Building a partnership

Paul Wall explains how a Sydney partnership continues to reduce construction waste.
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Don Emitsis, Proprietor – KADS Plant Hire

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IT'S BEEN A COUPLE OF DIFFICULT MONTHS FOR THE RECYCLING INDUSTRY but, despite the hiccups, there may be opportunities.

What started out as a customs inspection program in China soon escalated when its ban on 24 categories of solid waste with a contamination rate of more than 0.5 per cent was flagged to the industry in the middle of last year. Some in the industry, including waste consultant Mike Haywood, said it was foreseeable in the Oct/Nov edition of Waste Management Review – Transport’s Macroeconomic Headwind.

Following the suspension of a number of Victorian council contracts, the state government responded to the issue with a $13 million package to give councils and contractors time to develop long-term solutions, including renegotiating contracts. The state government also moved to establish a recycling taskforce to develop a plan for the transition. In southern central Australia, the SA Government allocated $300,000 in grant funding to recycling businesses as part of its response.

In February, the National Waste and Recycling Industry Council (NWRIC) also warned that without urgent action to address market changes, Australian recycling contracts could face default. On page 69, Alex Serpo, Policy Officer at NWRIC, explains five beneficial recycling programs that could be implemented at scale in response.

At this year’s Waste to Energy Forum in Ballarat, I had the pleasure of listening to numerous inspiring talks on the future of waste to energy in Australia. As a result of the China ban, some noted the potential that exists in Australia to embrace a circular economy and local manufacturing. Others pointed out that China’s ban is not an “outright ban”, but rather a limit on contaminants, which should encourage cleaner recycling processes.

Off the back of Victoria’s recycling contracts impasse, I sat down with the new Chief Executive of the Victorian Waste Management Association, Mark Smith. On page 26, Mark outlines some of the measures VWMA will be recommending to the Victorian Government taskforce and how a collaborative approach between industry and government needs to be prioritised, as the industry potentially faces a market reset. Waste Management Review will continue to follow this issue in 2018 and speak to other stakeholders as it evolves.

We also welcome a new journalist, William Arnott. On page 21, William’s report discusses the impact of the Container Deposit Scheme in South Australia over its more than 40-year history, lessons learnt and whether a similar scheme is long overdue in Victoria. William can be contacted via email at william.arnott@primecreative.com.au.

For article ideas or general enquiries, you can contact me directly by email at toli.papadopoulos@primecreative.com.au or phone (03) 9690 8766.
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NWRIC warns recycling contracts could face default

The National Waste and Recycling Industry Council (NWRIC) has warned that without urgent action to address market changes, Australian recycling contracts could face default.

It follows the controversial move by the Chinese government to ban the imports of 24 categories of solid waste.

China’s National Sword initiative, a continuation of its Green Fence program, has also tightened standards on import contamination by limiting which businesses can obtain scrap import licenses. The NWRIC explained this means lower contamination levels and fewer import licenses issued.

Following their latest meeting, the NWRIC believe that without significant changes to the current market, kerbside and commercial recycling contracts could be cancelled.

Re-negotiating contracts between local governments and recycling providers, increasing stockpiling allowances where environmentally safe, and assistance from the Federal Government were identified as strategies to help the current market.

The best long-term solution to the problem is reinvigorating local re-manufacturing capacity, according to NWRIC.

Recycling market shortfalls can lead to large stockpiles of papers and plastics, which could lead to a fire hazard.

“The NWRIC is urging all customers, including local government and commercial waste generators, to meet with their recycling supplier to plan for these sudden and unforeseen changes,” said Chairman of the NWRIC, Phil Richards.

Waste Contractors and Recyclers Association of NSW Executive Director Tony Khoury said that thoroughly checking firefighting and emergency equipment is vitally important.

“In relation to unprocessed stockpiles or bales of stored sorted material, please ensure that you comply with your Environment Protection Authority (EPA) and development approval requirements,” Mr Khoury said.

“If you are approaching your authorised, lawful stock pile limits, please consider your options, including negotiating with the EPA, finding alternate drop-off facilities and talking to your council or commercial clients.”

According to Mr Khoury, there is at least one fire per week at NSW waste facilities.

Glass is being stockpiled due to market issues.
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Every year, thousands of tonnes of tyres are dumped illegally. This is a major environmental and public health concern; but it needn’t be.

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In response to China’s National Sword decision, Victorian councils and industry will be provided a $13 million package to support the ongoing collection of household waste.

The assistance will go towards helping councils and industries that have been affected by the Chinese policy, giving them and their contractors time to develop longer-term solutions, including renegotiating contracts.

The Victorian Government has also moved to establish a recycling industry taskforce to develop a plan for the industry's transition.

The decision comes not long after the Victorian Waste Management Association (VWMA) called for a suite of measures to improve the situation.

In a statement, the VWMA welcomed the opportunity to represent its member base on any proposed taskforce and said it has been assured by relevant government agencies that it will have a seat at the table. It advocated for the taskforce to have fair representation of the waste and resource recovery sector, including small and medium operators and the waste transportation sector. It said the taskforce should be steered by principles such as a competitive resource recovery sector and circular economy principles that prioritise local jobs over exports or landfilling.

While China has not banned the importation of waste entirely, new restrictions on the contamination rate means that they require a cleaner and more processed version of these materials.

"While recycling is ultimately a matter for local councils, we’re stepping in to help councils and industry affected by China’s new import rules," said the Minister for Energy, Environment and Climate Change Lily D’Ambrosio.

“This is about protecting jobs and ensuring Victorians have confidence to continue recycling.”

Council assistance will be provided until 30 June, though they will be required to meet an increase in recycling costs from 1 July.

**Victorian Government responds to China waste ban**

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Over 56 million used tyres are generated in Australia, each year.

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*Volume based on Equivalent Passenger Units (EPUs). An EPU is standard passenger car tyre. Full EPU Ratio Tables available at [www.tyrestewardship.org.au](http://www.tyrestewardship.org.au)*
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*Volume based on Equivalent Passenger Units (EPUs). An EPU is standard passenger car tyre. Full EPU Ratio Tables available at www.tyrestewardship.org.au

Crumbed rubber asphalt using recycled tyres.
New recycling technology processes tyres into resources

Tyre processing company Pearl Global has begun commissioning its first production plant to recycle tyres into valuable secondary products.

The technology uses an applied heating process called thermal desorption, which converts waste tyres into liquid hydrocarbon, high tensile steel and carbon char, and can be sold separately or processed further.

Pearl has constructed its first production plant, with two thermal desorption units (TDUs) in Stapylton, Queensland and initial commissioning underway. The second TDU is owned by Pearl’s intellectual property licensor and contracting partner Keshi, and will be purchased by Pearl as soon as practical.

Each TDU can process approximately 5000 tons (4536 tonnes) of shredded rubber at full production, equivalent to 50,000 car tyres. On average, this equates to a weekly output 1.5 million litres of raw fuel.

“This is the first plant of its type in Australia and we expect to be ramping up to full production over the coming months,” Pearl Executive Chairman Gary Foster said.

The materials are being developed into potential commercial products, including a degreaser product.

With assistance from the Centre for Energy at the University of Western Australia, Pearl’s degreaser products have been tested and compared to existing commercial degreasers and surpassed the required standards, with one of them showing the best performance of all the degreaser products, according to the company.

Over 51 million used tyres get discarded in Australia per year, but only five per cent are recycled. Pearl’s technology focuses on extracting the resources from tyres instead of using them for constructing children’s playgrounds or exporting. Pearl (formerly Citation Resources Limited) in February rejoined the ASX following a reconstruction and a $5 million capital raising.

Pearl recently received planning approval from the Gold Coast City Council and has approval from Queensland’s Department of Environment and Heritage.

It already holds an environmental licence from the Western Australian Government Department of Environment Regulation.

“This is a turning point for used tyre processing in Australia. We are the first company in Australia to receive licenses for the thermal treatment of rubber, to reclaim and recover valuable products for resale,” Mr Foster said.

“Our technology is a significant advancement on other methods of processing waste tyres because it has low emissions, no hazardous by-products, requires no chemical intervention and is the only process that meets the standard emissions criteria set by the Australian regulators for this type of technology,” he said.

Mr Foster said the technology will help Australia handle a serious global environmental problem.

“We believe there is great potential in Australia to immediately deploy our technology at sites close to where tyres have been stockpiled,” Mr Foster said.

“With governments seeking or mandating solutions for waste, Pearl is well placed to offer a solution that is both environmentally sound and commercially viable.”

Pearl has applied to be an accredited member of Tyre Stewardship Australia.

Pearl Global’s technology uses an applied heating process to convert end-of-life tyres into fuel.
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National Plan for PFAS released to protect environment and health

The heads of all state and territory environmental protection authorities (EPA) and the Federal Government have released a National Environment Management Plan for PFAS (per- and poly-fluoroalkyl substances) to help protect the environment and human health.

PFAS are a group of manufactured chemicals which have historically been used in firefighting foams and other industrial and consumer products for decades, according to EPA Victoria. PFAS can also be found in soil, surface water and groundwater in urban areas, and some are being phased out around the world as they may pose a risk to human health and the environment.

The National Environment Management Plan for PFAS describes how to properly deal with and clean up contaminated sites, how to best treat soil and waste, and methods for safely destroying the chemicals. PFAS can make products heat resistant, non-stick, water repellent, and weather and stain resistant.

Prior to the plan, there was no consistent guidance or direction for communities that had been affected by PFAS.

Environment Protection Authority Victoria’s Executive Director Assessments, Tim Eaton, said PFAS chemicals have been used in a range of products in the past, including pesticides, stain repellents and firefighting foams.

“PFAS compounds have had a wide range of uses because they resist heat, chemical and biological degradation and are very stable,” Mr Eaton said.

“There is now growing concern worldwide about the effects of PFAS on our health and on animals and plants, because of that chemical stability and the fact that they easily enter the environment, moving into soil, creeks, rivers and lakes. We know there are sites with PFAS contamination, so we are working collectively to manage them.”

More than 100 million containers collected by NSW Return and Earn

More than 100 million containers have been returned since the NSW Return and Earn scheme began in December last year, according to the official website.

Reverse vending machine technology, alongside over-the-counter and automated depots have helped NSW reach this goal.

NSW Minister for Environment, Gabrielle Upton said more than five million drink containers had been returned over the second weekend of February.

Nepean Distributors, a drinks product supplier to schools and sporting club canteens, have been supporting the scheme and having a positive impact on the local community, according to Environment Protection Authority NSW.

In two months, Nepean Distributors has processed 133,034 containers, with over a record of 11,879 in a day.

“It is making people, especially kids and teenagers, think about recycling. We want to help change their mindset to think about their environment and cleaning up their local park,” Managing Director of Nepean Distributors, Anthony Morrissey said.

They have also teamed up with local sports groups such as Macarthur BMX to help fundraise for the club and encourage locals to donate their refunds to charities like the African AIDS Foundation.

Reverse vending machine technology helped Return and Earn achieve its goals.
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The ProSet® XT series sets a new standard for pneumatic rivet tools. Highly flexible, cost-effective, ergonomic installation tools are designed to reduce installation costs, increase productivity, and provide consistent placement of a wide variety of fastening solutions.

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ProSet® XT3
The ProSet® XT3 can be used in a variety of applications, setting a large range of breakstem rivets, lockbolts and sealing plug sizes. The extremely large stroke of 26 mm allows the placement of longer rivets like Monobolt and Interlock in one set. The innovative, ergonomic design ensures maximum user comfort and efficiency.

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The ProSet® XTN20 is a high speed blind rivet nut tool with flexible pull-to-stroke & pull-to-force setting. The combined world-class innovations from POP Avdel created a high speed, lightweight tool with great strength, endurance, excellent ergonomics and optimal flexibility – responding to the latest and highest standards in tool manufacturing. Dual operating mode technology ensures enhanced productivity, improving your return on investment with the lowest installation cost per fastener.
In 2011, some of Sydney’s leading property owners and managers, investment firms, peak bodies and waste industry influencers formed a partnership to reduce their waste. Known as the Better Buildings Partnership (BBP), the efforts aimed to improve the performance and sustainability of commercial buildings in the City of Sydney and across Australia.

According to the organisation’s most recent annual report, the partnership represents more than half of Sydney’s commercial floor space in the city centre. It’s worked with industry professionals to create and embed best practice standards in key areas, including leasing, operational waste, refurbishment waste, solar installations and optimising water use. The end result has led to the creation of new waste management guidelines for contracting and reporting and 60 per cent resource recovery targets for creating stripout waste. BBP estimates that 80 per cent of stripout waste goes to landfill due to contractual red tape. Stripout waste refers to removing all or part of a building’s internal wall, flooring, ceiling and furnishing components when a tenant vacates a space.

The initiative forms part of Sustainable Sydney 2030, which lays out a vision for a green, global and connected city.

The BBP works by engaging the building industry and government on key environmental policy and
regulatory issues to enable markets, scale up sustainability and benchmark its progress. The leadership panel comprises senior representatives from its member organisations, including University of Technology Sydney, AMP Capital, Lendlease, Mirvac Group, Investa Property Group, Dexus, Brookfield, Stockland, ISPT, Frasers, University of Sydney and the City of Sydney. Its 2017-18 annual report indicates that during the financial year, BBP projects covered 54 per cent of commercial office space in the Sydney Commercial Business District, which includes 100 commercial buildings in that financial year.

Paul Wall, Head of Group Sustainability and Energy at Dexus and BBP Chair, says the BBP is a unique initiative.

“Once you start understanding waste streams and documenting the process you can create more markets for recycling,” Paul says.

Paul says the BBP has provided more certainty to business by opening up these markets, which will allow the cost of recycling to reduce over time, adding that it remains commercially viable due to a higher landfill levy in Sydney.

The BBP has focused on a range of sustainability projects, from green leasing, to operational waste, refurbishment waste and energy and water efficiency. Most relevant to the waste industry are its operational and refurbishment waste projects. Operational waste focuses on raising the bar on procurement and management of waste contractors and services, which helps to contribute to the NSW Government’s target to increase commercial recycling from its current rate of 51 per cent to 70 per cent by 2021-22.

BBP’s aim is to improve the quality and flow of information through set guidelines for the procurement of waste management services, effective waste diversion and reporting. BBP’s operational waste guidelines range from tips on the billing of waste management services, to more accurate waste data, and established roles and responsibilities for cleaners and contractors in waste disposal.

Paul says it complements a new certification introduced for waste contractors by GECA (Good Environmental Choice Australia) which BBP has recently worked collaboratively on. The new certification will be launched for use by contractors in early 2018.

“GECA has now developed a certification process so that when building site managers go to tender for various works, they can select the GECA certified waste contractors – this improves supply chain governance,” he says.

PREVENTING STRIPOUT WASTE
The BBP’s recovery of waste project focuses on maximising diversion from landfill from office tenancy stripout. According to the BBP website, Sydney’s office tenancies are on average renewed every seven to 10 years, with an estimated 25,000 tonnes of waste ending up in landfill each year. By improving its processes, it’s estimated the City of Sydney could divert 55,000 tonnes of strip out waste from landfill each year from the commercial office, accommodation, entertainment and retail sectors.

Several research projects in this space have been conducted with partners such as the University of Technology Sydney, GPT and Dexus.

One of the many case studies from the BBP included Sydney’s Governor Macquarie Tower, a substantial refurbishment project in Sydney’s Central Business District.

In 2015, Edge Environment was commissioned to investigate resource recovery across several floors. Using inputs from BBP members, it was estimated that without careful planning, recycling rates in office strips can be as low as 20 per cent, and that every 1000 square metres of office space generates around 63 tonnes of waste during a stripout. It found that high diversion rates could be achieved at no extra cost. The trial helped inspire the Stripout Waste Guidelines, released in mid-2016. The guidelines are a practical tool to help tenants, building owners and contractors reduce waste and improve resource recovery through improved stripout processes.

