instil a lot of confidence with industry, NWRIC is ever hopeful and committed to working with government. "NSW has the potential to transform waste management and resource recovery. It has the funding through an annual waste levy of more than \$700 million per annum.

"It has a sound Waste Avoidance and Resource Recovery Strategy and it has a sound planning strategy for the Greater Sydney Region Plan A Metropolis of Three Cities. What it currently lacks is leadership and a commitment to actually implement these strategies and deliver on its targets and intentions in a timely manner."

A spokesperson for SUEZ said that modern and highly engineered landfills play a necessary role in managing NSW' waste, now and in the future.

"SUEZ has an extensive waste management network servicing



Sydney which has allowed us to always accept waste to our landfills. However the waste hierarchy also acknowledges the role that energy recovery can play in waste management."

"In regards to contingency planning, SUEZ maintains business continuity processes at all our facilities as part of our standard operating procedures."

Marc Churchin – Group General Manager, NSW – Veolia Australia and New Zealand, says that policy certainty and building a collaborative regulatory framework which focuses on extracting and returning value at all stages of the waste lifecycle will make or break NSW's sustainability leadership.

"In the last 10 years, Veolia has committed some \$150 million in the development of waste technology and infrastructure to lead the creation of a circular economy including mechanical biological treatment, bioreactor technology, leachate treatment, organics recovery and materials recovery.

"In order for this to continue, and to drive the best outcomes for community, business and municipal sectors, the NSW Government must create optimal conditions for private and public investment in long-term infrastructure which reduces the social and environmental impact of waste."

A spokesperson for the NSW

Department of Planning and Environment refuted claims that it had been historically difficult for proponents to gain approvals for putrescible landfills in metropolitan Sydney.

"Approvals for putrescible landfills in NSW can be granted by either a council or the minister for planning (or his/her delegate).

"The minister has been the consent authority for only one putrescible landfill in the metropolitan Sydney area in recent years, the Lucas Heights Landfill, which was approved in about 14 months," the spokesperson said.

The spokesperson also responded to questions regarding the lengthy approvals process for landfills and whether there was suitably zoned land.

"The department is not aware of a putrescible landfill approval which the minister for Planning (or his delegate) was the consent authority taking 10 years.

"The State Environmental Planning Policy (Infrastructure) 2007 permits waste facilities, including putrescible landfills, in a range of appropriate zones across the state, including some rural, industrial and special purpose zones."

In responding to issues surrounding the Queensland levy, the spokesperson highlighted it was working with the EPA and waste industry to address its impact where appropriate.



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Recyclable investments

KIRK RICHARDSON, DIRECTOR CITY OPERATIONS, CITY OF ONKAPARINGA, EXPLAINS HOW THE COUNCIL IS USING RECYCLED GLASS AND SOFT PLASTIC IN THE FIRST SA ROAD.

Q. How has waste collection in the City of Onkaparinga evolved over time?

A. Like most councils, we've adapted to a three-bin collection system for waste ordinarily going to landfill, mixed recyclables and green organics. Our services have expanded to include managing illegal dumping, collecting hard waste, a green organics drop off service and street sweeping. These have been driven by legislative requirements and community expectations.

We offer a variety of recycling and disposal programs which include hazardous waste events, drop-off services for mobile phones, household lights and batteries, fishing debris recycling bins and a recycling craft store.

Q. Congratulations on having the first SA road to be built with soft plastics and glass. What drove council to identify the need for the material?

A. We're extremely proud to have worked with Downer Group and resource recovery and recycling companies Close the Loop and Red Group to have the first road in South Australia surfaced with an asphalt mix that included soft plastics and recycled glass.

The fact that we've been able to use materials that usually end up in landfill to create this road really highlights the benefits and value-add



potential of recycling.

The last 12 months has seen major disruptions in international markets for recyclables and falling commodity prices have significantly increased the cost of providing kerbside recycling.

The current impact for us – the largest metropolitan council in SA – is over \$1 million a year.

While this brings significant challenges, it also presents opportunities.

To capitalise on those opportunities, we need to think creatively and look for innovative ways of working – and that's how this project came about.

Projects like this can reduce our dependence on international markets for recyclables, reduce costs and create local jobs. We're also generating a new, local demand for recycled products while delivering a core local government service.

Q. How will the road be tested to ensure it remains durable?

A. This new road surfacing material, Reconophalt, has a similar upfront cost to traditional road resurfacing materials.

We expect the product to offer improved strength and resistance to deformation resulting in a longer lasting road surface that's better able to handle heavy vehicle traffic, and that'll reduce ongoing maintenance costs.

Being the first road of its type in South Australia, we'll be working with the Downer Group to monitor the road surface. We're in the process of looking at our future works programs for opportunities to use the product across our more of our 1350-kilometre sealed road network.

Q. What has been working particularly well over recent years for the council in terms of waste management/recycling services?

A. At Onkaparinga we're very focused on organisational service reviews and those we've undertaken in the waste and recycling space have identified better ways of delivering our services.

One review included bringing previously outsourced services such as illegal dumping collection in-house, resulting in significant savings, increased efficiencies and a more flexible service.

Q. Is there any modern technology the council is using and/or would like to use that would make collection or recycling more efficient?

A. With a population growth of 1.5 per cent per annum and with waste to landfill collection carried out in-house, GPS management has been invaluable to reviewing and improving route efficiencies and planning for future growth.

There's a growing range of





technologies that we have started researching such as radio-frequency identification (RFID). This would give us real-time information on the bins – what property they belong to, whether they have or haven't been emptied and the weight of the contents.

It would also allow for a more targeted and efficient collection service and the data collected would help guide our future collection planning. While there are several benefits RFID would bring, there's a lot we'd need to consider given the size of the Onkaparinga region at around 517 square kilometres.

Q. Where do you see waste and resource recovery heading in the future?

A. Together with adjoining councils, the cities of Holdfast Bay and Marion, and the Southern Region Waste Resource Authority, we're investigating the potential to build a new material recycling facility to sort kerbside mixed recyclables collected throughout the region. A new recycling plant would make us more self-sufficient, create local jobs, attract more businesses to the area and help reduce the costs and issues associated with China's restrictions on recycling imports.

Q. What qualities do you look for in a successful waste contractor?

A. We look for contractors who are customer focused, have service delivery experience, offer competitive pricing, good ethical/environmental stance and/or processes, and are compliant in regards to work health and safety and the National Heavy Vehicle Law, including Chain of Responsibility laws.

Q. What is council most proud of when it comes to its achievements in waste management?

A. In 2014, we partnered with four Fleurieu Peninsula councils to tender for recyclables processing. The collection volume on offer generated interstate interest and competition for processing into South Australia.

The new processing arrangements achieved through that tender increased the range of materials our residents can recycle through the household collection service.

We're also really proud of the number of recycling service options offered to our communities and their success.

For the past three years we've won the Top Collector Award for South Australia in Mobile Muster's Local Government Awards, collecting more than 124 kilograms of mobile phone components in 2017-18.

Alternative rubber

EIGHT MEMBERS OF TYRE STEWARDSHIP AUSTRALIA ARE TAKING THEIR ROLE AS TYRE MANUFACTURERS A STEP FURTHER BY WORKING TOWARDS A CIRCULAR ECONOMY FUTURE.

roduct stewardship is, by definition, acknowledging that those involved in producing, selling, using and disposing of products have a shared responsibility to manage those products in an environmentally friendly, healthy and safe manner.

This Federal Government
Department of the Environment and
Energy definition goes well beyond endof-life management, but encompasses
a whole-of-life product stewardship
approach. It's an approach that begins
from material sourcing, followed by
production, consumption, disposal and
reuse of resources.

In recent years, eight tyre companies have been taking proactive steps to reduce their impact.
Continental, Bridgestone, Pirelli, Michelin, Goodyear, Yokohama, Kumho and Toyo are key members of Tyre Stewardship Australia (TSA). In addition to raising public and industry awareness on tyre resource recovery with TSA, their considerable efforts to increase sustainability in the entire tyre production chain are also

yielding some progressive results.

Lina Goodman, Tyre Stewardship Australia CEO, says significant efforts are being made to turn the tyre industry into an environmentally focused, circular economy endeavour.

"From new sources of natural rubber to the introduction of sustainable plantation techniques, the efforts of tyre manufacturers has potential to significantly reduce global reliance on unsustainable natural resources," Lina explains.

The production chain goes all the way back to the pure source of natural rubber. *Hevea brasilliensis*, known as the Para Rubber Tree, is currently the primary source of material used in tyres. The price of natural rubber has fallen in global markets overs the years, affecting rubber growers in South-East Asia.

The Fraunhofer Institute for Molecular Biology and Applied Ecology IME in Germany identified the dandelion as a cost-effective, eco-friendly alternative to Hevea in 2015. In Germany, Continental has committed 35 million Euro to

researching the production of rubber from the Russian dandelion as an alternative to the Hevea plant.

"It is encouraging to see these positive sustainable initiatives by tyre manufacturers towards minimising their environmental impact," Lina says.

All TSA members are part of a World Business Council for Sustainable Development initiative called the Tire Industry Project (TIP), a CEO-led cooperative endeavour to identify and address potential environmental impacts from the industry and work to deliver a more sustainable future.

Cooperative efforts, such as the TIP, are also looking to improve the sustainability of end-of life tyre outcomes. The TIP aims to improve global industry recovery rates and reuse, including in less developed markets that have been subject to environmentally unsound reuse and recovery practices.

Bridgestone and Pirelli have also been investigating the rubber producing capabilities of the desert plant Guayule, due to its ability to thrive with less water than rubber-producing Hevea trees. Bridgestone is also undertaking considerable research work on disease protection for the Hevea trees, helping farmers increase productivity and reduce resource use.

French manufacturer Michelin has been developing sustainable rubber tree plantations in South America and South-East Asia, often co-planting Hevea trees with either natural forest vegetation or intermingled with local farmed crops. The work is part of



their Movin'On 2018 plan, which is working towards a future of tyres manufactured with 80 per cent sustainable materials by 2048.

"That work is closely mirrored by Goodyear's focus on improving the sustainability and productivity of natural rubber tree plantations and education efforts, directed at farmers, to improve land management and habitat conservation," Lina says.

Other conservation efforts have included Yokohama's Forever Forest initiative, which exceeded its target of planting 500,000 trees by 2017. The aim of the program was to increase local community environmental education, help in the formation of conservation forests and preserve biodiversity.

The substitution of other components of tyre manufacture with sustainable alternatives has also been the focus of work undertaken by Goodyear. After years of investigation, the company replaced petroleum with soybean oil in the tread compound of a tyre, delivering a renewable raw material that not only improves manufacturing efficiency, but also enhances tyre performance.

Both Kumho and Toyo have worked on increasing sustainability and reducing waste through lowering tyre weights and the use of exotic, yet renewable, materials used to extend product life and minimise the use of non-renewables.

Lina says that the efforts to improve sustainability have not excluded research and development into improved tyre performance that can contribute to positive environmental outcomes.

"Tyre manufacturers focus on improving areas such as reducing rolling resistance, wet weather grip and extending the overall lifecycle of the tyre, not only improving consumer value and safety but reducing the final waste impact of the product through the extension of the product's lifecycle."

