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Environment Protection Authority



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Foreword

In 2015 when CSIRO produced its seminal global megatrends report, *Our Future World*, its number one item was “more from less”.

“The world has limited supplies of natural mineral, energy, water and food resources essential for human survival and maintaining lifestyles,” it said. Resources are being depleted at an “alarming rate”.

But waste suffers from a lot of bad press. When it comes to commercial waste streams, we keep hearing stories of poor measurement data, contamination, and a lack of focus and understanding about the opportunities.

Things are changing.

The corporate world is waking up to the potential for waste to become a resource, both materially and financially.

But there’s a lot more to waste than separating recyclables and getting the waste contract right.

This ebook, our latest in the Greening Your Office series we’re producing in collaboration with CitySwitch – and in this case with co-lead sponsor EPA NSW – is a guide to the best thinking and resources around.

We’ve looked at what some of the leading office sites are doing – Barangaroo for instance – and companies that are setting inspirational targets. We’ve looked at intervention, procurement, design of products, separation, recycling, re-use, office de-fit and product end of life.

We’ve even grappled with the conundrum of the coffee cup. Recyclable? Hardly. Here’s a tip: buy your own lovely porcelain or ceramic number and enjoy the flavour untarnished by the taste of cardboard or plastic film.

It’s all part of the gifts that a more sustainable lifestyle and business brings – a better experience and better outcomes.

In the office, the rewards of a good management plan can include better staff engagement and wellbeing, lower costs for waste management, reduced corporate carbon footprints and enhanced company reputations.

A huge thanks to CitySwitch and our special co-lead sponsor on this issue of Greening Your Office, EPA NSW.

Tina Perinotto,
Managing Editor
The Fifth Estate



Waste is a thing we do



Waste is about to come out of the office building loading docks and into our boardroom metrics. This most neglected area of our commercial world is one of the last of our poor environmental practices to face reconstruction.

As green buildings become the norm, as corporates vie for world's best ESG practices and global leaders club together to ensure the promises of COP 21 deliver actions, attention is turning finally to the darkest corners of our workplaces, the trucks and conveyor belts that carry our

waste out of sight and out of mind to the landfill or incinerator.

We waste money, energy, resources and human effort when we fail to give proper attention to our waste streams. The notion that we can just throw things away is not only "stiffoating" our environment, polluting waterways and soil, generating methane and carbon emissions – it also results in valuable resources and embodied energy being literally trashed.

We need a major overhaul of how we manage waste and we need it fast. Australia is running out of landfill. By 2021 Sydney's

nearest will be 250 kilometres away and costs are already sky high in most places.

According to Esther Bailey, sustainability program leader for the City of Sydney, which manages the CitySwitch program, waste is ultimately corporate inefficiency. Driving out inefficiency is what many companies strive for.

Business gets it, or at least they're starting to turn strongly to the opportunities in waste to save resources.

Bailey says we've entered the era of resource recovery and new businesses models are emerging that can capture waste and convert it into new products.

"But not quickly enough," she says.

"There are a myriad of easy ways to reduce, reuse recycle and recover material, but we need to get serious about how we account for our waste, build an honest and shared understanding about what is meaningful recovery and focus on how we manage waste at source to create genuine recovery opportunities."

The time is right to ask the hard questions about what is going on in commercial and industrial waste from the office and retail sectors and to raise our expectations, she says.

"We know that commercial office tenants want it; we know that building owners want it. Let's get on with it."

THE DATA IS MISSING IN ACTION

One of the biggest stumbling blocks in meaningful progress to rampant waste creation is a dearth of transparent and up-to-date data on commercial office waste

generation and disposal outcomes.

In the commercial sector there is unreliable, inconsistent or non-existent measurement. This is one of the big challenges in motivating change.

A major problem is that commercial office waste is generally aggregated with industrial, construction and demolition waste once it enters the landfill gates, so getting accurate data specifically on commercial waste can be difficult.

"We need to get good information travelling reliably up and down the supply chain," Bailey says.

According to the Australian Bureau of Statistics, Australia generates 48 million tonnes of waste a year. That's equivalent to 2.2 tonnes per person, and Department of Environment data shows that the amount we throw away each year is growing at 40 per cent faster than population growth.

In NSW, a 2014 Environmental Protection Authority audit found that 27 per cent

WE NEED A MAJOR OVERHAUL OF HOW WE MANAGE WASTE AND WE NEED IT FAST. AUSTRALIA IS RUNNING OUT OF LANDFILL.

of commercial and industrial (C&I) waste currently disposed to landfill was recyclable – mainly masonry materials, garden organics, plastic, paper and cardboard. Future technologies could see this figure rise to 83 per cent.

And while NSW is seeing downward trends in C&I waste to landfill – 1.8 million tonnes in 2013/14 compared with 2.2 million tonnes in 2007/08 – other states are seeing increases. In Victoria, for example, waste trends are heading up, according to the Victorian EPA. C&I and construction and demolition (C&D) waste in the state went from 2.214 million tonnes in 2013/14 to 2.281 million in 2014/15.

Nationally several jurisdictions hope to improve the outcomes.

NSW is targeting a 70 per cent recycle rate for C&I waste by 2021, Western Australia wants 70 per cent by 2020 and



South Australia 80 per cent by 2020. Currently, offices are on average recycling only 50-60 per cent of their waste and the veracity of the figure varies depending on how rigorous individual waste data is.

Analysis by the NSW EPA has shown that 94 per cent of office waste is recyclable.

Bailey says that right now very few people could claim that level of recovery.

"Those that do need to demonstrate the veracity of that data so that we can trust it," she says.

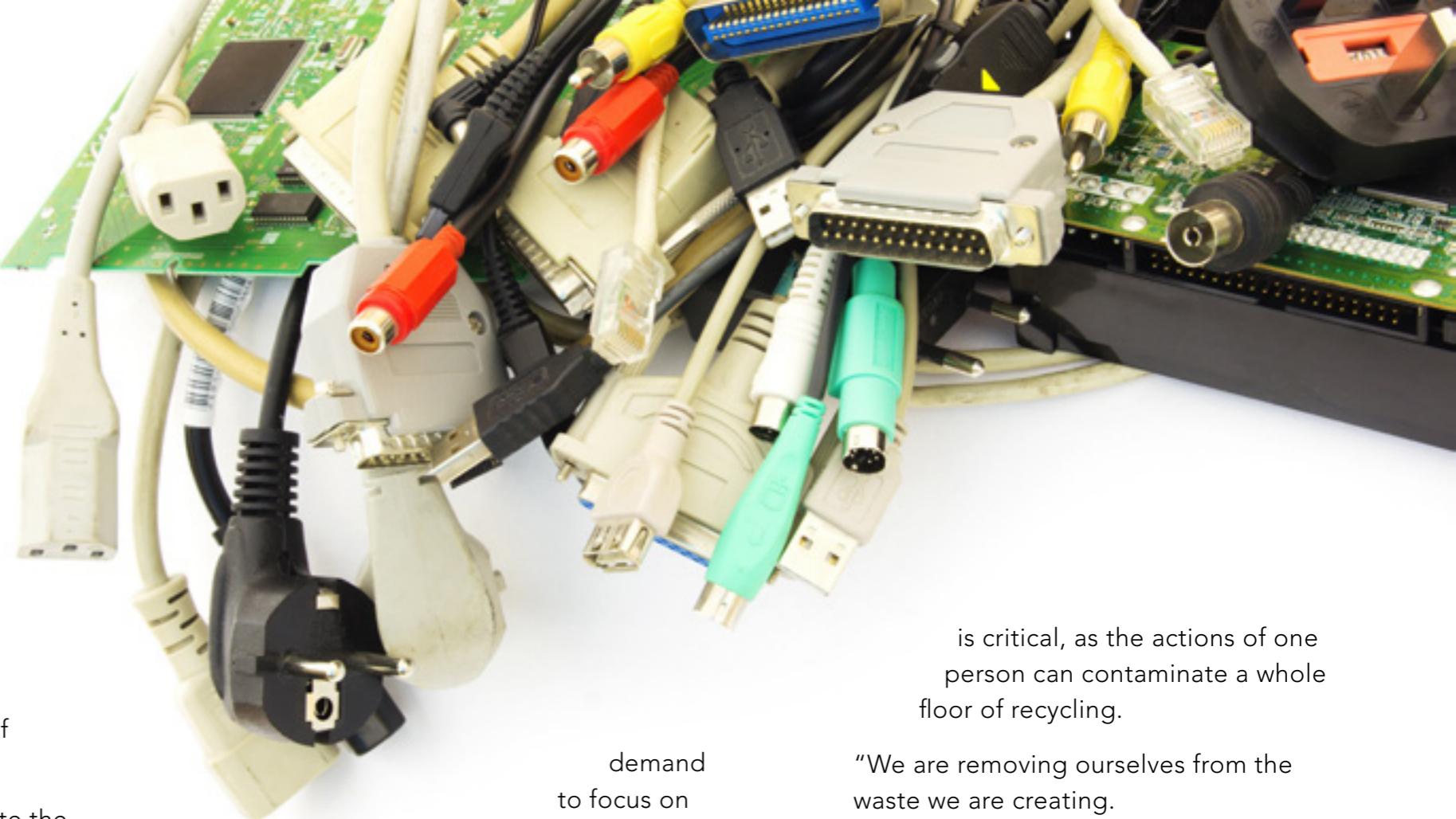
Her team will be working with CitySwitch signatories in the next six months to establish more precise data on generation and recovery rates of waste in offices.