A framework from learnings was outlined for Governor Macquarie Tower, which is jointly owned by

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**Fast Fact**

10 steps to good practice in waste management in construction:

- Specify your corporate outcomes
- Develop a waste management plan in collaboration with stakeholders
- Allocate clear roles and responsibilities
- Agree the fees per waste stream and the nominated facilities
- Know your nominated facilities
- Use coloured translucent bags and onsite contamination checks to minimise load rejection
- Preference onsite weighing over lifts/volume
- Audit your current practice
- Rate your data quality
- Meet regularly to address challenges and make system improvements

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Dexus, GPT Group and Lendlease, to move the industry in the long term towards 80 per cent resource recovery in an office stripout and refurbishment. Under the trial, an overall resource recovery rate of 61 per cent was achieved, with progress tracked through receipts. Recycling alternatives were also found to offer a lower gate fee than landfill as they could monetise on recycled product.

Tom Davies, Director of Edge Environment, the diversion manager throughout the process, says the firm worked across the BBP with numerous commercial builders to help them find ways to reduce their waste, including GPT Group, one of Australia’s largest diversified property groups. The company received a grant under the NSW Government’s Waste Less, Recycle More initiative to recover in excess of 10,000 tonnes of material as part of the BBP project.

Tom says that the Governor Macquarie Tower trial looked at 1000 square metres of net lettable area on five floors – a measurement of the total occupiable floor space and land area of a property, which assists in rental calculations and property market assessments.

“With materials such as plasterboard, we found that instead of ripping it off the wall and putting it into a skip, you can place it on a pallet and send it off for re-processing.”

He says companies such as Regyp were able to re-process the plasterboard into a soil amendment. They can also send it back to the manufacturer in a circular-economy approach.

**FUTURE OPTIONS FOR RECOVERY**

Numerous lessons were learnt from the trial, including that glass, plasterboard, hard fill and metals were 100 per cent recyclable. It also noted take-back schemes exist for some materials, as some suppliers offer closed loop solutions. Onsite separation and removal was also identified as a key factor in ensuring clean material streams and an organised approach to material recovery. Tom says one of the most challenging waste streams was glass, which could be made into insulated glass, but was often at risk of contamination.

“A high proportion of waste transported included glass and the tolerance for contamination is extremely low, so we had a couple of loads rejected. The waste industry just needs to learn how to manage this accordingly,” he says.

A large proportion of office furniture was also sent to charities to help find it a second home. He says office furniture is another challenging stream, and Edge Environment is now working with the City of Sydney to help find new markets for items such as laminated desktop chipboard and plastic.

An issue, he says, is contractors and demolishers not having the time and contractual incentive to take responsibility for waste reduction and to better understand their roles. Tom says the BBP is now looking at a second round of funding to further develop the resource recovery industry for the building sector.

The BBP is working with its members to develop a register of upcoming stripout projects, ensuring more lead time is given before contractors move on site. It is also looking at take-back product stewardship schemes, in addition to new markets for re-processing and keeping a record of price fluctuations.

Paul says once the 80 per cent diversion of fitout waste target is achieved, the next step will be to get contractors to adopt a “business as usual approach”, negating the need for external managers.

“With Stripout Guidelines in place, we think contractors will be able to drive progress within this framework. However, we will always support the head contractor to educate the supply chain and ensure it is aligned,” Paul says.

“We’re finding there’s a lot of awareness and intent, but we still have a way to go with educating contractors across Sydney and the broader recycling market.”

Paul says BBP members are now using the Stripout Waste Guidelines in most stripout projects.
Other areas of improvement being looked at by the BBP include an online marketplace and equipment inventory to help find a new home for used office furniture for other commercial enterprises. Once launched, customers and tenants will be able to purchase the products.

The success of the project has led Paul to believe that the building industry can take the lead in reducing its waste, and in time, reduce the need for government-led product stewardship schemes.

“I think the market will get there as a lot of our research has proven that coordination is the key to securing higher diversion rates,” he says.

HOW DOES BUILDING SUSTAINABILITY OPERATE ELSEWHERE?
Paul hopes the BPP model can be rolled out nationwide. Talks are underway with statutory authority Sustainability Victoria to develop a similar program in Victoria and a forum was held earlier this year in Melbourne to discuss the success of the BBP model.

It will build on past work to improve the NABERS waste rating tool and more recent work looking at waste separation in commercial buildings and shopping centres.

Stan Krpan, Sustainability Victoria’s Chief Executive, says the building and construction industry is leading the way in the area of using recycled parts in building projects.

“After research investment from Sustainability Victoria we’re seeing a lot of interest in low-carbon concrete, containing recycled glass for instance. Hazardous waste, including fly ash is also being used in concrete now, so I think the industry has been quite innovative,” Stan says.

The Australian National Waste Report 2016 shows 76 per cent of construction and demolition waste (C&D) in Victoria was recovered.

In Australia, the same report shows 64 per cent of C&D waste was recovered nationally, a figure which has fluctuated since 2006-07.

“We’re seeing new growth in particular in infrastructure. We work closely with the Infrastructure Sustainability Council of Australia (ISCA) and have a strong relationship with them. Most large government infrastructure projects in Victoria are now being rated with the ISCA tool.”

He says Sustainability Victoria is partnering with ISCA to encourage the use of recycled glass, plastic, tyres and a number of problem waste streams and looking at their end destinations.

“One of the exciting developments for me is around procurement. There’s a new international standard around sustainable procurement – ISO 20400. What we’re also seeing in the market is people questioning how they can use finance to drive innovation and reduce the environmental footprint of what they’re buying.”

TECHNIQUES TO REDUCE WASTE ON SITE
Stan says a growing interest in building sustainability is the concept of lean manufacturing and pre-fabrication – the practice of making components offsite and then incorporating them into residential or commercial construction. This reduces the amount of waste on site and improves productivity by reducing time that materials spend on site. Another technique is pre-cutting individual housing components including plaster, roofs and timber offsite and then fitting them as the structure progresses. These practices were used by companies such as Burbank in pilot programs funded by Sustainability Victoria.

In Victoria, home builders Burbank partnered with the Housing Industry Association, RMIT University and Sustainability Victoria in 2013 to develop a Zero Waste Home, achieving a 99 per cent reduction in waste going to landfill.

An investigation by RMIT University, which audited and reviewed processes and the materials used, waste avoidance and working with suppliers, found waste at the site was largely due to oversupplies of materials and material offcuts.

CHALLENGES
According to Stan, state and local government procurement is the next area which Sustainability Victoria wants to target, due to the size of their
spends and ability to stimulate markets and innovation. Volume homes are another priority area with room for improvement, he adds.

“Tens of thousands of new homes are being built every year on the outskirts of cities like Melbourne and Sydney and a few tonnes for every home created is costing the builder money, which is then passed on to the purchaser. One of the reasons why it’s difficult to recycle is that waste is mostly just dumped on site in a cage or skip and it’s mixed, which imposes additional costs if it is to be recycled,” Stan explains.

Working with sub-contractors to reduce waste is another area for improvement, Stan says, as all stakeholders have a role to play.

“It’s an issue we all have to work on in coming years. How are we training and educating tradespeople such as electricians, carpenters, plasterers and sub-contractors more broadly?

“I think there are good business opportunities in this space and we’ve partnered with the Australian Supply Chain Sustainability School to promote their educational resources and materials which include tips on waste reduction and recycling.”

The costly problem of mixed loads is one that needs to be reconsidered, he says, with additional work required.

“Victoria already has a mature recycling sector for household, commercial, industrial and construction materials, but across the board there are many opportunities to expand this sector into new areas and capture more of what now goes to landfill.”

Antony Sprigg, Chief Executive Officer of ISCA, says the challenges in Victoria include a lack of recycling targets in the state to send the right market signal to industry.

ISCA is working closely with Sustainability Victoria to encourage the deployment of its IS v.2.0 rating scheme, which evaluates sustainability across the design, construction and operation of infrastructure.

Its latest rating scheme, which includes a circular economy credit within the resources category, has been reviewed and is expected to launch in June of this year.

Overall in Australia, Antony says waste minimisation needs to be prioritised prior to procurement, as the sector often doesn’t have the contractual flexibility to help process unrecyclable material due to regulatory and other constraints. He says government entities in particular should make sustainability a focus in their procurement strategy.

“It all comes back to planning. One of the things we advocate with government procurers is how they can better work among themselves to reduce and work out what they can share among them, particularly when it comes to spoil on infrastructure projects,” he says.

“I’m confident that the private sector is innovative to deliver, they just need the right market signals.”

Michael Roberts, Executive Director Planning & Development at Housing Industry Association (HIA), puts the challenge of waste management in building down to three issues: economies of scale for the quantity of materials for smaller projects, site size and the practical challenges of sorting materials, and recycling options within proximity to where construction is occurring.

“Waste management is a complex issue for the housing industry as no single waste management approach guarantees significant waste reduction. Part of the challenge is in the fact that quite different responses are required to address the issues faced by the new home building sector as opposed to the renovation sector,” Michael says.

“Even within the new building sector, the challenges and options available vary significantly between for example the construction of a high-rise unit project and the construction of a one off designed house.”

He says the residential construction sector is predominately dominated by small business, and reliant on subcontractors as a result.

“On a single house site as many as 50 contractors can be involved in the construction of the home. Getting buy in from all contractors on any issue is a challenge.”

The larger the project, and larger the site size, the more opportunities there are for a waste minimisation strategy, he notes.

“The challenge for house builders is that while they do generate waste the amounts of individual products (plaster board, timber, masonry products) generated on a single site is relatively small.”
Michael says the frustration then is that even if the material is able to be sorted onsite, which due to rapidly shrinking allotment sizes and local government site management requirements is a challenge in itself, who will be interested in the relatively small quantities of each material? What collection facilities are available and what are the transport costs?

Michael says the biggest savings are delivered where a business is able to develop a suite of designs that they build on a repeat basis. Improvements in software estimating packages helps volume builders know within a couple of shovels of concrete how much of these materials go into a standard design, he adds.

Equally, the improvements in factory truss manufacturing has also significantly reduced timber wastage, he says.

“Modular construction, particularly in relation to walling systems, is also emerging as a legitimate option that provides a range of potential benefits, including waste minimisation.

“Improvements in the quality of modular construction is also providing options in the construction of high-rise apartments. HIA is seeing the installation of elements such as bathroom pods steadily growing in popularity.”

Michael says the construction associated with boutique designs or renovations creates a range of additional challenges. He says this can be exacerbated when you have local government planning provisions or developer covenants that require boutique designs or the use of particular materials.

Despite these challenges, Paul remains optimistic about a waste free future.

“The better we are able to measure and manage our resources upstream, the more people can extract value from them later. Its a win-win scenario, and we’re pleased to be leading the way.”
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What SA CAN teach us

THE SOUTH AUSTRALIAN GOVERNMENT IMPLEMENTED ITS CONTAINER DEPOSIT LEGISLATION 40 YEARS AGO. NOW THAT OTHER STATES ARE FOLLOWING SUIT, WHAT LESSONS CAN BE LEARNT FROM SA? WILLIAM ARNOTT REPORTS.

In 1977, the South Australian Government implemented a scheme with impacts that are still being felt today. The container deposit legislation (CDL) began as a way to deal with single-use containers littering streets and drains.

The world has changed since then, but South Australia adapted and has worked with both the beverage and waste industries to not get left behind. Products changed and the packages they came in have too. Reusable glass bottles have become rarer and mixed plastics are now the norm. Container design also changed, with plastic mixes becoming more common – a drink bottle could be made of one plastic, the lid another and the label another variety.

As packaging evolved, so did the legislation, keeping up with the changes in consumer behaviour. Because the CDL was able to change as the industries did, it was able to adapt to new introductions as they happened.

In 2003, the SA Government extended the legislation to keep up with the changing packaging designs. It now covers fruit juice, non-carbonated soft drinks and flavoured milk containers.

Now in 2018, the CDL program is still going strong. The return rate on drink containers is reaching 80 per cent. Since 2005, more than six billion containers have been diverted from

The CDS remains popular in SA, with 98 per cent of South Australians supporting the scheme, according to a 2012 report prepared for EPA SA.
landfill and returned for recycling.

The CDL in SA has helped to instil positive behavioural change when it comes to recycling. Beverage containers now only make up 2.9 per cent of litter items. In comparison, Clean Up Australia’s 2017 Rubbish Report found that in Victoria, Tasmania, and Western Australia, the percentage of beverage containers ranged from 14 to 26 per cent.

The CDL is based around rewarding consumers for recycling by providing them with a financial incentive. When a drink container is purchased in SA, consumers are encouraged to visit a local depot to drop it off. Originally, the refund was five cents, but was changed to 10 cents in 2008 to encourage more South Australians to get involved.

Ten cents can add up fast and organisations began jumping on board to collect litter from community members to raise funds. Over 2016-2017, almost $60 million was returned back into the community.

It still remains popular in the state, with 98 per cent of South Australians supporting the program, according to the CDL Awareness & Support Research Report, prepared for the South Australian Environment Protection Authority (SA EPA). It was even listed as a state heritage icon in 2006 as improving the quality of life in SA.

John Phillips, Executive Director of Keep South Australia Beautiful (KESAB) believes that the legislation has helped South Australians reduce litter and encourage recycling.

“Ultimately, while it was originally a way to encourage people to think about their litter, it has really helped the community. Depots have not only encouraged the resource recovery of containers, but have become a place where people can easily recycle materials like cardboard, scrap metal, or even car batteries.”

KESAB began 50 years ago as a litter reduction campaign and has since evolved into a non-governmental organisation that works with its stakeholders to reduce litter. It works with governments, recycling companies and depots and schools to help educate people on sustainability.

“What helps the CDL shine is the fact that it can encourage everyone to pitch in and clean up the streets, not just the original consumer. "If we look closely, there are two segments that come into play," says John. “You have the types of consumers who will hold on to containers to give it in for recycling later at a depot or community centre, and the consumers that buy a drink, finish it, then throw it out the window as litter. Even if they do that, it will most likely get picked up by someone who can hand it in later for cash.”

This kind of recycling is important, not only for resource collection, but also because cleaning up litter can be costly.

According to the Victorian Litter Action Alliance, maintenance for litter bins, traps and clean-up costs just under $28 million. Roadside litter and dumped rubbish ends up costing Victorian councils nearly $22,000 a day to keep the street clean.

The CDL also makes a significant impact for people in lower socio-economic areas.

It covers drink containers easily available outside the home, specifically lunchtime beverages.

If the 10 cent refund was expanded to other recyclables like wine bottles, restaurants and hotels could also be encouraged to increase how much they recycle, John says.

Fast Fact
There are three main ways to return items collected in the NSW Return and Earn scheme.

The reverse vending machine system accepts and scans barcodes of up to 500 items and are found often near shopping centres and major littering locations. They can provide a refund in three ways: A voucher that can be redeemed at a participating retailer, an e-payment to a PayPal account via the myTomra App, or donating the proceeds to a consumer’s charity of choice. Some reverse vending machines are set up only for charities.

Over-the-counter collection points allow consumers to hand in around 50 to 100 containers per transaction. An operator will verify the eligibility of the container before providing the refund.

Automated depots accept up to 500 or more containers per transaction through mechanical scanning or a counting system. Refunds are available through cash or eftpos.
Similarly, the legislation could be expanded to non-drink related containers that are recyclable.