She says that another example of the circular economy principle in practice is retreading. She says that a number of manufacturers are closely involved in the effective reuse of salvageable casings, particularly of truck tyres, allowing them to serve for a second, third or even fourth cycle.

"Consequently, they reduce pollution, conserve resources and use less energy than in the full manufacture of a new tyre," she says.

Lina says that ultimately, all of the work undertaken by TSA members is in recognition of the responsibility the tyre industry has to deliver full product stewardship and of the global move towards a circular economy.



WEST-TRANS



BUILT TOUGH IN AUSTRALIA



Community benefits

SOCIAL PROCUREMENT IS OFFERING SIGNIFICANT ENVIRONMENTAL, ECONOMIC AND SOCIAL BENEFITS FOR VICTORIA'S CONSTRUCTION INDUSTRY AND IS FEEDING DOWN TO THE RESOURCE RECOVERY SECTOR.

scial enterprises are worth about \$5.34 billion to the Victorian economy – a significant contribution to the state's economy.

Not only do these businesses provide vulnerable groups with access to employment, but they also have the ability to help solve the world's complex social, economic and environmental problems. Social procurement is a broad term to define workplaces and other areas.

Part of that is also environmentally sustainable outputs, practices and implementing climate change policy objectives, meaning the use of sustainable resources, recycled content in construction and lowering greenhouse gases all have a role to play in meeting these objectives.

It's therefore of no surprise that Victoria's pipeline of infrastructure

direct employment of disadvantaged jobseekers in the supply chain.

The Brotherhood of St Laurence is a community organisation working to prevent and alleviate poverty across Australia. With one of its sites based in Epping, Melbourne, an opportunity arose to partner with resource recovery specialists Repurpose It, located in the same suburb.

Repurpose It's contribution to social procurement is embedded into its business model of industrial ecology, which focuses on shifting industrial processes from linear systems to a closed loop process. But the company decided to take its social procurement offering a step further by providing employment to disadvantaged communities.

Simon Gray, Brotherhood St Lawrence Labour Employer Engagement, says that Repurpose It's George Hatzimanolis approached him at the beginning of 2017 as he wanted to make a difference in the local community due to high unemployment.

"George was building his business from the ground up working on major projects. There was an opportunity to create some ideal roles for our candidates, especially those working with limited English and could utilise their skills in a productive way," Simon explains.

He says that for many candidates, this was their first job in Australia and a great opportunity to obtain meaningful and in some circumstances permanent employment in a steady workforce. In



organisations using their buying power to generate social value above the value of goods and services being procured.

It's why the Victorian Government introduced Victoria's social procurement framework in 2018, a policy that aims to build a fair and inclusive sustainable Victoria.

The Victorian Government's social procurement objectives encompass opportunities for Indigenous Victorians, those living with disability, women's equality and safety, disadvantaged Victorians, safe and fair

projects is leading the charge in delivering social procurement projects. Annual infrastructure spending will be \$9.6 billion from 2017-18 to 2020-21, with many contractors setting their own social procurement spending targets as part of this.

The Level Crossing Removal Project is one project providing meaningful employment, tasked with removing 75 dangerous level crossings in the state. It has set a target of three per cent of its total contract spend on social enterprises, Indigenous businesses and

some cases, he says employees are more reliable and have a greater appreciation for their roles. Simon says many of the employees come from disadvantaged backgrounds, including refugees and asylum seekers.

"It initially starts off as a small percentage but when employers see the calibre of candidates they ask why they haven't been doing this before," he says.

To date, Repurpose It has employed about a dozen employees facilitated by the Brotherhood St Laurence's Given the Chance program. The program aims to build social and business networks and lower market risk for employers and job seekers. The model is highly specialised to multicultural groups, including more than 70 per cent from refugee backgrounds, with 91 per cent of those participants completing the program.

The Level Crossing Removal Project encompasses a variety of alliances working on various projects in different regions across the state. One of these is the North-Western Program Alliance, which has successfully removed level crossings at Camp Road, Campbellfield; Skye Road, Frankston and Buckley Street, Essendon with works commencing at High Street, Reservoir.

Suzanne Hewitt, Social Procurement and Inclusion Advisor at the North-Western Program Alliance, says the alliance works with contractors to deliver social outcomes through its procurement process. Some of North-Western Program Alliance contractors already work directly with Repurpose It.

"Recruiting those who face barriers is life changing, not just for the individual but for the families and communities they live in," Suzanne says.

"If we can break down the barriers for marginalised groups, individuals gain a sense of independence and dignity while having a direct impact on the economy through reduced welfare payments."

Repurpose It's George Hatzimanolis says that as a result of major infrastructure contracts issued by the state government, including the level crossing removals, Metro Tunnel and Westgate Tunnel projects, demand for social procurement is growing.

"This is filtering down to a number of industry partners, including the waste and resource recovery sector," George says.

"For Repurpose It, we've seen a growing demand for social procurement outcomes for our customers."

He says Repurpose It has received positive feedback for its social procurement efforts from all of its clients, as it fully aligns with the social purpose of the company's purpose to convert waste into resource.

George says Repurpose It is now obtaining a certification to become a social enterprise.

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Seamless integration

THE CITY OF MANDURAH HAS BECOME THE FIRST WA LOCAL GOVERNMENT AREA TO INSTALL MOVING FLOOR TECHNOLOGY, REDUCING OPERATIONAL COSTS AND BOOSTING SAFETY.

egional councils across Australia have been showing exceptional leadership in recent times, in spite of the challenges of working in smaller communities that produce less waste.

Within these communities there are champions of waste management, willing to investigate, trial and invest in new technologies that will future-proof their resources for decades to come.

From NSW's Albury City Council, which is on track to halve its waste by 2020, to Shoalhaven City Council's recent investment in a first-of-its-kind mixed waste processing facility, regional councils across the nation are leading by example.

At the end of 2018, the coastal City of Mandurah, located an hour away from Perth, made a bold decision to invest \$1.25 million in a hydraulically driven floor conveyance system at its Waste Management Centre.

As the existing concrete pit was showing signs of deterioration, the council risked closing its tipping shed for a significant period of time by repairing the existing piece of infrastructure. The Waste Management Centre has been around since 1997 and processes commercial and industrial and municipal solid waste.

The team spent two years investigating a variety of options before opting for moving floor technology, a system that would not only reduce the city's reliance on staff-operated front end loaders, but improve safety and lower operational costs. It also allows its waste processing capacity to increase



from 55,000 to 75,000 tonnes per

Kyle Boardman, Coordinator Waste Management at the City of Mandurah, says the city was aware of moving floor technology being used in Tasmania and Melbourne. Back in 2012, the city had installed a static compactor and compaction trailers, with turnkey specialists Wastech Engineering winning the contract through a competitive tender process.

The Wastech team had proved to be a reliable service provider for the city and was successful in a tender for the moving floor technology. The company knew the ins and outs of the city's Waste Management Centre, having visited it multiple times over the years to install the compactor and deliver the compaction trailers.

"We'd had a number of dealings with Wastech, which helped a great deal," Kyle explains.

Two moving floors were installed onsite in September 2018, servicing

both residential and commercial waste. The commercial waste moving floor is located within the existing push pit, with the residential moving floor located on the adjoining tipping floor. The interconnected moving planks are driven by hydraulic rams which move forward and backwards, allowing the waste to travel smoothly along the floor.

It is unique in that when the planks move forward, they move together, but when they retract, they do so in a series of three distinct movements.

"This allows the waste to stay in its original position so it remains stationary while the planks move backwards, and then it moves forward together," Kyle says.

Another benefit of the floors is the ability to run them in reverse, allowing material to be shifted to the start of the floor while more is loaded in front of it.

The moving floors are safe enough to run while loads continue to be loaded into the pit, another benefit to increasing throughput and speeding up vehicle movements onsite.

The waste then flows into a hopper connected to the static compactor, which loads the compaction trailers.

"In the past, a front-end loader was required to push the waste into a hopper.

"Now, a front-end loader is not required as the waste moves automatically along the floor and into the hopper."

Kyle says the front-end loader can now be released to manage other waste stockpiles onsite.

"One of the key advantages of the system is the design incorporates a large metal resource recovery deck at the end of the residential moving floor. That allows recovery of recyclable materials from the residential waste stream whereas before, once it went in the pit, there was no recovery at all."

He adds that this allows the recovery

of scrap metal, e-waste, cardboard and hazardous waste from the municipal waste stream. Kyle says the new design lets the city do that safely.

The moving floor technology seamlessly integrates with the existing compaction infrastructure, reducing loading times for compaction trailers and stress on the compaction unit. The technology will also allow the facility to handle additional waste volumes as the city grows.

Wastech moving floors are hydraulically powered via a 30-kilowatt power pack and floor speeds can be varied to suit high throughputs during peak loading periods. In addition to a faster and more efficient means of moving waste, the technology has the ability to improve vehicle queuing time. Leak-proof pits can be installed according to council requirements, whether it's a deep pit for more than

1200 tonnes a day, shallow pit for 20 to 500 tonnes a day, ground pit for low volumes or a combination of all of the above to suit mixed waste streams.

While it's still early days for the Waste Management Centre, Kyle predicts the moving floor technology will save on maintenance costs and provide a measurable benefit in resource recovery.

"Wastech has always been very professional to deal with. They promptly assisted in resolving any issue that arose with the static compaction or compaction trailers," Kyle says.

"Maintenance is critical to the operation of the site and Wastech have a service arm to maintain the compaction system and moving floor, with local contractors who provide support."

He says the city's officers would have no hesitation in turning to Wastech in the future should they require any further upgrades.

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Quality craftmanship

ACT BINS EXPLAINS THE KEY QUALITIES THE COMPANY HAS APPLIED TO DEVELOPING HIGH STRENGTH AND DURABLE FRONT AND HOOKLIFTS, SKIPS AND MARELLS.

ith more than 60 years' combined experience in the recycling industry, ACT Bins boasts a proven track record of quality and strength that has seen it used worldwide for more than 10 years.

ACT Bins & Sheds, which stands for Australian Standard, Customer Centric and Total Quality Control, is part of ACT Industrial, an Australian steel fabrication company located in Kwinana, WA.

The company focuses on the manufacture of high quality and strength pre-fabricated steel sheds, factories, warehouses, workshops and other steel structures 500 square metres and above. With a dedicated team of engineers and welders, ACT Industrial integrates and tests the latest manufacturing systems to ensure high quality welding and

workmanship for quality assurance.

On an average day, Matthew Eaton, ACT Bins General Manager, explains the company's 12,000-square-metre site in QLD could contain between 1200 to 1400 bins at any one time.

"Because we keep so many bins onsite, the best thing we offer is for customers to come here and take a look. Every customer that comes through our gates always notices how strong our bins are. They are the heaviest duty bins you will see on the market," Matthew says.

"I've been with the company for almost five years and I have never had any bins fail or break."

ACT Bins offers 1.5, three and 4.5 cubic metre front lift bins manufactured using three millimetre cold rolled sheet steel. The company also uses industrial lids with proven durability on all its front lifts.

Matthew explains that the galvanised steel bins, 1.5-cubic-metre and three-cubic-metre front lifts have typically been used by private waste companies particularly in shopping centers and companies close to the ocean. "As they are rust proof, these bins will typically last two to three times longer," he says.

A number of private waste management companies come to ACT Bins to provide them with a customised front lift bin design.