It's targeting 94 per cent improvement, so the program is a "terrific opportunity to lead" Bailey says.

Other positive steps are programs by the Better Buildings Partnership NABERS alongside funding opportunities such as the EPA NSW programs.

There is also a suite of tools developed by CitySwitch, the BBP, the EPA and NABERS that will show office owners and managers how to raise the bar and reduce the amount of waste being sent to landfill from your office.

According to Bailey there is massive



demand to focus on waste; 23 per cent of projects reported by CitySwitch signatories last year were waste related.

THE CONVENIENCE FACTOR

A big part of the problem with waste is the consumption motivation coupled with the "convenience" of waste.

A good example is the takeaway coffee cup, which can't always be recycled (more on this later).

According to director of Foresight Environmental Oliver Batchelour most people don't think about the consequences of the materials they consume.

The individual is generally removed from the process of managing waste, he says. They put it in the bin, don't see where it goes afterwards, and don't think about it. Making people aware of their actions

is critical, as the actions of one person can contaminate a whole floor of recycling.

"We are removing ourselves from the waste we are creating.

"Once you are aware of the consequences of your actions, you [hopefully] stop doing it."

IT'S GOOD HOUSEKEEPING

"Waste is lumped into the environmental argument but it doesn't need to be. It's just good housekeeping.

"Why just bury it when it can be recycled, reused or you can just not buy it in the first place?"

IMMENSE OPPORTUNITIES

The good news is, the woeful waste picture can change, and the benefits of change are multiple, including better staff engagement and wellbeing, lower costs for waste management, reduced corporate carbon footprints and enhanced company reputations.

"When people get together, they can create huge change," Batchelour says.

Zero waste: can we get there?

TIP:

How to be a resource steward and help create a closed-loop future:

- **Choose products for both your workplace and your home that can be repaired by someone, have a long design life and are fully recyclable into a high-value product**
- **Make smart decisions around lunch, coffee and eating out so you are using reusable items – even if you bring them to the food or beverage outlet yourself**
- **Ask the hard questions – why isn't your office collecting batteries/mobiles/orgamics? Then make it your mission to see it come about**

Dealing seriously with waste can mean examining existing paradigms and throwing them overboard in some cases. For example, the notion that zero waste to landfill is a good target. According to Robyn Pearson, a waste consultant and member of the Better Buildings Partnership's waste working group, it's not.

Pearson, who helped develop the waste management strategy for the new Medibank building in Docklands, says many leading organisations have a good handle on the type of recycling that works, with reasonably good diversion of paper and cardboard.

But there's confusion about what happens to everything else, including traditional comingled recycling and food waste.

In Pearson's view recycling is just one step above landfill, and can become a "false god".

"It's a comfort background. An 80 to 90 per cent recycle rate? I'm not impressed by that anymore. We need to think beyond that. What we are aiming for is reduction and avoidance of waste."

That means avoiding getting food and beverages in takeaway containers, and trying to generate less paper, even if that paper is going to be recycled.

Robyn Pearson



"Zero waste to landfill is the wrong target to have," she says, particularly if the business is generating reams and reams of paper waste to send to recycling.

Or take the case of one manufacturing site she audited, where the top 10 centimetres of packing cartons on a pallet went straight into the recycling and were never used.

The new supplier of the cartons had been tying them down on the pallets so tightly, the top cartons had damaged corners and could not be used. This was costing the company several hundred thousand dollars a year in wasted packaging.

"The mindset of recycling is fine," she says, but in terms of the next generation of waste

TIP:

Don't rely on recycling, reduce first – dramatically if possible.

management strategies, we shouldn't even be talking about recycling, it should simply be standard practice while the target should be reduction and avoidance.

When the mindset is focused on recycling, we forget about the resources we're actually consuming, including human energy, water, power, transport and the carbon footprint, Pearson says.

THE PERSONAL DESK BIN

Pearson believes the under desk bin should be scrapped.

"Get rid of them and see what happens."

GPT national manager – sustainability performance Steve Ford says the company did just that in one of its office towers in the Melbourne CBD. There, every tenancy is required to take waste to hubs where there are recycling bins and general waste bins.

The feedback from one tenant is that it's been positive for staff, who now engage in more informal discussion of ideas and have become more productive as a result, simply because they are meeting up on their way to the hub space.

It's a similar principle to the "bump spaces" that have become so popular in new tertiary education buildings. Encourage people to move about and they will probably talk to each other.



TIPS:

- **Scrap the personal bin and see what happens**
- **Examine your product purchases**
- **Encourage staff to take time out to have a lunch that they've brought from home in a reusable container, or eat at a cafe where they offer reusable plates and cups**
- **Encourage staff to get up and walk to a water fountain for filtered water in a reusable cup, rather than using bottled water. Movement is good for people (and can translate to lower costs for employers).**

RETHINK EVERYTHING

The key to next generation waste management starts with looking at waste and rethinking why it is generated. From simple things such as upgrading toilet roll dispensers so that cleaners are not encouraged to toss out up to half the roll at the end of the day, to bigger things such as technology upgrades that result in less paper, ink and power use.

In offices where recycling is well



established, the majority of waste found in audits of bins is food waste and containers from takeaway food.

Perhaps we need to see a shift to a tiffin system like India's where the building's food court or cafe supply lunches in workers' reusable steel containers.

Pearson says there needs to be a whole mindset change about how we consume food and coffee, for instance.

When she was doing the Medibank WMP, she was conscious of bringing everything

back to a person's wellbeing.

The planet is too big a concept for most people, she says, but what's more important to a person than their health and wellbeing?

It's about tying it all back so what is good for the individual is good for the environment.

Improvements to staff health if they eat better and move around more also translate into lower costs for employers, she says.

CASE STUDY: NSW cracking commercial waste



Steve Beaman

The industry has long agreed that among all waste streams, commercial and industrial waste stream is the most challenging in terms of diversion from landfill.

But now, after a series of major waste and recycling programs, Waste Less, Recycle More, launched by the NSW Environment Protection Authority and funded by the NSW Government, there are promising inroads into this segment.

According to NSW EPA director waste & resource recovery Steve Beaman, the struggle with office waste is due to it being a diffuse system, with "lots and lots of small businesses and many contractors", creating complexity.

"The solution", he says, is helping

businesses link up with resource recovery, not waste disposal.

Two approaches that have reaped consistent rewards for the EPA are the Circulate program in regional industrial ecology-type networks and the Bin Trim program that targets small-to medium-sized businesses, offering waste audits and advice on recycling and resource recovery.

A NSW EPA C&I waste audit showed a significant drop of 800,000 tonnes in waste to landfill between 2011 and 2014.

Beaman partly attributes this to the effectiveness of government programs, but says "the whole sector needs to take credit".

ORGANICS SWEPT UP IN THE SAVINGS

Part of the success has been in diverting organic waste from landfill across all three waste streams – municipal, C&I and C&D. A new audit at the end of the programs in mid-2017 is expected to find the new infrastructure will divert 1.9 million tonnes of waste from landfill, with a large part of that organics.

TIP:

Make use of industrial ecology networks and programs such as Bin Trim.

So far Bin Trim has assessed more than 15,000 properties, many of them offices, and increased recycling by around 10 per cent, saving businesses on average \$1000 a year. EPA NSW offers free assessments by trained assessors.

The industrial ecology networks being set up around the state are also taking advantage of re-use and recycling options, especially in urban areas such as the City of Sydney, which is experiencing significant turnover of office space.



94% of office waste can be recycled. It's easy.