“If we look at all the plastics we use in the kitchen or bathroom, there’s a lot that could be included, like shampoo bottles. These are all ways we can minimise the amount of waste that goes to landfill and have been proven before to have an extensive impact across the state.”

A spokesperson for the South Australian Environment Protection Authority said the SA Government is not currently considering expanding the legislation to other beverages or packaged products.

“However, with any future legislation amendment proposals there will be an opportunity to consult with the community and industry on whether the scheme should be expanded,” the spokesperson said.

The impact of China’s waste restrictions has impacted Australian recyclers, according to John. The nation’s change in policy saw a crackdown on imports of 24 different types of solid waste from Japan, USA, Australia and other source countries. Because SA has a clean waste stream, partially due to its CDL, it has avoided a lot of the stress, but there is still plenty of work to be done.

“We need to be more innovative in looking after our waste and reduce the need to export it,” John says.

“We’re at a knife’s edge at the moment based on how we progress. Rapid change is needed to address issues like climate change and resource recovery, and at the moment in the waste management industry, we have a perfect opportunity to demonstrate how we can perform.”

John believes that Australia is positioned perfectly to influence worldwide change.

“With our innovative minds, we could use this as an opportunity to set global standards and help influence some of our northern neighbours.”

NSW has recently begun its own recycling scheme similar to SA’s CDL. The Return and Earn scheme began in December of 2017, and has collected more than 100 million containers in the three months.

Return and Earn is based around a similar 10c refund on beverage containers, but also relies on a system of reverse vending machines as well as a number of automated and over the counter return depots.

John says that the differences between Sydney and Adelaide aren’t that great when it comes to recycling. People want to do the right thing, but infrastructure is important to make sure that happens.

“From the very beginning of the SA CDL, it was connected to the industry and a network of recyclers.
Adjustments to the scheme have occurred, but it’s flowed on from there and remained solid.”

“NSW doesn’t have that luxury. In Sydney, the infrastructure needs to be built from the ground up. RVMs can be quite slow when attempting to recycle 200 to 300 items and all of a sudden you’ve got a queue a mile long. It’s important to make sure that they expand their local collection points, because RVMs are not the answer to everything,” John says.

A spokesperson from the NSW Environment Protection Authority said the NSW community has embraced the Return and Earn scheme, returning more than 100 million containers in just 10 weeks.

The SA implementation of container deposit legislation and similar projects globally were also explored to help inform the design of Return and Earn, according to the spokesperson.

Victoria is currently the only state that has not started or begun to plan implementation of CDL. QLD, WA, and ACT have schemes planned to begin in 2018 and 2019, with the NT introducing their own in 2012.

Lily D’Ambrosio, Victorian Minister for Energy, Environment and Climate Change, says the State Government is “continuing to look at container deposit schemes in other jurisdictions to understand the benefits and costs of various models, and how they might work in Victoria”.

According to the Victorian Government, litter levels in the state have been decreasing for seven years in a row, including an eight per cent decrease in beverage container litter over the past year.

John says with the other states mounting pressure on the Victorian Government, it could only be a matter of time before it is available nationwide.

“Wheels will begin to turn once all states and territories have come on board. Common sense tells me that Victoria will be obliged to start one up to keep up with the rest of the country.”

Dr Philip Kwong, Senior Lecturer at the University of Adelaide’s School of Chemical Engineering, notes that on a recent trip to Melbourne, the aesthetics were vastly different, with much more visible litter in the streets.

“In South Australia, I don’t see any CDS-eligible cans lying around.

“In Melbourne, I could see a lot of these types of containers everywhere on the streets. I think it would be good to see [a CDS] implemented in Victoria, but there’s a lot of development that needs to occur. There needs to be super collectors, depots and co-operation with the drink manufacturers themselves,” he says.

Other countries around the world have much different recycling standards. Philip explains that in many countries the recycling culture is significantly different.

“In Europe, there is even a similar scheme for electronic waste. Certain items like phones and other mobile devices have 10, 20, or even $50 added onto their cost. When the device reaches the end of its lifespan, you’re able to hand it in and get that money back.

“Japan in particular has a sophisticated household system. Each

Fast Fact

Once a container is given into a recycling depot for a refund, the items are sent to a super collector. The super collector is a larger collection depot that handles and sorts through containers sent to them from smaller depots. They then sell the recyclable material to market. These super collectors have contracts with beverage suppliers such as Coca-Cola and Pepsi which help fund the cost of the beverage.

Retailers purchase the beverages from the supplier which have a 10c refund and handling fee, which is added on to the final price of the beverage.

John believes the CDL helped encourage recycling in SA.
household has six different kinds of bins for different waste that need to be handled in certain ways. If you don’t flatten down your milk cartons when you put it in the bin, they will return it to you.”

According to Philip, the key to making sure these types of schemes succeed is education.

“We need to teach people the value of separating waste. Currently in Australia we put all our recyclables in the yellow recycling bin. With household recycling, there’s so much more that can be done to help avoid sending things to landfill.”

One major benefit of this type of source separation is that it makes waste management much easier in areas with a CDS.

Because a large percentage of recyclable waste is being returned for packaging, it means there is less of that within the household recycling bin. This is especially important when it comes to materials such as glass bottles.

“Glass containers in recycling bins can be an issue. Glass takes a certain amount of power to crush properly, meaning if there is a significant amount of glass being collected, it reduces the amount that can be moved in one load,” Philip says.

“By separating the sources, it lets you fit more waste into each truck before it fills up, saving a lot on time and resources.”

Philip says these types of schemes are a good start for Australia. He adds that schemes still mostly just target litter, but there is more that can be done to help with recycling.

“In order for this type of program to become successful around the country, and particularly in NSW, the government or relevant EPA needs to make sure the scheme is promoted actively and to educate people on how they can help.”
Eight years ago, Mark Smith, 27, had just completed his Bachelor of Applied Science in consumer behaviour and planned to embark on a career in public health and education.

At that stage, the Environmental Protection Authority (EPA) was less involved in the public environmental health space, having recently taken on additional responsibilities, including from the Department of Health and Human Services in 2017. After working across VicRoads and Toyota in an auditing role, Mark experienced the turmoil many graduates face when looking for work in their field. He was underqualified for positions suited to his skills – while overqualified for less relevant jobs that offer a foot in the door, having also held a Diploma of Business.

“There were only two government areas I was looking to apply for and one of them was the old Department of Transport, Planning and Local Infrastructure and the other was the EPA,” Mark explains.

Mark says he ended up applying for a junior role at the EPA in 2010, snaring a role as project officer supporting the delivery of the Illegal Dumping Strikeforce team.

“It was just a really exciting program because it was the first time that particular program had been launched. There was a huge amount of resource behind it – $6 million.”

Over four years, he worked his way up to project and program manager roles, including program manager of the Litter and Illegal Dumping team, before moving onto statutory body Sustainability Victoria in 2014. At Sustainability Victoria, he oversaw the development of the Victorian Waste Education Strategy, which aimed to provide an overall framework for the arguably disjointed system, before long receiving a promotion to waste education team leader.

“The team was delivering about $6.5 million worth of projects including social research with CSIRO – a world-first for the waste and resource recovery sector. We looked at community attitudes and perceptions to the sector, with a focus on the low level of public understanding of the waste system,” he says.

Part of the Victorian Waste Education Strategy and Statewide Waste and Resource Recovery Infrastructure Plan, the CSIRO research project, Engaging communities on waste, helped inform Mark’s views of the public perception of the waste industry in 2018. He says the basis of his views were developed by public sector experience, working across a range of projects in regulation and compliance. In addition, he’s also lived in close proximity to one of Victoria’s largest landfills in Melbourne’s south east.

In 2016, Sustainability Victoria conducted a 20-minute survey with 1212 Victorians, asking them about their attitudes, knowledge and behaviour towards waste and resource recovery. The research was inclusive of all adult Victorians, including those that lived within a two kilometre radius of waste and resource recovery infrastructure. The results showed knowledge about household waste collections was good, but knowledge about landfills and the use of recycled materials was low. While people agreed waste was an essential service, they viewed the responsibility for reducing waste as primarily falling on businesses and companies, followed by governments and lastly households.

A follow up report on the findings made a host of recommendations, including the development of guidelines for industry to better consider community sentiment when going out to tender, promoting a wider understanding of the societal benefits of waste management, promoting best practice operators via the media and providing real-time community feedback to site operators about the impacts of their facilities.

“The waste and resource recovery sector needs to get a clearer narrative on it and some headline metrics and that’s what this research was underpinning,” Mark says.

“People don’t realise or understand how the system works. Beyond kerbside collection, they don’t know what happens beyond that. I think it’s really disappointing because state government can’t tell a really clear story on the waste and resource recovery system,” he says.

“You could potentially argue that it’s not the government’s role to provide this narrative because it’s predominantly
Mark Smith brings an array of experience to VWMA in government roles.
privately run, but I think the sector is really at a disadvantage in that we can’t really capture jobs figures, economic benefit, potential cost of assets, compared to some other sectors, be it mining and manufacturing that are able to rattle off similar figures.”

In 2018, Mark joined the Victorian Waste Management Association (VWMA) as Executive Officer, a member-based not-for-profit representing the waste and resource recovery sector in the state.

He says over the next 24 months he hopes to build the VWMA brand, in addition to showcasing his social research to its members and working to build the reputation of the sector to the public.

The events which have played out with National Sword, a Chinese crackdown on paper and plastics waste imports and the nation’s subsequent ban on 24 categories of solid waste with 0.5 contaminants have led to media extensive scrutiny, Mark says, as they manifest further in 2018. The challenge is then to restore public faith in the system, he adds. Greater public understanding of the importance of waste as a resource and its potential for job creation can lead to the development of more resource recovery facilities, or other government benefits to help grow the sector and the broader economy.

“With the way population and urban sprawl has happened it’s just not feasible to have huge infrastructure any more. I think we’re going to see a lot of decentralised infrastructure in waste and resource recovery, not dissimilar to what happened with water – with waste integrated into the planning of our new suburbs and towns,” Mark says.

On February 20, the VWMA Executive met to discuss National Sword and its impacts on Victoria. They recommended numerous measures to be prioritised by state and local government, including reviewing the contractual models for waste and resource recovery models, such as linking contracts to an indexed commodity price and a greater distribution of risk between all parties. He hopes this will be backed by the state government, which is investigating the matter through a taskforce to develop a strategy going forward. Mark says the VWMA looks forward to contributing to the taskforce.

“The feedback received from members is on the way that council contracts are written up – the contractor needs to take on all of the risk which isn’t always a reasonable option,” Mark says.

“Especially when sometimes the financial incentive and higher order priorities we want to tick off in terms of the quality of the material stream isn’t always met because the contractor is meeting the local government requirements instead of the higher order requirements.”

Mark says that even though the waste sector is privately run and may in part be administered by local government, if the system is not working, it then becomes a public health issue, which makes it a state government issue.

The VWMA has also proposed to unlock the state government’s Sustainability Fund, which is collected by landfill levies, to boost investment in the form of low-interest loans and grants to the private sector and local government. Other measures include stimulating markets for recovery through minimum requirements in procurement contracts.

Mark believes stimulus is needed to reset the market, which is not dissimilar to construction and demolition recovered materials mandated in government construction specifications,
including by state roads authority – VicRoads.

Better engaging the community and schools about waste as an essential service is another VWMA recommendation post National Sword.

“You could argue to some extent we don’t recycle, we collect and sort and export.

“So many friends and family have told me that since the National Sword onset they were really surprised we don’t do a lot of that here,” Mark says.

The issues have placed the industry into tumult, he says, so much so that he believes the Victorian Government may need to re-think its priorities for 2018 such as the proposed e-waste ban.

“I don’t know how realistic it is for under resourced local governments to be dealing with all of these issues at once,” Mark says.

Fortunately, Mark says public awareness of environmental issues is building, as evidenced by much of the understanding towards the reality of tackling climate change.

“The reason why we did the CSIRO research is that government research tells us that we need to see growth in the resource recovery sector to keep up with waste generation, which means new resource recovery facilities or upgrading existing facilities, but we know that whenever this happens, communities rally against them.”

“For example, people need to feel confident in the government controls in place to protect human health and the environment. Is the EPA ensuring these sites are compliant, and if not, what action is being taken?”

Mark says that in Sustainability Victoria’s research, the agency also found that there is a direct link between understanding how the system works and engaging in more appropriate waste disposal practices, including producing less waste and recycling better.

“And another important factor in keeping the public’s morale high is the impact of waste infrastructure, which is harder to fix. If you’re doing everything amazing, but you still have those odour issues once a week, it just undermines everything else. So facilities need to keep on top of that.”

He remains optimistic about the new EPA Victoria agency in continuing to manage these environmental issues in the future, which is currently going through a restructure to better define its legislative role.

You can read the report, Engaging communities on waste here: www.sustainability.vic.gov.au/About-Us/Research/Engaging-communities-on-waste

Mark believes the public is largely unaware of what takes place beyond the bin.

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WASTE MANAGEMENT REVIEW SPEAKS TO PETER SCHMIGEL, THE NEW CHIEF EXECUTIVE OFFICER OF THE AUSTRALIAN COUNCIL OF RECYCLING (ACOR), ABOUT SOME OF THE KEY ISSUES FACING THE RECYCLING SECTOR.

Q. Tell us a bit about your past background?
A. I’ve been lucky to work with leaders in many diverse sectors, including premiers, ministers, recycling and manufacturing chief executive officers, mental health reformers, bankers, environmental protection authority leaders and journalists.

I’ve worked for organisations such as Veolia, Hyder, the Beverage Industry Environment Council and the NSW Government’s Office of the Minister for Environment.

Over the years, it’s been great to spend a lot of time in materials recovery facilities, high-tech reprocessing plants and collection trucks. I’m grateful for both the policy and practical experience to make a valuable contribution to 21st century recycling and its part in a circular economy.

Q. What influence do you hope to bring to the new role at ACOR?
A. A positive one! It’s time to change the conversation around recycling. Its direct environmental value is a given. Given all the China discussions, now is the perfect time to multiply its social and economic value.

Recycling has great return on investment and with leadership, we can double it as a growth sector for domestic jobs, get more credit for it as one of the cheapest and most available ways to reduce the carbon cost to the economy and convert overwhelming community support into the right pro-jobs and environmental policies.

Q. What inspires you about the recycling sector?
A. Its practicality. It is about offering a real solution to a real problem. I started working with the waste management sector as a Chief of Staff for the Minister for Environment in NSW in the early 90s, near the time of the beginning of kerbside recycling. Since then, I’ve always admired the industry’s can-do attitude.

Q. Some in the industry argue China’s National Sword policy will lead to a market reset. What measures do you think are needed to help solve this issue in the long term?
A. There have been ups and downs in recycling since its start and it has always resiliently made its way through. It will this time too.

The situation we’re in offers a great opportunity for renewal. Let’s really get to the specifics of the current “crisis” and put in place the right fixes. As one example, ACOR has suggested...
the industry adopt standard operating procedures to minimise costs for customers.

But let’s also show leadership in public policy that give consumers, councils, collectors, sorters, reprocessors and manufacturers greater certainty going forward in both supply and demand.

Positive procurement, recycled content, better planning regulations for locations, Container Deposit Scheme extensions, infrastructure investment: all of these options need to go back on the table. We all get certainty by multiplying recycling’s value.

Q. What potential to you see for forms of waste to energy such as refuse-derived fuel, anaerobic digestion and thermal treatment in Australia?

A. A long time around the sector teaches this: there is no single silver bullet. As an early adopter and proponent of life-cycle analysis – I am technology and technique agnostic. It’s better to get the right cost/benefit numbers from an environmental, economic and social perspective. And to do so within a strong integrated plan. At the end of the day, it’s also about what the community wants and is willing to pay for.

