NWRIC’s Rose Read explains why the industry is pushing for national leadership.
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VISIONARY POLICY
The National Waste and Recycling Industry Council CEO Rose Read highlights the association’s priorities in 2019 and its long-term response to major national issues affecting the industry.

“NOW MORE THAN EVER THE INDUSTRY MUST WORK TOGETHER WITH THE STATE AND FEDERAL GOVERNMENTS TO FIX THE REGULATORY BARRIERS AND MARKET CHALLENGES THAT ARE IMPEDING THE INDUSTRY TO INNOVATE AND ADAPT TO THE DYNAMIC NATURE OF THE GLOBAL MARKETS WE LIVE IN.”

-Rose Read, National Waste and Recycling Industry Council CEO
AS WE MOVE INTO A NEW YEAR, THERE WILL BE A FEW NOTABLE developments to watch closely.

The Victorian Government’s long mooted e-waste ban to landfill will take effect in July 2019. With funding to go to more than 130 e-waste collection and storage sites, there will be a number of new expansions to watch that boost our domestic capabilities in batteries and other electronics.

The Federal Government’s long awaited review of the Product Stewardship Act remains on the table, despite the government’s initial plans to present the findings to the minister in mid-2018 and then changes implemented and regulatory amendments undertaken in 2018-19. With an election on the cards for May, it remains to be seen what will come of the review.

After the Federal Government’s Department of the Environment and Energy issued a statement indicating a consensus was reached on a national action plan for the National Waste Policy, Environment Minister Melissa Price issued a carefully worded release claiming state and territory ministers “walked away from solid targets on Australia’s recycling and waste”.

The next meeting of environment ministers in the coming months is expected to address a national action plan with appropriate funding, “robust targets” and milestones, according to the minister’s agreed statement. Hopefully the issues will be resolved, as what would seem to be a fairly conservative debate, which would warrant bi-partisan support, unexpectedly faced disunity.

In other news, Queensland’s waste levy is now penned to start on 1 July, 2019, after changing dates from 4 March, and now set to be $75 a tonne instead of $70. Increased investments in recycling from the waste industry are bound to emerge, amid the standard debate as to whether sufficient proceeds of the levy will be re-invested into the industry.

The challenges of council planning for the levy and its impact on costs will need to be budgeted by local governments ahead of time. While council costs will differ for municipal and regional councils, the Queensland Government has committed $32 million in advance payments to support the transition. Last year, the Local Government Association of Queensland praised the delay of the levy.

Industry associations such as the Waste Contractors and Recyclers Association of NSW and the Waste Management and Resource Recovery Association of Australia have also slammed the EPA’s decision to ban mixed waste organics on agricultural land in NSW. Will the decision be restored?
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Nominations for the widely anticipated Women in Industry Awards are now open for 2019.

As a media partner to Women in Industry, Waste Management Review is encouraging leaders in the sector achieving excellence in the waste and resource recovery to put their name forward as a nominee.

The Women in Industry Awards recognise outstanding women from across the mining, engineering, manufacturing, road transport, logistics, infrastructure, rail, bulk handling and waste industries.

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

Juliet Maynard, winner of the 2018 Safety Advocacy Award, said that the Women in Industry Awards provide great "recognition of the impact women are having not just in our business but also in our industry".

Julie Russell, of Russell Transport, said that the Women in Industry Awards provide a forum or a voice for women to share, challenge and measure themselves.

"Having a community that understands you, where you have come from and the challenges you have faced – because they have also experienced similar – helps give you strength and the drive to continue on your own journey," she said.

Reflecting on taking home the Social Leader of the Year Award in 2018, April Whittam, of Aurizon, said she was taken aback when her name was announced.

"My fellow Women in Leadership nominees in the category are outstanding in their fields and their contributions to their communities exceptional. Upon reflection, winning the award has been two-fold. Firstly, it has meant that the work that I contribute on a daily basis is having a positive change in our communities and the strategy and programs are well regarded and effective.

"Secondly, I was honoured winning the award celebrating Women in Leadership. The mining, transport, logistics sector is predominantly male so to stand out in a field that I am passionate about has been both very humbling and rewarding," she said.

Gita Pendharkar, of Melbourne’s RMIT University, Winner of Mentor of the Year in 2018, said that the award was a special achievement for her as it was highly competitive.

"It is an excellent recognition of my 26 years of hard work of teaching, mentoring and academic services to the community," Ms Pendharkar said.

"Recognising capable and successful women in various industries (especially traditionally male-dominated ones) is an excellent step towards promoting gender diversity in Australia and these awards are a great platform to achieve this. I would like to give thanks to the organisers, sponsors and everyone involved in making the Women in Industry Awards a success."

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

Nominations are open in the following categories:
• Social Leader of the Year
• Rising Star of the Year
• Business Development Manager of the Year
• Industry Advocacy Award
• Safety Advocacy Award
• Mentor of the Year
• Excellence in Manufacturing
• Excellence in Mining
• Excellence in Engineering
• Excellence in Road Transport.

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

For more information, head to: https://bit.ly/2UV5ZYA
Are you struggling to sort your mixed waste streams efficiently?

AMP ROBOTICS is leading the way in industrial artificial intelligence (AI) to change the economics of material recovery. AMP’s breakthrough technology automates the identification, sorting, and processing of material streams to extract maximum value for material recovery facilities (MRFs) that process single stream, mixed waste, construction & demolition and e-waste.

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Robotic Sorting

Are you struggling to sort your mixed waste streams efficiently?

AMP ROBOTICS is leading the way in industrial artificial intelligence (AI) to change the economics of material recovery. AMP’s breakthrough technology automates the identification, sorting, and processing of material streams to extract maximum value for material recovery facilities (MRFs) that process single stream, mixed waste, construction & demolition and e-waste.

Robotic Sorting

Turbo Separator

ATRITOR’s Turbo Separator de-packaging system has been developed to remove products from their packaging with up to 99% efficiency.

The recovered product and packaging can then be recycled or disposed of more suitably, diverting waste from landfill and benefiting the environment.

Turbo Separator

ATRITOR's Turbo Separator de-packaging system has been developed to remove products from their packaging with up to 99% efficiency.

The recovered product and packaging can then be recycled or disposed of more suitably, diverting waste from landfill and benefiting the environment.
The NSW Environment Protection Authority (EPA), in partnership with Infrastructure NSW, is developing a 20-year waste strategy for the state.

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

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

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

This will include examining similar waste strategies in Australia and around the world.

A long-term vision and roadmap will include new long-term goals for waste generation and landfill diversion, policy positions and strategic decisions that aim to avoid waste and improve resource recovery, and a plan for new or enhanced policies to improve waste collection.

A framework for the delivery of an integrated state network will be part of the roadmap, along with aims to align policy and regulation to achieve long-term strategic objectives and a plan to strengthen data quality and access.

The strategy is expected to be completed by the end of 2019.

The South Australian Government released a waste infrastructure plan in 2018 which was developed to provide a clear guide for future waste and resource recovery needs across the state. The plan projects future waste flows, maps existing waste and resource recovery infrastructure by major types, and identifies potential future infrastructure needs, investment opportunities and associated risks.

Sustainability Victoria’s Statewide Waste and Resource Recovery Infrastructure Plan was also updated in 2018 to ensure Victoria had a strategy that reflected regional implementation plans, government policy and provided clearer guidance for decision makers.
Representing industry priorities to government

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The plastic waste crisis is expected to deepen, potentially leading to a federal response in the form of an emergency tax by 2021, according to global wealth manager Credit Suisse.

It argues that reactionary policy measures are highly likely in the short term and could include a tax on virgin resins or additional tariffs placed on imported plastic goods in its report, *The age of plastic at a tipping point*.

With too much plastic waste being created domestically and no large export markets available, Credit Suisse estimates there will be a sharp increase in plastic being sent to landfill and illegal dumping.

“Our headline view is that things will get worse before they get better: the policy initiatives in the National Waste Strategy won’t take hold until FY20/21," the report said.

Credit Suisse expects bans on single-use plastics to be extended to the six most common plastic packaging and tax incentives to be provided to help hit the 2025 target of 30 per cent recycled content in packaging.

The report indicates the long lead time from policy approval to implementation is problematic, particularly for new waste infrastructure, which the company said will likely lead to a more supportive project approval environment for waste infrastructure.

Waste managers are expected to benefit from this scenario, with short-term potential from council renegotiations and long-term potential to fast-track waste infrastructure approvals, according to the report.

“Plastic has infiltrated almost every aspect of human life. It is the most prolific material on the planet, growing faster than any commodity in the last 33 years," the report said.

“Plastic packaging has become one of the most intractable environmental challenges of our age. None of the commonly used plastics are biodegradable; they accumulate in landfills or the natural environment rather than decompose.

“To curtail the situation in the short run, it is a matter of when, not if, we see reactionary policy measures."
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EVERY LEADER BRINGS THEIR OWN PERSPECTIVE AND A FRESH PAIR OF EYES TO AN ORGANISATION. WHEN ROSE READ WAS APPOINTED CHIEF EXECUTIVE OFFICER OF THE NATIONAL WASTE AND RECYCLING INDUSTRY COUNCIL (NWRIC) IN AUGUST 2018, SHE BROUGHT 20 YEARS OF ENVIRONMENTAL AND PRODUCT STEWARDSHIP MANAGEMENT EXPERIENCE, INCLUDING EXECUTIVE ROLES AT MOBILEMUSTER AND CLEAN UP AUSTRALIA. HER EXPERIENCE LEADING THE PRODUCT STEWARDSHIP ARM OF E-WASTE RECYCLERS MRI E-CYCLE SOLUTIONS BROUGHT A WELL-DEVELOPED UNDERSTANDING OF EXTERNAL STAKEHOLDER RELATIONSHIPS AND A CONSULTATIVE APPROACH.

“In some respects, coming from outside the waste industry can be an advantage in being able to bring an alternative view to how the industry can develop and move forward,” Rose explains. “It also reveals new opportunities for how the industry can work with its customers by building productive relationships with the manufacturers and brands who make goods that are being handled by the industry.”

Rose joined the organisation in mid-2018 following former CEO Max Spedding’s retirement. Together with the NWRIC’s Policy Officer Alex Serpo, her ability to engage with stakeholders is of great value to an organisation founded and chaired by the leaders of Australia’s waste management sector.

**NWRIC’S FOUNDATIONS**
The NWRIC was established in late 2016 by national waste management companies Cleanaway, JJ Richards and Sons, REMONDIS, SUEZ and Veolia with the key purpose of developing a cohesive national approach to industry development and innovation. Its goal is to achieve consistent policy and legislative settings at a federal, state and local government levels that will transform waste into valuable resources for local and global markets.
Current membership of the NWRIC includes the five founding members, plus Solo Resource Recovery, Alex Fraser, Sims Metals and ResourceCo. It also comprises state and territory affiliates the Waste and Recycling Industry Queensland, the Waste Contractors and Recyclers Association of NSW, the Victorian Waste Management Association, the Waste Recycling Industry of South Australia, the Waste Recycling Industry of Western Australia and the Waste Recycling Industry Northern Territory. Collectively, the NWRIC represents the interests of Australia’s 500-plus small, medium and large waste management enterprises.

To facilitate greater cohesion across the industry, the NWRIC also works closely with the Australian Organics Recycling Association, the Australian Landfill Owners Association, the Australian Council of Recyclers and the Australian Industrial Ecology Network as well as the Waste Management Association of Australia.

Since its formation, the NWRIC has developed its roadmap to move the sector up the waste hierarchy, building Australia’s competitiveness while also ensuring high levels of environmental performance and public support.

The roadmap reflects the members principles and positions on policies relating to resource recovery and recycling, safety, fair markets, regulation, emissions, landfill levies, planning, product stewardship and the circular economy.

PROGRESSING THE ROADMAP

The first roadmap set the pace for reform with the NWRIC’s policy statement to harmonise levies across Australia or make levy liability portable across state borders. The council also affirmed its policy for extended producer responsibility schemes to be applied uniformly across jurisdictions and be regulated, enforceable and enforced in order to operate effectively.

Lifting the bar on resource recovery operations was also on its agenda, calling for regulatory and licensing regimes that actively discourage the long-term stockpiling of wastes, including mass balance reporting and upfront levy liabilities.

Now, the NWRIC is looking to update its policy roadmap in 2019. Rose says that the NWRIC’s broader priorities have been, and will continue to be, to advocate for better infrastructure planning, fairer markets, harmonisation and smarter investment of waste levies, intelligent regulations and effective policing of standards.

The council’s members have all been affected by the recent upheaval experienced by the industry with China shutting its doors, escalating insurance costs due to fires at facilities and NSW stopping the land application of mixed waste organics.

“Some sectors of the industry are stalling due to market failures and regulatory changes. Stockpiles of paper, plastics and glass are growing, while organics and masonry are being lost to landfill rather than being recovered,” Rose says.

“With such a complex industry and a long agenda, now more than ever the industry must work together with the state and federal governments to address the market challenges and regulatory barriers that are impeding greater resource recovery, industry innovation and adaptability to the global markets we live in.

“The time has come for governments and industry to transform Australia’s waste and resource recovery industry into a key sector of innovation and economic growth.”

Rose says that one of the NWRIC’s key responses to addressing market challenges and regulatory barriers will be the timely implementation of the National Waste Policy signed off by state and territory environment ministers last December.

She says this will involve finalising the action plan, targets and committing adequate resources at a national and state level within the next six months to ensure effective and efficient ongoing implementation.

However, she says that without strong government leadership and state government collaboration, the policy will ultimately fail. Rose says that as a result, the industry will not invest in new resource recovery capacity or innovative technologies at the rate needed to help move Australia towards a circular economy.

NATIONAL WASTE POLICY IMPLEMENTATION

The NWRIC will continue to call for the Federal Government to establish and resource a National Waste and Resource Recovery Commissioner.
The aim of the commissioner would be to bring together all stakeholders and ensure they are delivering their responsibilities under the policy.

Rose says that the NWRIC is eager to work closely with the Federal Department of the Environment and Energy to achieve a sustainable future for Australia that extracts maximum value from products and materials across the supply chain.

The NWRIC believes that the overall lack of harmonisation has led to inconsistencies around waste definitions, licensing, transport and landfill levies that cause confusion, unnecessary complexity and do not encourage resource recovery or best practice.

Rose says that one example is Queensland’s proposed resource recovery residual exemptions and discounts for its upcoming waste levy. “While conceptually the proposal has merit in developing a resource recovery industry in Queensland, the methodology underpinning it is lacking and completely out of sync with other states’ approach to applying a levy to residuals,” she says.