Join CitySwitch Green Office – a network of more than 700 forward-thinking business leaders.

Access free support and improve your office waste management with the new CitySwitch tools that help you:

- understand how much waste you generate and where it comes from;
- assess your rates of contamination and recycling;
- set up a best-practice waste system in your workplace;
- receive tailored advice from a CitySwitch expert; and
- set and achieve waste targets.



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WASTE IS A HIDDEN TAX

"THE PAST'S LINEAR TAKE ON WASTE IS NOT FIT FOR THE CURRENT WORLD.

"THERE'S A VALUE FOR ALL THIS MATERIAL. TREATING IT AS WASTE ESSENTIALLY MEANS PAYING FOR IT TWICE - PAYING UP FRONT TO USE IT, AND THEN PAYING TO DISPOSE OF IT, WHICH GIVES NO VALUE. WASTE IS REALLY A HIDDEN TAX ON RESOURCES THAT GOES ONTO WHATEVER YOU ARE MAKING.

JOEL MORRIS, CLOSED LOOP

SUCCESS STORIES – PLANET ARK

Planet Ark's online resource for business started as a way to connect firms around Australia with recycling service providers. As the waste streams that can be recycled have grown, so too has the www.businessrecycling.com.au site.

There are now about 90 different materials for which users can find a recycling service provider. Planet Ark believes this makes it Australia's most comprehensive list.

The aim of the site is to bring all the information to one location for ease of use. It has now evolved to provide a range of other help and support, including free downloadable signage for bins, ways to achieve behaviour change in the workplace, and resources including case studies.

Planet Ark campaign manager Brad Gray says signage is one of the essentials for successful waste programs, otherwise "people get confused about what goes where".

It's also important to make it as simple as possible.

Cartridges 4 Planet Ark is a good example of a scheme that works, and is the most successful campaign the organisation manages in the waste sector, Gray says.

This scheme, funded by manufacturers, comprises more than 300,000 printer and toner cartridge collection boxes installed in workplaces and retailers around the country.

Close The Loop provides the logistics through which the cartridges are broken down into components, with the plastic reclaimed for remanufacture into rulers, the toner used in a new TonerPave bitumen developed by Downer EDI and any metals also reclaimed.

In terms of the commercial sector's overall engagement with resource recovery and stewardship, Gray says there tends to be bigger engagement in larger firms.

Research by Planet Ark in 2008 found that large companies have a reputational motive and also a perception it is good for staff if there are programs in place.

It makes staff feel like they are working for a responsible company, Gray says.

TIP:

Get involved with programs such as Cartridges 4 Planet Ark and Mobile Muster

In small businesses, engagement is likely to be driven by an owner or manager that has a personal interest in sustainability.

The Mobile Muster program is also increasingly reaching workplaces, though the majority of action is happening through retailers. Some firms are also putting in place battery collecting options for staff.

"Getting involved in these programs are good morale boosters," Gray says. People need to be aware that if they throw stuff out in a bin destined for landfill, they are actually tossing out resources they have paid for.

"It doesn't make economic sense to throw things out.

Audit to action – your quick guide to improved resource management

Before you start setting targets for reducing the waste your office generates, it's important to get an accurate picture of what's being generated, and where it's going after it leaves someone's hands.

Keep in mind, there's also money to be saved on payments to waste contractors if resources with a commodity value can be diverted from landfill.

Once you know what's happening, it's easier to identify what the priorities should be for diverting waste to recycling, or even prevent it from existing altogether.

A waste assessment is the first step to taking control of office waste. It should cover all the waste and recycling practices in place at the office.

This could include the number of bins being used, the number and size of bins being collected by waste contractors, the amount of money being spent on waste and recycling collections, the number of recycling bins, and any waste/recycling staff engagement or education programs in place.

The next step is to understand exactly what kind of waste is being generated onsite.

HOW TO UNDERTAKE A WASTE AUDIT

It's also possible to audit your waste. This can be done by employing a specialist – which may be the best course of action for large organisations or those with multiple sites. Office tenants can use the CitySwitch visual waste audit tool to get an evidence based conversation started with their staff and building owner.

Smaller companies might use a do-it-yourself guide, such as the NSW Environment Protection Agency's [Bin Trim](#) tool (see breakout) or the Chamber of Commerce & Industry Queensland's [ecobiz program](#).

Waste audits can help you boost your company's bottom line and develop sustainable resource recovery objectives.

There are three key stages to the waste audit process:

1. Identify volume and type of materials in bins
2. Quantify how much waste is produced and its cost
3. Identify key actions to take to reduce waste and encourage staff to become involved in waste management



ENGAGE WITH CLEANERS AND WASTE CONTRACTORS

Talking to cleaners is an important part of understanding where waste comes from, as they are the ones who see it most often and will be able to identify problem areas.

Communicating closely with your waste contractor is also a good idea, as they will be able to tell you the amount of waste/recycling they collect from the premises, the costs of removing it, or the advantages of actions such as switching to smaller bins or reducing the frequency of collections.

Sustainability Victoria has a [best practice document](#) that may help.

Reviewing waste/recycling invoices every six to 12 months is another positive step.

HOW TO DEVELOP A SUCCESSFUL ACTION PLAN

Once you've identified the types and volumes of waste being generated, and liaised with employees on potential ways to reduce waste and/or increase recycling, you can develop an action plan, which may include specific targets for waste reduction or recycling.

The CitySwitch Green Office Guide suggests a range of target types to choose from:

- percentage based, such as "reduce general waste by 50 per cent in a year"
- Volume/weight based, such as "reduce general waste volume by 200 litres a week"
- Material focused, such as "recycle all waste paper"
- Specific challenges, such as holding a company-wide "rubbish-free lunch" day

TIP:

**Separate waste correctly
Use a zero waste box**

A good idea is to undertake a trial run of any new system. This way, staff can give feedback on the trial and provide the opportunity to overcome any barriers and identify potential costs before final implementation of the full waste reduction/recycling scheme.

After the new action plan has been implemented, it should be revisited periodically to ensure progress and that

targets are still relevant. A waste audit 12 months after commencing is one way to ensure targets are on track.

COMMUNICATE SUCCESS TO BUILD ENTHUSIASM

Keep staff abreast of achievements – for example waste reduction, recycling volumes, money saved, carbon emissions avoided and targets met; it's an effective way of ensuring high morale and continued engagement.

SORTING AND SEPARATING

Separating waste and keeping it clean is crucial to reducing waste sent to landfill.

The most common problem is paper in the waste bins. All paper should ideally

be recycled because it is free or low cost to do so in most capital cities and its potential for recycling is well understood.

It's possible to achieve around 60 per cent diversion of waste to landfill for a business just by capturing the paper.

Comingled waste – including glass, recyclable plastics and metals – diverts another five per cent. Organics being collected and either sent offsite for composting or managed onsite via worm farms results in about another 25 per cent of the average business's waste diverted.

That's 90 per cent less waste going to landfill, as long as the separated streams are free of contaminants like takeaway coffee cups.

The remaining 10 per cent of waste comprises items such as coffee cups, broken stationary items and other materials. Some, such as printer cartridges, batteries and small e-waste like USB sticks, cables or computer mouse devices are covered by specific programs such as Cartridges 4 Planet Ark, TechCollect or producer and retailer schemes.

TerraCycle also has a scheme for items such as pens binders, office supplies, snack wrappers and mail room supplies that are not currently recyclable through regular channels.

The **Zero Waste Box** is a user pays program operated in conjunction with Australia Post and Officeworks. The price of the box includes the cost of shipping it when full, the sorting and recycling.

TIP:

Before plastics go in the comingled bin, take the lids off.

PLASTICS – OUR MOST UNCOMFORTABLE EXPORT

Most of the plastic items collected in comingled recycling are not processed in Australia. Instead bales and bins of plastic bottles and other items are shipped to Asia for processing.

Part of the reason is that with most bottles, the lid and the bottle are two different types of plastic that need to be processed in two different facilities. The plastic film of the label is a third type, and often is incinerated rather than recycled. And someone has to do the manual work of taking the lid off and putting it in one pile for redirection, and taking the label off for its fiery fate.

That work is done by small groups, usually families, working near the unloading docks in India and other countries.

Many people have pointed out the dubious ethical value of shipping our waste offshore.

Perhaps we can process our own waste.

INNOVATIONS IN THE SPACE

A new company, Plastics Forests, has developed an industrial ecology model for some plastics not accepted



CASE STUDY: Bin Trim Tool

Most state governments offer waste audit guidance tools.