Matthew says a cold rolled steel makes the material highly durable and results in a faster and more economical manufacturing process. With an engineering team based in WA, every bin goes through a rigorous design process to ensure it meets the customer's specifications.

The 1.5 and three-cubic-metre front lifts are stackable and tapered, reducing freight costs, and able to store three bins high for the three-cubic-metre front lift and four high for 1.5-cubic-metre bins.

"Previously with many front lifts, you couldn't stack them inside each other," Matthew says.

"We had them tapered because we bring them all from overseas, but for transport costs it's a no brainer. The more you can fit on one truck, the better it is for the customer."

He says that in the design of ACT's hooklift bins, the pins are not passed through the channel at the front, but have two additional 22-millimetre steel plates welded in place along



with two stiffeners added to each side of the hooklift pin inside the channel.

ACT's hooklift bins also contain five millimetre floors with 100-by-100 millimetre RHS running down both sides linking at the base. This then runs through to the opposite side giving superior strength to the sides and floor.

Hinges within the hooklift bin have a 30-millimetre shaft and are heavy duty reducing any risk of failure.

Depending on the bin size, door hinges comprise 30-millimetre steel shafts by two or three and the locking mechanism can have two or three by 12-millimetre steel plates. Both sides of the bin have folded edges along the floor and the welded join is 100 millimetres up the wall reducing dirt and water build-up (which causes rust along the join), providing additional strength where needed.

ACT also offers skips and marells built from three and four-millimetre floors and walls respectively with three or four 90-by-50-millimetre channel reinforcing along the bottom for added strength. The skips and marells are heavily reinforced, with all seams fully welded and with 40-by 40-millimetre angles added to all joins.

The top of the bins have 80-by-40-millimetre channels with extra bracing on the four corners for added strength. Lifting lugs comprise 40-millimetre pins that pass through the channel and have two-by-12-millimetre steel plates added inside the channel, then are welded internally and externally.

"One of the best design strengths on our bins is the lifting lugs on our skips and marells are welded inside and outside the bins. Inside the channel are two 12-millimetre plates as well, so it's pretty much guaranteed in your lifetime you will never snap those lugs off," he says.

"I've been with the company for five years and the other staff I've spoken to have never had a customer report that they've snapped one off – not even bent."

Matthew says that skip and marrel joins are 40-by-40 angle welded over for double strength.

All bins are welded to Australian Standards EN 12079 and available in a high performance industrial enamel coating. Matthew says that ultimately, the company's strong product and customer service offering speaks for itself.

"Our turnaround for quotes is generally 24 to 48 hours, including bin specifications with length, width, height and a 3D graphic," he says.

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Smooth service

BMI GROUP HAS ACQUIRED A NEW MACHINE FROM GCM ENVIRO TO SUPPORT THE DEVELOPMENT OF ITS LATEST LANDFILL IN QUEENSLAND.

t the coalface of Queensland property development and waste management is BMI Group, a Brisbane-based organisation that offers recycling, waste transfer and landfill activities. With six different sites across Queensland focused on resource recovery, BMI is helping to solve the challenges of construction and demolition (C&D) and commercial and industrial waste (C&I).

One of these key hubs is a landfill and recycling centre located between Brisbane and the Gold Coast in Stapylton, a convenient point of disposal for C&D, C&I and green waste, concrete products and inert fill.

The Stapylton site is also an ex-quarry that received landfill development approval in 2018. The landfill site opened its doors in October upon construction of the first cell. The new site is able to process 500,000 tonnes of waste per annum, with 1800 tonnes per day on average.

The landfill is now a key destination from residuals from three other transfer

stations focused on resource recovery, taking waste from the Bogside Mining Industries, Nudgee Road Resource Recovery and the nearby transfer station at Stapylton.

AJ Ali, BMI Group Operations Manager, has been with the company for the past eight years, having previously worked as a plant manager at the Watson Road Resource Recovery site at Acacia Ridge.

For the site, AJ needed a landfill compactor that would provide even compaction and complement existing dozers on site.

AJ says that GCM Enviro was identified by BMI as a reliable and potential supplier.

"We had purchased a TANA G290 landfill compactor previously at our resource recovery facility at Watson Road that had achieved excellent compaction rates," AJ explains.

Downtime on the site was an issue and BMI was looking for backup and after-hours support. GCM Enviro's TANA E520 was seen as a potential

product to solve BMI's challenges, but it was the company's decision to go the extra mile that ultimately stood out.

"GCM Enviro Managing Director Daniel Kastowsky stood by his product by agreeing to provide a guaranteed backup machine should the TANA E520 experience any failure," AJ explains.

"A number of suppliers won't do after-hours warranty supply, but GCM offered this as part of the total package."

Available through exclusive supplier GCM Enviro, the TANA E520 features two full compaction drums which provide a full width compaction and even surface.

Maximum uptime, fuel burn, a comfortable cab and after-hours support were key components of the arrangement. GCM Enviro also offers a generous warranty with support.

"Operator comfort in the cab is a big thing for us. Maximum comfort means our drivers are happy and able to give their best performance on the job."

He says the rigid machine remains



at operator level, while a bigger cab offers 360-degree views in addition to a window from roof to bottom floor for better visibility.

"We got great compaction of four passes. The compaction force of the full-width twin drums is directed straight down, thus preventing waste extrusion from underneath the compactor. Even compaction keeps our landfill cells flat at all times," he says.

Due to the dual compaction drums, the machine is able to provide an even surface in four passes instead of an industry standard of six, reducing machine hours, operator costs and fuel consumption. AJ says the E520 also offers a greater crushing force to provide a smooth even compaction.

A rigid frame maximises the crushing force of up to 50 per cent of the total compactor weight, compared to 25 per cent for an oscillating

frame, according to GCM Enviro.

The rigid frame also means waste spreads in level layers, which maximises uniform compaction, instead of being spread unevenly along the surface through an oscillating frame. The end plates on the drums of the TANA machine eliminates any waste extrusion experienced in the eight points of fourwheel compactors.

The drum design concentrates pressure directly under the frame, providing a smooth and level compaction.

GCM Enviro says the E520 ground clearance is at least double that of any other compactor in the Australian compactor industry, with a height of 890 millimetres from the ground, while still maintaining a low centre of gravity. This is also important to prevent rubbish from getting trapped around the underbelly of the machine and

posing a potential fire hazard.

Stability is also ensured through a maximum sideways tilt angle of more than 50 degrees and minimum cabin sway due to a rigid frame. It's particularly important for safety, by preventing the risk of rollover for the operator.

AJ says the engine also offers low fuel consumption. Automatic traction control lifts the blades up to ensure the load is consistent and even.

He says he's so pleased with GCM's service that he is already looking at a TANA shredder for another recycling plant at Stapylton that BMI is in the process of building.

"I couldn't be happier with the assistance and support provided by GCM Enviro. Their desire to go the extra mile is helping us achieve our disposal and resource recovery goals," AJ says.



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Enduring career

WASTE MANAGEMENT REVIEW SPEAKS TO BOC'S JACQUIE HILLER ABOUT HOW THE GAS AND ENGINEERING COMPANY IS REDUCING ITS CARBON FOOTPRINT.

t's rare in the 21st century to find someone who has spent most of their career with one company, as modern estimates predict future graduates will have as many as 17 different jobs in their lifetime across five different careers.

Jacquie Hiller has spent most of her three-decade career as an engineer for the industrial gas and engineering company, BOC – part of the global Linde Group.

Her passion dates back to her schooling years where she had a keen interest in science. This initially saw her being interested in veterinary science or physiotherapy as potential career options, but after a summer camp promoting women in science and engineering at UNSW, Jacquie found herself drawn to the technical and problem solving world of engineering.

Jacquie studied chemical engineering at the University of Sydney in the late '80s and was fortunate enough to be given the opportunity to join the engineering cadetship program at BOC (formerly known as CIG) during this time.

Having thoroughly enjoyed university and the cadetship, Jacquie went on to work for BOC commissioning cryogenic air separation units as well as hydrogen and carbon dioxide plants in remote locations across Australia and Indonesia. Other roles have included logic programming and project engineering, all involving cryogenic liquid and gas production facilities.

"In the late '90s I went back to study to be a physio and remained as a contractor working on



programming for BOC," she says.

But her zeal to work as an engineer and solve day-to-day challenges with logic and technical expertise remained strong, and five years later Jacquie rejoined BOC as a process engineer in 2014.

She has since moved into the role of Energy Manager for BOC South Pacific Region, working mainly in optimising the procurement and demand side management of electricity. She is also involved in efficiency schemes to reduce BOC's energy consumption, minimise gas losses and maximise efficiency. The projects are not only commercially beneficial, but reduce the overall carbon footprint.

"As part of BOC's energy management strategy and commitment to sustainability we are currently rolling out solar photovoltaics to approximately 50 sites across Australia with an installed capacity of 1.5 megawatt with a potential to double this in the second stage of the solar program."

Efficiency and sustainability are embedded in BOC and its parent company Linde. Linde has developed specialised equipment and gas treatments that enable environmental benefits such as increasing recyclable water rates by up to 70 per cent and reducing fuel use and emissions in parts of the steel-making process by 50 per cent.

BOC and Linde are also involved in pioneering renewable hydrogen projects for use in hydrogen fuel cell vehicles in many regions around the world.

"BOC has also invested with the CSIRO to develop technology to enable the green hydrogen supply chain so that hydrogen can be exported to Japan and other parts of Asia where it is in high demand, but difficult to produce from renewable sources. We are working with Australian Renewable Energy Agency to see if we can get some of those technologies off the ground," she says.

According to Jacquie, best practice environmental leadership encompasses a shared responsibility. For example, BOC participates in demand-side management, which offers the company commercial incentives but also assists in supporting the electricity network in times of peak demand in order to reduce blackouts. This occurred recently during the extreme temperature periods in SA and Victoria when BOC responded to requests to shut one of its major production plants to provide extra capacity to the grid when it was under excessive pressure.

"In 10 years, the electricity grid will have undergone further remarkable change with more renewables and better means of energy storage which will place us in a better position. The key is how we all pull together to get to this future state," Jacquie says.

She adds that it's important to live and work in accordance with own values and lead by example.

"Leadership is about living and

working toward your aspirations in a positive, spirited manner that then inspires those around you. There are many females that start in engineering roles but there is also a high attrition rate potentially because of the lack of female leaders in engineering," she says.

Being in a more visible role in engineering, she hopes to inspire other young women out there and show that it is possible to have a long and rewarding career in engineering, where every day is interesting and stimulating.

As a sponsor to Women in Industry, Jacquie says BOC is proud to be part of a night showcasing the best and brightest across a range of diverse career roles.

Waste Management Review, a media partner to the awards, is encouraging leaders in the sector achieving excellence in the waste and resource recovery to put their names forward as nominees. The Women in Industry Awards recognise outstanding women from across the mining, engineering, manufacturing, road transport, logistics, infrastructure, rail, bulk handling and waste industries.

The awards aim to raise the profile of women within industry, as well as promote and encourage excellence.

"It is very inspiring to hear of the achievements of other women and their diverse technical skills as well as their unique approaches to leadership. There are always take-outs that can help motivate and inspire back in your own workplace," Jacquie says.