“Another example is the Victorian and NSW governments responses to develop fire guidelines for stockpiling and waste facilities. This is a clear example of where states are failing to liaise and come up with appropriate guidelines that can be applied consistently across the industry and states.

“One potential solution would be a national fire safety accreditation program developed in consultation with relevant fire authorities, insurance companies, government and industry.”

**THE VALUE OF FORESIGHT**

The need for market development and upgrading facilities is also prompting the NWRIC to call for a greater proportion of landfill levies to be invested back into waste management, resource recovery and recycling facilities, including research, market development, training, policing and education.

A key priority of the NWRIC’s next roadmap will be to advocate for waste and recycling infrastructure strategies and plans in NSW, QLD and WA as these plans already exist in Victoria and SA. Rose says that with NSW, QLD and WA flagging their own potential plans, the NWRIC wants a commitment to make them happen. The NWRIC also believes a national infrastructure strategy would provide additional insights into the bigger picture in the context of global markets,” she says.

“These plans are key to providing direction for investment and certainty for industry, government and the community.”

Rose says the plans need to forecast future material flows, map preferred resource pathways and ensure planning regulations allow for the timely construction and upgrading of processing facilities, including waste-to-energy facilities and servicing regional areas.

The NWRIC has been calling for recycled content to be mandated in state, local and government procurement of products. Five million tonnes of food waste was generated in 2016-17 and 76 per cent of this went to landfill – a key figure which Rose says could be halved and recovered for use in landscaping, forestry, mine rehabilitation and agricultural application. The same applies to the use of crushed glass in road construction and drainage works, she adds.

Another prime issue for the NWRIC is regulating batteries and tyre product stewardship schemes to reduce fire hazards, increase resource recovery and minimise environmental pollution. Rose says that the need to significantly increase recycling rates in these waste streams is overdue and will serve to improve Australia’s stewardship performance.

“The NWRIC is very concerned with the contamination of recycling streams and the fire risk created by disposable batteries. When crushed or pierced, lithium-ion batteries can spontaneously combust,” Rose says.

She says regulated schemes are desperately required with clear recovery and reuse targets to stop illegal dumping and speed up the development of innovative reuse applications.

As an essential service to the community, environment protection and Australian economy, the NWRIC will continue to lead the policy direction of the nation’s waste management sector into 2019. Rose notes that a thriving waste and resource recovery industry will serve many goals. “Australia can become a global leader with the right policy settings, smart regulations, long-term infrastructure planning and adequate investment,” she says.

“China’s National Sword has been a catalyst for change and reform, and now we must activate the required adjustments in a planned and collaborative manner.”
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A TOTAL OF $6.8 MILLION OVER FIVE YEARS WILL BE INVESTED INTO CONVERTING BIOMASS AND PLANT-BASED MATTER INTO A VARIETY OF NEW MATERIALS AND PRODUCTS.

In October last year, a new research hub focused on transforming organic and wood waste in Australia’s paper and pulp industries into marketable chemicals was launched.

The Australian Research Council (ARC) Hub for Processing Advance Lignocellulosics into Advanced Materials will see a total of $6.8 million over five years invested into converting biomass and plant-based matter into higher value materials. This will comprise cellulose-based hydrogels for personal medicine, nanocellulose films to replace food packaging and nanogels to help farmers maintain their crops.

The research will target the agricultural, food and biomedical industries to innovate in these markets.

The project comprises three objectives. One will be to derive green chemicals from Australian wood and lignocellulosic streams following examples from Europe and North America.

Another will be to engineer new nanocellulose applications using Australian agricultural and wood residue to create nanocellulose and better nanofibres. The third will be to develop ultralight paper and novel packaging, creating cellulosic packing products with significantly improved physical properties and new attributes, including radio frequency identification (RFID) technology to integrate with transport or retail information systems.

RFID could track product destination and quality, with a plan to make it part of the Australian industry in three to five years.

An industry consortium composed of Visy, Amcor, Circa, Leaf, Orora, and Norske Skog will join Monash, the University of Tasmania, the University of South Australia, the Tasmanian Government and AgroParisTech as part of the ARC hub.

Gil Garnier, Bioresource Processing Research Institute of Australia Director, says the goal of the project is to develop new products in existing markets in a circular way.

As part of the research, the properties of materials such as paper bags will be transformed to make them stronger and more rigid.

The researchers will aim to ensure paper bags offer a viable alternative over plastic.

Meat trays could also be strengthened using recycled paper to retain the moisture of the product and keep it fresh. Gil says upgrading the properties of recycled fibres with additives and nanocellulose will mean they can be reused over and over.

Gil says the project aims to compensate for fibre no longer being able to be sent to China.

“Our partners are already using some of the outcome in their products.

“We want to push that much further and grow them thinner and thinner to replace the plastic. Over the next three years there will be a lot of output,” he says.

Gil says one of the real challenges will be processing the inorganic materials produced from the paper, including dealing with the residual sludge, which can be difficult to develop into new products.

Residual timber or paper from the paper recycling process is typically burned, but the end goal will be to convert it into chemicals. The leftover process from that would then be incinerated.

Over the next three years, the focus will be on developing higher value chemicals, with a goal of distributing them in five years.

Gil says that one of the goals of the project is for its industry partners to generate, within four to 10 years, 25 to 50 per cent of their profits from products that don’t exist today.
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Featured Topic – Waste to Energy

Asian transformation

ResourceCo’s rapid growth in South-East Asia is helping the region work towards a more sustainable future.

The current substitution rate of fossil fuels by alternative fuels is estimated at less than five per cent in South-East and West Asia, according to ResourceCo.

As a leader in resource recovery and alternative fuels, the company has over the past three years significantly expanded its processed engineered fuel (PEF) capacity in Asia to ensure non-recyclable waste streams contribute to significant reductions in coal use and subsequent carbon emissions.

The company’s state-of-the-art PEF plant in Ipoh, Malaysia, has a 100,000-tonne-plus capacity and supplies a number of companies, including the Malaysian unit of one of the world’s largest cement manufacturer – LafargeHolcim.

ResourceCo is now extending its network across South-East Asia. According to Pavel Cech, Managing Director ResourceCo Asia, the company has made significant inroads in transforming select non-recyclables into PEF that is used in cement kilns.

“Over the past three years, the local waste received and processed per month at the Ipoh plant has increased to 5000 tonnes – representing a fourfold increase,” Pavel explains.

“This is very encouraging, as the companies coming to us are prioritising sustainability after implementing their own green and zero landfilling policies.”

The Malaysian Government has an objective to boost its recycling rates, in the process encouraging local businesses to step up their efforts to reduce their commercial and industrial waste.

ResourceCo Asia has helped leading Malaysian plastic and packaging manufacturer Daibochi introduce a recycling strategy based on their recycling initiatives.

“They wanted to explore new ways to recycle previously non-recyclable industrial waste and reduce its impact on air, land and water pollution,” Pavel says.

Pavel says that ResourceCo Asia now receives more than 100 tonnes of industrial waste from Daibochi, including flexible printed consumer goods packaging such as sachets and unfinished manufacturing waste material which is turned into PEF.

“We are committed to traceability and provide companies with details on what they have sent us and tabulate estimated carbon dioxide emissions and landfill mitigation results. Additional record keeping such as videos and photos is also provided,” he says.

The company also provides full supply chain transparency with authorities by sharing a complete mass balance information sheet. This particular measure has proved to be instrumental in sustaining a strong environmental performance. Pavel hopes that this practice will be adopted by the entire recycling sector to prevent cases of illegal dumping by recycling “cherry pickers”.

“Our stringent testing and monitoring procedures begin from the moment waste arrives at the plant to ensure any hazardous materials, e-waste or foreign objects, are not accepted in the plant. The product from beginning to end is manufactured and supplied under strict quality control and production procedures in accordance with our quality assurance systems,” he says.

“This involves hourly sampling and frequent testing of the product in our state of the art in-house laboratory.”

ResourceCo Asia is also making headway within Malaysia’s fabric and
Clothing recycler Lifeline Clothing, which produces up to 15 tonnes of cleaning cloths each week, sends its textile scraps made from polyester, spandex, lycra and materials with zippers, sequins and plastic beads to the Ipoh plant.

“We blend these unwanted pieces with other materials to produce PEF,” Pavel says.

“It’s a win-win situation as no material or textiles are sent to landfill and we’re helping Lifeline Clothing’s factory achieve their goal of zero waste.”

UNIQLO is another clothing manufacturer striving to minimise its environmental impact that has turned to ResourceCo Asia to ensure clothing that is no longer wearable can be repurposed.

“The portfolio of industries we’re now helping is certainly becoming far more widespread, including Asia’s leading pharmacy chain Watsons, which is looking to responsibly dispose of worn uniforms.

“We’re also taking plastic packaging from iconic coffee brand Old Town White Coffee, as well as working with condom and rubber glove manufacturers,” Pavel says.

“By forming these partnerships, we are reducing the reliance on fossil fuels in the production of cement with some cement manufacturers achieving thermal substitution over 20 per cent.”

Pavel says the company is only just scratching the surface, so the opportunity is huge regarding what it can achieve to turn relevant waste streams into PEF in the Asian markets.

As well as operating a Singapore hub, ResourceCo Asia is on track to further expand in key local areas, including the Philippines, Indonesia and Thailand.

ResourceCo’s operations in Australia, including its new world’s best practice resource recovery plant at Wetherill Park in Sydney, supplies both local and Asian customers with PEF.

“It’s very much about providing a unique zero waste solution to businesses and then helping those interested in making that change,” Pavel says.

He says the biggest ongoing challenge is to achieve further cut through with businesses and authorities that are not carrying out green practices and unwilling to pay for responsible waste management services.

“Consumers are certainly now more than ever aware of the environmental impact of goods and services, with many leading brands promoting their green initiatives to boost sales and remain relevant,” he says.

“We are very proud that all the energy as well as mineral content of the materials we take in and process are fully recovered through co-processing.”

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  - Complete recycling lines; tyres, e-waste, cable, plastic washing & drying.
Economic incentive

THE CITY OF BALLARAT'S PLANS FOR A WASTE-TO-ENERGY FACILITY EXPECTS TO OFFER A $202 MILLION BOOST TO THE ECONOMY.

With the City of Ballarat adding up to 6500 residents per year for nearly a decade, landfill sites in the area will only come under more pressure to address the already 30,000 tonnes of waste that flow to them each year.

The regional council has been investigating a waste-to-energy (WtE) facility since 2013, with the potential to divert up to 60 per cent of waste away from landfill.

Earlier in 2018, the city announced it had signed a heads of agreement for a due diligence study with Malaysian Resources Corporation Berhard (MRCB), a Kuala-Lumpur-based construction company, to build the facility. At the time of writing in November, MRCB was continuing to undertake its due diligence work as it had 120 days to complete its end of the agreement.

If the project is approved, construction could begin as early as August 2019, with the site to be operational by 2022.

The $300-million-plus facility, to be based in Ballarat’s West Employment Zone (BWEZ), may also process waste from surrounding regions and is expected to boost Ballarat’s economy by $202 million through building and flow-on effects. It is anticipated the facility will create 419 jobs per year for three years with 120 ongoing jobs.

The economic investment targets reductions in the $18 million waste disposal cost that currently impacts council, with $8 million per annum spent on maintaining the landfill site alone.

So where does the business case lie? The primary rationale for the facility was to attract further investment from companies looking to secure a sustainable and cost-effective power supply.

Terry Demeo, City of Ballarat Director of Infrastructure and Environment, says the plant would be a first for Australia’s eastern seaboard and will provide the region with significant benefits.

“There is potential to deliver new industry type developments to take advantage of the green power supply and establish jobs via the circular economy, effectively using all waste streams to their maximum beneficial use,” Terry says.

Companies in the BWEZ will be able to enter into a power purchase agreement.

According to Terry, the City of Ballarat remains “agnostic” towards which technology will deliver the envisioned benefits. Terry says that it is understood the alignment with technology partner Babcock and Wilcox Volund was a result of the company’s corporate relationships from delivering plants worldwide, including in the US, China, Sweden and Denmark.

The due diligence study will determine how best to approach the project and move forward to produce a business case for council and select a WtE technology.

The process is highly dependent on which technology MRCB identifies in their report.
BWEZ has included a WtE facility as a core infrastructure item in addition to being included in its previous two council plans. Terry says that all of these factors provide the council with a social license to operate.

The 438 hectares of available staged development land adjacent to the Ballarat Airport will host the site, an industrial area with businesses across manufacturing, agribusiness, construction, freight and logistics and research and development.

While the economic benefits appear clear prior to the release of the MRCB’s due diligence report, environmental outcomes are dependent on the scope of the project.

The learnings from the work council has received focus on ensuring the feedstock is secured for the long term, the site delivers best practice environmental standards and that there will continue to be a realistic market/oftake for the energy from any plant. Ballarat is a key part of the Grampians New Energy Taskforce (GNeT) and the proposed WtE plant will be a considerable asset in this partnership.

The GNeT comprises local government representatives, regional partnership members, energy industry and community groups and will develop a roadmap for the renewable energy sector in the city.

The WtE plan is one part of the city’s commitment to educating the community on contaminant reduction to ensure the market for recycled product continues to grow. The council has also progressed an all waste interchange with a $5 million budget commitment to be built at the BWEZ which would in the long-term provide high-tech sorting facilities to process recyclable materials.

Terry says that once a partner is identified, their technical knowledge will be used to manage and minimise disruption in the BWEZ.

“The City of Ballarat is committed to reducing waste and seeking best value for the waste it diverts from landfill. This includes how we educate the community, the infrastructure we provide for them, the procurement decisions we make and also the policy settings of the state and Federal Government,” he says.

“Encouraging residents to place the correct material in their bins and make use of recycling facilities such as oil, battery, e-waste and mattress services at our transfer station will continue to be a priority.”

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Q. What are some of the challenges surrounding collection and recycling in Burdekin Shire Council?
A. To put the Burdekin Shire waste management function into context, the Shire is about 5053 square kilometres in area and has a high rural population. The main urban areas of Ayr, Home Hill, Brandon and Giru have a three-bin service – general waste, recycling and green waste. A large part of the rural area, including minor towns of Clare, Millaroo, Dalbeg, Alva, Wunjunga and Jerona have a two-bin service – general waste and recycling. A commercial two-bin service is also available.

The challenges surrounding collection mainly centre around determining suitable areas to economically service which involve consistent policy and practical servicing.

The challenges of recycling are more variable and harder to control. Recycling at the kerbside requires willing participation by householders, that is not directly under the council’s control. Downstream recycling, such as mulch from processed green waste can be difficult to manage as it depends on the size and value of that market which can vary.