In NSW, the downloadable waste audit tool, [Bin Trim](#), is available free.

The tool provides users with a profile of current waste and recycling amounts, a tailored action plan to reduce waste, and further information to help reduce waste and recycle more.

STEP 1: QUANTIFY

The first step of the Bin Trim tool asks managers to find out how many general waste and recycling bins are collected each week, the capacity of these bins, and whether or not they are full at the time of collection. For recycling bins, a list of which materials are being collected should also be noted.

The tool will then create a pie chart showing the percentage of waste recycled/thrown away, and what this equates to in litres per year.

There is the option of also comparing the waste results with others in the same industry.

STEP 2: ASSESS

Once you've got an idea of the amount of waste being generated onsite, it's time to get down and dirty, and find out what the waste material is made of.

The best time to do this is just before the

bins are due to be collected, when they will be full.

The Bin Trim guide provides a survey sheet to help keep track of the material type found in each bin, approximate volumes, where that bin is kept, and the likely origin of the waste material.

STEP 3: TAKE ACTION

Once you've understood what is in the bins, the Bin Trim tool lists the materials contributing the greatest volume to office waste, and provides you with an estimate of how much waste is recyclable.

For example, a kitchen bin full of food waste and cartons is about 90 per cent recyclable. By placing clearly-marked organic food waste and carton recycling bins next to the general waste bin, along with signs that encourage staff to recycle, the amount of waste generated could greatly reduce.

The tool then suggests that an action plan is drawn up, in consultation with staff, to try to reduce waste creation.

To ensure that the actions are maintained, the tool suggests that a member of staff is assigned to periodically review the action, which can help identify if further work is necessary.

For more information, visit

[http://www.epa.nsw.gov.au/
managewaste/bin-trim.htm](http://www.epa.nsw.gov.au/managewaste/bin-trim.htm)

in comingled collections. It collects plastics films from major food processors such as chicken processors, along with agricultural product wraps such as the plastic used on bales, and then reprocesses the films into products including tree guards.

There are also companies developing waste-to-energy plants that can burn plastics to generate electricity. A plant is currently being planned for Cowra, and Dial A Dump industries in Sydney has plans for a facility connected to its Genesis Xero Waste recycling and landfill facility in Eastern Creek.

The precedent has already been [established in Europe](#). Waste-to-energy plants have been adopted as a way for countries to meet the EU landfill directive to reduce waste sent to landfill. They burn both biological wastes (such as food waste) and other combustible products including plastics that cannot otherwise be recycled.

This technology is not free from controversy, however.

[David Suzuki](#) says that one of the WTE plants operating in Canada, for example, generates not only carbon emissions, nitrous oxide emissions and airborne pollutants including fly ash, the incineration process also results in a toxic "bottom ash" equal to 17 per cent of the weight of the original waste. This ash has been found to be high in heavy metals including cadmium and lead, and can only be disposed of in landfill.

ORGANICS

Not all organics recycling creates a quality output.

GPT national manager – sustainability performance Steve Ford says some are "the biggest lipstick on the pig ever", taking waste that is so contaminated with plastics and other materials that it will literally poison soil if it is used for compost.

The material produced by these facilities is often used for capping landfills – hardly an outcome that means it got diverted.

Other poor quality processed organics are used for stabilising or rehabilitation works at mine sites, as they are unsuitable for use where food may be grown due to the high level of contamination.

It comes back to the quality of the inputs. Lismore City Council has a successful facility that achieved formal organic certification last year for its compost. The council kerbside collection system includes an organics bin.

[Data from 2012](#) on the organics processing industry nationally shows there have been growing numbers of facilities processing organic waste for a variety of purposes in the majority of states.

TIP:

Get a worm farm for the office



FOOD WASTE

According Jenny Campbell, director of Perth sustainability and waste consultancy Encycle, the most tricky waste stream is food waste.

Perth currently does not have any kerbside collection for organics and this puts the onus on building owners, managers or individual tenants to find a solution for organics, she says.

There are some solutions available but it depends on the building manager.

A worm farm can be one solution.

Campbell says one Perth engineering firm has both compost bins and worm farms in its atrium area. The staff take compost home to use on their own gardens. Her own company also has a worm farm on site.

"It has a whole lot of benefits. It is easier

to use than putting food waste in a bin, and it doesn't smell," she says.

But a word of warning, worm farms are difficult to scale and can put too much pressure on individual champions.

LOCAL COUNCILS

Some local councils and businesses have also been using advanced composting units that process food waste rapidly

TIP:

Check with your local council or waste contractor for your options regarding separated organics collection



Jenny Campbell

organisations including Qantas QCatering at Mascot and Barwon Health in Geelong.

Brisbane City Council has installed a food waste dehydrator in the basement of the refurbished Brisbane City Hall to process waste from functions. The biomass it produces is used by council on its parks and gardens.

Melbourne City Council in conjunction with Sustainability Victoria has also been trialling a food dehydrator at its Degraves Street resource recovery centre. It is taking all the food waste from around 40 laneway food and beverage outlets – saving hundreds of truck movements a day and diverting the waste from landfill.

into compost. City of Waverley in Sydney trialled the "**Bondi Gobbler**" at Bondi Pavilion, with the compost then sent to a dairy farm for building carbon in the soil.

The supplier of the Gobbler, **Closed Loop**, has also supplied and installed units for major



CASE STUDY: Organic Waste



HOW TO KEEP A HEALTHY WORM FARM IN THE OFFICE

The Institute for Sustainable Futures at the University of Technology, Sydney, set up a worm farming system to deal with kitchen waste.

A working group performed an options assessment to understand what was available for internal spaces with no access to sunlight or soil, and held discussions internally with staff that had their own worm farms, composts and bokashi bins to understand advantages and disadvantages.

There were few guidelines for operating a worm farm in an office space at the time, so it was a matter of trial and error.

For example, the initial worm farm leaked, and staff had to test different products like sawdust and lime to manage smells. There were also concerns that the farm would contribute to an increase in pests (such as cockroaches), and there was some confusion about what could and could not go in to the farm, and how frequently the worms should be fed.

However, after developing a list of what shouldn't go in the worm farm (for

example, coffee grounds, which are too acidic), and deciding to house the worm farm under the workbenches away from direct sunlight (to protect the worms and manage smell), the system started to work "perfectly smoothly".

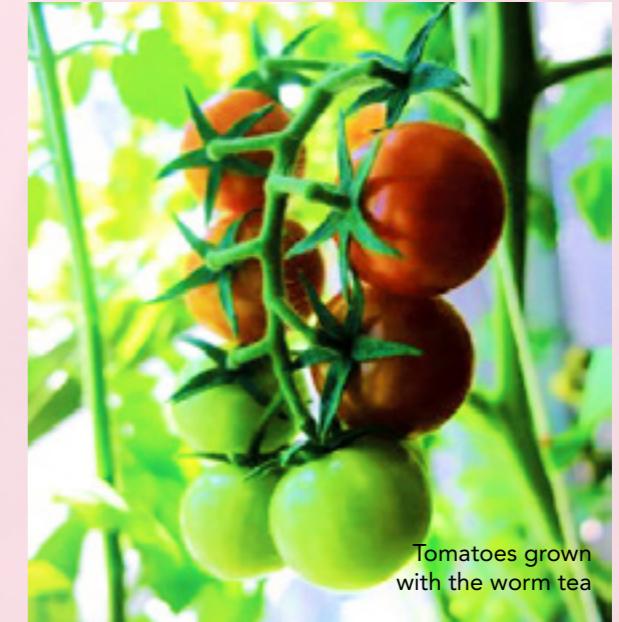
A sealable Tupperware container was setup in the kitchen for food scraps, marked with signs about what could and couldn't go in the worm farm.

Information was also provided by email and signs, and regular announcements were made on progress at the weekly operations meetings and the monthly staff meetings. As worms are living creatures, the hardest part of the worm farm system is looking after the inhabitants, an ISF spokesman says.

"We need to make sure someone is looking after the worms, even during the holidays.

"Our worm farm roster is a voluntary roster with, at any given time, around 10 people on the list. Two people are on active duty each week, and being a worm minder takes around 20 minutes a week."

Those on roster are responsible for emptying the full container of food waste into the worm farm and ensuring that each tray of worms isn't too full. If necessary, they are required to rotate the order of trays.



Once the farm reaches its final rotation, staff dig out the worm castings and place them into window pots (staff are growing tomato plants and other vegetables in the office) or take them home for use in their gardens.

