Eight questions to ask your eWaste processing partner: an eWaste management primer for Australian & New Zealand businesses

With consumer and legislative expectations increasing, how confident are you in your eWaste disposal practices?

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Background

As businesses and consumers, we're disposing of more end of life electronic equipment than ever before. However it is not always disposed of correctly or ethically, creating risk and uncertainty.

With an eWaste to landfill ban now in effect in Victoria, now is the time to ensure your business has effective processes and controls in place for handling eWaste, including conducting effective due diligence on eWaste processing partners.

However, it's not always easy to know what to look for and what questions to ask. As a company, Fujitsu Australia Ltd has more than a decade of working in this area and has handled more than 500,00kg of eWaste from our own, and customers' operations. Our key motivation for putting together this guide is to support our customers and wider industry to take the issue of eWaste seriously, and at the same time providing practical information that can be easily implemented in your organisation.

What is eWaste?

The definition of eWaste varies across Australian states and territories. The Victorian Government, which announced a ban on eWaste to landfill in July 2019, defines eWaste as "any end-of-life equipment which is dependent on electric currents or electromagnetic fields in order to work properly".

Essentially, it is anything with a plug, cord or a battery that is no longer wanted or useful.

The Global eWaste Monitor found that in 2016, the world generated 44.7 million metric tonnes (Mt) of eWaste with a projected annual growth rate of 3-4%. Shockingly, only 20% was recycled through appropriate channels which leaves over 35.7 million Mt disposed of incorrectly. That's the equivalent of filling the MCG more than 20 times over!

Fast Facts: eWaste in the Oceania region

- eWaste is the region's fastest growing solid waste stream
- Australia, New Zealand and other nations of Oceania are the highest per capita generators of eWaste in the world
- In Australia, per head of population, we generate 23.6kg of eWaste annually. In New Zealand it's 20.1kg.
- Around 3% of batteries used in Australia are recycled – the lowest rate in the OECD
- The official eWaste recycling rate in Australia is just 7.5%. Because there's no formal scheme in New Zealand, there's no official data.

Source: 2017 Global eWaste Monitor (International Telecommunication Union, United Nations University, International Solid Waste Association)

Why recycle eWaste?

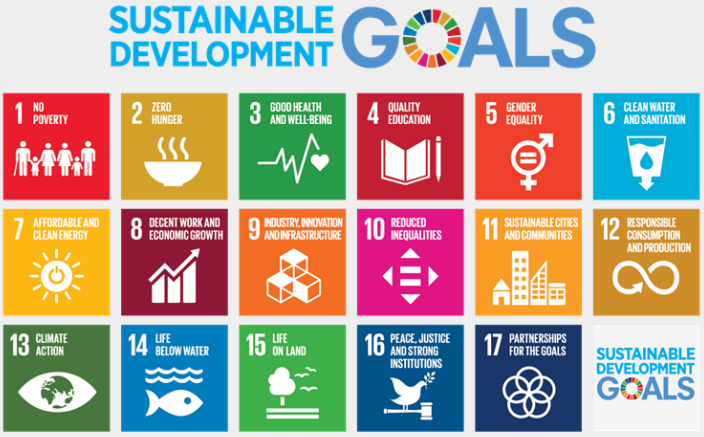
- eWaste in landfill can leach toxic chemicals like cadmium, mercury and lead into soil and groundwater, posing serious risks to human health and the environment
- Conserve scarce and non-renewable resources and recover material for reuse. Around 95% of eWaste (by volume) can be recycled and reused
- Its important to destroy data securely
- Avoid brand damage if asset tagged or branded equipment is detected at an illegal eWaste dump
- Save money on the costs of operating, storing and disposing of end-of-life equipment
- Contribute to organisational waste reduction goals
- Align with the Sustainable Development Goals (see below).
- Compliance with legal and environmental obligations.
- Avoid Greenhouse Gas emissions. Basel Action Network estimates recycling 100kg of eWaste avoids about 28kg of GHGs.

eWaste and the Sustainable Development Goals

The UN Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity.

As well as outlining where we need to be by 2030 to achieve a sustainable world; for business, the SDGs also represent new markets and opportunities. The SDGs cannot be achieved alone – they require action across society, business and government to fulfill.

- Goal 12: Responsible Consumption & Production calls on everyone to take actions to promote a circular economy, educating and assisting our value chain to minimise waste.
- Proper management of eWaste contributes to the SDGs related to environmental protection (Goals 6, 11, and 14) and health (Goal 3).
- It also addresses Goal 8 (Work and Economic Growth), since the sound management of eWaste can create new areas of employment and drive entrepreneurship.