It can also be very difficult to minimise contamination, resulting in a less desirable product. The costs of transport and lack of infrastructure in our region can be barriers to resource recovery. The Burdekin is a small local government area, so low product volume can also make recovery challenging.

Q. What do you look for in a successful tender?
A. It depends on the size and scope of the tender. For a recent large tender, the criteria we used to assess the tenders was comprehensive and included financial capacity, organisational capability, experience, delivery methodology, occupational health and safety systems, environmental management, compliance, and, of course price. Dependability, reliability and willingness to partner are key requirements for a long-term contract.

For the new kerbside collection contract starting in July 2017 we were looking for higher service levels for our ratepayers. These included faster timeframes for delivering new bins, bin repairs and missed services.

Q. Which bin system do you use and why?
A. Generally for the urban areas, we have a three-bin system which includes a smaller, 140-litre refuse bin by default serviced weekly and alternate fortnightly recycling and green waste services. A 240-litre refuse bin is available at a higher charge. The 240-litre green waste bin assists in minimising green organics in the refuse stream and provides a convenient service for residents with average household quantities of green waste. The 240-litre recycling bin is great for separating the commonly
known recyclables.

Contamination rates in the green waste and recyclable bins are a problem as with most councils, making the end product less desirable. This is something that council is continuing to work on through education and contamination notices.

Q. How do you work with the surrounding councils to drive diversion outcomes?
A. We work extensively with surrounding councils – Townsville, Hinchinbrook and Charters Towers through the North Queensland Regional Waste Reduction and Recycling Plan (NQWRRP) working group.

The group is about to release a request for quotation to conduct waste stream audits for kerbside collection across the region. We will be able to use the information gained from these audits to see what recyclable or reusable materials could be targeted for diversion strategies and further education.

Q. How is Burdekin Shire Council progressing the outcomes of the NQWRRP?
A. The regional group is set to review the NQWRRP in the next financial year. The group has been waiting for the state to finalise its strategy. We will be able to take into consideration the direction of the new Queensland resource recovery and waste strategy and the North Queensland Waste Infrastructure Plan which are set to be finalised in the near future.

The councils in our region have been working together through our current NQWRRP for five years so we have a greater understanding of what works for our regional group and our own councils.

Q. How do you see waste management evolving in North Queensland?
A. Like many areas in Queensland, from a waste management progression perspective, we suffer from the disadvantages of low volumes and long distances. Many of the waste management improvement projects such as resource recovery, regionalisation and waste to energy plants require high and specific waste volumes and low transportation costs.

Policy and major infrastructure decisions by councils will come down to cost and service level to the ratepayer. Unfortunately, unless there is some form of external funding to reduce transport and other costs or technological/legislative change to make recyclables more economically valuable, the pace of change in waste management operations and resource recovery will be slow.
Pure and simple

WITH CHINA’S NATIONAL SWORD PUTTING PRESSURE ON PLASTIC RECYCLERS, APPLIED MACHINERY HAS PARTNERED WITH AN ITALIAN COMPANY TO HELP RECYCLERS HIT CONTAMINATION TARGETS.

It has been almost a full year since China’s Government implemented the National Sword policy which would go on to have significant impacts across the global recycling sector.

The policy set restrictions on the contamination levels of plastic waste, unsorted paper and textile materials, meaning China would only accept materials with a contamination level of 0.5 per cent or less.

From the 1990s until 2013, global wealth manager Credit Suisse says it was cheaper to transport recycled materials by ship to China than it was to domestically transport them by truck or rail in its 2018 report, The age of plastics at a tipping point.

One particularly difficult waste identified in the report was modern food packaging, which uses layers of different polymers as well as other materials like aluminium and ink layers that need to be separated before sorting if they are to be reprocessed.

“Food packaging is also often contaminated by its contents, requiring screening and washing. Councils also have different requirements for sorting and acceptance of products depending on the materials recovery facility in the area,” the report says.

To achieve a circular plastics economy, Credit Suisse highlights the importance of technology and innovation to improve the current methods of plastics recycling, processing and manufacturing.

David MacDonald, Director of equipment supplier Applied Machinery, says this requirement to find a technological solution led the company to begin investigating possible products for Australian recyclers needing to improve the quality of their recycled pellets.

Applied Machinery currently represents two major companies in the recycling market, Genox and Polystar.

Genox is a supplier of plastics recycling machinery, such as shredders, granulators and washing and drying equipment. In Australia, its machines are used to reduce contamination from plastics and separate metals with individual machines or turnkey plants.

Polystar’s Australian machines are mostly pelletisers, which turns the washed plastics into pellets or granules to be sold.

However, there are limits to washing technology. Even if a material is washed, it can still remain contaminated. For example, paper labels on plastic bottles can count towards the contamination level and reduce the overall value of the product.

By removing these contaminants, recyclers are able to achieve a cleaner product and extract the most profit possible from recycled materials, which is why Applied Machinery has partnered with Italian screen changer manufacturer FIMIC.

Generally, filters run material through a very fine screen mesh which can become clogged or blocked with cleared debris. FIMIC’s technology uses a continually wiping screen with internal blades to ensure it remains clear.

A pressure threshold can be programmed into the screen to begin turning the blade holder and collecting debris to be discharged when appropriate. Alternatively, in cases of higher contamination levels, the blade holder can be operated in continuous mode with the discharging valve opening automatically on a timer.

David says the FIMIC system means operators are not required to constantly change the filter screens due to the often high levels of contamination in certain waste streams.
“For companies handling packaging waste, which often contains a relatively high amount of other materials, the FIMIC system can ensure the end product remains as pure as possible,” he says.

“Plastic waste from the agricultural and aquaculture industries can also benefit from the technology, as often there is a significant amount of dirt and soil that is difficult to wash off, especially when it comes to soft plastics.”

International contamination restrictions have led to a significant drop in the price of plastics and increased stockpiling, creating a competitive domestic market environment.

David says companies improving their contamination levels are able to stand out in the now volatile market and potentially reach the required contamination thresholds to resume exporting materials to China and other nations as Australia’s recycling infrastructure develops.

Applied Machinery plans to offer the technology as an ongoing option for Polystar processing plants and has sent a potential customer from Sydney to the United States to see the system first hand, as it is currently not available in Australia.

According to David, after inspecting it and seeing it in action, the customer was set on installing one in their plant.

“The technology will enable companies to process plastics that historically would have been considered too difficult and would have been sent to landfill,” he adds.

“Not only that, but it may give recyclers and exporters the edge they need to reach the strict contamination targets for international export and allow companies to take advantage of the less crowded market.”

FIMIC’s technology aims to help recyclers achieve a cleaner product.
Sparking change

CMA ECOCYCLE IS TAKING ITS ROLE AS AN E-WASTE RECYCLER A STEP FURTHER WITH WHAT IS AN AUSTRALIA-FIRST SOLUTION TO CONTAIN AND CONTROL ELECTRIC VEHICLE FIRES.

When new technologies become mainstream, discussion inevitably mounts on what could go wrong.

As with the much debated dangers of a self-driving car, the evolution of electric vehicles (EV) carries with it a risk to safety and the environment.

A significant number of EVs have caught fire over the past few years, galvanising the debate on lithium-ion batteries. Global research firm Battelle’s 2017 study for the US traffic safety agency National Highway Traffic Safety Administration found the severity of such fires were comparable, or perhaps slightly less, to that of gasoline or diesel vehicular fuels. As EVs have zero exhaust emissions and are generally considered eco-friendly, their acceleration overseas is drawing the attention of Australian regulators.

The Federal Government’s trade agency Austrade produced a December 2018 report which found Australia was well positioned to capitalise on the significant opportunities presented by the lithium-ion battery era. With the world’s third-largest reserves of lithium, the report shows battery manufacturing technology central to downstream lithium processing is the critical gap in the Australian supply chain. Regulations and stringent processes across the supply chain will then be required to manage the transition safely.

Taking its vision a step further, battery recycler CMA Ecocycle is not only positioning itself in the market as a leader of onshore e-waste recycling, but is also expanding its role into offering safety systems for the commercial vehicle industry through its Envirobat product branding.

In late 2018, Waste Management Review revealed CMA’s plans for a first-of-its-kind battery recycling plant expected for launch in April 2019. The $2.5 million plant has capacity to process more than 5000 tonnes of batteries each year with the ability to identify more than 3000 battery types by chemistry, brand, size and shape.

“Safety is a high priority for us, principally because we run a mercury plant so the toxicity issue is a major hazard. We are well used to that and now rolling that into the world of batteries with a new plant and stepping up that safety regime further,” says CMA Ecocycle’s Daryl Moyle.

As the company ramped up efforts to lead the local battery recycling market, it identified yet another gap in the market and sought to fill it.

Following extensive research into overseas best practice, CMA will soon be bringing into the country first-of-their-kind shipping containers protected by an automated fire fighting system to suppress EV and hybrid electric vehicle fires before and after they have occurred.

“This will be the only system to reach these shores that we’re aware of,” Daryl says.

The system comprises a mechanical and hydraulic salvage platform to be deployed onsite to suppress electric vehicle fires that have just occurred or may present as high risk.

“The car just needs to be rolled up a platform that is totally controlled inside, so if that car starts to smolder and the EV starts to burn, it will suppress the whole thing in a safe manner,” he says.

Daryl says CMA’s research saw it collaborate with many major electric vehicle manufacturers with the anticipation of offering a new safety solution.

“Electric vehicles are not more prone to battery fires, but because they’ve got lithium-ion batteries, they fuel hotter fires and they release toxic fumes that are very hard to

CMA will soon be bringing into the country first-of-their-kind shipping containers with an automated fire fighting system.
extinguish,” Daryl says.
“We want to solve that problem. We don’t want to see an electric vehicle break down or an accident on the freeway for instance and the vehicle is burning away.
“Because it’s difficult to extinguish, it’s something that needs a unique safety solution.”

He says CMA is currently working out the specifics around the rollout of the containers nationally.

As the faster obsolescence of technologies and variety of batteries continues to grow in the Australian waste stream, Daryl says the company will continue to learn from best practice overseas.

When the company began planning its battery recycling plant, it also looked to an overall safety strategy.
“We are also adopting the guidelines of the new EPA Victoria policy on the management and storage of combustible recyclable and waste materials,” Daryl says.

He says that with occupational health and safety certification in place, the next step for CMA is fine-tuning its risk assessment and hazardous identification processes and handling and processing – starting with lithium-ion batteries as a key target.

He says that keeping batteries in a separate area onsite is one part of its safety strategy, while offering degraded collection and storage boxes made of galvanised steel to prevent battery explosions, is another.

The lid of the boxes also contains aerosol fire extinguishers designed to suppress lithium battery fires.

“CMA Ecocycle is offering safe battery solutions, including the N-Ext lithium fire extinguishers to all of its clients large and small,” Daryl says.

As it continues to look to the leaders of Europe, including Belgian’s successful Bebat product stewardship scheme, Daryl says CMA’s goal will also be to educate the community on how to identify battery chemistries and the inherent risks each one can carry.

Whether it be the more hazardous cadmium and nickel-cadmium or commonly found alkaline and zinc batteries, the sorting plant will ultimately be able to separate these materials to ensure they do not become a potential safety hazard.

“There will always be an inherent risk, but we will negate that to a large degree and that will be a major emphasis on the entire plant and what we do across the country now and into the future,” he says.

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With hazardous chemical waste stockpiles rising, Waste Management Review explores the current state of regulation governing safe and permanent disposal of this potentially dangerous waste stream.

In 2016-17, Australia produced around 6.3 million tonnes of hazardous waste, an increase of around 26 per cent compared to the previous year, according to the 2018 National Waste Report.

These annual generation figures are dwarfed by the sheer amount of legacy hazardous waste, with hundreds of millions of tonnes being stockpiled and stored in facilities that are inappropriate for long-term situations.

That is according to data from the Hazardous Waste in Australia 2017 report, commissioned by the Federal Government Department of Environment and Energy, which finds new hazardous waste streams are also emerging as a result of changes to technology and consumer habits.

Australia has signed international treaties, such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, which places obligations on countries to ensure hazardous wastes are managed in an environmentally sound manner.

Multiple regulatory regimes manage hazardous waste in Australia, including environmental protection regulations which are designed to minimise the impacts on the environment and human health to meet Australia’s international responsibilities.

National legislation and codes for the transport of dangerous goods aims to prevent accidents and promote safe transport, along with work health and safety regulations to reduce occupational health and safety risks in the workplace. Product stewardship regulations also aim to ensure products such as waste oil, asbestos, e-waste, tyres, batteries, mercury and medicines are responsibly managed.

Ensuring hazardous waste is stored safely often requires strong controls across the lifecycle of the waste, from its generation, to its storage, transport, treatment, recycling, recovery and final disposal.

Richard Phillips, General Manager of Health, Safety, Environment, Compliance and Quality at Tellus Holdings, says hazardous wastes are often produced across a product’s lifecycle, in the mining, manufacturing, distribution, consumption and recycling stages.

“We all produce hazardous waste. On a per capita basis, Australia is one of the highest emitters of hazardous waste, with some of the larger producers being legacy contaminated site soil clean-up utilities, oil and gas, heavy industry, agriculture and mining industries,” Richard says.

“Much of this waste sits at the bottom of the waste hierarchy and cannot be recycled or reused – it needs to be permanently isolated from our biosphere.

“However, Australia doesn’t currently have the infrastructure to safely and permanently isolate these legacy wastes.”

He adds that this applies to the isolation of current production and
emerging wastes at cost effective price points, while meeting Australia’s international obligations.

One method of managing this waste is through a geological repository with a circular economy park. These use multiple natural and engineered barriers to store hazardous waste long-term, recover valuable materials, or permanently isolate hazardous materials.

Geological repositories make use of man-made and natural barriers, allowing them to permanently isolate waste for hundreds of thousands to millions of years. Because of this, they have been recognised by the United Nations and European Union as effective methods for disposing of hazardous wastes, and due to their safety record, are enforced on a national level in countries such as the UK and Germany for the disposal of nuclear waste.

Richard adds the development of geological repositories requires significant investment of time and money to consider strict site selection criteria and navigate the regulatory approval process, which can cost millions of dollars and require years of development.

Tellus Holdings has gone through the process of environmental assessment for its two sites: the Sandy Ridge Facility in WA and the Chandler Facility in the Northern Territory. Both projects have been recommended for approval by each jurisdictional Environmental Protection Authority. The Sandy Ridge Facility has been granted a ministerial approval by the WA Government and has received Federal Government approval.

By bringing these sites to market, Tellus aims to provide governments with a tool to adequately use to address the issue of legacy waste, current production and emerging hazardous waste in Australia.

“There’s increasing levels of support from government agencies, regulators, and from our customers for what Tellus is aiming to achieve,” Richard says.