Women in Industry will take place on Thursday, 6 June, 2019 at The Park, Albert Park, Melbourne. Nominations will remain open until 29 March 2019.

It is free to submit a nomination, and an individual can be nominated in up to three separate categories.

For more information, head to: https://bit.ly/2UV5ZYA

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THE FIRST-EVER COOPERATIVE RESEARCH CENTRE FOR FOOD WASTE REDUCTION, THE FIGHT FOOD WASTE CRC, LAYS OUT ITS STRATEGY TO REDUCE PRODUCT LOSSES ACROSS THE SUPPLY CHAIN.



ustralia's food price inflation has generally been below the OECD average over the past 20 years.

The nation averaged 3.1 per cent a year compared with 4.4 per cent a year for the whole OECD, according to the Federal Government's 2012-13 Australian food statistics.

Credit Suisse's recent Global Wealth Report also shows Australia is the richest country in the world, with wealth per adult just ahead of Switzerland. It showed Australia also has the highest wealth by median, meaning the nation has a low level of inequality compared to other nations.

The nation's purchasing power has meant the low value we place on food creates a barrier to behavioural change, according to Dr Steven Lapidge, Chief Executive Officer of the Fight Food Waste CRC, who is keen to see Australians stop wasting food.

Steven says that the higher cost of food in European nations has meant behavioural change to reduce food waste has been more readily achievable.

"Food in Australia is really cheap as a percentage of income. Because of that many have lost all respect for food and what it takes to produce," he says.

The fact that food waste costs an estimated \$20 billion to the economy each year has led to the development of a new cooperative research centre to combat the issue – the Fight Food Waste CRC.

When the Federal Government launched the National Food Waste

Strategy in 2018, it reiterated its election commitment to halve the nation's food waste by 2030. Food Innovation Australia Limited was appointed as an independent governance body to support the implementation of the target and strategies within it. Months later, the Fight Food Waste CRC was established and granted \$30 million over 10 years in funding, taking its overall budget to \$121 million, to reduce food waste throughout the supply chain, transform unavoidable waste into high-value products and engage with industry and consumers to deliver behaviour change.

The CRC's activities will comprise three programs: reducing supply chain losses, transforming waste resources, and education and behavioural change. Steven says that since the CRC launched on 1 July, the first few months have involved finalising the head agreement with the Federal Government and agreements with the 57 participants, which include major food supply chain companies such as Woolworths and horticulture producer FAVCO, as well as Swisse Wellness and Sustainability Victoria. More participants will be able to come on board in the future.

Steven says the process of establishing the CRC has been a five-year journey from when the idea was first floated.

"Now that our agreements are in, we're starting to work on the initial research portfolio," he says.

He says one of the biggest areas of potential reform is to transform surplus horticulture into "nutraceuticals" to create higher value uses. Instead of fruit and vegetables that don't meet supermarket specifications going to low value uses such as animal feed, Steven says surplus horticulture could support the development of an Australian nutraceutical ingredient industry.

"Currently all nutraceutical ingredients and most food ingredients we use are imported from overseas. We could actually create whole

new industry around that in Australia," he says.

"One of the fastest growing areas in the food industry is this merging of food, health and medicine. It's happened in Asian countries for many years, as well as Europe."

He says that companies such as Swisse currently use a high-grade grape seed extract imported from France rather than utilising local ingredients, as there are no players in Australia in this space.

The projects are just the tip of the iceberg, with new potential projects ranging from new food products to bioenergy, nutrients for the aquaculture industry and a range of other areas.

He says that RMIT University and the University of Queensland will support the mapping of resource flows through supply chains in addition to companies such as Empauer – a lifecycle assessment company.

To reduce supply chain food waste, Steven says the CRC is working with areas such as the seafood industry to ascertain the quantity and quality of product losses.

"Sometimes developing new foods that may not require the initial capital outlay can be slightly less value but actually more profitable, so the kind of work that goes to each decision is [based on] how do we maximise profitability for our industry partners?"

He says the CRC will look at multiple uses for all waste materials to determine the best options.

"If you've got a horticultural waste stream, you might look to do a couple of extractions for a prebiotic, followed by turning the residual waste stream into a plastic, or if there's any waste after that, into bioenergy."

According to Steven, one of the technology gaps is processing the feedstock onsite. In this vein, he says that lessons can be learnt from European factories that now deal with onsite waste streams.

He adds that mobile freeze drying and dewatering technologies are food waste processing options that are currently lacking in Australia, although this is starting to change.

To inspire behavioural change, an industry engagement program will develop short courses so businesses can identify supply chain gaps. A household behaviour change program will also take place to reduce food waste, which already involves Victoria, NSW and South Australia.

Over time, an online decision support tool will also be developed that will capture information on multiple waste streams, their location, volumes, seasonality and potential uses, as well as the location of potential manufacturing facilities, to help deliver maximum profitability from food waste. As Steve points out "we only manage what we value".

"I hope that will be one of our key legacy items. It's really building the infrastructure and the knowhow to extract financial benefits from traditional waste streams and to develop the circular bioeconomy in Australia," Steven says.



Microfactories in fashion

RESEARCHERS AT THE UNIVERSITY OF NEW SOUTH WALES SYDNEY HAVE DEVELOPED A NEW MICROFACTORY TO TRANSFORM FASHION INTO USEFUL BUILDING PRODUCTS.



he push towards decentralised waste treatment has the potential to disrupt the traditional model of collection, treatment and recycling. As waste generators look to innovative ways of resource recovery, therein lies not only potential to treat waste and reduce transport costs, but even indirectly become a manufacturer.

Researchers at the University of New South Wales (UNSW) Sydney's Sustainable Materials Research and Technology (SMaRT) Centre have been working on making this idea a reality. Having completing their second microfactory at the end of 2018, this time, the green microfactory will focus on transforming clothing and textiles into high-quality building products such as flat construction panels.

The panels will be used for acoustic and thermal insulation, while the SMaRT Centre expects it may be modified later on for flooring and walls.

The high-end composite products can have a wood veneer look or a ceramic-style finish and have been lab tested for qualities such as fire and water resistance, flexibility and acoustic and load-bearing capabilities. To develop the new product, the team collected an assortment of discarded clothes, uniform, bedding and mattresses. They also collected additional polymer textiles sourced from waste packaging, shopping bags and disposable lab coats.

Upon manually removing zippers,

buttons and buckles and the leftover mix of cotton, the team shredded and treated polyester, nylon and other fabrics with heat and pressure to form solid panels. UNSW is now working with various construction industry partners to ensure the products can undergo a formal regulatory assessment.

The process follows a separate exercise by UNSW Scientia Professor Veena Sahajwalla, SMaRT Director, and a number of researchers that converted used glass into high-quality ceramics suited for benchtops and tiles in kitchens and bathrooms that can come in all sort of sizes, colours and finishes. The research, published in the *Journal of Cleaner Production*, found a cost-effective new process to

transform mixed glass into high-value building materials without remelting.

UNSW's SMaRT Centre plans to launch its green microfactory in 2019. In addition to the fashion recycling, used glass will be converted into high-quality ceramics suitable for benchtops and tiles in kitchens and bathrooms. The SMaRT Centre demonstrated that mixed broken glass can be used in the production of polymeric glass composites, with mechanical properties, utility, aesthetics and expected market value comparable to natural and engineered stone products.

The university's first microfactory launched in April 2018 and has the ability to recover and reform materials from electronic waste. The microfactory functions as a series of machines and devices that use technology to perform one or more functions in the reforming of waste products.

Veena says green microfactories not only produce high performance materials and products, but eliminate superfluous machinery, preserve natural resources and reduce waste.

The challenge for fashion recycling, she says, is garments often have a variety of synthetic materials and polymers, which can combine polyester, nylon and acrylic, that need to be isolated.

UNSW's method works to convert materials by breaking the clothing items down and shredding them into basic elements. Using a hot press isothermal treatment process, the materials are heated and compressed and blended with a wood-based material.

UNSW's fashion project has been in the making for the past four years. After initially looking at converting agricultural waste into acoustic panels, the university turned its focus to fashion.

Veena says that acoustic panels offered a viable alternative to standard

refurbishments which reduced waste, taking into account areas with noise pollution. She envisions a future where small businesses could utilise microfactories onsite to sell acoustic panels and disrupt the traditional interior design industry.

"It could provide new opportunities for a local job market," she says.

"Another aspect of what we want to do is eliminate nasty chemicals. We all know that when it comes to many products that come from overseas, we don't know what goes into making them. What goes into making those products has got to be one of the most important things we pay attention to and understanding country of origin."

Veena says the new material is now undergoing further testing to align with the international ASTM standards for acoustics. UNSW will continue to engage with government and industry bodies.

The SMaRT Centre also found industry partners to build and run the world's first commercial e-waste plastic microfactory after receiving a \$250,000 grant from Sustainability Victoria. The Australia and New Zealand Recycling Platform will build

the microfactory that will be run by e-waste recycler TES and process up to 500,000 kilograms of plastic waste per year. This will be recovered and reformed into 3D printer filament for retail sale.

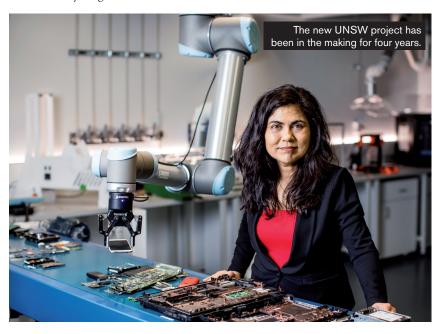
Given the green microfactory is due for launch in 2019, the commercial one is set to be constructed this year and for this reason, Veena says the launches will be spaced out.

In the meantime, Veena says disruption from microfactories will experience momentum if it is embraced by the general public, enabling local manufacturers to flourish with multiple societal benefits.

As infrastructure becomes more complex and resources more finite, Veena says that it will be increasingly important to preserve our natural resources.

"Our cars and circuit boards have wiring in it.

"We will need to accept that we will need these materials and the integration of electronics into our everyday lives, and there is something quite exciting on its way," Veena says, alluding to a future project relating to electronics.



Lifting the bar

WASTE MANAGEMENT REVIEW SPEAKS TO WASTE MANAGEMENT AND RESOURCE RECOVERY ASSOCIATION OF AUSTRALIA CEO GAYLE SLOAN ON HER EXPERIENCES LEADING THE ASSOCIATION.

ith more than two years under her belt, Gayle Sloan, CEO of the Waste Management and Resource Recovery Association of Australia (WMRR), has taken a leading role in putting waste management and resource recovery on the radar of governments as an essential service.

From appearances on the ABC's War on Waste to Q&A, as WMRR CEO, Gayle continues to boost the profile of the sector with the general public, upstream stakeholders and governments, extolling the virtues of recycled content and encouraging governments to use more of it. As the national peak body for the landfill, recycling and resource recovery sectors, including waste to energy, WMRR's broad church of membership has enabled the association to provide an unrivalled level of support to its members on advocacy, information and training, conferences and networking events, and a range of other areas.

Gayle's procurement and government experience has served her well in the role, but she tells *Waste Management Review* that it was waste management's interesting policy and operational impact that drew her to the sector, with this journey beginning in 2002.

"My first encounter was with the City of Sydney where I was responsible for



both procurement as well as policy. I did my first collections and processing tender there," she says.