Q. Are you satisfied with the current landfill levies in place across the states and territories and are they doing enough to spur investment in recycling?

A. Were people happy when each state had different railway gauges? Probably not, but it took leadership to get the right changes.

Nowadays, any objective observer would say we can do better coordinating landfill levy levels and its purposes to get the results we want, or at least to avoid situations that basically break our public promises. Now is a good time for leadership and revising Australia’s National Waste Policy to focus on this disparity is one policy solution out of many.

Q. Another issue in recycling is that when the commodity price is low, stockpiling occurs. Is there a solution to this issue?

A. There’s nothing here we haven’t seen before. Let’s first look to the specifics – where are we stockpiling? What are we stockpiling and why? Let’s really get the scope of our solutions right. Einstein’s right: the way you define a problem is how you fix it. Sometimes these are specific contractual issues for specific streams in specific places.

However, let’s also look at bigger picture and get all the options on the table that make us less dependent on commodity prices that can be volatile. That’s the leadership part, from industry, councils, non-governmental organisations (NGOs) and governments.

Q. How can we help tell a more positive story about recycling?

A. The only narrative I believe in is what happens everyday in the real world not what happens on one television show or one headline of a newspaper.

Everyday, people overwhelmingly vote with their sorting and bins. Dedicated people collect, sort and reprocess the vast majority of recyclate into new material that’s got a much smaller eco-footprint. We see technological and process innovation like container deposit schemes being introduced now in several states. The manufacturing industry becomes more conscious of its own role and how it can contribute. In recycling, everyday is a good news day when we really look hard enough. Let’s move forward with leadership on how we get bigger and better.

Q. What waste streams do you think we need to see recycled in greater numbers and what can ACOR do to help improve the situation?

A. We need to keep progress going in established waste streams by making them more economically sustainable for all players. We need to meet our own promises by growing efforts in areas like food, e-waste, batteries, medical and tyres. There are good people working hard and they deserve more government support too. It’s about leadership and not just managing the incremental progress.

Q. What is your vision for the future of recycling in Australia?

A. My practice of leadership is to put on the boots and do the hard slog toward goals. Goals like doubling the employment level of the recycling sector, getting positive public policy that captures recycling’s real value and creating industry rules that give all players more certainty about costs and investment.

And most importantly: let’s stay positive!

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**Fast Fact**

Established in 1983, ACOR is a not-for-profit peak national industry council representing businesses in the resource recovery and recycling industry of Australia. It works closely with the federal and state and territory governments to develop policies and programs that improve resource recovery and support investment and growth in recycling.
Q. We understand Cessnock City Council has recently opened a new waste transfer station. Tell us more about this?
A. We have had the proposal in the pipeline for a while now as the first step was to secure the purchase of the site from crown land and deal with the native title and land claim matters. This then allowed the preparation of the environmental impact statement and the development application.

Q. What are some of the innovations surrounding the new facility?
A. We don’t claim to be the inventors of all things, but we did take the time to learn from the experiences of others. We had a dedicated and focused project control group established early in the project, we scheduled regular meetings to gauge progress and complete tasks and kept minutes of each meeting as a record.

We also took time to look at the operations and learnings from others and blend them into what our needs were and what the community expected.

The innovations we introduced to the project are based around following the contours of the site to secure level areas for unloading.

We provide the opportunity for maximum resource recovery through designated drop off areas, as the customer first enters the transfer station. We also introduced a community recycling centre for the household problem wastes all before the waste disposal push pit area.

To complement this strategy, we introduced a third internal weighbridge within the transfer station that is connected to the existing dual weighbridge system, recording gross and tare weights. The internal weighbridge interacts with the original transaction via a number plate record (recorded at the transaction commencement) and radio frequency identification tag issued on entry. The system is designed to accurately account for the resource recovery drop off and reward this behaviour with significant price reduction. The remaining load destined for landfill is accounted at the completion of the transaction and attracts full price.

We were also conscious that we wanted the facility’s development to look appealing, adding some character based to the “management” theme. We opted for colourbond metal finishes, the use of rock gabion features, turfed areas, recycled glass in a feature wall, solar panels and roof water capture into rainwater tanks. We understand that if a facility looks the part, then more people are likely to appreciate and follow site management requirements.

To achieve maximum life in heavy vehicle traffic areas and turning areas, we upgraded the pavement from a flexible pavement with two-coat seal to concrete pavement, which will significantly increase pavement life and reduce on-going maintenance and cost.

Q. Cessnock City Council runs a number of sustainability programs, from food waste to living with less chemicals. How has council’s sustainability programs helped create a cleaner and greener municipality?
A. Sustainability management is a dynamic concept and should be, so that we seek to accept and find solutions for the next challenge. We started our journey with the land component, then prepared our waste management strategy, recognising the challenges and gaps that made a significant sustainability contribution and were high on the community’s agenda.

Part of that journey recognised the contribution organics made to the waste stream and the production of greenhouse gas, as we tackled that challenge with our neighbouring councils (Maitland and Singleton) to achieve economies of scale. Looking back, we set ourselves quite a challenge to construct a significant waste transfer station and introduce a third bin collection system simultaneously.

Q. What do you look for in a collections contract tender and how do you go about it?
A. The challenge in regional areas is meeting the economies of scale and organising logistics. Our first approach
is usually based around determining the critical service numbers and are our neighbours in the same spot or have a program we might look to join? I also look for contractor experience and their resources.

Q. How is council tracking in its target of 70 per cent diversion of landfill by 2022 and what are some of the challenges in meeting this?
A. Our weighbridge records provide up-to-date data on this each day, allowing us to determine what impact the kerbside program has achieved and the diversion achieved through outgoing material.

Before the facility and the organics service we were sitting at around 33 per cent diversion during the 2016/17 financial year at the waste management centre. We are confident of increasing this when the waste management centre is in full operation. Our kerbside collection diversion rate was 23 per cent 12 months ago (before the garden organics service was introduced) and has now increased to 48 per cent.

Q. What are some of the more pressing issues in relation to waste management in the Hunter region and how is the City of Cessnock tackling these?
A. I find waste is continuously challenging, I think its continual cost impact is one of the significant challenges for all of us, including getting the community to understand and accept that waste management is a big business reliant upon many externalities and regulation.

These regulatory challenges include: managing and explaining the waste levy, the heavy reliance upon logistics and the cost of transitioning waste management from the hole in the ground “dump mentality” to one of the most significant cost centres in most councils’ annual operating budgets. To achieve this, I believe community engagement is vital. Nobody likes a fee or charge but if we understand why and can see some tangible evidence of what’s being done, I think there is some degree of acceptance.

Q. How does council work with other local municipalities to reduce overall waste in the region?
A. The Hunter area is somewhat unique, with many examples of working with others to achieve the desired outcome. Cessnock is in a partnership arrangement for the delivery of kerbside recyclables collection service with Lake Macquarie, Maitland and Singleton – a service of approximately 130,000.

We also have a partnership with Maitland and Singleton for the organics collection service, comprising approximately 60,000 services. There are also some regional contracts through Hunter councils for metals recycling that support council.

Q. Does council incorporate or have plans to incorporate digital technologies such as real-time data monitoring and telematics?
A. We have had Global Positioning Systems (GPS) systems in our collection vehicles now for many years and about three years ago, we upgraded the system to one that records both the GPS coordinates of each vehicle, can show where they are at any particular time, what services have been delivered and touch screen tabs for non-presentation (including photo), over full and damaged bins. We are working with the provider to develop a system that can pass the information to a support vehicle showing bins that require replacement or repair.
Recent moves by the Federal Government and other stakeholders involved in Australia’s National Food Waste Strategy show that waste reduction, and food waste management in particular, is becoming an increased priority.

In reducing food waste in the supply chain, companies can help the community, while also potentially benefiting financially. The National Food Waste Strategy indicates that 2.2 million tonnes per year of food from the commercial and industrial sector is going to waste, which results in significant waste disposal charges and lost product costs to businesses.

According to Paul Corder, Weighing Director of Technology at Trimble, an increased focus on greater resource recovery comes as the public become increasingly environmentally conscious and state and local governments set waste to landfill reduction targets.

He says this agenda is pushing many businesses to evaluate their waste reduction and recycling efforts in more quantifiable ways. A barrier to these efforts is a lack of transparency around individual bin weights and customer loads in the waste collection industry. Paul sees this increased focus on environmental issues and the growing demand for transparency and traceability in the refuse industry as a good thing.

“What used to be a simple calculation where customers were charged for refuse collection based on waste volume has evolved for several reasons,” Paul explains.

“The traditional pricing model where a waste collector meets with the customer and puts together a price based on bin size, how often the bin is emptied and waste type, is a model that’s losing appeal.

“The issue is the disconnect between how waste collectors charge (fixed volume) and their costs basis (per tonne for disposal). A small miscalculation and they are losing money.”

THE CHAIN OF RESPONSIBILITY

Paul says increased governmental regulations are also are leaving many waste transporters (and customers) at risk. Under the Heavy Vehicle National Law, there are numerous persons tasked with responsibilities around the safe transportation of waste, recycled materials and other loads.

The list of those responsible includes (but is not limited to) a driver of a heavy vehicle, an employer or prime contractor of the driver, a shipper of goods for road transport and loading manager. He says overloading refuse trucks, even inadvertently, can lead to costly fines. On top of that, Paul says changes to the Chain of Responsibility laws coming in mid 2018 are putting increased pressure on waste transporters to improve their practices.

PAYING BY WEIGHT

Paul says it is in this environment that weight-based billing in the refuse industry is attracting significant attention from refuse waste transporters and Australian corporate leaders. Weight-based billing provides real-time data on the billing of waste management services for front and rear loader bins in the commercial and industrial sector.

One influential figure in weight-based billing is Trimble, which sees
the industry moving in this direction and has recently had its LOADRITE on-board scale system certified ‘Legal for Trade’ for front-loading refuse trucks. Legal for Trade products meet the European directive for measuring instruments. The Australian standard for approved weighing instruments is governed by the Federal Government’s Division of the Commonwealth Government Department of Industry, Innovation and Science – the National Measurement Industry (NMI).

The LOADRITE E2750 system records the weight of each bin so transporters can provide accurate weights to their customers directly. The in-cab display shows weight data calculated from the load and position sensors.

During the normal lifting cycle, the operator sees the bin payload, which helps the operator know if it has been overloaded and is potentially unsafe. The system also has an automatic mode that adds each bin to the total weight, keeping a running total of truck payload, so the operator can know when to dump without overloading the truck. There is no delay in the loading process and the payload is calculated automatically.

Alan Clarke, manager with Weighing Systems Australia P/L is a distributor of LOADRITE Weighing Systems & Preco Reversing Radar.

He says weight-based billing will continue to grow in popularity and become the industry standard over the next several years.

Alan says the company’s success in weight-based billing is aided by Trimble’s LOADRITE solutions and its years of experience, service and responsiveness.

“We’ve always tried to be ahead of the curve in terms of providing weighing products and solutions that help our customers become more profitable and operate more safely,” he says.

Alan says that more solutions and options for on-board scale systems will make weight-based billing more mainstream in the future. Furthermore, it will help improve profits by providing more accurate weights to customers directly.

The LOADRITE E2750 weighing system aims to offer accurate and reliable weighing of every bin emptied and provide traceable data on all loading activity. Paul says this helps waste collectors operate more efficiently. Not only that, after the payload is calculated the total is connected to the customer account via the truck computer. No paperwork is required by the operator and if a customer requires a ticket, the operator can print directly from the cab. Trimble also has a range of front, rear and hook lift truck scales.

TRANSPARENCY IMPROVES PROFITABILITY

These scales and new advancements are working to ensure that waste collection and disposal processes are highly productive and safe. In addition to improving safety, Paul says refuse transporters can now have much greater visibility into their customer waste services.

“They can clearly see which customers are profitable and where they may be losing money,” he says.

The E2750 automatically measures the net weight of the bin as it is emptied, and the system integrates into the machine’s route management system. Paul says measuring payload in this way helps waste collection companies improve safety because there’s no chance of overloading trucks.

In conjunction with a route management system, waste transporters also have a complete record of a customer’s activity, which means they can evaluate profitability. Optimal truck loading helps reduce trips to landfill without the risk of overload penalties.

More data and reporting options also aim to help waste transporters improve productivity and ensure refuse trucks are loaded to the optimised weight for transport. With weight-based billing, Paul says waste transporters can also quickly see individual bin weights with time and date stamps and they can track customers quickly by customer identification, number, bin size and similar metrics.

“On the other side, many commercial customers like it because they can see a complete picture of the waste they’re generating,” Paul says.

“While waste-based billing might be a small part of the equation, when it comes to reducing the amount of waste created, it’s clear that having more insight and transparency around waste collection is a win-win for waste transporters and corporate customers looking to cut costs and clean up their act.”
WHERE DO YOU FIT IN?

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Australian-first strategy targets tyre recycling

THE RELEASE OF THE NATIONAL MARKET DEVELOPMENT STRATEGY FOR USED TYRES CREATES A STRATEGIC FRAMEWORK FOR THE MARKET DEVELOPMENT OF AUSTRALIAN TYRE-DERIVED PRODUCTS. IT IS THE MOST COMPREHENSIVE DATA SET EVER FOR AUSTRALIAN WASTE TYRE GENERATION.
End-of-life tyres remain one of the nation’s most significant waste management challenges. With more than 56 million end-of-life tyres generated in 2015-16, a 16 per cent increase on 2009-10, the flourishing market shows no signs of slowing down.

In fact, it’s only predicted to grow, with new tyre sales estimated to exceed 63.3 million by 2024-25.

Dealing with this challenge in a sustainable manner recently took an important step forward – with the public release of the National Market Development Strategy for Used Tyres 2017-22 in March.

Commissioned in cooperation with Tyre Stewardship Australia (TSA), the five-year strategy was endorsed by all Australian environment ministers last year and provides a collaborative framework to maximise market development opportunities that increase the use of locally-produced recycled tyre-derived products. Increasing recovery and demand for tyres will lead to fewer tyre stockpiles that pose fire and health threats to communities.

The strategy was co-funded by Sustainability Victoria, Environment and Heritage Protection (EHP) Queensland, the WA Department of Water and Environmental Regulation, the NSW Environment Protection Authority and TSA.

A cross-jurisdictional working group comprising the states and territories and TSA helped develop the comprehensive market development approach, which looks at practical ways to overcome barriers to increase consumption of tyre-derived product in Australia. Most importantly, the direction of the strategy was informed by widespread industry consultation.

Consultants who assisted with the compilation of the report include Randell Environmental Consulting, Reincarnate and Sustainable Resource Use.

A KEY MILESTONE
Liam O’Keefe, TSA’s Market Development Manager, says it is an important step forward for the market development of end-of-life tyres.

“To have a strategy that quantifies the challenge and creates a cohesive framework for collaboration across multiple government agencies is a great achievement,” Liam says.

“It’s a way for government, industry and other partners to deliver tangible outcomes to the resource recovery sector and the community. I’m not aware of any national market development strategy of this nature having been prepared before.”

Not only does the strategy create a cohesive strategic framework for national market development, it provides the most comprehensive data set ever for Australian waste tyre generation and stock.

The vision of the strategy is for Australia to have a strong and diverse market for recovery of end-of-life tyres, with profitable outcomes for tyre-derived products that stimulate recovery and help prevent stockpiling and illegal dumping.

Its purpose is to pave the way for a national approach to market development for tyre-derived products, supported by state-based programs and underpinned by collaboration between government and industry. It’s a practice which has been growing each year as TSA helps develop more practical applications from its initial research and development projects.