“These facilities will provide Australia with the infrastructure it requires to ensure hazardous waste has a safe, final resting place permanently isolated from the biosphere in an environmentally sound manner.”

Tellus plans to support the creation of a circular economy by storing similar materials over time in order to create economics of scale advantages and by investing in technologies that recycle and recover valuable materials.
The heat is on

RAY COX FROM LANDAIR SURVEYS OFFERS AN AERIAL SOLUTION TO IDENTIFYING LANDFILL HOTSPOTS WITH DRONES AND THERMAL CAMERAS.

There is an old axiom that states “prevention is better than cure”. The phrase emphasises taking action in the here and now before a potential problem escalates, requiring significant remedy.

This principle of being proactive rather than reactive has many examples in modern life. In the medical sphere, all are encouraged to take preventative action against harmful lifestyle choices that inevitably lead to future medical issues. In the financial realm, reserve banks set interest rates and government agencies implement economic policies to stave off recession. Environmentally, taking action now significantly limits the likelihood of future catastrophe.

The same principle applies to landfill operations. Liner and leachate systems are preventative measures to stop environmental contamination and the associated remedy costs. Another preventative measure highlighted in most landfill license conditions is detecting and monitoring landfill hotspots.

Landfill hotspots are areas of increased temperature that point to the presence, or likely future occurrence, of subsurface fires. They can be detected in a number of ways, including changes in leachate temperature, higher surface temperature readings, escaping gas or smoke and unusual cap settlement.

Often the approach to detect hotspots is time consuming and labour intensive. To regularly walk over closed landfill cells looking for problem areas becomes increasingly impractical as the landfill footprint grows. Even by walking a 20-metre grid over a landfill cap, there remains the very real possibility important warning signs are missed.

Landair Surveys utilises state-of-the-art thermal cameras attached to drones to quickly and effectively to identify potential hotspot locations. Using surface temperature data stored in the imagery, a whole-of-site thermal map can be created to spatially locate high temperature readings that require further investigation. This spatially accurate thermal map can also be draped across a 3D surface created from the drone images to give a virtual, interactive view of the increased temperature locations.

Hotspot detection has risen in importance of late. As recent as October 2018, EPA Victoria issued a fine for over $8000 to a Victorian council in breach of their landfill license conditions relating to hotspots. A smouldering fire broke out in an older part of the landfill. Temperature readings taken on location by the local fire authority found the hotspot had reached surface temperatures up to 100 degrees Celsius. Investigations undertaken by EPA Victoria found the landfill had no formal procedure for identifying hotspots in older parts of the landfill.

Hotspot detection is an important aspect of landfill operations. Regular thermal flyovers of active and capped landfill cells can be a key tool in fulfilling EPA licence conditions. By proactively identifying hotspots before they turn into fires, the potential for large-scale remediation costs are significantly reduced. As the axiom goes, prevention is better than cure.
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Shoalhaven City Council waste services is responsible for recycling, resource recovery and waste disposal activities for a NSW local government area of approximately 5000 square kilometres and 100,000 residents.

Peter Windley, Team Coordinator Waste Operations with Shoalhaven City Council, leads a team of 56 staff that manages daily operations at Shoalhaven City Council’s 10 recycling and waste facilities.

The council’s waste operations comprise two landfills, transfer stations at each site, a pre-booked garden organics and bulky goods collection service, 10 community recycling centres, seven buy-back recycling shops and three former landfills.

To further augment its overall waste management service, Peter was looking to improve machine efficiency, maximise airspace and extend the landfill life of council’s West Nowra landfill site.

In particular, Peter wanted to use global navigation satellite system technology on the site’s landfill compactor. To achieve these goals, Position Partners worked with Shoalhaven City Council to implement the Carlson LandfillGrade machine guidance system.

“Overall reduction of landfilling is certainly an organisational goal for Shoalhaven City Council Waste Operations,” Peter explains.

“Maximising airspace within our current landfills is a major factor in our strategic planning and when used in conjunction with effective resource recovery activities, will ensure we prolong the landfill lifespan.”

Peter says that Shoalhaven City Council conducted a trial of the Carlson LandfillGrade system in partnership with Position Partners.

“The system was fitted to our existing landfill compactor at the West Nowra landfill site. The results have been extraordinary,” he says.
the site in 2019.

Peter found that the Tana E520 landfill compacter and the Carlson LandfillGrade from Position Partners work together seamlessly.

“It is a natural fit and we have seen some excellent results in airspace savings and significant reductions in filling and compaction costs,” he says.

Prior to implementing the Carlson LandfillGrade from Position Partners, the West Nowra team struggled to ensure consistent landfilling practice with inconsistent filling and considerable reworking a common problem.

“Supervisory staff had to hold tipping face meetings multiple times per week and at shift changes just to ensure consistent landfilling practice,” Peter says.

“These issues are now a thing of the past, our compaction rates have increased, cell filling is exact, we use significantly less cover material and have seen considerable reduction in fuel usage.”

Peter says that the reporting and monitoring features of the system are excellent. He says that the Carlson LandfillGrade from Position Partners was the best fit for the landfill site due to its ability to improve airspace utilisation and maximise compaction to reach optimum density in less time.

It also allows council to measure waste volume and density daily, import weighbridge data to accurate daily density calculations, track waste compaction (deflection and pass counts) in real time, determine slope and grade management and a range of other areas.

He says that the reporting and monitoring features of the system are excellent.

“The 3D replay feature is great for operator tool box talks and issues relating to multiple operators and continuity on a filling face over seven days have been eliminated entirely. They just follow the design on the screen,” he says.

One of the major factors that Peter took into consideration when choosing to implement Carlson LandfillGrade machine guidance technology was the service and support offered by Position Partners.

“Dieter Von Mollendorf, from the landfill and mining section of Position Partners, has been excellent. He has conducted training sessions for our team and provided a thorough level of support,” he says.

“The improvements to our disposal cell areas and filling activities are substantial. Operators have been able to fill according to the exact design, with reduced machine passes and use minimal cover. This saves time, cost and maximises airspace utilisation.

“Every landfill operator should consider this technology to maximise landfill life and reduce costs.”
Sealing the deal

SELECT CIVIL’S RENAUD CHAUVEIT EXPLAINS THE KEY SERVICE CAPABILITIES PRIVATE WASTE MANAGEMENT ORGANISATIONS SUCH AS SUEZ HAVE LOOKED FOR WHEN USING A SPECIALIST WASTE SERVICES PROVIDER.

Market niches don’t spring up by accident, but are created by identifying the needs and wants not being addressed in the marketplace.

It’s then important to offer a cost-effective solution based on real competitive advantages, including industry knowledge, specialised assets and capital.

Denis Poisson worked as a pipe layer while travelling Australia in the 80s and hoped that one day he could leave a lasting impact on the local market. In 2001, he saw an opportunity to diversify his international business Groupe Poisson, acquiring Select Civil, a small-sized business specialising in civil works and wet and dry hire that would later expand significantly.

The former owner, John Donahue, remained on board until 2005, when Renaud Chauvet took over as Managing Director. Renaud’s mission was to break into the Australian waste industry, which had remained Groupe Poisson’s strength in Europe.

The majority of Groupe Poisson’s 700-strong fleet of equipment in Europe, Australia and Canada specialises in waste, with the company working with a range of major private waste companies such as SUEZ and Veolia.

Select Civil’s intimate knowledge of the landfill and waste businesses via its parent company in France meant it was ideally placed to service both areas.

Renaud tells Waste Management Review that as a civil contractor, the company’s historical understanding of waste industry machine maintenance and performance was a key point of difference to enter the local waste industry.

“Most other companies are civil companies that dabble in waste, whereas we specifically target it as our core business and have done so with our parent company for the past 40 years,” Renaud says.

The company’s construction team comprises professional engineers, experienced supervisors and foremen, established plant operators and labourers able to support landfill cell construction, site remediation, road and drainage construction.

In landfill services, the organisation operates a fleet of waste handling bulldozers, compactors and dump trucks, in addition to various loaders and excavator track loaders.

Having taken on a broad range of service capabilities, Select Civil also positioned itself in the market as a leader in maintenance and sourcing of quality equipment.

The business also supplies long-term dry hire equipment to councils and a number of private green waste facilities, garden organics and alternative waste treatment, as well as waste transfer stations.

Renaud says that securing landfill management contracts with SUEZ at its Kemps Creek facility in 2009 and Lucas Heights Resource Recovery Parks in 2011 lay the groundwork for its Australian waste management entry. From there, it went on to operate the Melbourne Regional Landfill, initially for Boral and then Cleanaway prior to Cleanaway taking over onsite operations in late 2016.

With a nationwide service offering currently operating in Sydney, Melbourne, WA and North Queensland, the company currently handles 3.2 million tonnes of waste per annum.

A well-run landfill is one of Select Civil’s passions, having continually worked with clients such as SUEZ and Cleanaway to improve its services in Australia and look for efficiencies.

“We utilise a variety of alternative daily cover systems onsite and have worked with SUEZ in trialling the most appropriate ones for the EPA to assess and eventually approve,” Renaud says.

He says that the company has been called upon by SUEZ, Veolia and Cleanaway to perform other civil works on sites, including capping, gas and leachate infrastructure and transfer station upgrades. The companies have also leveraged Select Civil’s expertise...
in construction to develop waste infrastructure.

Having secured its reputation in the private sector, Renaud says the next steps for the company are to bring its expertise and private sector thinking to local councils.

“We believe that there are substantial efficiencies and improvements to be made on a lot of sites,” he says.

“We have a long-term strategy that we would like to duplicate in other intensive and harsh environments within four to five years.”

He says Select Civil has already worked with councils to build landfill cells and piggyback liners and is keen to support local governments that don’t supply onsite services. The company’s aims in this area are to improve efficiencies, minimise environmental impacts and cover usage while maximising compaction.

“One of the big problems in landfills is that operators can have minimal or untimely access to capital to purchase plants and equipment,” Renaud says.

“Because the environment is harsh, invariably the front line machines break down, which can result in breaches of their consent or EPA licenses as well as the expensive risk of filling too quickly and costly infrastructure because of careless use of airspace.”

Renaud says that Select Civil always has backup equipment for all front line equipment.

As part of its local government foray, Select Civil and SUEZ work directly with Mackay Regional Council. SUEZ are contracted for waste transfer out to Hogan’s Pocket and landfilling, with Select Civil operating the landfill on behalf of SUEZ.

Renaud says that its services has led to a reduction in cover usage and leachate control. In addition, Select Civil has installed Computer Aided Earthmoving System Global Positioning Systems on frontline equipment to manage lift heights and waste compaction.

As an account manager to Select Civil, Ayden Piri, Industry Specialist-Account Manager Asia Pacific at Caterpillar Inc, says the company is one of the best performers in waste handling.

“Minimising downtime is a key practice for them. One of the things they do well is use high end technology such as clean Tier-4 final engines, electric drive and transmission systems for better efficiencies and less pollution and contamination for the environment.

“They also closely monitor compaction density, utilise GPS technology and train their operators the way Caterpillar really promotes.”

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FIRE SUPPRESSION SYSTEMS FROM FOGMAKER ARE BEING USED AT WASTE FACILITIES TO REDUCE INSTALLATION COSTS AND FIRE RISKS, HELPING TO KEEP INSURANCE PREMIUMS DOWN.

Doing your due diligence to mitigate a fire risk is integral to keeping insurance premiums down and preventing a potential catastrophe.

Whether operators are running a transfer station, recycling facility or landfill, the need to lessen one’s risk while keeping costs down is crucial. For some businesses, it could be key to remaining a commercially viable enterprise. It’s for this reason that the Fogmaker fire suppression system has become a widely used system in the waste handling business. Its compact size, low weight and speedy installation are helping a number of companies save time and resources to dedicate elsewhere in their businesses.

As waste handling environments containing a high number of combustible materials, Fogmaker recommends to its customers an extended discharge duration of 80 to 90 seconds. This allows the operator to move the machine to a safe location for evacuation and provide the extended discharge duration to assist in fire extinction. According to Fogmaker, companies such as Liebherr and Cleanaway and local councils have all used the Fogmaker system on their machines.

Fogmaker’s water mist system offers a total flood application which cools and smothers the fire with large amounts of steam. Every litre of water has the potential to transform into about 1700 litres of steam. The temperature reduces quickly as the atomised water droplets convert steam.

As an expert in waste handling equipment, a number of major waste organisations turn to Liebherr for fire suppression systems within the company’s machines. When Liebherr’s customers are in need of a solution, the company recommends Fogmaker as an established product.

Paul Findlater, National Key Accounts Manager – Earthmoving & Material Handling Division, Liebherr-Australia, says that the company has fitted in excess of 20 machines to its machinery in the past year.

“In earthmoving equipment, the previously accepted fire suppression equipment was often very large foam systems that were sometimes challenging to install given that the cylinders used can often take up a lot of valuable space. These cylinders can sometimes interfere with vision,
access in and out of the machine, as well as location for serviceability,” Paul explains.

“With the Fogmaker system, you can have single or multiple cylinders fit into tighter locations, whereas previously we would have to fit in cylinders sometimes four or five times the size.”

Paul says that the installation is somewhat simplified and faster by the compact nature of the Fogmaker cylinders.

“In some machines, such as our Liebherr track loaders, for example, we’re able to even store the cylinders in a horizontal position in a storage compartment which was previously not specifically used for anything. So the cylinders are totally out of the way of damage which makes it very neat to install,” he says.

He says the compact nature of the system leads to cost savings by often not requiring underpinning or heavy fabrication of cylinder bracketry.

The two x 6.5-litre Fogmaker systems can absorb up to six million calories which leads to a unique extinguishing effect that reduces the risk of the machine reigniting. The steam creates a thermal barrier to protect personnel and scrub the air which greatly reduces the amount of toxins released into the surrounding atmosphere.

To improve the security of the machine, the detection network consists of a polymer tube which ruptures if the temperature goes beyond a nominated temperature set at about 180 degrees. The polymer tube is also protected by a stainless steel coil to prevent mechanical damage during engine servicing and general maintenance. The Fogmaker system can also provide inputs for a multiplex system to enable onboard computers to work as an alarm panel and send real-time alerts back to base for any fires detected.

The system works independently of electricity as it is hydro-pneumatic and will work even when the machine is turned off, unattended and battery isolated.

Fogmaker also meets an array of fire protection standards, including AS5062 for mobile and transportable equipment, P Mark, AS4587 and Underwriters Laboratory (UL 1384).

According to Paul, the system is an important investment for any waste facility to have.