"Worm tea" is also regularly drained into sealable bottles using a funnel, and staffers are also encouraged to take this home for use as an organic fertiliser.

Engagement with how the system works is also an ongoing job due to staff turnover, and recruiting new members of staff to join the roster can reportedly be "a little tough", but it's diverting organic waste from landfill (about 1.2 kilograms a day) and produces a high-quality, nutrient-rich material that can be used on office plants.

BUILDING OWNERS AND DEVELOPERS

Many new buildings, particularly those that are Green Star-rated, have good systems for waste management in place.

Director of Perth-based Encycle Jenny Campbell says standout buildings include Brookfield Place with where cleaners weigh waste bins before they are picked up by the service provider.

Initiatives in other buildings include drop-off recycle banks in the building foyer for batteries, toner cartridges or mobiles.

Campbell advocates that architects working on food courts provide space for storage and cleaning of crockery in order to eliminate takeaway food and coffee containers.

FLOOR SPACE CAN BE A BARRIER

However developers can be reluctant to reduce floor space that might fit in another rent-paying tenant.

An alternative is to have restrictions on what types of packaging are used.

"Some developers might want a sustainable feel or vision, but down on the ground level there is [often] reluctance. It is perceived as too hard," Campbell says.

Developers might be convinced to really engage with better waste management when they have a strong environmental, social and governance policy.

What can make it too hard for building owners and managers is if they don't bring tenants on the journey.

Policies of not allowing staff to eat at their desks can mean better control of the

waste stream entering office bins. Green buildings with breakout areas also lead to better outcomes in terms of where food waste and associated containers go.

"To get good recycling in an office, you have to understand how areas are used," Campbell says.

"The system has to be custom-made and planned, with the right-size bins and right-size signage so people know what can go in each bin."

This needs planning at the design stage.

"Older buildings generally struggle to have good systems in place," Campbell says.

HAVE THE CONVERSATION

Waste needs to be part of the conversation between owners and tenants. The tenant needs to be aware of the costs for waste, and how they are divided. Owners also need to consider that if a tenant is going to improve their waste performance, is there a financial incentive to do so?

For systems to work well you need to have requirements in tenancy lease agreements.

Tenant or managers can often just take away the under-desk bins and put in recycling bins in a central location when they want to implement a new waste strategy. This can upset workers, as people get attached to their bins. Explain why you're doing this.

TIP:

Get tenants, FMs and owners all working together.



SERVICE PROVIDERS

Data can be a problem without service providers on board. Monthly reports can be hard to interpret, as contractors have different forms and use a variety of measures ranging from weights, to estimated volumes, to number of bin lifts.

Consistent reporting systems and methods will make it easier to split costs properly between tenants and it can help in developing contracts with cleaners.

MANAGING WASTE CONTRACTS

According to EcCell Environmental Management director Jo Drummond and waste consultant Robyn Pearson the waste contract can be the most effective tool for improved outcomes, even more so than motivating people within a building, when it is effectively managed.

In a series of workshops around NSW in 2013 and 2014 on behalf of the NSW Office of Environment and Heritage that aimed to help businesses, community

groups, local government, facilities managers and property owners better manage waste it was the topic of most interest, Drummond says.

"Most people feel like they can't," she says. "So we go through case studies of how to get a compliant waste contractor, how to get meaningful data and what [that data] really needs to include."

Carrot works better than sticks with waste contractors because they prefer not to take waste to landfill if instead they can make money from recycling it. So a separated waste stream is attractive to contractors because it has financial benefits.

In regional areas, however, it can be more challenging as there are fewer contractors competing for business and sometimes fewer options for them to on-sell recovered resources.

The NSW Office of Environment and Heritage has published a [checklist](#) of what to look for in a waste contract in its Sustainable Property Guide.

Facilities managers

Chief executive of the Australia New Zealand Recycling Platform Carmel Dollison, a former facilities manager, says the first step facilities managers should take is education. They need to ensure people in the building understand the way the system works, why the system is in place, and the benefits it has for them.

"Explain it, then make it easy for them to do," Dollison says.

"We've all felt that guilt, standing in front of the bins with a coffee cup and wondering, is it organic?"

The FM needs to be the educator who encourages people and makes the system simple.

FM's also do a lot of procurement for buildings, so responsible procurement can also play a big role in reducing waste.

Owners and building managers

The more services owners provide beyond basic paper and general waste, and the more options there are for tenants to properly distribute other recyclables, the better the building's overall performance will be. This ideally also extends to any catering facility or on-site food vendor, with provision of organics recycling or composting.

Fit out stipulations can also include a requirement that all materials and items are able to be refurbished or recycled at end-of-use.

TIP:

Use the resources provided by many local councils and organisations such as the Better Buildings Partnership and CitySwitch.

CASE STUDY:

Large Scale Action at Barangaroo

The new 22-hectare Barangaroo South precinct on the western edge of Sydney CBD is diverting 80 per cent of its operational waste from landfill, with non-recyclables going to advanced waste treatment facilities for recovery. The aim is zero waste to landfill by 2020.

To achieve the goal, green lease tenants are required to source separate up to five different resource streams: paper and cardboard; food and organics; soft plastics; co-mingled recyclables (glass, aluminium, steel); and for retailers cooking oil, which is processed into biodiesel.

The office occupants are also supported through an onsite "Eco-concierge", who provides support, training and advice

Pictured: Artist's impression of Barangaroo Waterfront

to all tenants, contractors and visitors. Building management staff and cleaners undertake regular training on the waste objectives of the precinct, and are tested on their knowledge of waste separation.

The support materials and training is also offered free to all tenants.

Other initiatives include:

- drinking foundations to reduce plastic water bottle waste
- retail tenants to be plastic-bag free and use plant-based fully-compostable packaging (which is processed offsite to produce fertiliser)
- waste data independently audited

Waste free in the workplace: opportunities you can implement today



JOHN GERTSAKIS, INFOACTIV AUSTRALIA

Going waste free in the workplace is increasingly straightforward and uncomplicated.

Procurement and purchasing is often the perfect point of intervention. It not only levels the competitive landscape among product and service suppliers, it also demonstrates that low-waste solutions are increasingly viable and affordable.

Key actions can range from simple inclusions in tender documents through to uptake of free collection and recycling programs funded by producers, manufacturers and telcos.

Over and above the gains achieved in workplace tearooms for recycling packaging

and food waste, some significant waste reduction opportunities rest with technology and associated consumables.

The combination of voluntary and government regulated schemes, has resulted in a variety and electrical and electronic products being part of industry-funded "take-back" programs. Most importantly the genuine product stewardship initiatives are free of charge, workplace-friendly and geared towards corporates, institutions and government agencies.

Two of the longest running collection and recycling programs deal with mobiles and printer consumables: Cartridges 4 Planet Ark and MobileMuster (see information provided earlier).

Australia also has specific legislation that requires producers and importers of televisions and computer equipment to fund the delivery of collection and recycling services for end-of-life equipment. While not as convenient as MobileMuster and C4PA, the National Television and Computer Recycling Scheme is a free service for householders and small business, and involves weekend collection events or permanent drop-off points (usually at local councils or retailers).

- See [Planet Ark](#) website for drop-off points

The collection and safe processing of mercury-containing lamps is another opportunity for workplace-based recycling. [FluoroCycle](#) is a voluntary product stewardship scheme with government accreditation. Its core aim is to increase the national recycling rate of waste mercury-containing lamps and keep waste lamps out of landfill. While not a free program to end-users, it has a strong education and PR focus underpinned by program signatories and facilitators.

An ongoing hotspot that flies under the radar yet needs prompt attention by government and industry is the continuing non-recovery of handheld or loose batteries – both single use and rechargeable. While various pilot programs, ALDI and BatteryWorld provide limited take-back and recycling services in some locations, the reality is that millions of batteries still flow into our landfills every year.

Some rechargeable batteries contain hazardous substances and it is essential that product stewardship programs are designed and funded by key brands such as Duracell, Energizer, Panasonic and various smaller suppliers. The time has come for these brands to make it easy for all battery users, including commercial and institutional consumers, to have responsible disposal options.

The [Australian Battery Recycling Initiative](#) is working hard with governments and industry to establish a permanent national battery recycling scheme.

ENVIRONMENTAL PRODUCT DECLARATIONS

Are EPDs valuable tools for guiding decision making? And, if so, what kind of EPD/certification should they be looking for?

In addition to specific product take-back and

waste reduction initiatives, there are more generic tools and labels that can directly assist organisation to source, compare and procure environmentally improved products and services. [EcoSpecifier](#) provides one of the best summaries covering ecolabels, certifications and related EPDs.