The legal framework

Legislative controls in Australia

When it comes to recovering many of these materials, the Australian federal government's National Television and Computer Recycling Scheme (NTCRS) covers TVs, computers, and their peripherals. This scheme, funded by importers of electronic products, provides access to recycling for these products.

However, items such as mobiles, whitegoods and appliances, photovoltaic solar panels and batteries still fall outside of the NTCRS and the Product Stewardship Act 2011. This means that the recycling costs for these items is usually higher, and access points may be harder to find. Voluntary industry schemes such as Mobile Muster and Cartridges for Planet Ark provide disposal solutions for specific items. In addition, The Australian Battery Recycling Initiative intends to launch a voluntary, industry-led product stewardship scheme, which will provide a national scheme for recycling hand-held batteries. This means many categories of eWaste are outside of any legislated product stewardship scheme.

eWaste has been banned from landfill in South Australia since 2011, and in Victoria since 2019. It's been our experience that many in the business community haven't been aware of this upcoming change. It is likely that other jurisdictions will follow suit within coming years, so it makes sense for businesses to implement uniform policies now.

Some eWaste items (eg. cables, server racks etc) can be treated as scrap metal. In an effort to combat crime, some states have outlawed cash for scrap metal payments.

Legislative response in New Zealand

eWaste is a not a controlled waste stream in New Zealand, so it is not formally banned from landfill. There is a no national Product Stewardship Scheme, although the government has announced a program of work that could include the establishment of regulated or voluntary product stewardship schemes for eWaste.

eWaste and Human Rights

The UN Guiding Principles on Business and Human Rights (UNGPs) call on businesses to eradicate Human Rights abuses in their value chain, and the Australian Modern Slavery Act legislation obliges businesses to report on the risks of modern slavery in their supply chains and the actions they are taking to reduce them.

While Human Rights abuses at the beginning of the ICT lifecycle have some level of public awareness (e.g. issues surrounding conflict minerals), Human Rights abuses can also occur at the point of disposal. Illegally traded eWaste (see spotlight box on this page) has been detected at illegal dumpsites in the developing world, often processed by child labourers.

Avoiding the use of illegal child labour, as well as the catastrophic environmental and resource impacts of illegal dumps, is one critical reason to conduct good due diligence in your eWaste disposal chain.

Spotlight on illegal eWaste export

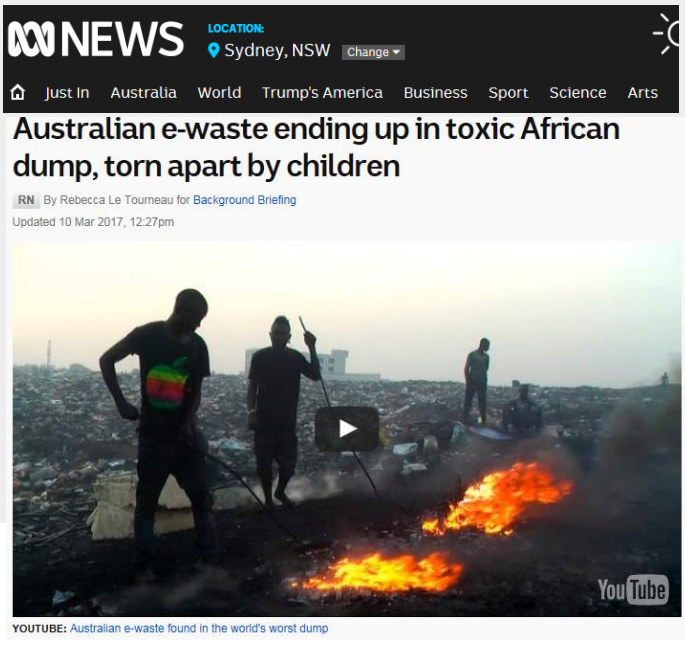
A report released by the UN Environmental Programme (UNEP) in 2015 estimated that between 60 and 90 per cent of the 41 million tonnes of eWaste produced each year worldwide is illegally traded from OECD countries to non-OECD countries, particularly in Africa or Asia.

The Basel Convention bans the transportation of hazardous waste, including non-operational electronic devices, between countries. While both Australia & New Zealand have ratified the convention, this illegal export of eWaste still occurs.