“With any good fire suppressant system, you are averting a potential disaster so it’s important to have the machine suppress a fire as soon as there are any signs,” he says.
Unlike Europe, which has a standard 1060-millimetre width for its bins, Australian bins can come in all shapes and sizes. Because there is no national standard design in Australia, local manufacturers are able to produce a variety of bins with different dimensions and hook heights, ranging in width from as small as 980 to as large as 1180 millimetres.

The bins are still in circulation within Australia and can pose awkward scenarios for waste collection companies as many hookloaders can’t carry them safely, leading to potential service delays.

That was the dilemma facing a client of waste collection vehicle manufacturer Superior Pak. The client was a national waste company which needed a hookloader that had a manually adjustable hook height for its operation.

“Our client was a large waste management company that was looking to upgrade its fleet in Queensland, particularly as the state has recently begun its Containers for Change refund scheme,” says Superior Pak National Sales and Marketing Manager Garry Whineray.

“They’re a national company, so it was important we could provide them with a frame that could handle whatever the industry could throw at it and be shipped around the country without any issues.

“Additionally, our client specified it
required a hookloader which could manually adjust the height of its hook to handle any custom bins that it came across.”

Superior Pak purchased eight T22A DINO Hookloaders from Gough Palfinger Australia for its client, which were installed in just two months.

The hookloaders were specifically designed for Australia’s broad range of bins with an adjustable, multi-rail width system that can fit three different widths. What made the hookloader stand out to Superior Pak was the ability to manually adjust the height of the hook.

Garry says this feature was one of the most important factors to their client and helped give it the versatility required to handle its collection tasks.

In addition, Gough Palfinger Australia has recently completed testing of a front bin locking system to provide additional safety benefits for operators.

Previously, it wasn’t possible to include a front bin locking system on the T22A DINO, as containers sit 200 millimetres higher to allow for zero tunnel clearance on older cable bin containers. This meant the front bin locks also needed to be positioned 200 millimetres higher and required longer travel to accommodate varied rail widths.

Mark Gardner, Gough Palfinger Australia Business Development Manager, says the addition of front bin locking on the DINO design now gives a vehicle a total of seven points of contact, providing additional safety benefits when transporting loads.

“In addition to the hook itself, there are two points of contact at the front and four at the back of the hookloader with dual inside and outside locking, which significantly reduces cargo movement. Now, it’s even safer to carry loads of sludges and liquids as less force is required to secure the container while the vehicle is in motion,” he says.

“Front bin locks are compulsory for carrying liquids and sludges. However, we have also found they are an important feature for safety-conscious customers in the waste industry.

“New Palfinger 2018/2019 hookloaders come pre-dispositioned for front bin locking and are able to have the front bin locks retrofitted at any stage should a customer want to improve upon safety.”

The T22A DINO unit is equipped with an articulated arm, allowing the hookloader to lift a load in tight spaces such as supermarket carparks, due to the lower clearance height while also reducing load sliding.

It is able to lift up to 22 tonnes and is constructed from high-tensile steel to reduce weight and improve the system’s durability.

Each telescopic hookloader is a bi-point unit, which reduces horizontal forces and increases tipping capacity and has a soft-landing system to save the unit and container from shocks while reducing noise.

Garry says the process of purchasing the Palfinger hookloaders was relatively quick and has been well received by Superior Pak’s customer.

“Our purchasing decision was based around responding to our client’s needs. Gough Palfinger Australia was able to provide us with a significant number of units in a timely manner,” he says.

“We were impressed by the Palfinger team’s professionalism and enthusiasm to offer up their unique solution, quickly and efficiently.”

Garry Whineray Superior Pak National Sales and Marketing Manager
Great supplier and customer relationships can become enduring partnerships when collaboration allows for innovation.

While strong relationships can last decades on end, the businesses involved must continue to innovate to stay at the cutting edge of service.

Such was the case for Haulaway, a more-than-30-year-old Melbourne-based business that has continued to take pride in providing quality trucks and experienced drivers across its transport services in the commercial waste management sector.

Jake Hilbert, Sales Manager at Haulaway, says the company has, over the past 12 to 24 months, diversified its business.

“We’ve evolved to stay at the cutting edge. We’ve developed from a rrigids business with skip bins and front lift bins and a small fleet of rear lift to now transporting a large amount of rear lift and picking up council contracts, through to operating semi-trailers and now B-Doubles as well and looking to cart A-Doubles into the future,” Jake explains.

The diversification came off the back of Haulaway picking up a range of contracts in late 2018 on major Victorian infrastructure projects, including with the Cross Yarra Partnership and Rail Infrastructure Alliance on the Metro Tunnel and West Gate Tunnel projects.

The evolution began with Haulaway picking up the Metro Tunnel Early Works in 2017 while tendering for the subsequent projects.

Jake says having the latest technology helped advance the business to the next level.

“We’re getting to a point where every single bin will be weighed and reported, and we’re now striving to achieve whether a customer will be able to access that data within a 24-hour period of collection and hopefully down the line, even live,” he says.

To support the evolving organisation, Haulaway turned to a reliable supplier in Scania, purchasing two new 8x4 450 rigids in Scania’s latest series with a Hiab Multilift hooklift on the back. The first trucks arrived in November with another two at the beginning of 2019.

Scania representatives visited the site in late 2018 and arranged for the vehicles to be fitted with the supporting hooklift.

The fleets support Haulaway’s general waste removal and collection, which is taken to a recycling facility to achieve a 90 per cent recycling rate.

Jake says Scania offers a portal which can be accessed from the Haulaway head office, allowing it to monitor fuel burn (average amount of fuel per load) while the vehicle is idle compared to driving. “We can see whether the driver is down the road
or just sitting onsite with the truck running, which could indicate access issues, and also see if he’s operating the PTO attachment, which helps with our fuel credits as well,” Jake says.

Jake says that maneuverability was crucial in the purchasing decision.

“The previous series was very comfortable and we always had a lot of drivers wanting to jump into the Scania fleet. However, the latest series is comfortable, yet more manoeuvrable,” Jake says.

“It’s got a better turning circle as they’ve moved the axles slightly which has been one of the biggest pushes for us, as a lot of the sites we operate in are tight access restricted.”

Other safety features include adaptive cruise control, lane departure warnings and a scoring system which allows Haulaway to score its drivers based on their performance caring for the vehicles.

With the trucks on the road 20 hours a day hauling about 30 to 40 tonnes of waste across freeways and in and out of construction sites, a highly competitive repair and maintenance service was required.

When factored into the company’s purchasing model, the life of the truck over the course of five years, including maintenance and fuel burn, turned out cheaper than competitor vehicles.

“We won’t repair the cab chassis in-house. We will still carry out preventative and fortnightly maintenance mainly for safety to ensure the truck is roadworthy. All routine maintenance will be carried out through Scania,” Jake says.

“They also offer the ‘Max 24’ rule where within 24 hours of a breakdown they guarantee they will have the vehicle back on the road. If they don’t, they will cover the costs or supply the operator with an alternative truck.”

He says another key benefit is a dedicated account manager to support Haulaway should any issues occur – with the service akin to a pre-sales offering.

“The account manager is with you even after you purchase the vehicle. We’ve found in the past we’ve bought a truck and the moment the account manager gets the signature you are put onto after-sales service,” Jake says.

“If we do have an issue with the truck and contact the mechanical team and the customer is not happy with the service, we can quickly make a phone call to our account manager and explain the issue. Where issues are corrected – they don’t repeat themselves.”

In after-sales support, Scania offers driver training and its Scania finance service to suit a businesses budget.

Ultimately, Haulaway’s passion for offering the best customer service and value for dollar means a quality supplier can make or break its success. Jake says that he is so pleased with the service he will look at further Scanias in the future and is also looking to potentially purchase two 620 horsepower R-cab prime movers to cart B-Doubles in late 2019.
Our success will be determined by our promises kept, not our promises made,” said Brad Banducci, Woolworths Chief Executive Officer, in the supermarket chain’s 2018 sustainability report.

Banducci’s comments affirmed the company’s commitment to provide genuine, transparent reporting on its sustainability progress. The objective shines a light on the strenuous efforts to unify a massive conglomerate behind a common purpose. In Banducci’s own words, it’s understanding from practical experience that “being green” is not easy.

With 1000 stores across the country and more than 200,000 team members employed nationwide, Woolworths has a sizeable impact on the commercial and industrial waste industry.

According to its 2018 Sustainability Report, Woolworths diverted 292,831 tonnes of waste away from landfill in that year. The company is now taking its diversion strategy to the next level in looking to make further gains in food waste processing across all its stores. The critical component of reducing waste is also a core part of its agenda, targeting the procurement of recycled materials across its homegrown brands and store departments.

In recent times, Woolworths has been liaising with its major recycling partners Visy, Veolia, Orora, SUEZ and Cleanaway to address areas such as organic waste, plastic and cardboard collection and processing. Its program with REDcycle has ensured soft plastics can be turned into new materials such as furniture and bollards. The program was scaled up in July and has since recycled around 100 additional tonnes of soft plastics.

Along with a number of state and territory governments, Woolworths has banned single-use plastic bags, which came into effect in June. Since its implementation, Woolworths has removed more than 700 million single-use plastic bags from its stores.

Adrian Cullen, Head of Sustainability at Woolworths Group, says the company is embedding sustainability across the whole organisation.

“We have always had good practices when it comes to recycling cardboard and plastics like LDPE in stores, but we’ve strengthened programs over the last two years to extend to other streams,” Adrian says.

“We are working with industry partners to ensure material we do want to separate can be processed at a commercial level. The challenge is trying to get these materials recycled at scale.”

Adrian says that since the implementation of the company’s ban on single-use plastic bags, a majority of Woolworths customers have started forming new habits. He says that the company has seen fewer transactions of purchasable bags across all of its stores.

To help drive recycling outcomes at a household level, Woolworths became the first supermarket chain to adopt the Australasian Recycling Label on their own brand products in November 2017. Up to 700 of its products have utilised the label to help customers understand what can and cannot be recycled.

As a signatory to the Australian Packaging Covenant Organisation 2025 targets, Woolworths has also been making inroads by transitioning to more recyclable products. The company is targeting 100 per cent recyclable
“We are working with industry partners to ensure material we do want to separate can be processed at a commercial level. The challenge is trying to get these materials recycled at scale.”

Adrian Cullen Head of Sustainability at Woolworths Group

packaging in its own drink brand products. Adrian says that the next step is to introduce a Woolworths brand 600 millilitre bottle of water made of 100 per cent recycled content on the shelf in early 2019.

Adrian says that Woolworths is looking to ensure its meat trays are recyclable by transitioning the clear packaging to one that is recyclable. He says the company is also evaluating the recyclability of its ready meals as well as those currently processed in black plastic.

The key areas to improve on, Adrian says, will be to no longer produce items wrapped in superfluous plastic, including bananas and tomatoes. During the year, the company has reduced more than 187 tonnes of plastic, including replacing plastic trays with cardboard for organic apples and sweet potatoes.

Woolworths has already removed around 400 tonnes of plastic from its bakery and produce lines, with 25 initiatives aimed at reducing plastic waste. Adrian says that while customers are still adapting to the bag ban, there are no current plans to reduce plastic bags in the produce department.

By the end of financial year 2018, 96 per cent of Woolworths supermarkets were operating one food diversion program and Woolworths aimed for all of its supermarkets to have at least one food waste diversion program in place by the end of 2018.

In 2018, Woolworths piloted its Reducing Food Waste to Landfill program at its Lidcombe store in Western Sydney and Mullumbimby, a town in Byron Shire in the Northern Rivers region of NSW.

All supermarkets nationally are now executing this new program to deliver best practice source separation and diversion of the surplus food to help feed people in need. It also supports farmers in need of animal feed and commercial composting programs.

The program looked to identify future capacity constraints of stakeholders and data strengths and shortfalls using a data capture tool that provided food waste diversion quantities and methods down to a store level.

To boost source separation, all stores across Woolworths have implemented a coloured bin system for the store’s back-of-store waste, including bakery and soft plastics.

Adrian adds that 600,000 meals per month are donated to food rescue partners, while also providing 660 farmers with a feedstock.

He says there is still some work to be done in resource recovery, particularly for the company to develop more commercial composting arrangements with the right market signals in a waste levy in place in the states and territories.

The company’s relationships with its suppliers also continue to ensure it goes from strength to strength as it works towards 2025 and its own targets.

“We’re constantly working with suppliers and a lot of them do come to us looking for new innovations especially in the packaging space. It’s really important for us that it doesn’t compromise food safety and we still can provide great quality products that are recyclable as well,” Adrian says.

“We think the 2025 targets are good for the economy and will create more jobs and more opportunities for innovation here in Australia.

“We shouldn’t have to send waste overseas to then buy back to use in our products, so it would be great to see more Australian recycled content.”
As one of the largest and fastest growing areas in Australia, the City of Sydney is a diverse municipality with more than half of its residents born overseas.

On an average day, it is estimated that there are more than 1.2 million people in the city, including workers, residents, visitors and students. The city’s population is also expected to grow by a further 60,000 residents and 120,000 workers by 2031. The fast-moving population of non-residents makes it increasingly challenging to instill consistent source separation habits. With more waste being generated and landfills in the area increasingly sparse, a solution was needed for the city into the next decade.

Last year, the city launched a waste strategy and action plan through to 2030, titled Leave nothing to waste: Managing resources in the City of Sydney area. The report prioritises a range of actions across city buildings and public spaces and residential and business community actions, including more targeted education programs and new services such as food scraps and e-waste collections.

By 2021, the city aims to divert 50 per cent of its waste from city parks, streets and public places from landfill and 70 per cent of city-managed properties. For residents, the city is looking at a 70 per cent municipal solid
waste target with a minimum of 35 per cent as source separated. The city’s long-term goal is towards a zero waste future – defined as greater than 90 per cent diversion from landfill by 2030.

Gemma Dawson, Waste Strategy Manager at the City of Sydney, says that the council will be looking at other forms of residual treatment to support its municipal solid waste targets.

She says that while the council is currently sending its general waste to a mechanical biological treatment facility, it is awaiting to see the final impact of EPA NSW’s decision to end the use of mixed waste organics on agricultural land.

“One alternative we’re looking at is to produce fuel from waste as a replacement for fossil fuels,” Gemma says.

“In an ideal world we would get all of our diversion from avoidance or recycling and leave the residual treatment for a small proportion of our waste stream.”

Gemma says that having one of the densest local government areas in the country has led to a recent updating of minimum waste management guidelines for developers. The council’s new guidelines aim to ensure new developments carry with them the necessary collection infrastructure for a variety of waste streams, including food and e-waste.

While the strategy was adopted in November 2017, Gemma says some progress has already been made, including efforts to commence the council’s largest ever food waste trial with 100 apartment buildings and 300 separate households. The council also plans to commence e-waste collection in the middle of next year and is also looking at textiles.