She says while working in crime prevention, she was also fascinated by the link between an increased sense of personal safety and pride of place.

"Waste management, along with street cleaning and graffiti removal, are fundamental to councils achieving this sense of safety, pride and connectedness," she says.

Over the years, Gayle worked for a number of councils before joining Visy in 2013 in a contracts manager role where she witnessed firsthand the power of supply chains in creating jobs and investment.

"In some ways without realising it, all roads have led me to WMRR, from working in NSW Parliament for ministers, state government, councils and then industry itself [at Visy]. What is evident to me is that there isn't a single obvious career path to entering our essential industry," she says.

Gayle joined WMRR at the end of 2016, which until the beginning of 2019 was known as the Waste Management Association of Australia. The name was changed earlier this year to reflect the needs of its diverse and growing membership and acknowledge the ever-increasing participation by materials recovery facilities, reprocessors and remanufacturers.

When it comes to the principles of effective leadership, Gayle says that the ability to collaborate with others and the capacity to listen and know when to let others lead is important. It's not necessarily about being the smartest person in the room, she says, but a thirst for knowledge.

"It is also important to have passion and energy for what you do, particularly when working with other people."

As the industry continues to face challenging times with China's ban on recyclables, among other domestic issues, Gayle says she is most proud of the collective efforts by all members and the industry which have remained positive and constructive.

"I am so proud that WMRR is firmly on the political and policy landscape and recognised as the go-to by governments across Australia due to our willingness to get involved and be constructive," she says.

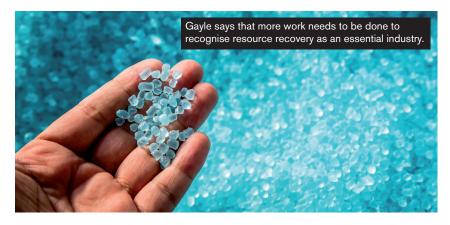
"Having the ear of our ministers and a seat at the table has allowed WMRR to influence key policy and regulatory settings, cementing our role as the peak body for our essential industry."

Looking ahead, Gayle says more work needs to be done, particularly by federal and state governments, to fully recognise waste and resource recovery as an essential industry.

"This means having improved, consistent and appropriate planning pathways and support for waste, resource recovery and remanufacturing facilities across Australia.

"We need greater regulatory certainty that supports the waste management hierarchy and its objectives so that we prevent a repeat of the recent revocation of mixed waste organic outputs in NSW."

She says that industry has



demonstrated its enthusiasm and commitment to building capacity, but asks how can the sector move forward sustainably if business and government continue to import recycled content?

"The Federal Government needs to step up and play a more active role, [by] leading and funding national programs, given Australia really is one large common market and it needs to be active in developing a national circular economy in Australia.

"Here's an idea – let's start with a 'Buy Australian recycled content' campaign and a genuine product stewardship scheme for packaging material."

To innovate effectively, Gayle says that industry requires investment –

not just capital, but human resources and time.

"However, any investment requires long-term certainty and so an important first step is for all levels of government to collaborate and develop onshore markets."

She says the other gap that has deterred innovation is the lack of a level playing field, arguing the lack of commonality in regulation and policy is a significant challenge to industry.

"There needs to be minimum standards for jurisdictions to abide by and harmonisation of regulations and policies such as landfill levies, reinvestment of these levies, resource recovery exemptions and orders, to name a few."



Centre of excellence

RETAIL PROPERTY FIRM VICINITY CENTRES IS TAKING GREAT STRIDES TOWARDS DIVERTING MORE MATERIALS AWAY FROM LANDFILL, WITH BOLD PLANS ACROSS FOOD WASTE AND DECENTRALISED RESOURCE RECOVERY.

decade ago it would have been an unusual occurrence for a \$16.1 billion retail property ownership firm to own and run its own materials recovery facility.

Australia's Vicinity Centres is part of a growing list of companies taking additional steps to divert their own materials away from landfill.

The firm, which employs more than 1300 nationwide and operates more than 60 shopping centres, has been focused on better waste management practices. Part of its plans are investments across various centres in anaerobic digesters, food macerators and weighing systems, to name a few areas. This laser focus on resource recovery has seen its landfill diversion rate move from 36 to 43 per cent within the past year.

The strategy includes working closely with its waste management partners Cleanaway and Veolia. Its efforts across sustainability, including water and energy savings, even saw it ranked the third most sustainable property company globally in 2018, according to the Dow Jones Sustainability Indices – an assessor of real asset performance.

Plans for the business are now keeping a close eye on the waste management market and look at new investments. Each centre has a clear energy and waste action plan, allowing it to make a contribution to Vicinity's Vicinity Centres has installed numerous recycling systems at its various shopping centres.

broader diversion goals.

Nick Irvine, Vicinity Centres General Manager National Operations, says two years ago Vicinity invested in building a data team to establish a data lake to enable reporting on its waste generation each month. The process allowed Vicinity to see the top 10 centres of excellence and the bottom 10, allowing it to work with centre managers and retailers to understand why more waste was being generated and develop a solution.

As an initial step into improving its data quality, Vicinity invested in a SmartWeigh System from Wastech Engineering. The system allows all retailers to have an access card that records the date, time and weight of the waste when used to access the packer. It also provides data reports identifying high-waste-producing tenants, which can be generated on a daily, weekly and monthly basis.

According to Nick, one of the proudest moments in the centre's landfill diversion history was the development of a materials recovery facility (MRF) at Chatswood Chase Sydney.

Launched in late 2017, the innovative recycling system has the capability of saving an additional 695 tonnes of waste from landfill each year. As a result of the setup, Chatswood Chase set a bold 90 per cent diversion waste target by the end of the 2020 financial year. The MRF system engages retailers with specific bins for different items such as paper, plastic and organics. The waste is then taken to the waste dock where it is bundled, sorted and processed onsite.

Nick says that the diversion rate was for some time hovering at 54 per cent, but since the last financial year has already moved into the high 70s.

"Our focus at Chatswood Chase Sydney is to push past 90 per cent by financial year 2020. As a first in Australia, it is something that we're learning about because we've had to help our retailers, but it's certainly



improved our waste management dramatically," he says.

He says the monumental occasion could mark a push towards a more decentralised model where the centre manages its own waste, rather than relying on external businesses.

"The cost of landfill is a fixed cost. It's not going anywhere so it's about how we get smarter. We're now looking at how we divert organics, because that's the easiest one for us. How can we convert our waste into bioenergy and produce income for the centre?"

Nick adds that Vicinity has been investigating mobile bioenergy plants prevalent overseas to replace some compactors. "The main purpose would be to try and identify where we could introduce it because retrofitting costs a lot more than building into the design, so we're trying to work through new developments.

"We've been talking with some of the teams such as at The Glen about what we can do and how they can design their loading docks and their waste areas, so that they're suitable for it."

With food waste being a priority for Vicinity, ORCA anaerobic digesters were installed at Chatswood Chase and Bankstown Central. The Pulpmaster is another piece of equipment being used to process food and is a macerator installed at 18 centres, with another 10 planned for other facilities.

"Our strategy is that where appropriate, every centre will have a Pulpmaster installed."

Nick adds that the centres collectively produce more than 7500 tonnes of organics per annum.

The biggest waste generators at the centres are the retailers, Nick says, which is why waste educational programs, including videos in the loading dock, have been introduced at a number of centres.

"Our challenge is our retailers and



"The cost of landfill is a fixed cost. It's not going anywhere so it's about how we get smarter."

Nick Irvine Vicinity Centres General Manager National Operations

the staff within it aren't necessarily static. A lot of them can be casuals or part-timers so it's important for us to keep managing education. But what's really exciting for us is that we've recently had national retailers approach us asking how they can help, because they have their own sustainability objectives."

At a customer service level, Vicinity ramped up recycling awareness at Melbourne's DFO South Wharf with a bin installed at the centre for customers to throw out their old shoes after purchasing new ones, with the pre-worn pairs donated to those in need.

With China's National Sword and Queensland's waste levy scheduled for 1 July, Nick says market signals are increasingly becoming skewed towards resource recovery.

"In NSW, we're looking at a material recovery facilities at our three new assets up in the Sydney central business district – the Queen Victoria building, The Galeries and The Strand Arcade – so that's a big one. We're certainly targeting something at Chadstone because of the sheer volume."

Nick says that sustainability is becoming a critical part of operations, with investors even inquiring about Vicinity's policies.

Plastic checkup

WASTE MANAGEMENT REVIEW REPORTS ON HOW SOME HOSPITALS ARE PARTNERING WITH WASTE AND REUSE ORGANISATIONS TO REDUCE COSTS.

hen someone's life is on the line, or a child is being born, proper waste management and recycling practices can be placed lower on the priority list.

According to the World Health Organization's fact sheet on health-care waste, a lack of awareness alongside the absence of waste management and disposal systems and insufficient financial and human resources are some of the most common problems facing hospital waste.

The organisation adds that of the total amount of waste generated by health care activities, around 85 per cent is general, non-hazardous waste.

Kristina Roberts, Afterhours Manager at Auburn Hospital in Western Sydney, says that there has been a cultural shift towards the use of single-use plastics in medical centres.

"Plastic packaging and tools became more popular in hospitals, as they are perceived to be quicker and cleaner to use," she explains.

"This is also true for more mundane items, such as water bottles. Years ago, patients would have access to a refillable plastic jug for water, but these have been replaced by plastic water bottles.

"In some cases, the cleaning staff noticed that there could be up to eight plastic bottles on a patient's bedside – some not even opened – but because they were near a patient, they needed to be thrown out."

Staff at Auburn has begun to notice the amount of recyclable materials that were being sent to landfill. More



than 2500 single-use kidney dishes were being disposed of every month at the hospital, which ended up costing hundreds of dollars in waste fees.

In November 2017, a group of committed staff decided to go beyond their expected roles and began the "Think before you bin it" program. It encourages staff at Auburn to consider how waste could potentially be diverted from landfill before disposal, with staff educating others about what can be recycled.

To further improve recycling rates, the hospital partnered with MedEarth and Doctors Assisting in South Pacific Islands, which collect equipment such as crutches, maternity beds, incubators and surgical supplies, masks and suture materials for reuse

in African and South Pacific nations.

Kristina, who leads the team behind the project, says one of the hardest things for the hospital was setting up contacts and relationships with organisations willing to assist their recycling efforts.

"We reached out to the companies that were providing us with the blue plastic bowls, and they agreed to collect and recycle them as long as they were clean," she says.

"Now that we have established these relationships, we're able to make sure those in other countries can benefit."

The team's efforts have seen a significant increase in recycling rates, recycling 100 per cent of recyclable plastic bottles and cans, 98 per cent

of the hospital's blue plastic bowls, 90 per cent of kidney dishes and galley pots and 90 per cent of "out of date" consumables.

One waste problem Auburn is now aiming to solve is food waste. Healthshare NSW provides around 24 million meals every year for patients in hospitals across the state. However, not all of these meals are eaten and leftovers are unable to be given to food rescue charities due to the potential infection risk.

Like many hospitals, Auburn doesn't have the space for its own dedicated composting on site, meaning much of this food waste ends up in landfill.

Something Kristina says would make it easier for hospitals to recycle is a collection service.

"One of the big logistical challenges was figuring out where to store the items we were wanting to recycle," she says.