GOALS
According to the strategy, 2015-16 data suggests domestic recycling doubled to around 44,000 tonnes – a 10 per cent recycling rate. Modelling suggests that if the opportunities in the report are fully realised, domestic recovery of end-of-life tyres could exceed 50 per cent by 2025-26.

Some of the key goals of the strategy are to enable growth in domestic recovery against 2015-16 baseline data, contributing to a future where no end-of-life stockpiling occurs, and recyclers can manufacture high-quality, fit-for-purpose tyre-derived products at scale to meet market demand. It also aims to reduce the likelihood of tyres going to landfill, in the absence of no other viable options of recovery.

“Quantifying the current size of the challenge, expected future growth of the task and identifying strategic pathways to more sustainable outcomes is central to achieving progress,” Liam says.
OBJECTIVES
Over the next five years, the strategy has five defined strategic objectives. The first strategic object is to support the development of the end-of-life tyre recycling sector, including a focus on products rather than wastes and improved price transparency for consumers.

Another objective is to address barriers to growth in key tyre-derived markets in Australia through early stage research for projects with national reach, supporting emerging markets such as crumb rubber explosives and links to sustainable procurement and rating tools.

Developing markets for tyre-derived products in road construction is the third objective, which aims to increase the uptake of sprayed seals in QLD, SA and WA and a national program to address barriers impacting crumb rubber asphalt.

The fourth objective looks at researching long-term markets for tyre-derived products in the rail construction sector through a long-term market entry program with industry and government partnerships and a focus on rail maintenance and new rail construction.

The final objective aims to see new markets in the use of tyre-derived products in civil engineering through the establishment of a national steering committee with a focus on tyre-derived aggregate, including early stage research and lab testing on this material and developing national specifications for key markets.

FOCUS AREAS
The strategy also identifies potential priority markets for increased consumption of locally generated waste tyres and details the collaborative framework needed to realise substantial market development opportunities.

Key focus areas include increasing the uptake of tyre-derived products in road, rail, explosive, polymer and civil engineering applications. Central to the objectives of the national strategy

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

The scheme is funded through a levy of 25 cents per equivalent passenger units (standard passenger car tyres, known as EPUs) on the importation of new tyres by voluntary member companies of the scheme.

In the 18 months leading up to the release of the National Market Development Strategy for Used Tyres, a vast majority of retailers in the country have become TSA accredited, driven by the uptake of the scheme from major tyre retail chains such as Bridgestone, Beaurepaires, Bob Jane and Tyrepower.

The National Market Development Strategy for Used Tyres strategy vision is that: “Australia has a strong and diverse market for recovery of end-of-life tyres with profitable domestic outlets for tyre-derived product that stimulates recovery and contributes to preventing stockpiling and illegal dumping.”

TSA’s internal audit and compliance program ensures all accredited tyre collectors and recyclers are fully audited for environmental, health and safety (EHS) compliance under the scheme.
was the need to quantify the potential long-term (10-year) uptake opportunity in these sectors which could account for around 150,000 tonnes per year – around one-third of the annual total of Australia’s waste tyres.

Domestic recycling of end-of-life tyres has historically been limited, according to the report, due to a lack of markets for tyre-derived products and strong international demand for tyre-derived fuel. Whole tyres/casings, baled tyres, shredded tyres, crumb rubber and steel are just a few products derived from recovery and recycling.

**OBSTACLES TO OVERCOME**

The report identifies market barriers to growth in the end-of-life tyre value chain as the economics of collection costs over the vast distances across Australia, the consolidation of products to ensure volume supply, current processing capacity, low barriers to competition and the limited product standards or specifications set across the market.

The report also notes waste to energy facilities that employ pyrolysis or gasification units are not yet being produced at commercial scale – a key market for tyre-derived product.

“As part of the collaborative market development framework, initiatives have begun to provide better information to government, industry, investors and the community,” Liam says.

Liam says one example of better information is underway in the tyre pyrolysis industry. Work being co-funded by TSA, Sustainability Victoria and the Queensland Department of Environment and Heritage Protection will result in an independent analysis of thermal processing technology for end-of-life tyres, with a focus on dedicated pyrolysis and gasification units.

“This work will provide a better understanding of emerging technologies, in one of the key focus areas of the strategy, for the benefit of all Australian states and interested businesses,” he says.

**FUTURE PLANS**

Liam says the influential report has already left a lasting impact on stakeholders. Initial positive signs of action include last year’s release by VicRoads of its *Country Roads – your insights, our actions* planning and strategy planning document that includes proposals to use more rubber-crumble products on Victorian roads.

The cross-jurisdictional working group has now transitioned into a National Oversight Group (NOG) which will formalise implementation of the strategy.

TSA will be involved in the NOG and all states and territories are eligible to join the NOG to ensure the strategy results in a nationally collaborative implementation.

Liam says TSA will continue to work with industry and government towards unlocking future potential for increased domestic recycling, adding that this will target the uptake opportunities of 50 per cent of total annual tyre generation identified in the report.

“The completion and release of the strategy is a tremendously proactive approach by TSA and the states to address a growing waste product with a clear eye to domestic solutions that are sustainable, innovative and offer valuable new uses for tyre-derived products,” he says.

“These are products that will create new jobs – turning a challenge into an opportunity.”

Stan Krpan, Chief Executive Officer of Sustainability Victoria, says the agency was immensely proud to have co-led the development of the strategy.

“Tyres are a challenge, but there are tremendous opportunities right across the resource recovery sector to expand what we’re already doing into new areas, so that landfill becomes a destination of last resort,” Stan says.

“While we are putting a lot of effort into research and development to demonstrate the benefits and uses of tyre-derived products, we all have to be prepared to use and specify these products, and generate the environmental, social and economic benefits of a circular economy.”
With the launch of its new Wetherill Park facility, in Sydney, slated for May this year, ResourceCo is continuing to expand its foray into the alternative fuels markets.

At full capacity, ResourceCo’s Process Engineered Fuel (PEF) facility is capable of diverting 250,000 tonnes of waste per annum, with a production line of 65 tonnes per hour.

Last year, the Federal Government’s specialist financier – the Clean Energy Finance Corporation – provided capital for a refuse-derived fuel facility, located in Wetherill Park, about 34 kilometres from the commercial business district. ResourceCo was also successful in securing an additional $5 million in grant funding from the NSW Environmental Trust under the Waste Less, Recycle More initiative.

The facility complements other ResourceCo alternative fuel facilities in Australia and Asia. ResourceCo supply PEF for use in cement kilns, which reduces a reliance on coal and other fossil fuels. Resources such as non-recyclable plastics, paper and cardboard are converted into the alternative fuel, which helps reduce emissions and costs for other businesses as it is cheaper than fossil fuels to use.

Ben Sawley, Chief Executive Officer – Sustainable Energy at ResourceCo, says demand for alternative fuels have been increasing as a result of higher landfill levies in states such as NSW, coupled with skyrocketing natural gas prices.

“Natural gas and electricity have risen dramatically and the long-term projection is this will remain high. It won’t go back to levels we saw 10 years ago,” Ben says.

According to the Australian Energy Market Operator’s 2016 National Gas Forecasting Report, the wholesale cost of gas will increase by 48 per cent by 2036. Increases are expected to be driven by rising production costs, combined with the effect of less...
domestic supply relative to demand. Industrial gas consumption is also forecast to decline by 2036.

At Wetherill Park, ResourceCo plans to take materials that can’t be recycled from recycling facilities and waste collectors, including plastics, cardboard, timber, paper and textiles and convert it into energy. With more than 10 years in the making, planning into the NSW facility started when the company decided to replicate other successful PEF facilities.

Materials with high embodied energy will be shredded, screened, and separated by magnets and air before being shredded again to size the items into a 50-millimetre piece of fuel. Once the process is complete, PEF will be transported to Boral Cement and exported overseas to Southeast Asian cement kilns, including Lafarge Holcim, one of the world’s largest cement manufacturers headquartered in Switzerland.

Ben says that at present, ResourceCo’s PEF facility can only supply to cement kilns, as the combustion process in cement kilns is clean and the exhaust gases do not need to be re-processed. According to the Cement Industry Federation, Australia’s cement industry comprises three main producers, including Adelaide Brighton, Cement Australia and Boral Cement. Ben says due to the smaller market in Australia the company’s future growth will be in Southeast Asia, where there are more than 100 cement kilns in the region. The Global CCC Institute indicates Southeast Asia’s main source of carbon emissions is from the cement industry, generating 57 per cent of the region’s emissions in 2007.

“The barrier at the moment is if you want to burn or consume refuse-derived fuel you have to be able to ensure the emissions from the combustion are clean, so you need to scrub the emissions. Using it in other waste to energy facilities requires scrubbing of exhaust gas and that’s an expensive process,” Ben says.

He says the technology does exist and is being used overseas, but it’s a matter of the private sector finding ways to make it work economically. The fuel is cheaper than natural gas, but the machinery is more expensive, he adds.

“What would be wonderful is if we had more Australian-based energy users who were able to find ways to use the high-quality fuel we make. It seems strange to us in an environment where energy prices are increasing we are exporting fuels, so it would be great to see more local users.”

“In many developed countries of the world, PEF, or other alternative fuels, can displace more than 50 per cent of cement kiln energy produced by fossil fuels in what is known as a substitution rate.” In terms of greenhouse gas emissions, Ben says hundreds of thousands of tonnes of carbon emissions will be avoided through diverting waste from landfill.

In the long term, Ben says ResourceCo aims to be a strong contributor to diverting waste from landfill and help other industries displace their use of fossil fuels with PEF.

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**Fast Fact**

ResourceCo has grown from a one-person operation in 1992 to more than 550 staff operating in 21 locations in Australia and South-East Asia. It has long-term partnerships with multi-national groups such as SUEZ, Lafarge and Adelaide Brighton Cement. The company recycles more than 95 per cent of incoming materials while processing more than two million tonnes of materials annually. ResourceCo also owns Tyrecycle, which is the biggest recycler of end of life tyres and conveyor belts in Australia. Tyrecycle converts rubber waste into quality tyre derived fuel and other value-added products and has well-developed overseas infrastructure to service direct trading relationships with various cement kiln operators in the region.

ResourceCo’s new Wetherill Park facility in its construction phase.
Suez exclusively trials Eurocargo

THE CHALLENGE OF HIGHER DENSITY LIVING AND ITS EFFECT ON WASTE COLLECTION LED SUEZ TO EXPLORE NOVEL SOLUTIONS IN THE AUSTRALIAN REFUSE COLLECTION MARKET, TURNING TO IVECO’S CUSTOMISED EUROCARGO ML140.

An increasing trend in Australia towards higher density living is impacting how waste is being collected.

According to Sustainability Victoria’s Statewide Waste and Resource Recovery Infrastructure Plan Amendment Consultation Draft, increasing multi-unit developments in some areas, particularly high-rise apartments, needs customised infrastructure and suitable and effective collection service models.

A shift towards apartment and townhouse living as well as a rise in gated communities such as retirement villages, means that larger, more traditional refuse collection vehicles are struggling with the more confined infrastructure, according to Mark Muttdon, Suez’s NSW Residential Operations Manager.

Mark says it’s changing the shape of the equipment needed to efficiently perform this task.

It’s this challenge that recently led Mark to approach IVECO in search of a solution. The end result is the customised Eurocargo ML140, developed in partnership between IVECO Australia, Suez and one of Australia’s leading bodybuilders, Bucher Municipal.

Mark says the Eurocargo offers a sound solution to a problem that is increasingly becoming common.

“Suez has a contract for a gated community in Port Stephens servicing 219 homes,” Mark explains.

“Being gated, the access roads are private and had gross vehicle mass limits. They didn’t want us going through in full size 6x4 compactors and risk ripping up the infrastructure.

“We did consider a 4x2 ACCO but it was still quite heavy and the dimensions

The dual control Eurocargo features a shortened wheel base.
still made it difficult to negotiate the tighter roads and dead-end streets. At this point, we approached IVECO and asked if there was something available through the Eurocargo platform – beginning our journey.”

The dual control Eurocargo features a shortened wheelbase (4185 millimetres) and is powered by a 5.9 litre, six-cylinder Euro5 (EEV) engine producing 280 horsepower and 1000 nanometres of torque. The engine is coupled to a five-speed Allison S3000 fully automatic transmission.

Mark says these compact dimensions provide excellent manoeuvrability and the lower gross vehicle mass required to work in the restrictive environments. He says Bucher Municipal’s Gen V Series II 14 cubic metre sideloader compactor body is also providing many benefits.

The body offers an optimum mix of payload (approximately five tonnes) while also benefiting from a strong, but lighter weight construction through the use of new steel products that are durable – allowing the bodybuilder to shed weight.

Marco Quaranta, IVECO ANZ Product Manager, says the Eurocargo will help meet changing market requirements.

“To get a full size compactor into higher density developments can be a challenge, in many cases the infrastructure just doesn’t accommodate larger trucks,” Marco explains.

Marco says the Eurocargo already has smaller dimensions than many compactors in the market, but with a shortened wheelbase of 4185 millimetres. He says this provides exceptional maneuverability while still accommodating the requirement for fitment of a 14 cubic metre compactor body and five tonnes of payload.

“You still get a good payload and being a more compact truck, there’s less stress for the driver to operate the vehicle in these confined environments,” he says.

Marco says IVECO worked closely with Bucher Municipal and Suez to develop the vehicle and the company is pleased with the outcome.

He adds that the availability of a Eurocargo to suit these more specialised collection requirements further increased the appeal of IVECO models in the waste market.

“IVECO has always had traditional waste collection covered with ACCO and Stralis being suitable for a wide range of rear, side and overhead collection applications along with hook bin work,” he says.

“Adding a Eurocargo to the mix will allow us to offer our customers a more complete overall solution and also provide an entry into new markets which are growing.”

Having been on trial for several weeks in February, Mark says driver feedback on the Eurocargo was positive while the truck also provided Suez management with some impressive efficiency gains.

“We were previously using a rear-loading compactor in this application with two operators, one driving the truck and the second operating the loader at the rear,” he says.

“With the Eurocargo, being dual control and having a sideloader body, it means we only need one operator, so it’s a lot more efficient.”

Mark says the size of the body is just right. He says the company is able to get the payload needed to service the 219 dwellings, drop the waste off, clean out the compactor and return to conduct the recycling.

“For the driver, the smaller dimensions of the truck and its phenomenal turning circle results in much less stress negotiating those tight streets,” he says.

Luke Aitken, General Manager of Sales at Bucher Municipal, says the collaboration between the three companies has yielded an impressive piece of equipment.

“Often it takes more than one head to find the best solution to a problem,” he says.

“Bucher Municipal has a long and successful history in working closely with both IVECO and Suez on a range of projects, so we were confident of a positive outcome and that’s what we got.”
The South Melbourne Market’s innovation has led to more than 600 tonnes of organic waste per annum diverted from landfill.

Butchers dice meat early in the morning as fruit and vegetable outlets turf their rotten tomatoes and cafes throw out their used coffee grounds – it’s just another day at the South Melbourne Market. But the waste produced at the market, which comprises green waste, fish offal, plastic milk bottles, oyster shells, coffee grounds and fruits and vegetables has to go somewhere, and at South Melbourne Market it’s being converted into valuable resources. The process is being spearheaded by the business’ Operations Coordinator/Assistant Manager Adam Mehegan, who has worked assiduously with the City of Port Phillip, which owns the market, and his team to make the business a cleaner and greener place.

Growing up in a time where paper bags were commonplace in grocery stores, Adam saw the rise of single-use plastic bags as an obstacle that needed to be tackled head on.