“When we did an analysis of our red bin waste stream we found up to five per cent of the general waste bin is textiles,” she says.

“We’re hoping part of our source separated target comes from e-waste, food and textiles.”

According to 2016-17 Australian Bureau of Statistics data, a net total of 15,160 people moved from NSW to other states and territories, the biggest loss from any state. Gemma says the challenges of residents leaving the state has presented issues of consistency for source separation, coupled with a high population of migrants.

She says that research has shown that upgrading signage and buildings to use photographs to promote correct source separation has been shown to be more effective than symbols.

The target of 50 per cent diversion from city parks, streets and public places has also been making progress. Gemma says that when the council put the strategy out, its diversion rate was 18 per cent, but has since moved to 26 per cent off the back of increasing resource recovery practices. For example, litter bin waste has been processed at the council contracted mechanical biological treatment facility with the organic fraction extracted.

Other recent research projects have included the Central Park Precinct Organics Management Feasibility Study, conducted by the Institute for Sustainable Futures. The project conducted a high-level assessment of the feasibility of anaerobic digestion to generate energy and produce a fertiliser at One Central Park in Chippendale, Sydney.

Given Sydney is expected to grow from five to eight million people over the next 30 years, the findings found significant potential in retrofitting existing developments or installing the system in new ones.

Treatment of organics onsite was found to avoid up to $85,000 per annum in waste removal costs and $80,000 in electricity or hot water costs. With a payback period of as early as five years, significant environmental benefits in avoiding more than 10,000 kilometres per annum in truck and rail movements were shown to be possible.

Gemma says that project partners are keen to put an application with the city forward for a demonstration plant off the back of the study’s success. Given there are no waste treatment facilities within 15 kilometres, she says decentralised models could become the norm in cities like Sydney.

“With food waste, there is a possibility maybe not on a small scale, but if you’ve got very large precincts then it could be the future to collect waste within and treat it in the same place.”


The City of Sydney’s long-term goal is for a zero waste future.
What do Bill Gates and human waste have in common?

In recent times it seems a whole lot, as the billionaire philanthropist has spent US $200 million over the years to generate new approaches to toilet technologies and transform human waste into fertiliser, recycled waste or energy.

The end result has potential to boost productivity, save money, preserve precious resources and support developing countries. In 2011, the Water, Sanitation & Hygiene program initiated the Reinvent the Toilet Challenge to support 2.5 billion people worldwide that don’t have access to safe, affordable sanitation.

The Reinvent the Toilet Challenge aimed to create a toilet that could remove the germs from human waste and recover valuable resources such as energy, clean water and nutrients at a low cost. Gates is now testing further prototypes in poor, urban communities in India and Africa.

Composting toilets provide waterless decomposition of organic matter to transform that into compost and can be used in dry landscapes and areas with low rainfall or minimal access to water.

Chuck Henry, international consultant and design engineer, was involved in the design and licensing of two composting toilets, in addition to monitoring and evaluating large-scale compost systems, wastewater treatment, renewable energy and solid waste management.

He and his partner Sally Brown, a research professor at the School of Environmental and Forest Sciences at the University of Washington, were keynote speakers at this year’s Australian Organics Recycling Association (AORA) Annual Members’ Meeting Forum.

Sally and Chuck’s research has found significant potential of human excrement to improve our natural resources. In Australia and other developed countries, a more mainstream solution in the form of biosolids have for decades been used to improve soil fertility. Sewage sludge is a by-product of treating wastewater from humans. When treated to an acceptable standard, the waste becomes a biosolid which may contain macro and micronutrients. But there is much untapped potential in their application overseas and in Australia, which Waste Management Review has sought to explore further.

VALUABLE RESIDUE

Sally has specialised in biosolids and organic residues and their potential to
improve soil fertility and a number of other properties important for plant growth. Her research looked at how soils applied to residuals may also store more carbon, which can assist in mitigating climate change. In addition to in-situ restoration of contaminated sites, Sally’s research looked at the concept of integrating residuals into green urban infrastructure. The University of Washington research has begun to work on establishing the strength of nitrous oxide emissions from organically amended soils.

Chuck tells Waste Management Review that his passion for biosolids dates back to the 1980s. “I went to a conference on putting sludge in forest land and I was so enamoured by the whole process and the results I signed up to do my doctorate,” he says.

“From there, I did a lot of research in forest applications and it transitioned into research in compost. I was involved in national regulation development for contaminants and in the last 10 years or so I’ve transitioned even further into composting toilets.”

Sally says that her 30-year research journey began with Chuck reclaiming the most contaminated sites on the US EPA Superfund list, a list of national priority sites at risk of hazardous substances or pollutants. From there, Sally worked on areas of carbon accounting and has now moved onto biosolids in urban areas.

She says that following decades of research, significant changes are now starting to occur. “I think that cities are understanding more and more you have public health protection for waste treatment as the first goal, then environmental protection and resource recovery,” she says.

“The big discrepancy I see are people are really into the environment. People are really into the concept of compost, but you have regulations to make sure you don’t poison anything and make sure a product is used and integrated into society.”

### REGULAR TREATMENT

One 2009 research paper titled Land Application – a true path to zero waste, estimated that each person in Washington State creates about 60 pounds (27 kilograms) of biosolids, about the same amount of food waste and about 150 pounds (68 kilograms) of yard waste each year.

The studies took organic amendment residuals to test their performance. Soil samples for the study included long-term replicated field trials and farmers fields distributed across Washington State and a range of land uses, including turf, ornamental crops, highways, agronomic crops and high value orchard crops such as pears, cherries and hops.

The results showed all studies using organic amendments resulted in significant increases in soil carbon storage. Carbon content in soils increased with time, which found organic matter added with the residuals application resulted in long-term carbon increases in soils.
In terms of benefiting the soil itself, all studies showed total nitrogen in soils that received organic amendment addition was higher than conventionally fertilised or control soils for at least one of the rates of amendment tested. Soil physical properties also generally improved, in addition to soil water holding capacity in five of the nine sites sampled and reduced bulk density in a number of sites.

Another study, titled Changes in soil properties and carbon sequestration potential as a result of compost or mulch application: Results of on-farm sampling, used a lifecycle analysis on open windrow composting to quantify the benefits of applying compost to agricultural soils in California. The project looked to investigate the impact of applying compost produced using municipal food and garden waste to agricultural soils. The limited field sampling found improvements were greater than the lifecycle analysis, including greenhouse gas equivalencies and water savings and improvements in soil quality and plant yield.

Sally says that more municipalities are using biosolids in the US and being upfront on what they contain.

“The industry for a very long time had a real philosophy if we stay on the down low, real quiet, no-one will say anything and it will be OK. That backfired at least in the US and developed a lot of mistrust and people thought we were trying to hide something,” she says.

“One of the big concerns or challenges are that you’re dealing with a municipal infrastructure that is very used to having to abide by regulations and meet permits and not cause a fuss, but you’re not dealing with an entity that’s used to developing a product that’s marketed and understanding how to meet a customer’s demand.”

Chuck says that in the US, compost is much more easily accepted than biosolids. However in Seattle, Sally says that biosolids branded Loop are being used effectively. Loop has been used in a range of locations in King County, Washington, including Boulder Park, the Snoqualmie Forest and the Washington State Department of Natural Resources. Sally says Chicago is now also distributing and selling biosolids to homeowners.

### BIOSOLIDS IN AUSTRALIA

In Australia, biosolids are largely limited to agricultural applications, energy recovery, road base, land rehabilitation and landscaping. Biosolids are also mixed in with organic waste in composting.

According to the Australian & New Zealand Biosolids Partnership, in 2017, Australia produced about 327,000 dry tonnes of biosolids annually. About 75 per cent of this was applied to agricultural land and about 19 per cent used for landscaping or land rehabilitation and the remaining stockpiled, landfilled or discharged to the ocean.

The organisation on its website notes Australia has one of the strictest regulatory regimes for biosolids production and application in the world. It notes that biosolids may contain traces of synthetic organic compounds and metals, including arsenic, cadmium, chromium lead, mercury, nickel and selenium, limiting the extent to which biosolids can be used.

Biosolids are classified in specific state, territory or national guidelines and must be tested to ensure they meet the quality standards defined in the respective state, territory and national guidelines.

For example, in WA, the state government guidelines for biosolids management indicates biosolids are used on select agricultural and forestry properties and in compost production.
According to data from VicWater, Victorian water utilities beneficially reuse about 26 per cent of the biosolids produced in the state.

As state and territory water authorities process Australian wastewater, companies such as Sydney Water, Melbourne Water, TasWater and SA Water all have their own biosolids processing.

For example, Sydney Water has a $25 million biosolids program and produces about 180,000 wet tonnes per annum for reuse in agriculture.

In Victoria, there are numerous water businesses that treat their own biosolids through a composting process to be reapplied to agricultural land to benefit the soil quality and ultimately improve productivity.

To the east of the state, Gippsland Water processes up to 25,000 tonnes of biosolids per annum, mixing it with a number of other organic streams and composting it, ultimately achieving compliance with Australian Standard AS4454.

This compost product is commercially distributed predominantly to the broad acre farming industry.

Kelly Hopewell, Chair Australian New Zealand Biosolids Partnership (ANZBP), says that in Australia, a stigma exists on the public perception of biosolids, despite being used safely for more than 30 years.

ANZBP was created to promote and support the sustainable management of biosolids in Australia and New Zealand and its advisory board includes representatives from from SA Water, NSW EPA, Sydney Water, TasWater and Queensland Urban Utilities.

ANZBP’s members comprise consultants and contractors that apply the materials to land. It also has strategic alliances with AORA and other water associations.

One of the barriers, Kelly says, is the perception that biosolids should not be applied to agricultural land where food is being grown. The Harmonised Australian Retailer Produce Scheme (HARPS) indicates that treated and untreated fertilisers and soil additives made from biosolids are not permitted for use on growing sites or potential growing sites. Kelly says there is potential for this exemption to be removed when HARPS updates its guidelines to bring them in line with current biosolids guidelines.

In addition to chairing the partnership, Kelly is also the Coordinator of Process Engineering helping to optimise the sewage treatment plants for a local government in South-East Queensland. In Queensland, a number of councils run their own water services, contrary to the other states and territories with government-owned water businesses. Kelly says that having the council run its water and waste businesses has provided it with synergies and insights into managing its waste business.

While biosolids have been largely used on agricultural land, Kelly says potential exists for the councils to look at applying them to council-run land.

She says infrastructure projects could also utilise biosolids.

One of the emerging contaminants which will need to be updated in biosolid guidelines is per- and polyfluoroalkyl substance (PFAS) chemicals, historically used in firefighting foams and other industrial and consumer products.

The ANZBP is working closely with other industry bodies and the National Chemicals Working Group, a working group of environmental regulators from all state and territory governments and the Federal Government, to ensure that biosolids are considered in the next version of the PFAS National Environmental Management Plan.

Kelly says that ultimately the key will be to try and stay ahead of the game with emerging contaminants and ensure regulations are up-to-date and relevant.

She says there is also room to improve communication that biosolids are beneficial to farmers and the community.

She says the benefits are not just applicable to carbon sequestration, but in avoiding the energy intensive process of producing chemical fertiliser.
RULES AND REGULATIONS

Waste Management Review looks at the draft NSW Asbestos Waste Strategy and its impact on recycling and materials recovery facilities.

With construction projects rampant in Sydney, the waste industry is left to deal with the blowback.

The unfortunate situation is that asbestos, a naturally occurring mineral commonly found in areas of NSW and WA, is now being dug up. While asbestos has been banned by most Australian states and territories since the late 1980s, this did not include chrysotile asbestos (white asbestos), which remained in use until 2003. It’s now an issue that affects one third of Australian houses, according to estimates from the Asbestos Safety and Eradication Agency.

The main two types of asbestos are bonded and friable, with friable being any material that contains asbestos and is in powder form or can be crumbled, pulverised or reduced to powder by hand pressure when dry. Bonded is conversely any material that contains asbestos, other than friable asbestos material.

Under the Protection of the Environment Operations (Waste) Regulation 2014 (POEO) in NSW, a
person that is disposing of asbestos waste off the site at which it is generated must do so at a landfill site that can lawfully receive the waste. Penalties apply for corporations and individuals not covering specific depths of virgin excavated material at initial disposal, the end of each day’s operation and beneath the final surface of the landfill site.

In late 2018, reforms were passed which increased penalties to $2 million for corporations and $500,000 for individuals who who illegally dispose, recycle or reuse asbestos waste.

Under the Contaminated Land Management Act, notification of asbestos contamination is required when friable asbestos is present in soil or on the land, or the level of asbestos is detected at screening levels above those specified in the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM).

These are the two common problems that wind up on the desk of Gavin Shapiro, Partner at Hones Lawyers. As an environment and planning lawyer, Gavin is faced with the issue of materials recovery facilities (MRF) and recyclers who have done their due diligence but through no fault of their own end up with trace amounts of asbestos in a stockpile or cross contamination.

In other cases, landowners have clean soil imported onto their properties only to discover asbestos within and be given a clean-up notice by council or EPA. The clean-up costs range in the hundreds of thousands to millions to dispose and remediate, so they turn to Gavin for advice.

“Typically the demolition earthworks contractor has disappeared off the face of the earth. The first category of MRFs and recyclers we help analyse the process and look at Australian standards,” Gavin explains.

“In the second category, we look closely at contaminated land requirements and work with a waste consultant to analyse the material closely and determine what asbestos or material is in there and negotiate with the EPA on clean-up and finding means of remediation.”

ADDRESSING THE ISSUES
Gavin was hopeful that the two issues would be addressed in the NSW Asbestos Waste Strategy 2018-22, currently out for consultation, but to no avail. While he welcomes the strategy as a step in the right direction, he says the final version should address these problems.

“Frankly it’s extremely difficult for the EPA. Through no fault of their own, they are in a very difficult position. Connecting the dots between the construction industry and earthworks could be something looked at as part of the final strategy.”

Gavin Shapiro Partner at Hones Lawyers

According to Gavin, having a clear strategy will help set the right policy direction, but the devil is in the detail.

“Where we have divergence in the legislation and regulations related to asbestos is the zero tolerance approach for microscopic amounts located in stockpile or soils. If you’re dealing with contaminated land the NEPM allows for what are deemed safe levels of asbestos within soil to remain in-situ.”

He says in the waste regulations there is a zero-tolerance approach, while in the contaminated land area it is risk-based, creating a divergence of practicality.