"Hospitals are busy places and a lot of people's efforts are focused on the patients. Making it easier for the people working in these environments to think about their waste and to make it convenient for them is critical to reduce costs and help the environment."

COLLABORATIVE CARE

Flinders Medical Centre (FMC) in South Australia is another example of a hospital that has benefited from establishing partnerships with other waste and recycling organisations.

The hospital was generating a significant amount of waste daily, with around two-thirds being potentially recyclable. However, the issue the hospital faced was clean plastic waste being mixed with medical waste, contaminating the entire stream.

Darren Bradbrook, Associate Nurse Unit Manager of Anaesthetics at FMC, believed there was more that "In some cases, the cleaning staff noticed that there could be up to eight plastic bottles on a patient's bedside – some not even opened – but because they were near a patient, they needed to be thrown out."

Kristina Roberts Afterhours Manager at Auburn Hospital, Western Sydney

could be done to recycle and raised the question with his managers.

This eventually led to a partnership with SUEZ Resource Co to help develop a bin disposal system for clean plastic. Within a year, the operating theatres alone had recycled more than 450 cubic metres of plastic and reduced the area's daily output of general waste from 12 to four 660 litre bins.

Plastics collected from FMC are taken to SUEZ Resource Co's multi-resources facility in SA, where they are turned into a processed engineered fuel for local industry, reducing fossil fuel use by around 30 per cent.

Darren explains that without the partnership with SUEZ Resource Co and the support of Southern Adelaide Local Health Network (SALHN) executive, divisional directors and local managers, the programs FMC started would not have been possible.

"With disposable and single-use items contributing to a huge volume of waste, partnerships with waste management companies provided options and pathways to recycle or renew it into something more than simply burying it as landfill," he says.

He recommends other hospitals get in touch with their local health networks and establish a team that is passionate about sustainability and recycling to build support and to establish a plan.

Since the success of the initial project in operating theatres, a green team committee was formed to discuss waste solutions and movements within the local health network. The green team has gone on to spark further discussion and have been pivotal in supporting the expansion of the initiative across all departments within SALHN.

The team's goal is to be the first hospital-wide facility engaged in this type of recycling to put a dent into the amount of plastic sent to landfill each year, with the ultimate goal to transition a similar model to SA Health in its entirety.

Mark Walker, Manager of Corporate Services and Contract and green team committee chair, says it's important to remember that every hospital or health facility will be different, and the cost benefits of waste reduction will be different for each.

"Any facility interested in participating can receive modelling on potential savings from service providers. Reach out and start a conversation," he advises.

"Good planning and communication meant the rollout was executed very well with the backing of our nurses, doctors and staff. This was crucial to its early success. The results spoke for themselves."

Clinical energy

ACE WASTE IS RAMPING UP EFFORTS TO ENCOURAGE BEST PRACTICE CLINICAL WASTE MANAGEMENT ACROSS THE BROADER HEALTH CARE SECTOR, INCLUDING PHARMACEUTICALS.

n the mid '80s, John Homewood had the foresight to predict changes in the medical waste disposal sector.

In 1987, John saw a gap in the clinical waste collection and disposal service market and looked to reshape the landscape.

"In those days AIDS and hepatitis were becoming an issue and I could foresee that at some point, but I didn't know when, that attitudes on clinical waste landfilling would change," John says.

While the tide had yet to turn on attitudes towards incineration, John established Ace Waste and proposed constructing a modern incinerator and air pollution control system that could safely destroy clinical wastes, including cytotoxic, pharmaceutical, human tissue and laboratory waste.

John says it was the largest high temperature incinerator built in in Australia at the time, located in Willawong, Brisbane and completed in 1993.

"It was pioneering work. I did a lot of overseas travel through Europe, Japan and the US where we looked at the various types of incinerators.

"We selected a pyrolytic type, a gasifier, as it was more environmentally friendly and utilises the high-energy plastic in clinical waste." More than 30 years on from its establishment, the company's vision – to protect Australia's environmental future through safe and reliable collection and disposal services – remains a priority. Understanding that landfill will at times be essential, Ace Waste aims to find sustainable alternatives that will safeguard the ecosystem into the future.

"The long-term environmental impacts on marine life, waterways and natural fauna and flora from incorrectly disposed wastes will be extremely detrimental," John says.

"Not enough care and attention has been placed on the correct segregation of pharmaceutical wastes and as such



authorities are allowing these materials to be incorrectly treated and disposed of, with risks to the environment and waste generators."

For these reasons, Ace Waste hopes to educate hospitals on the repercussions of incorrect clinical waste segregation.

"You've got pharmaceuticals from patient treatment in sharps, tablet vials and if it's going to a treatment landfilling option, then by law, pharmaceuticals must be segregated," John says.

"It's a very difficult job to put onto healthcare operatives. They're paid to look after patients and not to segregate waste."

In addition to its incinerator in Willawong, Brisbane, Ace Waste expanded its business in 2006 with the acquisition of a five-hectare site in Dandenong South, Melbourne, and set about building a modern high temperature incinerator, completed in 2009.

In Australia, clinical and related waste must be treated prior to final disposal. The waste must be rendered non-hazardous and non-infectious and disposed of safely.

According to an EPA Victoria operational guidance document on clinical waste, methods other than incineration are only suitable for treating some clinical wastes.

John says that it is therefore essential that pharmaceutical, cytotoxic and other related wastes are segregated at their source and not treated via an unapproved process. He says generators must also ensure that all waste types are only sent to licensed facilities for their streams.

"Healthcare professionals have a duty of care to make sure they're not sending an inappropriate material to an unlicensed facility, whether they are a doctor, dentist or employed at a medical clinic or hospital," he says.

One of the key issues with



pharmaceutical waste, John says, is that it is often caught up in the clinical waste stream as it is commingled.

"The disposer of the material should be taking steps to ensure that residual pharmaceuticals that can't go to landfill are separated out, and that means giving the generator a separate bin and training them to pull pharmaceuticals out."

Fortunately for Ace Waste, incineration is its method of disposal so the pharmaceutical waste can be commingled. The company has conducted a number of audits over the years and found pharmaceutical waste prevails in the clinical waste stream.

"Clinical waste is energy rich and best directed toward high-temperature incineration. It also eliminates the need for segregating the inherent and residual pharmaceutical waste in clinical waste."

Ace Waste incinerates clinical and related waste at 1100 degrees Celsius, effectively converting more than 90 per cent of it into water and carbon dioxide.

John says that in Victoria, most clinical and related wastes are treated and landfilled. He says that as a means of comparison, clinical waste has 28 megajoules of energy per kilogram, while coal has 32, making it comparable to fossil fuels. About 30 per cent of clinical waste is plastic, which has 46 megajoules of energy per kilogram, demonstrating clinical waste is a rich source of energy. John says that out of the seven grades of plastic, six are polypropylene and polyethylene based which oxidise to carbon dioxide and water through incineration.

He says that it's also a clean form of combustion. In addition to disposing of clinical waste, Ace Waste runs its own fleet of 23 vehicles, providing a cradle to grave service.

Clinical and related waste containers are provided to customers for safe and secure collection, storage and transportation.

"From the point of collection there is a chain of responsibility of guaranteed destruction," he says.

"By utilising approved complete destruction methods, the long-term environmental impacts of waste disposal greatly diminishes, especially for commingled clinical and pharmaceutical wastes."

Looking into a later levy

WASTE MANAGEMENT REVIEW EXAMINES SOME OF THE REASONS WHY THE QUEENSLAND GOVERNMENT'S WASTE LEVY WAS PUSHED BACK TO 1 JULY 2019 AND WHAT IT MEANS FOR THE INDUSTRY GOING FORWARD.

hen the Queensland Government introduced legislation to create a waste levy, it aimed to stop the state from becoming a "dumping ground" for interstate waste.

According to the state government, of the approximated 5.5 million tonnes of waste that was sent to landfill in 2016-17, almost a million was from other states.

Starting at \$70 a tonne, the aim of the levy is to remove incentives for transporting waste across state lines and use the funding to support councils and the waste industry.

Queensland had a levy, but it was scrapped in 2012 by the Newman Government, making Queensland the only mainland state without one.

Environment Minister Leeanne Enoch said the levy would provide advance payments to cover 105 per cent of the cost of their municipal waste, using \$32 million from the 2018-19 budget to ensure councils wouldn't have to pay more for their waste.

Originally slated to begin on 4 March 2019, by October calls had come from the local government sector pushing to move the implementation of the legislation back to 1 July 2019. By the next month, the Queensland Government announced the levy would be moved to this new date.

Waste Management Review

investigates some of the reasons behind the changes to the levy and what they mean for local councils and the industry.

COUNCIL CHALLENGES

Lyn McLaughlin, North Queensland Regional Organisation of Councils (NQROC) Chair, says one of the major reasons why councils needed more time is because the original levy implementation dates gave councils no time to review their annual budgets to account for it.

"When the news broke, last year's budgets had already been completed, meaning there was very little flexibility to figure out the financial side of things."

By moving the start date back, the increment dates and starting price were changed to avoid falling behind the other states, now set to begin at \$75 per tonne.

A majority of Queensland's

population is located within the south-east of the state, meaning many councils have been able to benefit from economies of scale and construct resource recovery and recycling facilities.

Councils located further north within the state tend to have much smaller populations and less access to recycling infrastructure.

Lyn says this distance from recycling markets is one of the hidden costs of the levy for regional councils.

"Transportation costs are a huge issue for regional and rural communities," she says.

"A lot of this material can only be recycled within the south-east, meaning all regional councils will need to face the transportation costs.

"Ideally, we'd like to see a processing facility closer to the regions, but until we understand the plans of the state government and how they're looking to spend the levy





funding, we can't go forward."

Around 90 per cent of Queensland's population is within the drafted levy zone, with 39 out of 77 local government areas included within the legislation.

However, regional economies are often complex when it comes to population.

For example, the Charters Towers Regional Council has a large number of rural properties across an area equivalent to Tasmania and provides waste services for less than the actual population.

One recommendation NQROC submitted to the state government was to implement a differential levy rate system, to account for the differences between the metropolitan and regional areas, similar to how Victoria and NSW implemented their levies.

Lyn adds there is still some confusion for councils around the specific levy exemptions and discounts along with the set fees for transfer stations.

"Our regional group needs to know exactly what will be involved and if

there will be any funding available to support us if hidden costs arise," she says.

"For example, if there is \$6 million available in funding, will councils further away from the recycling infrastructure be eligible for a larger subsidy?"

A spokesperson for the Department of Environment and Science (DES) said the state government has grants available to support councils, business and the community, which includes regional transport assistance programs, levy ready grants and the \$100 million Resource Recovery Industry Development Program.

Some of the wastes exempt from the levy have been announced, and include those resulting from a declared disaster, such as a cyclone, bushfire or floods, or litter illegally dumped and collected by governments and councils.

"By deferring the start date, it has given both state and local governments time to find the best method of implementing the levy," Lyn says.

"I think it is excellent that the

government is listening to us and working with regional councils to help overcome the issues we face."

INDUSTRY ISSUES

Around the time the levy was announced, the Queensland Government revealed it was developing a comprehensive strategy underpinned by a waste levy to increase recycling and create jobs. It introduced new performance targets which aim to see only 20 per cent of avoidable waste sent to landfill by 2030, dropping to zero by 2050.