Many companies now produce EPDs for their products and they provide a more objective and transparent method for comparing life-cycle environmental impacts of products. Combined with a strong environmentally oriented procurement policy, EPDs are well placed to empower the purchase, use and disposal of low-waste products.

Most importantly we need to move to higher levels of environmental performance for products. Driven by lifecycle thinking and good design, the opportunities to close loops and dematerialise are endless provided producers and manufacturers have the appetite for step-change and meeting consumer expectations.

The opportunities to create waste-free product solutions that are cradle-to-cradle-based directly facilitate a circular economy. However, we must move beyond "old school" collection and recycling solutions, and focus on upstream priorities including product design, supply chain greening, low emission logistics, reuse, extended product life and environmentally driven consumer innovations.

From design and cleaner production, through to greener supply chains and improved community education, it is vital that producers work collaboratively with retailers, government, the waste management industry and researchers to meet consumer expectations, which maximise environmental quality.

John Gertsakis is chief sustainability officer at Infoactiv Australia.

CASE STUDY:

KPMG accounts for its shrinking footprint

CitySwitch member KPMG has made a firm commitment to minimising waste across its Australian offices, and sees recycling as a positive step in being environmentally responsible.

"Our stewardship of the environment is especially important to KPMG and aligns with our commitment to the principles of the UN Global Compact and our actions to embed environmental sustainability across our business," director corporate citizenship for KPMG Australia Catherine Hunter says.

There were four key programs in 2015.

COFFEE CAPSULES

The firm has collected and recycled 100 per cent of the Nespresso coffee capsules used across every site in its Brisbane, Hobart, Adelaide, Canberra, Darwin and Sydney, offices, a total of 6300 capsules – equivalent to 6.3 kilos of aluminium and 56.7 kilos of coffee compost.

This is in line with the company's commitment to sustainable procurement, Fairtrade and procurement of Fairtrade coffee.

The plan is for all offices to phase

out the capsules and shift to coffee machines that use freshly ground beans instead, as is the practice in the Melbourne office.

CUPS

All the kitchens in every office are stocked with reusable glass mugs for staff to make coffee or tea in, reducing the need to buy or use disposable cups.

E-WASTE

As the firm was continually upgrading IT hardware, it partnered with e-waste recycler TES-AMM in 2009 to ensure decommissioned equipment would be recycled or reused by others.

TES-AMM has facilities in Sydney, Melbourne and Brisbane, and recovers commodities including gold, silver, steel, copper and aluminium.

Since 2009, KPMG Australia has recycled more than nine tonnes of IT equipment.

PRINTER CARTRIDGES

Since 2009 more than 18,400 toner cartridges have been recycled through Cartridges 4 Planet Ark. This is equivalent to diverting more than

16,500 kilos of cartridges from landfill. Collection boxes can be found next to almost every printer in every office.

The company has recycled enough cartridges to make more than 300,000 rulers from the plastic, and 1.53 kilometres of TonerPave road.

PAPER

KPMG Australia aims to become paperless in the next couple of years.

In the meantime it has reduced the number of printers across the firm's offices, adopting Canon's Uniflow technology, which automatically deletes print jobs that have failed to print by the close of each business day. In 2015, a 27 per cent reduction in paper use compared to 2014 was achieved, and 162,342 kilos of used paper was recycled through Recall.



Contamination: Why it stuffs things up

Contamination is one of the major hurdles for achieving good outcomes from waste management.

It only takes one renegade coffee cup in the comingled bin or one slice of pizza dropped in the paper bin to result in an entire load of recyclables going to landfill.

This raises costs for the building manager, owner or tenant.

For instance, two recycling plants in Sydney put up gate fees by 20 per cent in July 2015, due to the amount of contaminated loads they were having to send to landfill.

Materials recovery facilities are also generally not licensed to accept food waste, which is defined as putrescible waste.

This is a due diligence concern for owners or managers and for companies engaged in CSG reporting, as it might mean they are dramatically overestimating the percentage of waste not going to landfill.

GPT's national manager for energy performance, Steve Ford, says this is what he discovered when he started looking at outcomes.

- See [Case study – GPT looks beyond the bins](#).
- See the [links section](#) for where to get free signage

COFFEE CUPS – BANE OF THE OFFICE

Analysis by CitySwitch and audits by Foresight Environmental have found that up to 10 per cent of the contents of an office bin consists of takeaway coffee cups. Mention the cups to anyone in the sustainability consulting arena, and you'll hear different versions of the theme: "They are the bane of the office."

TIP:

To reduce contamination:

- **rain up your cleaners so they know, for example, to take the apple core out of the bin of wastepaper**
- **Do a contamination audit every year – make it someone's job to look in every bin and see how staff is performing in terms of proper waste sorting and separation**
- **Make sure education and signage for staff are in place**



Their convenience meets the race-to-work, race-to-lunch work style, as well as a whole lot of misunderstanding over whether or not they are recyclable.

There are so many types: "biocups", which some might think should go in with the organics for composting; plastic ones that look like they should go in with the comingled; and paper ones with an inner film of plastic that look like they should go in with the paper.

But, put your coffee cups in any of those bins and chances are the whole load will be considered contaminated and sent to landfill.

Technically paper coffee cups are recyclable, but to separate the liner from the paper shell (which is high quality paper)

the cups need to be soaked for longer. So, when coffee cups are part of a mixed paper waste stream the whole process must be slowed down, and this challenges the economics of the pulping process because it reduces the number of runs that can be performed each day. So, understandably, paper recyclers prefer not to accept coffee cups and they end up in landfill.

This year CitySwitch undertook a design thinking workshop with a range of stakeholders to explore how the environmental impact of disposable cups could be reduced. The results highlighted a range of strategies, to reduce their use; encourage keep cups or good old ceramic mugs and provide money off offers for coffee shops; and improve recovery after use



by demonstrating that they can be collected separately and turned into a new product.

CitySwitch is now looking to run trials with leading building owners to establish whether a good stream of coffee cups can be acquired for downstream reprocessing.

Brendan Lee of Simply Cups says, "We can overcome the recycling problem by providing a homogenous supply of coffee cups. While the pulping process still takes longer, it provides the opportunity for a pulping operation to do separate 'runs' for coffee-cup only waste streams and, say, office-paper waste streams. These separate waste streams, each produce a different reprocessed-paper product that is suitable for different uses – but both attract a price for the reprocessed product."

Simply Cups UK is a partnership between

Closed Loop and Simply Waste and has been growing steadily with partners now including the largest UK coffee chain, Costas, the department store giant John Lewis and, more recently, McDonald's, together with dozens of small, medium and large businesses. The Simply Cups model has been running in the UK since 2014 and has already **recycled more than 10 million cups**.

TIP:

- ***In many cases only the plastic lid can be recycled***
- ***Use a keep cup – or better yet ceramic – make coffee taste delicious!***

E-waste: How to combat that hoarding instinct

Offices around Australia are constantly upgrading or replacing IT items, but they don't always let the old ones go.

Redundant items are often stashed in a store room or end up stored under a desk, according to Carmel Dollison, chief executive of TechCollect, a take-back program operated by the manufacturer-funded Australia New Zealand Recycling Platform.

The program can recycle desktop PCs, laptops, peripherals, keyboards, charging devices, USBs, mouses, cables and connectors, multifunction devices, faxes, scanners and printers.

Dollison says every office should appoint a sustainability champion, and nominate an annual "clear out day" towards the end of the year.

"Offices are amazing hoarders in every regard," Dollison says.

TIP:

- ***Ensure company information and data is not compromised when e-waste is sent for recycling; look for software that can erase and overwrite storage or hard disks, or use an IT asset company that offers a secure data wiping service.***

- ***According to Dollison, another easy way is to just to put a nail through the plate of the hard disc drive.***

Practices that work

BBP OPERATIONAL WASTE GUIDELINES

GPT Group was one of the first companies in Australia to implement the Better Buildings Partnership [Operational Waste Guidelines](#). And GPT claims it's helped the company double its rate of recycling across the portfolio.

The Sydney Opera House has also been using the guidelines for almost two years.

Opera House environmental sustainability manager Naomi Martin says the organisation had been looking for a way to better manage waste.

"Having a best-practice operational waste management plan template prompted the Opera House, and our cleaning and waste partners, to document and clarify a number of items relating to our processes, responsibilities and targets," Martin says.

"The outcome is an improved understanding of our current practices and a plan on how to address opportunities identified during the process."