“The absurd situation is say there is a stockpile of soil on site that came from offsite and was tested. If asbestos is found below NEPM levels, those criteria can dictate it is potentially safer to remain onsite and be intact, whereas under the laws and regulations that apply to waste that may be deemed asbestos waste which is illegal to bury onsite.”

He says that under the POEO Act, you could be required to dig up the material and bury offsite which is more risky to human health than burying and capping it onsite.

STRATEGY SUMMARY
To reduce illegal dumping and unsafe disposal, the EPA released the draft strategy in October with a goal of making asbestos waste disposal easier, cheaper, increasing awareness and changing behaviour, closing loopholes and increasing transparency, disrupting unlawful business models and monitoring and evaluating progress. One of the reasons cited for putting together the strategy was a need to determine a baseline for
lawful disposal which will be set in the first year of the strategy.

To make disposal of asbestos waste easier, the EPA proposes to explore options with councils and private providers such as providing asbestos disposal bags with skip bins and offering door-to-door pickup services. It also plans to fund the collection of household amounts of separated asbestos at sites other than landfills, including community recycling centres, while expanding facilities that receive asbestos waste to include waste storage and resource recovery facilities with appropriate safeguards. The EPA will also work with developers and infrastructure providers to achieve more efficient and appropriate asbestos waste management solutions.

To make asbestos waste cheaper, the EPA proposes to investigate removing the waste levy on separated asbestos material, and is considering options for setting landfill prices for asbestos waste. It also plans to work with SafeWork to consider amending the Waste Regulation to make environmental and workplace health and safety requirements more performance-based and cost-effective.

Part of the EPA’s broader plan is a reform package as part of the Protection of the Environment Operations Legislation Amendment (Waste) Regulation 2018, which will come into effect at least 12 months after being passed in November 2018 to give the industry time to adjust.

The package includes increasing on-the-spot fines for illegally transporting or disposing of asbestos waste by tenfold. In addition, construction and demolition waste facilities will face tougher inspection and handling rules. Tighter inspection controls and constant video monitoring will be introduced. On the levy side of things, a 75 per cent discount for some types of C&D waste that meets specification for cover will be afforded.

Gavin says that removing the levy for asbestos would be a good start as some rogue demolition contractors have exploited the law to hoist the material upon innocent landowners as purportedly clean soil. However, Gavin cautions against the issue of the levy still applying to mixed waste.

“The practicality of removing it only from asbestos itself but not providing levy relief for soil or C&D waste that contains asbestos will mean in practice there are a lot of projects where the cost of going through the separation activity may not be worthwhile as it could be if it were broadened to cover waste mixed with asbestos,” he says.

“That being said I do understand the EPA can’t create a perverse incentive to mix asbestos with waste. It is a difficult and complex issue.”

Gavin says that updating resource recovery orders and exceptions to allow for some allowances to use waste material onsite with testing procedures and sampling could be one way to improve compliance.

The EPA also plans to work with local government and Heads of Asbestos Coordination Authorities (HACA) to educate people about proper asbestos waste management. According to the strategy, the government is also considering reforms to the C&D sector. Furthermore, new guidelines for recyclers will set benchmark requirements for inspecting, sorting and processing C&D waste. The end goal is to increase the quality of recycled construction waste and minimise the risk of it entering facilities and contaminating recovered resources.

To close loopholes and increase transparency, EPA will use its RIDOnline database to help it prioritise actions, regulation and enforcement, while understanding the size and location of issues and deterring people from unlawful activities. It will work with SafeWork to monitor and track asbestos waste. The EPA is also proposing to work closely with local government to strengthen development consent requirements. The strategy says developments should not proceed without confirming how they will identify, remove, manage and dispose of asbestos.

Gavin says a move towards a risk-based approach from agencies would be welcomed, but at this stage he is unable to pass judgement given the lack of further clarity in the strategy on this.

In disrupting unlawful business models, the NSW Government will investigate amending legislation to make it a requirement for waste generators to pay the landfill or resource recovery facility directly. In the first instance, this change could be brought in for developments generating large quantities of waste.

The government in the strategy argues it will strengthen the sentencing provision for asbestos by prescribing in regulation the method for the courts to determine the amount representing the monetary benefit gained from the illegal conduct.

**THE BURDEN OF PROOF**

From a law enforcement perspective, Gavin says the EPA’s powers of prosecution are adequate and can be severe when combined with a monetary benefit order. But the difficulty stands in proving an offence has taken place.

“I think the EPA has all the powers it needs in terms of enforcement and investigation it’s more about a lack of
visibility as to when.”

“It’s for them to be able to connect the dots between the source and where it gets dumped.

“Frankly it’s extremely difficult for the EPA. Through no fault of their own, they are in a very difficult position. Connecting the dots between the construction industry and earthworks could be something looked at as part of the final strategy.”

Finally, the strategy will monitor and evaluate work based on RIDonline data. The document sets proposed timelines for all the government’s actions based from immediate and ongoing actions to action in six months’ time.

According to Tony Khoury, Executive Director of the Waste Contractors & Recyclers Association of NSW, removing the waste levy from separated and wrapped asbestos materials delivered to a lawful landfill will encourage proper separation of asbestos from other wastes at the point of generation.

“We all agree that asbestos poses a threat to public health and the environment. If the objective of the waste levy is to encourage diversion from landfill, why impose a levy on asbestos as it cannot be recycled? The safest option for the removal of asbestos from our environment is for the asbestos to be disposed of at a lawful landfill site,” Tony says.

“And if the EPA’s objective is to make the lawful disposal of asbestos cheaper, then there is no justification for a waste levy on the landfilling of asbestos.”

Tony says that WCRA challenges the proposal by the NSW EPA to set a landfill price for asbestos waste.

“While we support the removal of the waste levy on the landfilling of asbestos, the operational price charged by the landfill is a matter for the landfill,” he says.

He says that any such price should take into account a range of commercial factors, including labour, machinery, cover, compaction, post-closure provisions and a rate of return.

“The NSW Government doesn’t own the landfill and it is the commercial right of the landfill to set its own pricing on any incoming waste, whether it be asbestos or any other waste product.”

When it comes to making waste generators paying the landfill or resource recovery facility directly, Tony says this could be brought in for developments generating large quantities of waste.

Tony notes that the strategy is silent on the issue of an Asbestos Protocol – a methodology for the management of unexpected small quantities of asbestos found in construction and demolition waste.

“There is a potential for asbestos [to be present] in many parts of the waste and recycling sector. Other states like Queensland, Victoria and South Australia allow for a small tolerance. To date NSW hasn’t adopted this approach.

“Industry has been discussing with EPA for the last eight or nine years the need for a protocol that the whole industry can work towards, so that if a small amount is detected in an existing stockpile of asbestos, we can follow the principles in the protocol to safely remove and dispose of the one or two small pieces of asbestos.”

Tony says that the publication of this protocol has for most of 2018 seemed no closer now than it was in November 2011 when the first draft consultation document was circulated by the NSW EPA. He says it should be noted that a copy of this draft protocol has been on the EPA’s website since mid-2014.

“This lack of progress is a concern to our members and has caused good investors to shy away from the NSW C&D recycling sector.”
When households line their green bins with single-use plastic bags, it’s the materials recovery facility or recycler that is forced to grapple with the consequences.

When the shredders tackle the machines, the operator is left to deal with a potential contamination issue. Worse yet, if a grinder is processing the material, a multitude of what can only be described as confetti flows out into the air.

Depending on the seasonal weather or council arrangements, grass clippings and any potential contaminant fines could be more prevalent.

Pulling out plastic contamination from organics is easier when there’s high throughput and cost-effective machinery to handle it. While higher valued materials such as top dressing, compost and garden mixes are less likely to have contaminants than oversized mulch, the cost of not recovering residuals effectively can be damaging to the bottom line. Likewise, materials such as biosolids and composted green waste can be more difficult to process due to their higher moisture content.

For these reasons, technology supplier ELB Equipment has continued to tackle the issue of fine particle contamination with a variety of different systems. As the Australian supplier for Komptech, ELB brings products into the market on a needs basis. Keeping an eye out on the highly regulated European market, ELB is able to respond to overseas trends as Australia tightens contamination regulations and its composting sector matures.

From the Multistar L3 with a diesel generator of 45 Kv/a for reduced fuel consumption for organics processing, to the Multistar One for 25 kilowatts of mains performance for wood and biomass processing, ELB offers its customers the specialist advice to help them select the most optimal piece of equipment.

Komptech’s Multistar L3 improves on the previous line of Multistar star screens with a high throughput across a range of applications, in addition to a patented cleaning system to separate wet materials. ELB has distributed the technology since 2010, typically for organic sites processing municipal solid waste compost. The machine processes source separated green waste anywhere from pine bark to forest residues.

According to Craig Cosgrove, Komptech Sales Manager, the machine leverages a diesel engine through a generator to significantly reduce fuel costs when compared to standard diesel/hydraulic power systems. Komptech’s green efficiency uses the latest scrubbing exhaust technologies to offer reduced fuel consumption and higher performance, lowering carbon dioxide emissions and resource use.

The diesel engine also reduces noise...
“It can almost be classed as a multi-use machine. Apart from screening and classifying into three grades, it splits out ferrous steel with magnets and wind sifts at the same time.”

Craig Cosgrove, Komptech Sales Manager

and can run off mains power while mobile.

“It can almost be classed as a multi-use machine. Apart from screening and classifying into three grades, it splits out ferrous steel with magnets and wind sifts at the same time,” Craig explains.

“What you end up with is a clean intermediate fraction such as a mulch and then a clean oversize material, which can then be reground or further processed.”

He says the machine also offers further operational savings through the use of variable speed star decks to change the product size instantaneously. With other traditional screening equipment, a drum or mesh would typically need to be changed out to alter the particle size grading.

“When operators want to change the particle size and go on to the next product, they’ve really got to change the drum or the mesh.

“What these machines do is they have a drive system that controls the speed of the stars in a range of revolutions per minute. You can speed up and slow down the star decks, which in turn alters the particle grading.”

Craig says that the quicker the stars speed up, the finer the material produced and by moving slower, the coarser it becomes.

The Multistar L3 can also be preset to screen customers’ various specific products, thereby preventing any lost productivity caused from drum or mesh swapping. Various star configurations are available.

“As an example, for an operator there could be an order for material that would otherwise have been ignored due to the need to swap the drums or screens due to the downtime required,” Craig says.

With the machines potentially working from eight to 10 hours a day, Craig says that one hour lost in productivity adds up over the year.

The machine also comprises cleaning tips within the stars to keep them clean and reduce maintenance.

“The star screens work well in a higher percentage of moisture in material compared to traditional drum screens,” he says.

“All machines will have their limitations. With the drum screens, say after heavy rain periods, you’d reach the point where the machine’s production slows down where you would turn it off and call it a day. The L3 keeps thumping through for longer, the moisture doesn’t affect them as much and they have a very effective cleaning mechanism.”

He adds that operators can keep producing materials with a higher percentage of moisture content for longer periods.

To help operators keep tabs on their machines and how they are being used, Komptech has also launched a cellular application called “Connect!”. The Connect! Hardware module reports events and diagnosis codes, in addition to data on operating hours, fuel consumption and idle time by mobile radio to a central data sever.

With distribution networks throughout Australia and New Zealand, ELB is able to support its customers with strong after-sales support.

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The Multistar L3 can be preset to screen customers’ specific products.
In June 2018, the Federal Parliament released its inquiry into Australia’s recycling industry. It highlighted the critical need for investment in innovative technology and improved infrastructure.

The report explains Australia’s recycling industry had become reliant on the export of large quantities of low quality recycled materials overseas, meaning that across the supply chain, from collection to sorting, there has been a focus on quantity not quality.

With regulatory restrictions now limiting potential export destinations, the report says Australian recycling industry is in grave danger. Further, it adds that Australia is lagging behind other jurisdictions which have made investments into recycling infrastructure and technology to establish a circular economy.

Tom Jansen, TOMRA Sales Manager, says standard manual sorting processes lack the efficiency needed to keep up with the evolving market demands for purity.

“We’re seeing it across the globe. To simply recover materials just isn’t good enough anymore. Materials recovery facilities need to be able to take the next step and ensure they are equipped with better, faster processes to reduce contamination levels,” he explains.

With more than 5500 sensor systems installed worldwide, TOMRA has specialised in sensor sorting machines, backed by continuous research and development of new technologies to improve capabilities of sorting plants.

To bring this market expertise to Australia, TOMRA has partnered with equipment supply and plant engineering company CEMAC technologies. The two organisations help recycling companies find ways to improve their throughput and qualities with sensor technologies.

Eric Paulsen, CEMAC technologies Director, says there are a range of potential applications for these sorting plants, from commingled recycling wastes, plastics to metal scrap recycling, or organics decontamination.

“It is important to ensure there is ample collaboration between us and the specific requirements and application for each plant, which is why CEMAC and TOMRA maintain close consult with clients to design reliable and consistent processes,” Eric explains.

“We help our clients develop the process engineering, flow and assist with the mass balance calculations for the correct selection of equipment.”

For waste streams where there are significant levels of contamination, such as commingled recycling, incoming materials are first separated based on size, removing potential contaminants such as textiles or plastic film.

Additional sensors include near infrared, which can be calibrated to detect specific material such as plastics and paper as they move through a specific point on the conveyor belt, before being ejected by a burst of compressed air.

For materials with no specific infrared signals, which are invisible to this type of detection, laser object detection sensors are installed. These use a 3D laser system to detect items the spectrometer can’t.

TOMRA has also developed the Sharp Eye system, which allows the plant to separate single-layer PET trays from PET bottles.

This is often important, as the chemical properties between the two products may require them to be separated for equivalent product recycling.

X-ray transmission sensors, colour detecting cameras and induction-based sensors are also able to be implemented according to the specifications required of the facility.

Eric explains that the TOMRA spectrometers are able to attain a high signal strength to background noise ratio, leading to better sorting outcomes.

“With automated sensor sorting, recyclers are able to go above and beyond the limitations of manual sorting and move closer towards the efficiency required for a circular economy.”

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PRODUCT SPOTLIGHT – SORTING AND SEPARATING EQUIPMENT

ATRITOR TURBO SEPARATOR

The Atritor Turbo Separator was developed to remove products from their packaging, releasing them for recycling or disposal.

Using a combination of centrifugal forces, self-generated air flow and mechanical action, up to 99 per cent of dry or liquid materials can be separated from their packaging. When compared with other methods of packaging separation, the Turbo Separator achieves higher separation efficiencies with lower power consumption, resulting in reduced running costs.

Available through Australian distributor Wastech Engineering, the Turbo Separator is ideal for separating out-of-specification, out-of-date and mislabelled products from a variety of packaging, including cans, plastic bottles and boxes.