To achieve these new targets, the regulatory framework plans to implement landfill disposal bans, adopt product stewardship schemes where national action fails, explore potential waste-to-energy methods and develop a monitoring system underpinned by a comprehensive waste database.

Waste and Recycling Industry Queensland (WRIQ) CEO Rick Ralph says the original implementation of the new regulatory reform was planned to be introduced in the middle of 2018



but was delayed to December and eventually pushed back to coincide with the beginning of the levy on July 1.

Rick says WRIQ strongly urged the Queensland Government to ensure the new framework was installed at least 12 months before the levy so government and industry can reach the level on equal footing.

"Because the regulatory framework will be implemented at the start of levy, unlicensed activity in Queensland is able to trade openly against licensed companies which is unfair as they have strict requirements placed on them," he says.

"If you are going to bring about reform, everyone needs to be on the same page. Pushing the levy back gives the governments more time to prepare, but it doesn't fix the fact there is a fundamental structural disconnect between the legislation and the industry."

In late 2018, WRIQ commissioned its first annual review of the performance of the industry regulator, the DES, and the effectiveness of the Environmental Services and Regulation Division (ESR). As part of the review, WRIQ outlined a roadmap for DES performance improvement to support the regulator.

The review found that 64 per cent of the industry reported the regulator was working against the industry, with 18 per cent reporting it had no real impact and a further 18 per cent reporting it is supportive of the industry.

On top of this, almost three in five survey respondents believed the ESR's approach is reducing economic growth and job creation. As part of an overall assessment of the ESR, 30 per cent of survey respondents rated its performance as poor and 55 per cent rated its performance as average, with only 15 per cent of the survey respondents rating it as good or very good.

In particular, the ESR's performance was rated lowest in areas of assistance with problem solving (85.4 per cent), stopping illegal dumping or unregulated operations (85.4 per cent) and providing leadership and direction.

"They spend more time trying to fine licensed operators for breaches, instead of closing down unlicensed operators," one survey respondent said.

WRIQ highlights improving consultation with the industry, fostering collaboration and engagement and setting clear goals, targets and expectations as potential methods for the department to improve.

In particular, it recommends targeting unlicensed operators, improve response times and to be independent of politics.

"We have always advocated that to have the right policy, we need the right regulatory settings," Rick says. "Right now, it's clear from the statistics that the regulatory settings needs an overhaul, with action and accountability from the state government to make sure positive change can happen."

WRIQ has presented the Queensland Government with a 10-point action plan to provide steps to improve how the industry is regulated.

The plan calls for an independent third party to review the current system and to assess the necessity of an independent Environmental Protection Authority.

"We're looking to the future and acknowledge the work the government has done thus far to genuinely create a better system," Rick says.

"We're hoping to build a level of trust between the private sector and the government that is seriously waning at the moment.

"We need certainty for the industry and need a new model to ensure that everyone is doing the right thing."

A DES spokesperson says the Queensland Government is committed to improving the relationship between industry and the regulator for the benefit of all Queenslanders.

"DES has clear expectations about acceptable standards of environmental performance, as well as published easy-to-understand guidance material and information to assist operators to meet their environmental obligations," the spokesperson said.

"The draft regulatory framework includes provisions to support and sustain recycling activities in Queensland, such as discounts from the waste levy for residue waste from recycling activities.

"The Queensland Government have committed that 70 per cent of revenue raised from the waste levy will go back to councils, the waste industry, scheme start-up and environmental programs."



TRANSFER TRAILERS

Waste Management Review's May issue looks at how the latest waste transfer trailers are increasing payloads and safety for operators, saving on trips to the depot and protecting drivers from harm.



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Specialised componentry

THIS YEAR'S BRISBANE TRUCK SHOW WILL SHOWCASE THE INNOVATIVE AND BESPOKE SOLUTIONS OF THE HEAVY VEHICLE INDUSTRY, WITH SYNERGIES ACROSS THE WASTE SECTOR.

rom high productivity schemes to electronic weighing systems, the innovations of the heavy vehicle industry have, over the past decade, paved the way for efficiency gains.

The dynamic industry is set to further highlight its advanced capabilities at this year's Brisbane Truck Show.

Presented by Heavy Vehicle Industry Australia (HVIA), the event will see hundreds of innovative trailer, specialised vehicle, component, equipment and technology manufacturers and suppliers touch down in sunny Brisbane to present their latest and greatest products.

The four-day event will feature multiple truck and trailer manufacturers involved in waste, including IVECO, Scania, Volvo and Barker Trailers. Among the diverse audience will be fleet executives and purchasing managers from industries including road transport, agriculture,

construction, infrastructure and local government.

The latest waste management equipment utilises advanced configurations to enable low tare weights that increase gross vehicle mass and boost productivity for operators. Fuel efficiencies also support increased safety – another key discussion point for the industry.

Some of the modern equipment to be highlighted at this year's show include an apprentice challenge, which will see three selected teams work together to identify programmed faults on IVECO trucks, a presentation by Scania on working towards a sustainable transport sector and more.

The 2019 Brisbane Truck Show has also added a number of new elements to the event to reflect the business audience, including dynamic and interactive tools and displays, demonstrations and information.

HVIA was formed in October 2015 after members of the Commercial Vehicle Industry Association of Queensland voted unanimously to transform itself into a national body. As a voice for the vehicle industry, HVIA has influenced the development and maintenance of policy, legislation, regulation and technical standards to contribute to the future viability of the industry and foster innovation.

HVIA's strategy is to advocate for appropriate vehicle regulation, standards and industry practices to meet the growing freight task and community expectations. It also aims to foster industry's capacity to innovate while meeting its customer's needs.

Since that time, membership has increased by almost 50 per cent to comprise a significant truck manufacturer/import and dealer network, major trailer manufacturers and a growing list of suppliers and distributors. Membership benefits have included supporting operators on national, regional and local issues, technical and regulatory support, regular networking events and other benefits

Original equipment manufacturer and third-generation business Barker Trailers has been manufacturing semitrailers since 1974 in the Loddon Mallee region and has production sites in Woodend and Maryborough. Barker Trailers will be showcasing its walking floor trailer at the Brisbane Truck Show, a trailer that is continuing to grow in the waste segment.

Barker Trailers will this year be celebrating its 45th year as a family business and manufacturer across a broad range of product areas, including general freight, agriculture and forestry and heavy haulage.

This year's Brisbane Truck Show takes place at the Brisbane Convention & Exhibition Centre from 16-19 May 2019.

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SUPERIOR PAK PARTNERS WITH SEA-ELECTRIC AND IVECO

IVECO's Australia-first ACCO waste truck is powered by battery electric power.

Powering the truck is a SEA-Drive 180 electric driveline featuring 220-kilowatt-hour NMC batteries, which provide the vehicle with a range of approximately 250 kilometres at full gross vehicle mass (up to 23.5 tonnes) along with a limited top speed of 100 kilometres per hour.

The vehicle features a 22-kilowatt-hour on-board charger, allowing the truck to be plugged in and charged from any three-phase power source. Battery charging time from totally flat to full charge is about eight hours.

Battery longevity is calculated at 3500 charge cycles, giving it a life of over 10 years based on a single charge, five days per week. According to IVECO, the remainder of the driveline is virtually maintenance-free.

As an Australian manufacturer, IVECO has the production line flexibility to provide Superior Pak and SEA Electric with a 'glider', a complete cab chassis minus the driveline and associated equipment such as exhaust, fuel tanks, traditional battery boxes and related items.



Contact

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SCANIA P-SERIES

Scania builds on its history of providing robust urban workhorses suited to the waste industry with the arrival of its next generation P-series.

Available as a prime mover or rigid, in a variety of power train and drive train combinations, the Scania P-series offers high levels of safety, driver comfort and excellent visibility, critical for safe and fuss-free manoeuvring in built-up areas.

The new Scania P-series comes with a range of frugal Euro-6 low emission engines with up to 450 horsepower available, making it suitable for a wide range of tough jobs. The P-series has been a successful front lift or rear-loading waste trucks, as well as being fitted with various hooklift and skip bin systems over the years and has a well-established following within the waste industry.

The high output six-cylinder engine easily pulls bulk compacted waste bins with high gross combination mass. In the 2019 NTG P-series, the windscreen is larger, and the A-pillars and door mirror mounts are repositioned, providing far greater visibility at intersections.

As part of the launch of a more spacious, frugal, safer and efficient overall package, Scania is offering a five-year or 500,000-kilometre service inclusive package that provides fully predictable maintenance costs for operators.

And as supplies of the NTG P-series arrive in Australia, a small number of previous generation P-series 8x4 hooklifts remain available.



Contact

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Cut to perfection

SHRED-TECH'S JUSTIN JOHNS TELLS WASTE MANAGEMENT REVIEW ABOUT THE RIGOROUS IN-HOUSE TESTING THAT GOES INTO DEVELOPING ITS BROAD RANGE OF SHREDDERS.

hred-Tech Corporation, a leader in the design and manufacturing of shredding and recycling systems, is continuing to collaborate closely with its customers.

Whether it's stainless steel machinery for corrosive shredding applications or 800-tonne-an-hour mineral sand shredders, the company's 1200-squaremetre testing site in Canada sees its products undergo rigorous in-house testing and trial and error. Shred-Tech has manufacturing and sales facilities located throughout the world.

At present, the company now has more than 6000 shredding and recycling systems installed worldwide and has been recognised globally for its commitment to engineering, innovation and quality. All Shred-Tech shredding systems can be configured with application specific knife design, cutting chamber size, horsepower, feed and discharge rates to suit the customer's requirements.

According to Justin Johns, Sales Manager at Shred-Tech Asia, the company is continually involved in the design with customers to ensure shredder knives and chamber designs can meet customer expectations and desired outcomes.

"We've developed proprietary processes in knife design to overcome product specifications," Justin explains.

"Customers often approach Shred-Tech with a problem that many competitors haven't been able to solve. With our broadly skilled in-house engineering team, we are able to work closely with the sales department and



Shred-Tech engineers have designed each knife profile and configuration to suit the application for maximum throughput.

the customer to find a viable solution."

One example of the company's diverse products is the ST-100, a two-shaft shredder ideal for primary reduction in waste streams ranging from consumer goods, wood, e-waste, high volume newsprint, cardboard and tyres.

The ST-100 offers cutting chamber sizes of 1145 millimetres by 815 millimetres and 1540 millimetres by 815 millimetres, enabling it to handle a wide range of products as well as bulky wastes. The company's engineers designed each knife profile and configuration to suit the application for maximum throughput and optimum shred size. "We've had issues in the past with shredded stampings for automobiles with this machine and have used a specific makeup of metals and treatments in the blades," Justin says.

From a reduced electric or hydraulic drive, the ST-100 is available with an extensive range of gear. The electric model is available with a single or dual 30, 50 or 75-horsepower motor. The hydraulic model is equipped with high

torque, low speed multi-cam radial piston motors.

When it comes to the control panel, the panel has been designed and fabricated by Shred-Tech technicians. It features Siemans controls including touchscreen and programmable logic controllers, enabling easy integration to any existing or new plant. Data logging and remote access capabilities helps to ensure the equipment maximises uptime. "The unique design of the machined hex shafts maximises knife placement options and allows for simple knife removal and machine maintenance," Justin says.