The guidelines aim to help major commercial properties and other buildings reduce waste, cut carbon emissions and save money, all at the same time.

Keeping rubbish out of landfill by recycling significantly reduces carbon emissions from harmful methane gases, according to City of Sydney Lord Mayor Clover Moore.



Clover Moore

"Fifty-two per cent of all waste in the City of Sydney comes from commercial and industrial buildings. The BBP guidelines help city businesses reduce waste and improve their recycling processes."

BBP Waste working group chair Jon Collinge says the guidelines have had a rapid uptake because they are easily adapted for different building types and business needs.

"The techniques to save energy and manage waste are different for every building. That's why we have developed a practical toolkit that recognises not all buildings are the same, and that needs and uses change over time," Collinge says.

Esther Bailey says the guidelines have already been successfully used by companies, including AMP Capital and Lendlease, and will bring much-needed consistency in assessing waste reduction in the commercial sector.



DISRUPTION IS COMING – WITH A GAME-CHANGING WASTE DATA AND MANAGEMENT PLATFORM

NABERS is currently piloting a new waste management tool that leverages work of the BBP operational waste guidelines to streamline the process of measuring, monitoring and managing waste in any type of building. Shifting the focus from expensive, point-in-time audits, the new tool focuses on the quality of waste data and management practices, to better assess the waste performance of buildings and help them improve over time.

NABERS Waste Manager is a digital platform that has evolved out of one developed by BBP member, the GPT Group as part of its own overhaul of waste management over two years ago.

National manager energy and environment for GPT, Steve Ford, says the IP has been given to NABERS because

the tool will enable as many businesses as possible to lift their game on garbage.

See the case study [GPT looks past the bins](#)

NABERS national program manager Carlos Flores says the platform's development coincides with a review of the existing NABERS waste tool.

A waste rating will now be based on annual data collected through the platform, instead of a 10-day audit as was previously the case. This aligns it with the BBP Operational Waste Guidelines and ensures better data integrity.

"It will be allowing owners and facilities managers to monitor the performance of a building over time," Flores says. It will also fully integrate with the NABERS rating process, which is having its scale expanded to 6 Stars as part of the revamp.

Flores says the platform will "bring waste data to life".



Many waste reduction initiatives in buildings involves change in occupant behaviour, such as increasing awareness of what is and is not recyclable, he says. But currently the limited access to quality waste performance data means it is difficult to assess whether engagement strategies are working.

With the platform, if an intervention of any kind is carried out in a building, the manager can see what was happening before and compare it with post-program results in real time.

The data will form a basis for interaction between tenants and the facilities managers, building managers and owners. And interaction is essential if you want tenants to perform well, Flores says.

"There are lot of additional benefits. This will help make evidence-based waste programs happen."

Flores says NABERS is extending the reach of the waste tool and rating to all types of property, including education, health, retail, hospitality and multi-residential.

"The issues BBP members mention on limited access and poor quality of waste data are not specific to the commercial property industry, but shared across many different industries," he says.

"We are trying to support the work the BBP and other property companies are conducting to improve the quality of waste reporting.

He says this project is also a "game changer" for owners and building managers.

NABERS has been in discussions with some of Australia's largest waste management companies, who are also seeing the opportunity to compete not only on lowest

price, but also on quality of services. Flores says several waste companies are asking, "How soon can you run a pilot?"

"They are saying, 'If you have this today, we will use it today,'" Flores says.

"Many of us who work in property sustainability do not always realise that providing clients with waste data can be painful for the waste management companies themselves.

"Because there is little standardisation for waste reporting, every company asks for waste data in different formats and at different frequencies."

For contractors, the platform will also mean they can compete for contracts on the

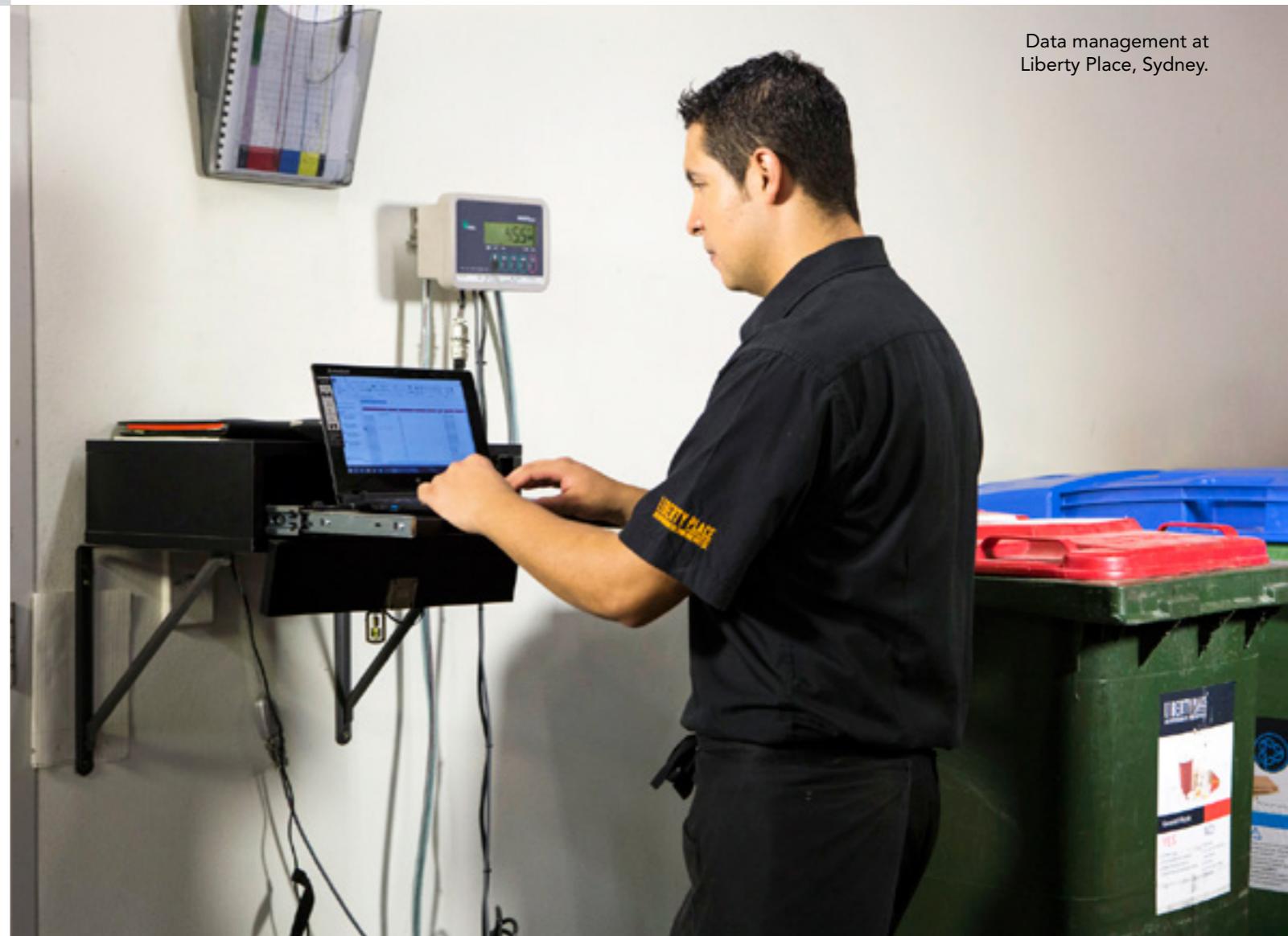
LIMITED ACCESS TO QUALITY WASTE PERFORMANCE DATA MEANS IT'S DIFFICULT TO ASSESS WHETHER ENGAGEMENT STRATEGIES ARE WORKING.

basis of the quality of data they provide.

It will also give them an edge in retaining existing contracts.

NABERS is developing early prototypes and an open pilot is expected to be released in mid-2016.

Data management at Liberty Place, Sydney.



CASE STUDY:

GPT looks beyond the bins



Improving the data it received from contractors and looking at the outcomes from recycling have been pivotal for GPT in improving the waste performance across its commercial and retail portfolio.

Steve Ford, national manager energy and environment for GPT, says it was difficult to make good decisions with poor information. The data he had been able to obtain previously only reported how much waste went to landfill, and how much didn't.

"There's more to the story," Ford says.

He wanted to know the outcomes – whether waste streams were cradle to cradle, or cradle

to grave, and where materials were being recycled, were they being recycled into a product of higher value that could be itself recycled, or were they being recycled into lower value products that would themselves be destined for landfill at end-of-life?