The diverse range of applications includes separating paper from gypsum in plasterboard, glass from laminate in car windscreens, and general foodstuffs from their packaging. Typically, recovered packaging can be recycled, while the organic fraction can be used for animal feed, anaerobic digestion or compost.

FLAKE PURIFIER+ MULTISENSOR SORTING SYSTEM

Automated processes paved the way for flake plastics separation, a process previously not possible with conventional manual sorting.

Telford Smith, a leading supplier of new and used recycling machinery, offers the Flake Purifier+ multisensor sorting system to streamline the process.

As a universal system for plastics recycling, the Flake Purifier+ multisensor sorting system separates flakes ranging from PET, HDPE, PVC and mixed plastic flakes and achieve maximum separation.

Based on a modular concept, the systems utilise the combination of all available sensors for contaminant detection. With sensors for metal and colour separation and infrared sensors for the separation and sorting of all plastic by type, the flake purifier works to optimise material infeed for a more evenly distributed product flow and increased material throughput.

Benefits of the machine include optimised compressed air and power consumption and easy maintenance and integration. The Flake Purifier+ also has a dust-proof design and integrated connections for dust and label extraction. The split machine allows for split sorting for two different material streams in parallel or for two-step sorting. The sensors can be upgraded with prewiring for the future integration of additional sensors.

Other options include separately controlled conveyor trough modules, a compressed air tank with a filter unit and pressure control, connections for dust and label extraction and a data management system, VISUTEC, for remote diagnostics.

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Applied Machinery offers a wide range of size reduction equipment to handle a variety of challenging waste streams and applications, from metal to tyres and cables.

To process metals, Genox’s metal recycling plants handle a variety of metallic waste streams, including light iron scrap, vehicle shells and body panels (end-of-life vehicles), steel drums, white goods, electronic scrap and computer waste. Genox tyre recycling technology features pre-shredding, recirculation systems, secondary size reductions, steel wire separation, fine granulation, product classifying, textile separation and dust collection.

For a high-volume processing machine, Genox’s cable recycling plants comprise functions which include pre-shredding, steel removal, granulation and copper or aluminium plastic separation.

A wider scope of applications is covered by Genox X Series Twin Shaft Shredders, equipped with powerful drive motors and high torque gearboxes. The robust pre-shredders are ideal for processing large volumes of various waste materials.

The maintenance-friendly-designed machines feature options such as drive motor power and gearing, hydraulic drive, hydraulic force feeder and rotary screens. High-speed granulation in a single pass can be achieved through GC Series Granulators that are ideal for processing materials such as plastics, rubber, fibres, copper cable and light non-ferrous metals. The machines are characterised by high efficiency, reduced power consumption and low noise and sound proof designs.

Bulky or voluminous materials are handled with the Applied Machinery M Series, characterised by their efficient, high torque and low power consumption design.

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BOMAG(compactors) were designed to achieve the highest level of compaction on the toughest of sites with low energy consumption. Available through National Dealer Tutt Bryant Equipment, the newest members comprise models BC 463 RB-3/BC 473 RB-3/BC 473 RS-3/BC 573 RB-3 which add innovations to the operator and machine. Extending the life of landfill sites are front of mind with efficiency during compaction, power, cost-efficiency, ergonomics and versatility all important considerations for customers. The well designed and powerful turbo diesel engines (available in Tier 3 and Tier 4) use the latest technology to provide power for all site situations and lower fuel consumption rates. With 10 per cent less fuel consumption than previous models, the machines aims to significantly reduce operating costs. For an even compaction, BOMAG’s wheel geometry, scraper beams and stable ground contact allow for even compaction. The machine uses polygon disc wheels fitted with premium teeth warranted pro rata to 10,000 hours for crushing, kneading and effective compaction to depth. An oscillating joint provides good load distribution to the compaction wheels, while scrapers and wire cutters guarantee clean wheels during operation. Ergonomics and ease of operation occurs through a flexibly mounted cab, ergonomically designed workplace and low pressure sound level. For additional comfort and convenience, BOMAG has developed an ergonomically shaped, comfortable heated seat with air suspension to suit any operator. Increased benefits to the customer are supported by various warranty extensions and maintenance contracts available to their needs. Smaller landfills can also look at the new RS model that can also be used on a variety of sites, allowing for versatility with high lift ability.

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The TANA Control system improves drivability with a user-friendly interface.

TANA E SERIES COMPACTOR
The TANA E Series compactor was designed to maximise uptime and provide landfill operators with efficiencies to invest in other critical areas of the business. The TANA design uses a twin drum, rigid frame and crushing teeth to compact materials with fewer passes. The rigid frame provides up to 100 per cent greater crushing force on a single drum when compared to an oscillating four-wheeler of a similar weight. The wide drums provide traction, stopping the machine from slipping below the waste. Its design also means the machine movement is cut in half, which saves time and fuel for the operator. The wide and level blade allows for an even level swing and traction is supported by no slipping or sinking wheels. The crushing teeth are made of solid steel and 200 millimetres in height, while providing up to 28 footprints per square metre and maximum kneading effect on waste. Its TANA Control system improves driveability with a user-friendly interface with a simple operating menu and four-colour display. A monitoring system helps the operator determine any faults and prevent damage from occurring. The combination of fewer passes and better compaction allows operators to manage their waste in a more efficient way.

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A top performer

CJD EQUIPMENT’S LINDSAY DANIELS DETAILS THE COMPANY’S PARTNERSHIP WITH VOLVO TO OFFER HIGH PERFORMANCE AND LOW FUEL CONSUMPTION EXCAVATORS.

Since 1974, CJD Equipment has partnered with high quality international manufacturers to offer a diverse range of products for a variety of industries, from waste to transport and freight. The company’s ethos – big enough to trust, small enough to care – has been paramount to supporting its customers to solve their day-to-day challenges with durable and versatile equipment.

In the waste handling sector, CJD’s distribution of Volvo EC220D excavators make no exception, with the company collecting the exact requirements of its customers to suit their individual site conditions. The EC220D has been distributed by CJD for more than three years, allowing them to improve their service offering over time. As Volvo CE’s first and only authorised partner for more than 25 years, CJD has continued to take pride in supporting its customers with advanced skills and product knowledge.

Lindsay Daniels, National Product Engineering & Training Manager at CJD Equipment, says that CJD’s ability to listen and understand the needs of its customers is critical to achieving success.

In his role, Lindsay collates the customer’s requirements to ensure any attachments and requirements are fitted within the supplier’s recommendations. For example, with the EC220D, if a customer is after a particular grapple, CJD finds out the material they will handle and its weight and ensures it is within Volvo’s safety guidelines.

“I think what we do well is listen to and understand our customers’ requirements and do everything we can to provide them with the right sized machinery and attachments,” Lindsay explains.

“There’s a fair degree of consistency depending on an operator’s application, whether it be green waste, scrap metal or general waste. It’s just a matter of understanding the application to offer the right option.”

To reduce fuel consumption and therefore operating costs, the Volvo EC220D boasts a 10 per cent improvement in fuel efficiency compared to the previous model. With Volvo’s ECO mode, a new hydraulic system and a premium Volvo D6 engine, the machine does not compromise on performance. Operator modes adjust both engine revs and operator control, maximising fuel consumption.

“The beauty of the Volvo engines is they produce a high amount of torque at very low revolutions per minute so you don’t have to rev the engine and therefore save fuel and keep the noise down,” he says.

Lindsay says that the 10 per cent in fuel economy can be experienced over the lifetime of the machine – more than 10,000 hours of use.

Auto engine shutdown automatically turns off the engine to reduce fuel consumption when the machine is inactive for a preset amount of time. A gauge bar also shows instantaneous fuel consumption with average consumption per hour to monitor on different sites and applications.

Hydraulic options offer speed and versatility with the ability to use the machine for a variety of functions. The EC220D also utilises a variety of attachments for versatility, including X1 and X2 auxiliary circuits, quick couplers, direct fit, general purpose and heavy duty buckets and a Volvo tooth system for all applications.

“The machines come into Australia with all of the hydraulic options factory fitted, including two auxiliary circuits and quick couplings, hose rupture valves and boom float so it gives the customer a huge amount of flexibility over the life of the machine,” Lindsay says.

A boom float options also enables the boom to float over the ground without pressure in the boom cylinders and not using pump power to ensure power for other functions.

Lindsay says that the X1 circuit offers the ability to preset 20 functions with preset flows, whether it be a hammer, plate compactor or auger, at the click of a button within the cab.

He says that the hose rupture valves are critical to safety and part of Australian standards, particularly...
when fitting quick couplings to the machine that allows operators to switch buckets quickly. Besides the hose rupture valves fitted as standard, three-point contact, large door openings for ease of entry and a falling object guard within the cab all work to enhance safety. Lights on the boom also ensure visibility at night. Lindsay says the factory-fitted options save operators time and money.

The spacious cab comprises robust slim cab pillars, large expanses of glass, an adjustable seat and easy-to-access controls to reduce fatigue and boost productivity.

Lindsay says that the noise levels are also significantly low, which enhances operator comfort and alleviates pressure on the surrounding environment. A pressurised air conditioned cab also keeps dust out.

“The EC220D comes with a heavy duty boom and arm sets even for the most arduous of conditions. The arm has protection plates welded on the end of the arm so that the arm doesn’t get damaged,” he says.

He says that centralised greasing also reduces maintenance and downtime as the operator can grease the boom and arm set from two locations as opposed to many. Centralised filters and greasing points also reduce downtime. A cooling system has been designed to work within ambient temperatures in Australia and Lindsay says they are easy to clean and maintain. The radiator, charged air cooler and hydraulic cooler are situated side by side to maximise efficiencies, reduce blockages and aid cleaning. An extra water separator is also available to prevent water from entering the engine and contaminating the fuel.

With after-sales support running 24 hours and seven days a week, CJD is able to support its customers through a vast network of branches in Australia, including major regional towns.

In the meantime, Lindsay says the reliable and trouble-free machines will continue to be a hit with customers in the waste industry across Australia.

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Treading the circular path

THE NEW NATIONAL WASTE POLICY ACKNOWLEDGES THE IMPORTANCE OF A CIRCULAR ECONOMY, BUT IS LARGELY A MISSED OPPORTUNITY, WRITES JENNI DOWNES, SENIOR RESEARCH CONSULTANT AT THE UNIVERSITY OF TECHNOLOGY SYDNEY’S INSTITUTE OF SUSTAINABLE FUTURES.

Following on the heels of the China sword crisis, the path towards a circular economy in Australia surged forward last year, in large part due to the leadership of state governments.

The South Australian Government can take some credit as a first mover. Back in 2017, it commissioned research into the benefits of transitioning to a circular economy and dedicated Green Industries SA to progressing it.

In March 2018, the WA Government first indicated their new waste strategy would likely include circular economy principles. In June, the Queensland Government announced in a directions paper that it would progressively move towards a circular economy, and shortly after, the Victorian Government committed to developing a circular economy Policy by 2020.

In October 2018, the NSW Government leapfrogged these commitments by releasing a draft Circular Economy Policy statement for discussion.

The Federal Government also

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How traditional waste collections contractors can play a pivotal role in a new circular economy.
joined the conversation, agreeing as part of the seventh Meeting of Environment Ministers last April that an update to the 2008 National Waste Policy by the end of 2018 would include circular economy principles. The government met the year-end deadline, releasing the 2018 National Waste Policy in early December, following an intense, though brief, round of industry engagement and public consultation and agreement at the eighth Meeting of Environment Ministers.

The new national policy acknowledges the importance of a circular economy, but limits the scope of such to closing material loops according to the waste hierarchy. In essence, it is just a progression of Australia’s “recycling” economy.

This approach misses the truly revolutionary nature of a circular economy. A circular economy ideally aims to maximise the lifespan of whole products and components as well as materials and energy, by developing innovative business models that transform whole systems of production, distribution and consumption. These systems also support sharing, reuse, repair, refurbishing, reassembly and remanufacturing as well as recycling and energy recovery.

For example, this can include:

1. **Products as services:** through sharing/collaborative consumption initiatives, pay-for-use, leasing/take backs/subscriptions/upgrades and performance purchasing agreements.

2. **Transformed products:** these include modular design of dismantlable components, allowing for easier upgrade, repair and refurbishment for ‘extended life’, and reassembly and remanufacture for ‘next life’, plus designing for recyclability at “end-of-life”.

3. **Innovative recycling:** leveraging new technologies and capabilities to recover almost any type of resource at a level of value equivalent to, or even above, that of the initial material.

The role of the waste and resource recovery sector in the third opportunity is obvious. But the sector also has an opportunity to support and enable broader transformations, by reimagining its own role in the economy and growing beyond end-of-life services to support extended life and next life approaches, which aim to stop items from becoming waste in the first place.

While this may seem counterintuitive for a sector whose business models mostly rely on the production of waste, such contrary transformations are already happening in other industries. In the energy sector for example, where decentralised generation and storage are disrupting traditional revenue streams, energy businesses are beginning the transition from selling energy (where profits have traditionally been derived from how much energy people consume) to selling energy services (including energy efficiency, which deliberately reduces how much energy is consumed).

In the same way, this sector could, for example, look to combat problems from the China “ban” not only by improving quality of waste streams and supporting (or moving into) onshore reprocessing, but also by profitably helping reduce the amount of waste that needs to be recycled.

For example, novel collection, consolidation and redistribution services could be offered that enable the cycling of reusable products and components, not just recoverable or disposable materials.

Auckland has taken the first step in this direction, with collection contractors for kerbside bulky goods doing a first pass of the clean-up stream and delivering salvageable items to a “triage” warehouse where reuse/repair charities take items to on-sell/redistribute. In this vein, e-waste recycling facilities could add preliminary processes to salvage reusable components before shredding items to recover raw materials, while food waste collections could partner with food charities to hand over edible food before recycling the rest.

And these are just the beginning of what could be. As described by the UK Chartered Institution of Wastes Management, there is a chance for “a generational change” resulting in a sector that would look very different to the one that has recently been overseeing a shift from “landfill-led to resource recovery-led”.

Such revolutionary changes require both vision and investment. The National Waste Policy could have been a vehicle for both. There is still scope for such. The eighth Meeting of Environment Ministers agreed to the National Waste Policy, while also acknowledging the urgent need for a strong, national action plan with robust targets, milestones and appropriate funding to underpin and guide implementation of the policy.

To be developed by the next meeting in mid 2019, the action plan should include a strengthened focus on support for industry development, which could include beginning these step-change transitions.

However, the sector could also take a leadership role in developing this broader vision for itself and lead this year’s conversation on how an Australian circular society could be about so much more than just better waste management and recovery.
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IS THE END IS JUST
THE BEGINNING.

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