While some of the eWaste is given a second life, used for parts or for the African second hand market; almost all devices entering Western Africa have already been extensively used, and once refurbished, have an average lifespan of just 2 years, according to some studies. It then ends up in a dumpsite, listed in statistics as domestic eWaste.

Once at the dumpsite, eWaste in these dumps is burnt over open flames by workers, typically children, to recover the valuable materials inside. This causes serious eye, skin and respiratory problems for the children and dramatically shortens their lifespan. The uncontrolled burning means dangerous toxins from eWaste enter soil, water and air.

Whole, non-operational eWaste from Australian business (still with its branded asset tag attached) was detected at the eWaste dump in Agbogbloshie, Ghana in 2017 by ABC reporters. This follows similar investigative journalism by SBS Dateline and overseas by Al Jazeera and BBC programmer The Insiders.



YOUTUBE: Australian e-waste found in the world's worst dump

eWaste and the Circular Economy

eWaste and the Circular Economy

The traditional linear materials economy model, where raw materials are mined, products are produced and landfilled at the end of their useful life has proven to be unsustainable. By contrast, a circular economy is regenerative by design – materials flow through a 'closed loop' system, rather than being used once and then discarded. As a result, the value of materials is not lost by being thrown away.

The Global eWaste Monitor estimates the total value of all raw materials present in eWaste at a staggering 55 billion Euros in 2016. This is more than the Gross Domestic Product of most countries in the world! A smartphone contains around 40 different critical raw materials, with a concentration of gold 25 to 30 times that of the richest primary gold ores, according to a 2016 PRoSUM report. Additionally, an increasing number of products contain precious resources such as indium (used in touch screens) and cobalt (used in rechargeable batteries).

Looking at this figure, a compelling economic argument for circular economy thinking for eWaste is immediately apparent.

Remarketing and Resale of ICT assets

Many eWaste providers will have a facility where suitable end of life devices can be refurbished and resold. This is normally either on a profit sharing or fee-for-service arrangement, with the profits from any sale returned to the organisation after the device is sold.

This is a useful option to extend the device lifecycle, and to reclaim any residual value in the asset. Not every asset will be suitable for resale; and the age, functionality, appearance and overall condition of the asset will all be assessed by the eWaste recycler. The device is wiped to cleanse any remaining data, and some minor repairs or upgrades may be performed to increase the sale price (e.g. memory upgrades with other recycled parts). Devices are then resold on the second hand market, usually via ecommerce sites or in bulk to brokers.

It's important to conduct due diligence on remarketing partners, not least to ensure the correct handling of anything not graded as suitable for resale and scrapped. Some questions you can ask that specifically relate to remarketing of assets are highlighted in the next section.

Charitable Donations

Donating an end of life device to a charity is one way to extend the use of the asset, but be aware many charities will not take electronic devices due to warranty and safety concerns. There are some factors to bear in mind when considering this option to ensure you aren't just passing along a problem to someone else.

Quality of the asset

Assets that haven't been subject to extensive use are more suitable for charitable donation as they are more likely to have useful lifespan. However, most organisations naturally want to obtain maximum use before a device is retired, so the quality of the asset may have sgnificantly declined since it was new.

Warranty and licensing

Once refurbiushed, the device may be issued with limited or no warranty, especially if you are doing the refurbishment yourself. A reputable remarketing service will include a genuine licensed operating system on the device. Ensure the receiving party is clear on what is and isn't included with the donation.

Responsible Disposal

At some point the donated device will reach its eventual end of life and will need to be recycled, which may create a financial and logistical burden that the charity does not forsee at the time of the donation. Consider giving the charity a guarantee that your organisation will take it back for recycling at its eventual end of life, including covering any logistics costs. Consider carefully donation of ICT product into developing countries, where infrastructure for proper reycling of eWaste may not be readily accessible.

Of course, it can also be time consuming to find a charity that wants to take second hand ICT devices. One way around this is to remarket suitable assets via your eWaste partner's typical channels, and donate any resulting sum to the charity of your choice. This is often the approach the maximises flexibility for both parties – as a general rule, charities are more in need of money than they are of a second hand laptop.

Recycling eWaste

Because most major electronics manufacturers do not have manufacturing facilities in the Oceania region, true 'closed loop' recovery, where materials are used in the next generation of products, is not always possible. However, recycling eWaste reclaims components for use in other ways. Any eWaste reycler that operates in the NCTRS must achieve a recovery rate of 90% of eWaste by volume. However, recovery rates of in the region of 95-99% can be achieved.