Part of the solution was to develop a digital platform for tracking waste so outcomes-based and impact-based reporting was possible.

He says when the company went to market for waste contractors two-and-a-half years ago, contractors had to commit to using the platform.

The impact-based reporting grades the end result of recycling.

An A-grade outcome is when a product or material goes back into the same production process, and therefore has a closed loop or cradle-to-cradle lifespan; a B-grade outcome is when recycling results in a product of lower value than the original recycled item, but can itself be recycled multiple times; and a C-grade outcome is a product that is destined for landfill at end of life.

Ford says the company has a "closed loop" approach, and is aiming for as high a proportion of A-grade outcomes as possible.

The result of the outcomes-based reporting initially was a drop in the company's actual recycling rate, because previous data had overestimated the amount of waste being recycled as contractors were not reporting back on loads that left the premises as recycling but actually got diverted to landfill due to contamination or other misadventures.

"We just want to know the truth," Ford says.

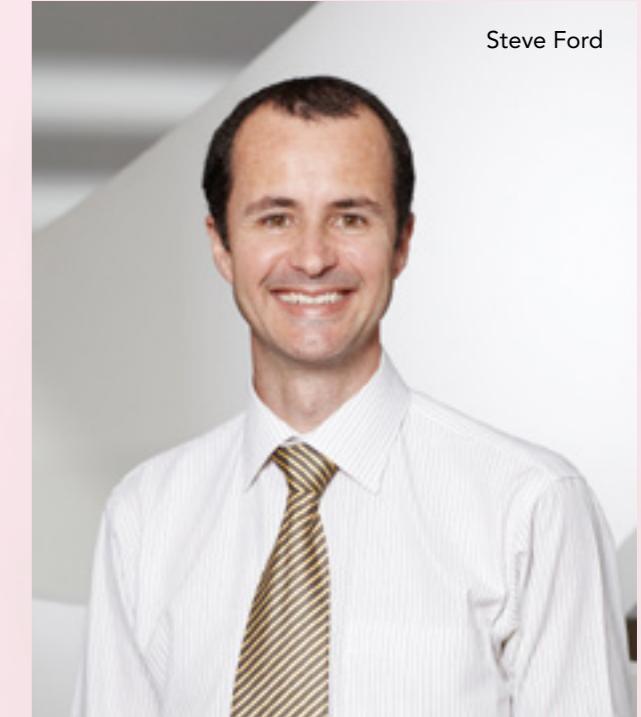
In Victoria, retail assets that had been reporting recycle rates of between 25-30 per cent were actually only achieving resource recovery rates of between 18-20 per cent.

Dandenong Plaza, for example, was reporting recovery rates in the mid-20s. The new outcomes-based reporting dropped that to below 20 per cent. Then programs were put in place to improve that percentage, and the resource recovery rate is now 50 per cent or better, Ford says.

"In Victoria, our contractor doubled the recycling rate. We have got waste streams being recovered that people said can't be," Ford says.

The improvement in resource recovery rates has also been financially beneficial.

Steve Ford



"The majority of our recycling streams are cheaper than sending waste to landfill," Ford says.

This in turn delivers a benefit to tenants.

Overall the company is achieving better environmental outcomes and decreased costs. There has also been such buy-in from contractors, they want to use the platform for other clients.

"Two years in, we know that good information and good decisions have led to major improvements."

Construction, fitout and defit waste

The commercial office sector generates around 260,000 tonnes of waste a year from construction, demolition and fitout in the City of Sydney alone, according to data from the Better Buildings Partnership.

With the average tenancies having a shelf life of 7-10 years, defit and fitout waste are an ongoing area for efforts in improving waste management.

Nationwide, a 2011 report by Hyder Consulting for the federal and Queensland environment departments showed that a total of 19 million tonnes of construction and demolition (C&D) waste was generated in Australia in 2008-09. Of that waste stream, 8.5 million tonnes was disposed to landfill while 10.5 million tonnes, or 55 per cent, was recovered and recycled.

As we've seen there are plenty of opportunities for reduction in waste to landfill, but also in the strategies tenants and their consultants introduce into design and procurement that can minimise waste in office fitout when the time comes for moving out.

Director of EcCell Jo Drummond says options for resource recovery at the defit stage depend on the contractor. Some, such as Dial A Dump and Bingo, will set up recycling schemes as part of the waste service.

She says people need to "come in on the angle of the money" in terms of gaining agreement to reduce waste from defit and fitout.

"It can be cheaper recycling materials than taking them to landfill," she says.

Green Star also offers better opportunities to reduce waste through smart design and through reduced packaging for materials.

On one of the projects she is consulting on, waste from an interior fitout will be weighed as part of the Green Star submission.

"People normally don't know the data," Drummond says.

The materials will be separated onsite for recycling. This, however, needs a large area set aside for the materials and the sorting process.

In terms of reducing churn, Drummond says there have been many attempts to reduce waste, for example on-selling carpets removed during a defit.

But sometimes perfectly good products can't find a home.

"You might end up with 70 hardwood doors that are fire-rated, but there is no market for them because the fire rating changed," Drummond says.



Also, sometimes people go out of business, or the links fail, as has occurred with the service that used to direct waste plasterboard to CSR for remanufacture.

Some products can't be recycled because of what's been done to them, such as packing crates from China that have plastic on them.

Tinted glass cannot be recycled or crushed.

The best chance to reduce waste at end-of-use is to design it out from the beginning.

Design for disassembly is another option.

TIP:

- **Think about waste at the design and procurement stage**
- **Get contractors on side at the defit time**
- **Provide room for sorting**

Resource recovery from strip-out gains momentum



BLAKE LINDLEY, EDGE ENVIRONMENT

In 2015 Edge Environment and the Better Buildings Partnership proved that resource recovery rates of around 60 per cent were achievable at no extra cost to contractors and building owners. The team has now turned its attention to solidifying these outcomes as business as usual. With initial studies showing that resource recovery from strip-out could be as low as 20 per cent in commercial office space, this project has already triggered extensive industry engagement.

In late 2015 BBP members committed to a 60 per cent resource recovery target from office strip-out, with an aspirational target of 80 per cent.

As a collective of Sydney's largest property owners, the BBP not only offers the scale but also the leadership required to achieve a genuine industry shift.

Chair of the BBP's technical waste working group Jon Collinge (Lendlease) says this is "a landmark point in this project, confirming the commitment of the members to reducing this source of waste and setting a precedent for resource recovery in commercial office space".

The pathways for material reuse recycling have been mapped thoroughly in the draft of the BBP's Strip-out Waste Guidelines, released to industry during December 2015.

Consultation engaged lead contractors,

demolition contractors and the project management staff of the membership, delivering a wide engagement and some insightful comments on the project.

The official guide is available now in consultation draft from the BBP website

With significant movement in CBD space expected over the coming 12 months (when Barangaroo for instance comes online) large tenancies are on the move and the opportunity to involve the tenant in the early stages of furniture re-use are being explored.

With the "make-good" settlement representing a major financial transaction and transfer of responsibility, the need for tenant services are being explored to allow furniture removal to occur well prior to the start of demolition.

Beyond charitable donation, commercial outlets both domestically and internationally are being explored to provide a second life to the CBD's high grade used office furniture.

In pursuit of the aspirational 80 per cent target for resource recovery in strip-out, attention is now turning to development of new material outlets, such as for engineered and laminated timbers, which make up workstations and cabinetry.

Emergent opportunities are being explored with the UNSW Sm@rt Centre and The Crucible.

With the impending finalisation of the BBP's Strip-out Waste Guidelines and the new commitments towards firm resource recovery targets, 2016 looks to be a progressive one in reducing the footprint of our city's built environment.

HANDY LINKS AND RESOURCES

[CitySwitch waste resources](#)

[NSW EPA Bin Trim program](#)

[Better Building Partnership operational waste guidelines](#)

[Planet Ark's Business Recycling portal](#)

[Zero Waste SA](#)

[Sustainability Victoria](#)

[OEH Sustainable Property Guide](#)

[Western Australia – incentive scheme for recycling and reuse of construction and demolition waste](#)

[Recycling options in City of Perth](#)

[Queensland government waste management information for businesses](#)

[Brisbane City Council business recycling service](#)

[Canberra - ACT Government ActSmart business recycling](#)

SUGGESTED READING

[The problem with e-waste](#)

[The Zero Waste Solution – Paul Connett](#)

OFFICE WASTE

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