The hex shaft is more durable than a keyed shaft, particularly important in high load applications.

"The hex shaft drive system coupled with knife design and gear selection offers the highest knife-tip cutting force of any comparable shredder in the Australian market," Justin says.

A number of design refinements have gone into easing the durability of the ST-100, including a new cast steel body design, in combination with bulkhead walls and labyrinth barriers at either end of the cutting chamber for seal and bearing protection. Quick disassembly of the cutting chamber allows for bearing and seal replacement without the need for gearbox disassembly.

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Down to a fine art

MORGAN BENNETT MACHINERY HAS BEEN DISTRIBUTING A GLASS CRUSHER WHICH AIMS TO REDUCE WEAR COSTS FOR MATERIALS RECOVERY FACILITIES.

organ Bennett visited a number of materials recovery facilities for more than 12 months, and found a prevailing pattern on how they treat their glass.

"There's a lot of materials recovery facilities (MRFs) using horizontal shaft impactors leading to high wear costs in the thousands of dollars. One MRF has turned off their glass crushing circuit due to too high crusher wear," Morgan explains.

As Managing Director of Morgan Bennett Machinery, a company with more than two decades' experience in supplying and manufacturing equipment, Morgan looked to identify a product that would be more commercially viable for councils.

That's when Morgan came across the REMco GlassMax Grinder, a vertical shaft impactor that had been used successfully in the quarrying industry. REMco GlassMax crushers and grinders are designed for reducing bottles, plate glass or any type of waste glass into powder or coarser sizes. The unique high-performance chambers and rotor options allow for high velocity reduction.

Morgan says the product's use overseas, initially in California, meant it would be highly suitable in Australia.

"The machines are autogenous which means crushing is glass on glass with minimal wear parts. Because glass is abrasive, it works much better than conventional impactors with blow bars," he says.

The crushers operate from 30

horsepower and above and Morgan says the GlassMax Grinder is a unique product now sold in Australia.

The machines are available in fully autogenous models for low cost operations and fine cullet. Semi-autogenous versions are also available for medium cost configuration for larger feeds and hard parts-typeversions for the coarsest feeds and maximum reduction in a single pass.

"The REMco machines are very robust and built for ease of maintenance and servicing by simply removing the four lid wedges and hydraulic lifting lid from the pendant control."

He says a 300 horsepower machine has already been sold to a Sydney based glass recycler and the product is generating a lot of interest from established MRFs.

The end products from glass crushing include glass sand, decorative stones, concrete and abrasive blasting. Pulverised cullet can also be reintroduced to a furnace to produce new glass containers.

The reduction ratio is calculated as the relationship between maximum feed size to the desired product size. Generally the bigger the grinder, the larger its feed size. The grinders can be operated in an open or closed circuit, with closed circuits producing the best results.

The REMco GlassMax incorporates unique design features such as non-metallic liners to minimise contamination, higher speed bearings



and rotors and internal dust control.

Standard features include hydraulically lifted hopper for a top service, wedge-type chamber locking, extra heavy duty steel fabrication, vibration and temperature monitoring and a range of other features.

Optional accessories are a service crane for maintenance, an electric hoist for ease of service, ski mounting for convenient relocation and structural steel support legs.

That's not to mention SmartBox remote monitoring, custom discharge hoppers, extended warranties, performance guarantees and dust collection systems.

Morgan Bennett Machinery also offers purchase or purchase hire arrangements.

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GENOX SHREDDERS FROM APPLIED MACHINERY

Applied Machinery offers a diverse range of Genox shredders to process an array of waste streams down to specific sizes. For size reduction of flexible, medium hardness, voluminous products, Genox's K Series Single Shaft Shredders process various plastics (films, mouldings), paper and cardboard, copper, aluminum, textiles and a range of other applications. The M Series shredder, which performs largely the same functions, is suited to other potentially contaminated materials such as metals or stones.

When it comes to small and medium size reduction, the Genox V Series Single Shaft Shredders are capable of processing a wide range of materials to uniform particle size. Typical applications include plastic, timber/wood, paper and

cardboard and copper.

If operators are looking to process large volumes, then the X Series Twin Shaft Shredders works as an ideal preshredder for municipal solid (MSW) and commercial and industrial (C&I) waste, scrap metal, end-of-life vehicles and a range of other applications. Segmented blades greatly reduce blade changing time and cost.

BH Series Single Shaft Shredders are heavy-duty reduction machines designed to process a variety of untreated waste materials down to coarse or mediumsized fractions. This powerful, wear-resistant machine is suited to demanding recycling tasks and can handle MSW, C&I, construction and demolition and other wastes.



Contact

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MOBILE SHREDDING SYSTEM FOR ALTERNATIVE FUELS AND BIOMASS

The new XR3000 mobil-e capitalises on the benefits of an electromechanical drive without having to forgo the advantages of a mobile machine.

Available through national distributor FOCUS enviro, the machine aims to provide operators with maximum efficiency and flexibility.

Just like all UNTHA XR products, the XR mobil-e is equipped with an energy-efficient UNTHA Eco Drive. This ensures minimal operating costs and maximum material quality.

A key feature of the machine is that it operates only electrically, conversely to energy consuming, and at times,



noisy diesel operated alternatives.

For the shredding process, the XR mobil-e is connected to the power supply with a hands-on quick fastener, allowing the machine to be moved across a variety of indoor and outdoor locations.

Mobility is ensured through a reliable crawler-type undercarriage in combination with a small petrol-powered engine. The XR mobil-e can be easily moved to any spot via remote control. With an extensive range of interchangeable screens and cutters, the shredder can be configured according to the customer's output specification. For example, consistent 30-millimetre or 400-millimetre particle sizes are achievable, as is anything in between. This means the XR mobil-e can shred bulky, municipal solid waste, commercial and industrial, construction and demolition or wood waste with ease. Other applications include industrial waste, scrap wood, plastic bales and more. The machine also produces a homogenous alternative fuel to the waste-to-energy, cement, gasification or biomass markets. In addition, a height-adjustable discharge conveyor belt and an optionally available magnetic separator lead to an efficiently operating mobile shredding system.

Contact

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Published monthly, the magazine includes in-depth interviews with prominent industry figures, and profiles on people and companies innovating new technology or trialling new solutions. The publication features the latest products to hit the market and showcases successful collaborations between equipment suppliers and service providers.

Waste Management Review is a "must read" for those leading, working in, or associated with the industry.

AUSTRALIA'S SPECIALIST WASTE MANAGEMENT MAGAZINE

Plastic not so fantastic

CONSISTENT LABELLING AND INCREASED INDUSTRY CAPACITY WOULD HELP COUNCILS IDENTIFY THE CORRECT PATHWAYS FOR RECYCLABLE PLASTICS, WRITES AUSTRALIAN LOCAL GOVERNMENT ASSOCIATION PRESIDENT DAVID O'LOUGHLIN.



t revolutionised the modern world. Plastics made consumerism and production boom, cars and household goods cheaper, food purchasing safer, freight packaging lighter and filled our homes, offices and communities with new products.

But where has it all gone? More than 8.3 billion tonnes of plastic are estimated to exist in the world, according to a study published in the journal *Science Advances* – the equivalent of more than 55 million jumbo jets. Some of this plastic exists in the form of new products, some as products currently in use, and the rest in landfill, in the environment, or in

stockpiles waiting for new markets. Of the 8.3 billion tonnes produced worldwide, approximately 79 per cent is estimated to be in landfill or in the broader environment.

According to the 2018 National Waste Report, only 12 per cent of plastic waste in Australia is recycled. When compared to other waste, such as masonry materials, organics and ash, plastics do not make up a huge tonnage within the Australian waste stream, but it is their pervasiveness in the environment, low levels of recycling, and easy access to products made from virgin materials (which dissuades recycling) that are real causes for concern.

Work by peak bodies such as the Australian Packaging Covenant Organisation (APCO), to assist product designers and manufacturers to reduce plastic waste through better product design and to incorporate used plastic in new packaging are important steps forward as part of extended producer responsibility. However, strong Federal Government action is needed to impose similar standards on the huge volumes on imported goods we collectively consume annually.

On the local government front, the sector has also long been grappling with plastics in the waste stream, such as plastic wraps and polystyrene,

kettles and computers, milk bottles, detergent containers and plant pots, toner cartridges and bags, fast food packets, meat trays and office stationary – the list seems endless. Around 35 to 45 per cent of plastics produced are just for single-use packaging.

But local councils have also been at the forefront of action for some time now. Many councils have plastic management policies and requirements for event managers to source nonplastic and sustainable alternatives, and council engineers are increasingly embracing products and materials which incorporate recycled materials and provide superior performance.

The Surf Coast Shire Council in Victoria is just one of many councils with a Plastic Wise Program as part of its commitment to eliminating single-use plastics at events and markets. Event organisers work with stallholders, sponsors, contractors, volunteers, patrons and participants to use alternatives to single-use and disposable plastics bags, packaging and promotional materials.

Meanwhile, in Adelaide, the city of festivals, hosting approximately 800 events every year – the City of Adelaide and other surrounding councils, including the Cities of Prospect and Marion, have strong

"When compared to other waste...plastics do not make up a huge tonnage, but it is their pervasiveness in the environment, low levels of recycling, and easy access to products made from virgin materials that are real causes for concern."

David O'Loughlin Australian Local Government Association President

Sustainable Event Guidelines. These guidelines have been developed collaboratively with event organisers, the waste industry and event suppliers to minimise plastic consumption and maximise food recycling – even the plates, 'glasses' and cutlery can be composted.

The Cities of Onkaparinga, Hume, Kingborough and Sutherland are some of many using asphalt incorporating recycled plastics on full scale road resheeting projects, with immediate potential for costs to be lower and performance higher than traditional asphalt.

And there are many more of the 537 Australian local governments moving beyond simply collecting waste or processing it. They are actively changing their procurement policies to insist on new products being made from, or including, recycled plastics, from road seals and asphalt, to bollards, street furniture and decking, office furniture, or components of buildings themselves.

Consistent labelling, recycling classifications and increased industry capacity would greatly assist our time and budget-constrained local government staff identify the correct pathways for collected material and

the range of manufacturers using recycled material.

That is why the Australian Local Government Association is calling on federal, state and territory governments to assist by developing an accreditation and information system to help all consumers, including local government, make better purchasing decisions at the front end. These decisions will minimise consumption of plastics that are difficult to recycle, and drive decision-making to purchase products and materials sourced from recycled materials. In doing so, they will close the loop and therefore truly

engage in the recycling process.

Governments must work together to minimise plastics consumption and maximise plastics remanufacturing. We must walk the talk and our procurement actions can be very powerful, as can the more than \$1,000,000,000 sitting in collective state government waste levy accounts, and the hundreds of millions more collected each and every year. These funds should be applied to co-invest in improving plastics recovery and separation, standardising supply chains and subsidising targeted government procurement of goods incorporating reused plastics, until sustainable levels of production and broader consumption are reached.

The Australian Local Government Association looks forward to working with its members, as well as the federal and state and territory governments and industry peak bodies, to minimise plastics consumption and drive demand for products incorporating recycled plastics. With better labelling, national consistency and increased industry capacity, we can help our governments, businesses and residents make more sustainable purchasing and procurement decisions.



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