Now a father, Adam hopes to leave behind a legacy of sustainability for his children and the next generation. He’s at a stage where a program he helped implement is converting more than 150 tonnes of green waste per annum into a nutrient-rich compost product through a worm farm, along with approximately 437 tonnes per annum of food waste processed into compost via a dehydration unit. Overall it’s seen a more than 90 per cent reduction in organic waste volumes and inspired the production of two nutrient-rich, garden fertiliser products sold at the market.

The successful strategy was this year recognised by the Institute of Public Administration Australia’s (IPAA) Victoria Environmental Sustainability Award, along with the equally prestigious Environmental Sustainability Award at the 2018 LGPro Awards for Excellence.

But just how did it all come about? In 2014, Adam noticed the green...
waste trailers sent for processing were actually being taken to a pig farm. Being uncertain about the animal treatment practices there, Adam began investigating alternative ways to treat the waste.

“We started sourcing some ideas in using the green waste and I thought of worms because I had my own worm farm at home,” Adam explains.

“I then made contact with one of my colleagues down in the town hall who works in sustainability and he worked with Kassandra Deml, of Wiggly Recyclers, who was capable of producing it on a larger scale.”

Adam says the team went back and proposed a business plan to the board, which was approved, commencing the sustainability journey. The City of Port Phillip Toward Zero strategy targets an 80 per cent reduction in council waste to landfill by 2020, based on 1999 levels, so it was already focused on waste reduction.

Once the partnership with Wiggly Recyclers was agreed upon, the process of green waste conversion began in 2015.

After being sent out to the rural suburb of Truganina, Wiggly Recyclers mixes worm castings with mushroom compost. It places it into buckets and sends it back to the market to sell as soil fertiliser, with 50 cents of each sale donated to a charity. The buckets have a shelf life of more than 12 months.

“It took over six months before we got the first batch, but it’s getting faster because the worms are breeding. The more worms there are, the faster the consumption,” Adam says.

“It depends on the climate of the day. If it’s a really cold day, it’s going to be slow in regards to how the

“...Adam Mehegan, Assistant Manager at South Melbourne Market.
worms process the waste. But if they get ideal temperatures, then they will start to mow through the waste pretty quickly."

Despite the progress, the market still had a problem of 8.4 tonnes of organics, including fish offal and used coffee grounds, going to landfill. The next step for Adam was to investigate how to convert that and that’s when he discovered the Gaia Recycle machine distributed in Australia by Eco Guardians.

He says it took four months to build and the machine was up and running by February 2017.

Adam explains that part of the process was to reduce the cost of disposing fish offal as 200 kilos goes into the machine, which is mixed up with other waste used in food preparation and post-consumer waste produced by restaurants, cafes and the food courts. The Gaia processes 8.4 tonne of raw organic waste a week into one tonne of fertiliser.

“We’ve got a couple of store holders producing their own juice so a lot of orange peel will go into that and other waste streams. It’s streams that the worms can’t handle,” he says.

Adam says the Gaia Recycle machine process involves heating the waste into the machine twice a day to approximately 175 degrees Celsius for about nine hours – with a total of 600 kilograms of raw organic waste placed in.

The waste breaks down into a compost, branded SoilFood, and the moisture is extracted into tanks stored outside and used in irrigation. About 400 litres of water emerges from the fermenter to aid the composting process.

“The soil food is highly concentrated and high in nitrogen because of the seafood. As it is a dry product, we end up being able to bag it and sell it,” he says, adding that SoilFood has an endless shelf life.

Adam says contamination is prevented by clear instructions on the bin for businesses within the market, with sorting fees of $200 per bin for those that don’t comply with the rules.

The South Melbourne Market’s innovations didn’t stop there, as it also found a way to compress its polystyrene boxes into bricks, which are converted into a range of plastic products. These include CD cases, coat hangers, picture frames, toys and pens, stapler bodies and rulers. Some are used as alternatives to wood for products, such as interior decorative mouldings, or hollow foam blocks,
that can be filled with concrete to form walls with better sound and thermal characteristics than conventional concrete blocks.

“A machine in the loading dock breaks the polystyrene boxes down and compresses them into brick form. We used to bale it and the footprint was quite significant,” Adam says.

“Collection is about four tonnes per fortnight and we stack them onto pallets four or five high. Even through we’re getting more polystyrene through the market, the vehicle is coming once a month instead of three times a fortnight.”

The market also invested in an onsite bottle crusher, which crushes 240-litre bins of glass bottles and fills it up to an 80-litre bin. The market processes 15 tonnes of glass per annum, with 80 per cent recycled into bottles and 20 per cent used in road base as a paint additive.

Adam has been so pleased with the progress that he is now looking at recycling plastic and milk bottles in the market’s commingled recycling. The South Melbourne Market’s success has been demonstrated to school groups across Melbourne, piquing their interest in sustainability.

“We get some school groups on a Friday, so the students can be tired by the end of the week. I take them to the offal room, open up a bin full of offal and that usually wakes them up pretty quickly and gets them to pay attention,” he jokes.

“If I can get one or two students that want to push the idea, I’ve done my job successfully.”

He says the business model could be applied to other industries at a low cost, including schools and other markets, which could potentially rent or buy the machine.

“We’re the first market to have a worm farm with a project like this and we’re the first market to install the Gaia machine. Prahran Market has got on board which is fantastic, but I think there’s other markets in Australia that can follow suit.

“It’s really a shining example of what you can do when you work collaboratively. The City of Port Phillip have been amazing in allowing us to take this project on, but we know there’s still a lot more work to do.”

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**Fast Fact**

South Melbourne Market’s program led to 450 cubic metres of green waste processed annually, equal to more than 150 tonnes. Since 2015, it has processed a total of 600 tonnes.

Other areas of sustainability at the market include its 500,000 litre rainwater tank, which collects water from the rooftop car park. The water is used for wash down applications, including by florists and to flush toilets. About 10,800 litres of oil was collected from the market in 2016-17. Most is turned into biodiesel, which is used in the vehicles which collect it. Australian charity SecondBite also collect leftover fresh food from the market and redistribute it to people in need. Last year, the market gave away close to 24 tonnes of fresh food, which could feed nearly 50,000 people.
For 35 years, Haulaway has serviced the Australian waste industry, with three generations of supporting companies to reduce waste to landfill and boost recycling.

Richard Hilbert took over as Managing Director in 2001 from his father, and works with his two sons and nephew to provide Melburnians with a prompt and reliable collection service. To further enhance its service, the company recently purchased a Walking Floor Garbage Galosh trailer. Richard explains he first saw the trailer at a trade show in New Orleans, USA, and was impressed by its durability and ability to handle greater payloads in fewer trips.

“We saw it as an alternative to our trailers in its ability to handle the more heavy duty and aggressive materials we transport. We purchased one in late 2017,” he says.

Thinwall Trailers Australia is the exclusive agent for this particular trailer design, which have developed a close relationship with the Canadian company, Titan Trailers, a specialist manufacturer of all-aluminium bulk haulage trailers. Thinwall Trailers Australia imports and assembles Titan Trailers. The company aims to offer a durable product which can handle some of the most challenging waste streams, including sand, dirt, timber and glass, green, hard and wet waste.

Haulaway’s Walking Floor Galosh trailer is being used for commingled waste collection.
Thinwall Trailers Director Barry Fennell says the company specialises in premium trailers designed for productivity.

“The walking floors we have unload two to three times faster than other walking floors,” Barry says.

“They’re built to the standard we want and designed to maximise payloads.”

“They’ve proven to be popular. We gave a client a trial one for a week and couldn’t get it back for three weeks, he couldn’t get it off his driver. It was the best one he’d ever used,” he says.

The trailer is on the roads 24 hours a day, six days a week, so being able to save on time really helps, according to Richard. “The system cuts down 10 to 15 minutes per trip. We’ve actually managed to get an extra load done each day, which is imperative to staying competitive as a smaller business.”

The trailer is being used for commingled waste collection, but Richard says it may be used in the future for green waste and hard rubbish. The all-aluminium makeup of the trailer has also been great for stopping wet waste and organics from leeching out of the trailer.

“The design of the trailer allows for hard compaction of material, increasing density per cubic metre. It can stand up to hard compaction loading methods and we’re usually getting around 22 tonne in each,” he says.

Richard says one of the advantages of the trailer is its ability to process difficult waste streams such as sand, glass and dirt. “A standard trailer wouldn’t be able to handle those kinds of loads, they’d get chopped up in a couple of days. Those kinds of materials chew up moving parts like sandpaper and make it very difficult to get out. With the Walking Floor Garbage Galosh, it’s difficult for that to happen,” he says, adding that the build quality of the trailer is professional and is optimised for durability, especially when exposed to materials that would cause surface damage through abrasion.

Richard says the Walking Floor Garbage Galosh has been great for productivity, saving his drivers valuable time on the road. “We’ve modelled it for full remote control so the driver doesn’t even need to get out of the cab,” he says. “It even has a self-cleaning system, eliminating additional time spent previously sweeping out any debris.

The sweeper goes through as the load is dumped and there’s no unrolling the tarp either, everything is automated. There’s no manual to it with hydraulic doors, hydraulic back lids, and it pumps out a lot faster than our other trailers.”

Richard also says that the trailer eliminates a lot of occupational health and safety concerns. “We’re able to dump the load horizontally, which means there’s a reduced risk to the vehicle and driver. Not only does it give us some height clearance, but it’s much safer on uneven surface,” Richard says.

“It also gives us larger volumes with the safety of dumping the load, without having to tip the vehicle.”

Richard says Titan also manufactures some of the lightest weight hauling trailers for Australian industries. He says the trailer also looks impressive and fits well into a modern fleet easily.

“We’re very happy with the look of the truck and trailer system. It looks modern and has a well-thought out design. It’s a really durable build, with extra strength and a lot of thought put into reducing wear and tear.”

The trailer is fuel-efficient and has Richard’s drivers saying they’re great to tow compared to other trailers.

Richard says the after-sales support is fantastic. The trailer is still in early days, only being in use for three months so far, but the distributor has made sure they’re set up with everything they need.

“If we’ve had any problems, they’ve jumped to it and made sure everything was okay.”

With 39 trucks in Haulaway’s fleet and five walking floors, Richard has tentatively placed an order for another two Garbage Galoshes.

“Eventually, we’re looking to run a fleet of them here and make them our preferred trailer.”

The trailer eliminates a range of occupational health and safety concerns.
Fastening the pin

INFASTECH ENGINEERED FASTENING’S GLENN HEFFERNAN DISCUSSES HOW THE COMPANY IS HELPING WASTE TRANSPORTERS SAFELY SECURE THEIR LOADS IN A VARIETY OF CHALLENGING APPLICATIONS.

The PB3400 and PB2500 battery operated tools aim to eliminate production downtime.
A

ssisting truck and trailer manufacturing in the use of fasteners is part and parcel for Infastech Engineered Fastening.

The 60-year old company, which became Australian-owned in 2017, supplies fasteners and fastening systems to the truck and trailer industry. The systems support manufacturing from the chassis, through to curtain rails and all work associated with fixing panels to bodies in all types of materials.

Glenn Heffernan, Managing Director at Infastech Engineered Fastening, says he took ownership of the company last year to help support the local truck and manufacturing especially in the

Glenn explains.

many of these are distributed to the waste transportation industry as they customise them based on their own individual contracts.”

Infastech Engineered Fastening offers a range of products to suit customised applications. From its trademark Monobolt rivet, to its pin and collar system and a battery tool for breakstem rivets, the truck and trailer industry has a range of choices at its disposal.

“Where trailer panels meet the floor, manufacturers used to weld assemblies together, now waste transporters are using our product,” he says.

Glenn says the pin and collar product provides an ideal fastener for the operator. It comes in a range of sizes, including three by 16 inches through to five by 16 inches and a variety of different platings designed to suit the rugged industry of waste transportation.

“We can put a variety of platings on to protect pins and collars so that they do not rust over time,” he says.

“The collar gets swaged onto the pin with a pneumatic tool. It provides protection against vibration so that it will never come loose.

“There’s so much vibration in a truck and trailer which is why businesses are turning to the pin and collar set up rather than using standard bolts and nuts which tend to come loose.”

For those that don’t have a great deal of access to internal panels, or wish to eliminate a two-person process, the Monobolt multi-grip visible locked structural rivet offers an ideal alternative to the pin and collar. The Monobolt product provides a fully sealed joint to connect the panels and framework, is appropriate for a range of thicknesses and is suited to heavy-duty applications where safety and performance is crucial.

Monobolt rivets can be applied to strengthen metal to metal or metal to plastic and come in sizes 4.8, 6.4 and 10 millimetres and the option to select from materials such as aluminium, steel and stainless (304 and 316) to suit all environments.

To help install and secure the fasteners, Glenn says the company has ensured it offers all the latest technologies.

Fastening tools replace now traditional forms of welding, which assists with eliminating occupational health and safety costs, rework and cleaning – required processes involved with welding. He explains that traditional fastening tools are pneumatic and work via air compression, requiring more maintenance, which is why Infastech distributes a battery-operated rivet tool.

“The most traditional and internationally-recognised manufacturers of fasteners are AVDEL and POP and they recently joined forces to bring out a new battery-powered tools which is really exciting,” Glenn says.

“POP and AVDEL combined their more than 160-years of experience to offer the PB-2500 and PB-3400 battery-operated tool.”

Glenn says the major benefit to businesses using a battery-operated rivet tool is minimal production downtime, as the tools don’t require servicing like that of pneumatic tools and only a charge on the battery which takes one hour to fully re-charge.

“The PB-3400 is designed for the quarter inch Monobolt, which is commonly used in the trucking industry. There’s not many tools on the market that can do that as effectively as our POP tool.”

The battery-operated tool is also ideal, he adds, eliminating air hoses on the floor and extra costs to a business on tool service and repair, while allowing for repairs off-site.

As the exclusive distributor to Australia and New Zealand for Stanley Engineered Fastening systems, Glenn says the company is able to draw upon a wealth of sister company resources, including centres in Asia, the USA and Europe.

“We’re ISO9001 certified, an international standard used to certify products that meet customer requirements. We offer engineering support through a dedicated engineering and sales team and that’s where we differ from a normal nuts and bolt shop,” he says.

“We’re here to help cut costs in the manufacturing process, whether it’s finding a new way of doing things, consolidating parts, or improving their speed and quality, customers can count on Infastech Engineered Fastening to offer a high level of support and after-sales service.”

Moving with the times

WASTECH'S 25-YEAR ANNIVERSARY OFFERS AN OPPORTUNITY TO SHOWCASE ITS SUCCESSES, INCLUDING THE FIRST-EVER PERFORMANCE-BASED STANDARDS-APPROVED QUAD-QUAD ROAD TRAIN EJECTION BLADE TRAILER.

Solving its customer’s problems has remained Wastech Engineering’s ethos since its inception.

The story of Wastech started 25 years ago when two brothers Neil and Paul Bone, both diesel mechanics with waste and resource recovery experience, saw a gap in the service and repair market.

More than 25 years later, the company has developed into a $30 million organisation, specialising in custom engineered and manufactured solutions. Wastech Engineering distributes waste and recycling equipment across Australia and New Zealand. The number of employees has risen from five to almost 100 today, as the business began with only the two brothers and three factory team members.

The company has designed, manufactured and installed transfer stations, trailers and materials recovery facilities, while since that time adding waste chutes, repairs and a range of other service offerings to its diverse portfolio. In 2018, it classifies its ethos to “solve the customer’s problem” as stronger than ever, boasting employees across its engineering, manufacturing, design, sales, office and service sub-sectors.

One of its most proud offerings was developing the first-ever Performance-Based Standards (PBS) approved quad-quad heavy-vehicle combination for Cleanaway in 2016. While now two-years old, the quad-quad remains a Wastech industry staple as the largest trailer offered by the company.

The PBS scheme allows for the design of optimised truck and trailer combinations that can carry additional loads over conventional combinations. The Wastech team, which collaborated with Cleanaway and their nominated transport contractor KTrans, designed

The quad-quad aims to reduce transport costs to landfill by maximising payload.
and developed the quad-quads, boasting a payload of up to 54 tonnes. The quad-quads reach a total length of 32 metres and have a 94.5 tonne gross combination mass. Wastech also supplied the S8000X Compactor, which loads and compacts the waste into the trailer.

Darren Quin, Wastech National Product Manager – Major Projects, says the system was developed to challenge conventional methods of waste transport. The quad-quad aims to reduce transport costs to landfill by maximising payload, which in turn significantly reduces repairs and maintenance on equipment and its associated carbon footprint.

The trailers can carry up to 20 extra tonnes of waste in each of the trailer sets when compared to the old method of using top load trailer combinations.

The body design is fully enclosed, allowing the waste to be compacted at high pressure into the trailer which achieves the payload gains.

“Top load trailers generally don’t get any great compaction. All they can do is try to tamp it down with the loader bucket. This can cause damage to the trailer walls and floor planks if you’re not careful. We can achieve consistent payloads when using compaction,” he says.

It can also be more efficient through reduced load times and a tidier way of getting garbage from a transfer station into a trailer and to landfill. With the compaction trailers being a fully-sealed unit, it prevents any rain or vermin entering the trailers if parked up overnight.

Darren says a typical top loading trailer can take anywhere between 10 to 20 minutes to unload with a moving floor trailer. Even with substantially more waste on board, the six-stage telescopic ram positive can eject the load in less than five minutes – all without the driver having to leave the cab. The ability to operate the rear door and eject the load all from inside the cab gives drivers the benefits of safety, productivity and keeps the inside of the prime movers clean as landfills can be a wet and muddy experience.

As Wastech’s 25-year anniversary arrives, Darren says the company sees it as an opportunity to celebrate its successes and the quad-quad was one significant milestone out of many.

“Our diverse range of products will continue to withstand the test of time, while maintaining the ability to adapt to any changes in legislation and waste industry trends.”

Neil and Paul Bone saw a gap in the service and repair market 25 years ago.
Could China’s National Sword be our greatest gift?

CHINA’S BAN ON WASTE IMPORTS OFFERS CHALLENGES, BUT WITH EVERY CHALLENGE COMES OPPORTUNITY, WRITES BROOKE DONNELLY, CHIEF EXECUTIVE OFFICER OF THE AUSTRALIAN PACKAGING COVENANT ORGANISATION.

First came the Green Fence Initiative and now National Sword – China’s latest policy shift to limit the acceptance of 24 categories of recyclable materials. As China’s demand for our waste material continues to wane, there has been much speculation about how Australia will sever its dependence on the nation and take responsibility for our own waste and recycling.

It is undeniably a serious issue that we must address, but I firmly believe we are far from the tipping point and as the adage goes – with every challenge comes opportunity.

For me, the most immediate and perhaps the most crucial obstacle that has not been addressed is the risk of reduced confidence and participation in recycling. Some local councils calling for a reduction in waste going to recycling and recent news headlines touting the possible demise of our recycling industry have created a sense of fear and doubt, not only within the industry but among consumers as well.

It is our responsibility to ensure that the love affair with recycling continues – just as it should. As a nation we have accomplished so much over the past 30 years in kerbside
recycling. Today we’re recycling more of the waste we produce than ever before. In 2014-15 we recycled approximately 60 per cent of waste produced, compared to just 52 per cent in 2006-07, according to the Federal Government’s National Waste Report 2016.

To throw it all away now would be a grave mistake and I firmly believe that with the right policies and systems in place, we can create new opportunities which benefit both the environment and the economy.

As CEO of APCO, I’m excited by the fact that our organisation is in a unique position to help both industry and government navigate these challenges and find viable solutions. We are already rolling out several initiatives to address these issues.

In the long term, we have launched the APCO Packaging Recycling Label Program, which will directly contribute to delivering a smaller, cleaner packaging waste stream driven through reduced contamination and increased visibility to consumers.

In the medium term, we are reviewing the Sustainable Packaging Guidelines, to help business reduce the environmental impact of their packaging. We see this as an ideal mechanism for industry to introduce a standardised voluntary approach to recycled content in packaging.

In the short term, we are working with members to undertake an independent impact assessment to contextualise the “China issue” and develop both quantifiable metrics and a framework for navigating it for both industry and government. We are also encouraging all members to communicate with consumers to reaffirm the importance of recycling in Australia.

Aside from the work APCO is doing, there are a range of innovative programs such as REDcycle and many other end-of-life recovery programs, which are already contributing greatly towards recyclability, sustainability and waste reduction. Looking at REDcycle specifically, the soft plastics they collect and reprocess are turned into furniture for schools and public places across the country. What’s more, the reprocessing is all done here in Australia.

This shows us that recycling isn’t just beneficial to the environment, but highlights its important economic benefits as well. Research conducted by Planet Ark (So you think you can recycle report) estimates that for every 10,000 tonnes of waste recycled, there are approximately 9.2 direct full-time jobs generated. Importantly, these types of jobs are generally resilient in times of recession. They also provide fantastic opportunities for social enterprises such as Resource Recovery Australia and Soft Landing to offer jobs for our long-term unemployed in regional and metropolitan Australia. These outcomes only further strengthen the case for expansion and increased capacity for the industry locally.

We can also look to other traditional Australian industries and how they are adapting to change for inspiration. In manufacturing, for example, local organisations are rapidly incorporating new technologies and processes to enhance their competitiveness and create new and exciting markets.

How can we take some of these learnings and apply them to the waste and recycling industries, safeguarding them and the environment into the future? The potential value of a circular economy created locally is $26 billion, as estimated by the World Economic Forum in 2015. An opportunity of this size should not be ignored.

Creating a circular economy and end market for our own recycled materials should be our goal, and in order to achieve this we need to have clean recycling streams and reduced contamination. With this important issue now thrust into the public spotlight, now is the time to create new opportunities through greater industry and government collaboration and a defined focus.
Australia’s future in UK’s past

WITH THE UNITED KINGDOM STEADILY INVESTING IN WASTE TO ENERGY, WILLIAM ARNOTT UNCOVERS WHAT LESSONS AUSTRALIA COULD LEARN FROM UK PROJECTS.

Australia faces unique challenges when it comes to waste management. Geographically as a country, there is low population density and the entirety of its population could fit into California, almost twice over.

According to the Victorian Environmental Protection Authority (EPA Victoria), the landfill levy for industrial waste disposal jumped from $44 to $58.50 a tonne from 2011 to 2014-15 – a 33 per cent increase. At the same time, energy prices have also been rising, according to the Australian Energy Market Operator.

One possible solution is turning waste into a source of energy to tackle both issues at the same time.

The Australian Waste to Energy Forum was a chance for the movers...
and shakers of both the energy and waste industries to come together and listen to industry experts about the potential to turn waste into resources.

There are four main forms of waste to energy: landfill gas harvested from decomposing matter, anaerobic digestion of organic waste in oxygen-low environments, extracting refuse-derived fuels from non-biodegradable plastics and incinerating waste in thermal treatment.

Thermal treatment may be an attractive solution, as it can offer another waste to energy solution out of many others to tackle residual waste, but it has not been implemented in Australia at scale.

The UK has seen a significant increase in its use of thermal treatment plants. With rising landfill levies that reach up to $153 per tonne and a push from the UK Government to move away from landfill, thermal treatment has become a popular alternative.

**THE UK SITUATION**

Dr Stuart Wagland, Senior Lecturer in Energy and Environmental chemistry at Cranfield University, is an expert in the study of resource recovery and the energy potential of UK waste streams.

His research on the UK’s waste management helped encourage the UK Government to invest in a demonstrator-scale advanced thermal treatment facility. He has also discussed the possibilities of potentially using this technology on a smaller scale in the UK.

There are two major types of thermal treatment facilities in the UK. The first are large scale combustion facilities that can handle a significant amount of waste diverted from landfill.

Stuart says larger facilities face unique challenges as they are dependent on bigger quantities of waste, leading to increased transport costs.

He also says land owners and local residents don’t want to live near existing and new facilities.

The other types of facilities are smaller advanced thermal treatment plants. Stuart says they have smaller energy outputs but have the benefit of being lower profile, adding that they can fit into existing infrastructure better than the larger scale facilities.

Stuart says one of the reasons that the UK has had such a major push towards waste to energy is its political climate, which has seen landfill diversion become a driver towards sustainable waste management.

High landfill levies and government incentives to find renewable sources of energy has seen the waste to energy industry turn into a growth market.

Stuart says these incentives have created an environment that makes certain waste to energy technologies appealing.

“Because all energy from anaerobic digestion is renewable, companies are able to receive incentives from the government.”

He says this incentive has helped boost the attractiveness of anaerobic digestion in the UK, but there is now significant competition in the market, with gate fees becoming more competitive.

“In the UK, we have around 300 anaerobic digestion sites now all competing for feedstock. Without incentives, there could be mass closures,” he says.

The UK Government has also been allotting funding towards gasifiers and other treatment plants.

“One major driver that has helped the UK in this space is the fact the UK Government has been proactive in supporting these projects.

“One gasifier in the UK, situated on the Isle of Wight, but no longer operational, received funding through a new waste technology demonstrator program,” Stuart says.

He says it is not as simple as merely building a bigger gasifier when scaling up production for advanced thermal treatment. Stuart adds that this approach has not proved successful in the UK and lead to high-profile setbacks.

“We’ve seen people in the UK that have tried to build a large gasifier, which failed.

“These kinds of facilities don’t work in the UK, so it’s highly unlikely they will work in an Australian context.”

Stuart says Australia’s needs differ greatly from the UK’s, but there are still valuable lessons to be learnt about the use of waste to energy in an Australian context.

“The population of Australia is a lot lower and more spread out than that of the UK,” Stuart says.

“Australia has proximity challenges that would impact a large-scale incinerator. One might work in places like Sydney, Melbourne or Brisbane, but for smaller, regional areas, they just wouldn’t be worth it,” he says.

“In regional centres like Ballarat, with populations of around 100,000,
advanced thermal treatment facilities could work well. They could benefit with the introduction of these smaller scale facilities.”

Stuart believes that there is no one-size-fits-all technology that can be rolled out. There are too many variables and niches that the waste and energy industries need to fill. This means that advanced thermal treatment and large-scale facilities aren’t necessarily rivals, instead they work best in tandem.

There are even possibilities that a network of thermal treatment plants could help to fuel a larger city like Sydney or Melbourne. “One of the upsides of the technology is that you can have more than one facility servicing an area. With small-scale facilities, you can have more of them and closer to residential areas, but they do cost more to set up. In the end, you offset the costs of the start up with the reduced transport fees,” Stuart says. “For example, you could have a centralised incinerator that handles most of the waste from Sydney, with smaller suburbs being serviced by the smaller facilities.”

AUSTRALIAN FUTURES

Stuart believes one of the best things Australia can do is to take the leap of faith into thermal treatment. “You need an incinerator first, which is a globally proven technology, just to prove that it’s a viable commercial prospect. It’s a proven technology elsewhere in the world and when you get the right environment and waste stream, it’s no problem,” he says.

“Financing is the difficult part. It can be hard to find someone willing to take the plunge and financing gasifiers is even more difficult. At this point, it is best to take the easier route and start small so the industry can find its feet.”

Stuart says thermal treatment is growing at a rapid pace and the future can be hard to predict. He says this exponential technological growth could lead to amazing scientific discoveries that could revolutionise both the waste and energy industries. “If you asked me where I thought the technology would be five years ago, I would have gotten it wrong. The whole system is changing and evolving so quickly. “We have artificial intelligence creeping into our waste management, which could lead to a faster and more effective mechanical sorting plant system. We might find that in five years we’re producing hydrogen from waste, it’s difficult to say what the future holds.”
ODOUR MANAGEMENT AND DUST CONTROL

Site managers are constantly dealing with noxious odours and dust. *Waste Management Review*’s June edition hones in on the ongoing monitoring required and how this is supported by odour treatment and dust control solutions providers – in their efforts to ensure only the highest health and environmental standards are maintained.

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www.wastemanagementreview.com.au
Metropolitan Melbourne’s booming population offers both a challenge and opportunity for how the city manages its waste in the future.

By 2051, the city’s population is projected to rise up to eight million people, up from 4.5 million in 2015, according to the Victorian Government’s *Victoria in Future* 2016 report.

The Victorian Government’s statutory authority, the Metropolitan Waste and Resource Recovery Group (MWRRG), estimates waste volumes will grow by 63 per cent by 2042, meaning the industry will have to manage 16.5 million tonnes of waste per year.

In response to this forecasting, the MWRRG released its Metropolitan Waste and Resource Recovery Implementation Plan in 2016, which sets out a blueprint to shape Melbourne’s network of waste and
resource recovery over the next 10 years, with a 30-year outlook. The objectives of the plan are to reduce waste to landfill, increase organic waste recovered, deliver community, environmental and economic benefits and plan for Melbourne’s growing population. It supports statutory authority Sustainability Victoria’s Statewide Waste and Resource Recovery Infrastructure plan within a metropolitan context.

MWRRG has been funded by the Victorian Government’s Sustainability Fund, collected from the state’s landfill levy, to prepare an advanced waste and resource recovery technologies business case and procurement strategy to tackle residual waste going to landfill. No decisions have been made yet and the procurement strategy, which supports the vision laid out in the metropolitan implementation plan, will be principally focused on procuring solutions to manage residual municipal solid waste.

**THE STRATEGY**

Rob Millard, MWRRG Chief Executive Officer, says the organisation believes it can boost Melbourne’s recycling rate from its current level of 73 per cent to 80 per cent by 2026. One of the key transitions towards boosting resource recovery is recovering residual waste – waste that cannot be avoided and which is left over after hard recyclables and organic materials (food and garden waste) have been removed through source separated kerbside collection and treatment systems.

“The work being undertaken by MWRRG in the development of a business case and procurement strategy is technology agnostic. Waste to energy is one potential solution but not the only one being considered,” Rob says.

With more than 30 years’ experience working in local government, Rob has developed a robust understanding of the ins and outs of council, while also knowing how to work with all government stakeholders, having worked in the state sector for 10 years and been involved in service and delivery contracts.

“The technologies need to reflect the (respective) council’s requirements and that will be determined in a number of ways, including affordability and ensuring residents are comfortable with the environmental and social outcomes,” he says.

“We will work with councils to determine their requirements as part of the business case process to inform the development of the procurement specification.”

Paul Clapham, Director of Procurement and Contracts at MWRRG, brings a strong understanding of complex resource recovery technologies, having led a number of large-scale waste to energy technologies in the UK.

“Achieving success is about having an understanding of getting stakeholders on board to substantiate the evidence base. Ultimately, if we want industry to invest in alternative waste treatment infrastructure, they need good information to make decisions,” Paul says.

“We are recommending councils take an outputs-based requirement in terms of their needs, rather than specifying the technologies. We’re leaving it open for councils to make up their own mind, but we are providing strong emphasis on technologies that are proven in scale.

“We are fortunate to be able to look to other parts of the world that have had a long history with alternative waste treatment technologies and learn from them.”

Rob says the business case phase is scheduled for completion in June of this year. It will include a regional business case as well as a cluster business case for groups of councils interested in going to market with an alternative waste treatment solution. Clusters of councils, which comprise metropolitan areas such as Melbourne’s south-east, inner, north and west, will have the option of entering into public-private partnerships and in the long-term potentially self-funded infrastructure.

“We will facilitate and do the contract documentation and go to market, so we basically act as the principal of the contract,” he says.

As MWRRG facilitates group procurements on behalf of local government, the Department of Environment Land and Planning will enable the policy and land use planning framework. At the same time, the Environment Protection Authority Victoria will regulate the operations and impact of any advanced treatment facility.
Rob says the south-east is likely to be the first cluster that will go to market later this year, with the inner and north-west councils likely to go to market at a later stage. “We’re on track to go to market with the first cluster and we believe there will be a number of cluster contracts after,” he says.

MWRRG has plans to work with local government and industry to ensure that the amount of residual waste going to landfill in 2026 is no more than that which was sent to landfill in 2015. It plans to achieve this through resource recovery infrastructure that can manage 500,000 tonnes of waste per annum through an integrated network of resource recovery facilities that will treat food and garden organics and residual waste.

**PLAN FOR NO NEW LANDFILLS**
The Metropolitan Implementation Plan includes a commitment to not schedule any new landfills before 2026. This means that new resource recovery infrastructure will be required to divert waste from landfill.

“Our current network of landfills meets our needs if we start building these other facilities. If we can continue this momentum we won’t need to build another landfill,” Rob says.

The current business case project is designed to inform a program of infrastructure procurement for local government that aims to deliver new infrastructure capacity by leveraging investment from the private sector. MWRRG will monitor its progress and review the region’s landfill capacity requirements in 2019.

**BOOSTING THE ORGANICS NETWORK**
In metropolitan Melbourne, about 42 per cent of municipal solid waste and commercial and industrial waste sent to landfill is food and garden organic waste. The implementation plan aims to reduce the impact of organics in landfill by recovering more of this waste through an advanced processing network.

“In 2010-11, EPA Victoria closed a number of organics facilities and we lost 50 per cent of our processing capacity because the facilities couldn’t meet the necessary environmental emissions requirements. At the time, MWRRG’s role was to provide overflow arrangements to keep organics processing going in Melbourne.”

Rob says since then, MWRRG has been working with clusters of councils to establish new facilities, having gone to market and securing contracts with a range of service providers.

“You’ve got public organisations such as Yarra Valley Water looking at a second anaerobic digester so we’re moving in the right direction with food and garden waste,” he says.

The infrastructure is building, he says, it’s now just a matter of spreading the word to the major waste generators.

“One of the major roles we have is having those conversations with the waste generators, including the retail and hospitality sectors to get them to understand the opportunities they have to become a greener business rather than taking it to landfill.”

**LAND CAPACITY IN METRO MELBOURNE**
Planning for waste and resource recovery infrastructure is inherently linked to land use planning and transport, according to the
implementation plan. Some of the challenges of land use planning include balancing the need for more housing and essential community infrastructure – the results of population growth.

“Waste to energy facilities or alternative waste treatment facilities are very much industrial facilities, so there are a number of industrial sites around metropolitan Melbourne or country Victoria that are potentially available,” Rob says.

Rob says part of the project is looking at what is the criteria of assessing a piece of land, including for transport, zoning, close proximity to incentive areas and areas that could take offsets such as energy or electricity from those facilities. As population growth can lead to urban encroachment, he says, it is important that state and local government work together to ensure that suitable sites are available for essential waste and resource recovery infrastructure.

The Victorian Government’s Department of Environment, Land, Water and Planning is looking at releasing a Waste to Energy policy, expected mid-year. It follows consultation in November and December last year on possible options that could be adopted in the policy.

MWRRG held its own engagement forums with industry in November of last year which were attended by 42 different organisations. Industry recommended that government should work to remove grey policy areas and barriers, such as considering the use of the Sustainability Fund, which is supported by the landfill levy. It also recommended a smooth procurement process which meets realistic timelines and engages with industry, financiers, governments and communities.

“MWRRG anticipates that landfill gate fees will escalate naturally because limiting the amount of landfill that is available will have an impact on the gate fees over time,” Paul says.

**THE IMPACT OF THE CHINA WASTE IMPORTS BAN**

The recent shock to the recycling industry through China’s ban on 24 categories of solid waste imports with 0.5 per cent contamination will not interfere with the rollout of the plan, Rob adds, as he pinpoints the problem as a market issue and not an infrastructure one. Nonetheless, he adds that the impact of the ban on recycling and processing will be a factor in council decisions when it comes to introducing new technology solutions as part of an integrated waste management approach.

“There might be an increased cost of service in the short to medium term to achieve this, but with the market wanting to be more self-sufficient and not so reliant on overseas exports into the future, hopefully we’ll have a more resilient and a more sustainable industry,” Rob says.

Paul says the other main takeaway from the China issue is that future contracts for recycling, but also those for the recovery of residual waste, need to have a proper understanding of the risk elements and allocation of risk between the various parties in a contractual sense.

“Part of the problem with the current recycling set up is a lot of the risk has been placed on the contractor, which ultimately comes back on local government and residents when markets begin to fail,” Paul says.

Overall, MWRRG’s 10-year plan is part of an integrated waste and resource recovery strategy, as MWRRG still believes that transfer stations, materials recovery facilities and composting facilities will play a key role in processing materials, while landfills will continue to manage waste that can’t be viably recycled.

“We don’t want to go back on the work that’s been done in the last 20 years in terms of recycling – with hard recycling and organics. We want to maintain those opportunities and work with councils to put them on a sustainable footing,” Paul says.

### COMPARING TECHNOLOGIES

<table>
<thead>
<tr>
<th>Technology</th>
<th>Track record</th>
<th>Constraints/opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirty materials recovery facility</td>
<td>Limited track record on municipal solid and commercial and industrial waste</td>
<td>Could be part of a pre-sort at a landfill</td>
</tr>
<tr>
<td>Mechanical biological treatment</td>
<td>Strong track record in Europe</td>
<td>Serious challenges for organics from mixed waste</td>
</tr>
<tr>
<td>Combustion</td>
<td>Very strong track record worldwide</td>
<td>Political/community sensitivities</td>
</tr>
<tr>
<td>Advanced thermal</td>
<td>Limited track record</td>
<td>Generally require a prepared fuel</td>
</tr>
<tr>
<td>Combined solutions</td>
<td>Increasing number of facilities worldwide</td>
<td>Can build in flexibility at a regional level</td>
</tr>
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Source: MWRRG
The AORA Annual Conference is well established as the principal conference in Australia for the recycled organics industry. Each conference is a forum for education, discussion and networking.

It features workshops, presentations, a gala dinner, networking function and industry tours. This is an opportunity to gain insight to the latest achievements in the organics recycling industry.

This event will provide industry stakeholders with access to prominent experts in the field of organics recycling as they share their expertise and knowledge, demonstrate their apparatus and techniques and showcase their innovative ideas. It will also discuss...
the latest developments and issues in organics recovery.

The theme for this year’s conference – Recycled Organics - The Circular Economy in Action – will explore user experiences in using recycled organics for soil health, as well as considering its risks and contamination management.

TWO OF THE PRESENTATIONS

Meet the keynote: Professor Ramani Narayan.

Ramani Narayan is University Distinguished Professor at Michigan State University, USA, in the Department of Chemical Engineering and Materials Science. Professor Narayan will speak in the opening keynote session on certified compostable polymers and their role in organic diversion through global best practices.

Dr Narayan has 153 refereed publications in leading journals to his credit, 28 issued patents and he has edited three books and one expert dossier in the area of bio-based polymeric materials. His research encompasses design and engineering of sustainable, biobased products, biodegradable plastics and polymers, biocomposites reinforced composites, reactive extrusion polymerisation and processing, and studies in plastic end-of-life options such as biodegradation and composting. It involves developing carbon and environmental footprint of biobased and biodegradable plastics and products using biocarbon content analysis (ASTM D6866) and LCA (life-cycle assessment) methodology.

Presentation highlight: The Cooperative Research Centre for High Performance Soils (Soil CRC) is bringing together scientists, industry and farmers to find practical solutions to Australia’s underperforming agricultural soils. Underperforming soils cost Australian farmers billions of dollars a year in lost revenue.

The Soil CRC therefore aims to enable farmers to increase their productivity and profitability by providing them with knowledge and tools to improve the performance of their soils.

It is the biggest collaborative soil research effort in Australia’s history, with eight universities, three state government agencies, 19 farmer groups and a range of industry partners. It is funded until 2027 by the Federal Government and its 39 partners to deliver outcomes identified by farmers as being critical to the success of Australian agriculture.

Four programs will deliver these outcomes: Program 1 – investing in high performance soils, Program 2 – soil performance metrics, Program 3 – new products to increase fertility and function and Program 4 – integrated and precision soil management solutions. Program 3, with its focus on creating new soil amendments and delivery mechanisms, is most relevant to the organics recycling sector. This program proposes to deliver new organic fertiliser products to meet fast-growing market demand, new materials to address surface and subsurface soil constraints and effective delivery mechanisms for beneficial microorganisms to plants.

The Soil CRC is led by Chief Executive Officer Dr Michael Crawford who has more than 25 years’ experience in extension, research and science management in areas related to soil science, farming systems and natural resource management.

He has operated at senior levels of government and research management, worked with grower groups and farming communities, and has strong relationships with relevant industry stakeholders, universities and government departments.

The 2018 AORA Annual Conference will be held at Hotel Jen Brisbane from 2–4 May 2018.

For more information visit: www.aoraconference.com.au

Fast Fact

A new feature of the conference this year will be an Equipment Demonstration Day on Wednesday, 2 May 2018. It will allow attendees to see grinders, screeners, turners and other equipment in operation and meet with manufacturers, see the equipment up close and compare different models all in the one place.

Sponsorship and exhibition opportunities are also available at the event. Attracting sector leaders, decision makers, management, scientists and researchers as well as consultants to the industry, the AORA Annual Conference offers the opportunity to showcase the latest equipment and services in a face-to-face environment to a targeted audience.
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Don’t let this recycling crisis go to waste

ALEX SERPO, POLICY OFFICER AT THE NATIONAL WASTE AND RECYCLING INDUSTRY COUNCIL, EXPLAINS FIVE BENEFICIAL RECYCLING PROGRAMS THAT SHOULD BE IMPLEMENTED AT SCALE IN RESPONSE TO CHINA’S NATIONAL SWORD PROGRAM.

Inside every crisis is an opportunity, and the Chinese ‘National Sword’ program is no exception.

For those not across the facts, allow me to first offer some background. In July 2017, China notified the World Trade Organization that it planned to effectively ban imports of 24 types of scrap, which its environment ministry at one stage referred to as “foreign garbage”. This program is part of National Sword – a customs inspection program launched in February, 2017.

According to a technical report from the International Solid Waste Association Globalisation and Waste Management Task Force, China received 56 per cent by weight of global scrap plastic exports in 2014. Meanwhile, the Australian Bureau of Statistics estimates that 64 per cent of Australia’s waste paper and cardboard and more than 60 per cent of our plastics go to China, either directly or via Hong Kong. So we are very much dependent on China for recycling.

The implementation of the National Sword program was brought forward by the Chinese Government with little warning. It made large changes to market conditions. The program is putting strong downward pressure on prices for recycled materials - which means materials recovery facilities (MRFs) can’t provide the same value to its clients. The price changes are dramatic.

In some cases, the price for paper has fallen from $250 per tonne to $60 or even less. The price of mixed plastics has fallen from around $300 per tonne to $50 or less. Glass has effectively become worth $0 and is either being stockpiled or given away to make road base for the cost of transport. In essence, the price of a ‘bin’ or commingled recycling has fallen by anywhere between 50 to 95 per cent.

So let nobody be confused – this is a crisis. Without sudden action, kerbside and commercial recycling could be shut down in the worst affected regions.

Speaking about the formation of the United Nations following the Second World War, Winston Churchill said: “never let a good crisis go to waste”. If he was alive now, perhaps he would say ‘don’t let a recycling crisis go to waste’. With this spirit in mind, here are five beneficial programs which could be created out of this challenge.

1) An opportunity to stimulate fuel manufacturing in Australia

In between landfill and re-manufacturing is fuel manufacturing. Mixed kerbside materials can be turned into pelletised, high calorific fuels. These fuels can be used as a low cost, low pollution alternative in cement kilns and other energy generating facilities. As we use more fuel than packaging globally, these markets are more robust. Fuel manufacturing is an important part of the circular economy and it’s essential that we don’t let the perfect be the enemy of good. In other words, let’s not push the industry towards an impossible perfect and get nowhere and instead accept the good.

SUEZ-ResourceCo's process engineered

Alex Serpo.

Fast Fact

The NWRIC is an organisation working to create a cohesive national vision for Australia’s waste management and recycling industry. It was formed in Sydney on February 13, 2017. Collectively, The council’s founding members operate the majority of Australia’s private sector waste and recycling assets. The council’s members are Alex Fraser Group, Cleanaway, J.J. Richards and Sons, Solo Resource Recovery, SUEZ, Toxfree, REMONDIS, ResourceCo and Veolia.
fuel plant in Wingfield, South Australia is the type of infrastructure we need.

2) **Container deposits schemes must work for and not against MRFs**

NSW has just introduced its Container Deposit Scheme (CDS), Return and Earn, with Queensland to follow in 2019 and Western Australia likely in 2020. This means CDS schemes will cover every Australian jurisdiction except Victoria and Tasmania.

Container deposit schemes can work for or against MRFs, with industry initially questioning the scheme for NSW on the basis that it may undermine existing kerbside recycling programs. The obvious answer to this problem is to ensure that cash for can schemes work for and not against MRFs.

CDS’ work against MRFs when they effectively ‘compete’ with MRFs because they provide a cleaner stream of recycled materials and they result in picking of kerbside bins which reduces their overall value to a recycler.

CDS’ work for MRFs when the MRF operators can claim the deposit on incoming bottles (not local government), making them extra income and ‘picking’ of recycling bins is kept to a minimum.

3) **It’s time to talk about contamination**

Now is the time to implement new action plans to reduce contamination. Luckily, we have a new national program ready to go – it’s called the Australasian Recycling Label (ARL). If adopted, the ARL means that what can and can’t be processed by MRFs will now be determined by an independent umpire. It’s a good example of many new source separation initiatives which are ready to go.

4) **Let’s put those levy funds to work**

Landfill levies are substantial and have been getting larger, meaning state governments have banked up big capital. For example the Municipal Association of Victoria estimates that the Sustainability Fund created by landfill levies, sat at $466 million as at 30 June 2016. Meanwhile, landfill levies in Australia are expected to raise more than $1 billion in 2018. Some of these funds should be redirected to the MRF sector as a response.

To deploy these funds effectively, the NWRIC has made two suggestions. Firstly, that all state and territories develop 10 and 30-year waste and recycling infrastructure plans. We’re pleased to see that Victoria and SA have now done that. Secondly, that levies are deployed effectively and fairly. One way to do this is to deploy levy funds via a national ‘recycling bank’, which could operate in a similar manner to the Clean Energy Finance Corporation. This would see the government offer recyclers low or no-interest loans to fund new infrastructure.

5) **Now is a golden opportunity to stimulate domestic re-manufacturing capacity**

Ultimately, long term recycling will depend on establishing domestic demand for recycled materials. Having sat through multiple ‘crisis’ meetings with industry and government, it has become clear that China has permanently changed its appetite for accepting contaminated foreign waste, but we can still sell clean material.

Therefore, if we want a long term recycling industry in Australia it must be built off the back of domestic demand. Luckily, governments are ready to provide capital and recyclate has never been cheaper. So if you’re thinking about setting up a domestic re-manufacture business, now is the perfect time.
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