Devices are either manually dissembled or shredded, or a combination (e.g. a hard drive might be shredded while the rest of the device is dissembled). Shredding a device has the added advantage of physical destruction of any data.

Once disassembled or shredded, eWaste is essentially a number of different commodities, like plastics or metals. These commodities are then on sold to brokers for reuse in a variety of applications.

Fast facts: What can you make from eWaste?

- Plastic components like PC housings can be remade into other plastic products. eWaste plastic is commonly made into street furniture, bins, buckets, plastic pallets and crates.
- Metals are recovered via a smelting process and can be reused indefinitely.
- Screen glass can be smelted to have metals removed or reused in glass-to-glass manufacturing.

Equipping Your Organisation to Succeed

Just having the right eWaste recycling partner is not enough in itself – you also need to take some actions inside your organisation to minimise the risks of unauthorised eWaste disposal.

Set a Policy

Your organisation may have a waste reduction policy or targets; some may have an ICT Sustainability policy which includes direction for the entire ICT lifecycle, or some might have a specific policy on the treatment of end of life electronic equipment. Whichever approach you take, typical inclusions would be:

- A simple definition of eWaste ('anything with a plug, cord or battery')
- A ban on eWaste going to landfill
- A list of required certifications or standards eWaste recyclers you engage should hold; or a list of the electronic recyclers that can be dealt with (once you have completed due diligence!)

Like any policy, the best way to ensure compliance is to make the policy easy to comply with, so give some attention to providing disposal points that are easy to find and use, along with simple staff guidelines.

Know your waste stream

Having a good idea of what eWaste you are generating will help you drive compliance, as well as avoid unexpected costs. Some questions to ask yourself are:

- What volumes are you producing?
- What geographies is eWaste being produced in?
- How will it be available for collection (e.g. boxed, palleted, or loose)?
- Is there any standard asset management in place? Who is part of this process?
- Will devices be wiped before recycling?
- Will the product manufacturer take back the assets for recycling?
- Are there other disposal options available (e.g. disposal facilitated by a high-rise building manager)? Are these secure?
- Will this facility be open to staff as a benefit (to deposit eWaste from home)?

Policy Education

In our experience, people are often aware of the need to responsibly dispose of assets like servers or laptops in order to protect data and comply with asset management processes. However, this is often not extended to other eWaste such as peripherals or batteries, which frequently end up in landfill. For most office workers having periodic refreshers (posters, newsletters etc) combined with prominent collection points will be enough.

Target formats like workshops at those personnel who are dealing with eWaste most frequently, which will normally include:

- End User Support teams
- Office or branch managers
- Facilities/Premises management teams
- Data Centre personnel
- Warehouse and logistics teams.

Disposal/Collection Points

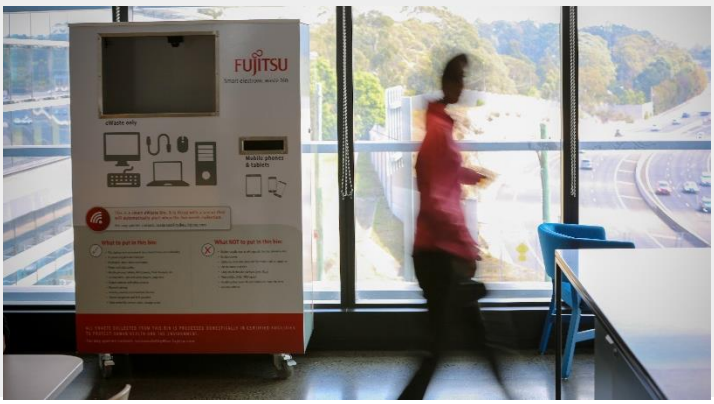
There are a variety of methods to collect eWaste, and the one you choose will depend on the type and volume of eWaste collected and the space available. What works at a Data Centre might not be so practical in your head office. The factors to consider are:

- Visibility and accessibility to support disposal compliance
- Security - you might need separate, lockable disposal options for things like hard drives, mobile devices and media
- Minimisation of manual handling and lifting
- Availability of staff and space to pack or pallet items
- Access to your building. Some collection options may require a truck with a tail lift to move them; so ensure you knowi if this can be accomodated in your building's loading zones.

Look out for events that will generate a lot of eWaste, like office moves or major ICT refreshes. It is worth doing point solutions (like additional disposal options or posters etc) at these times to ensure compliance.

Case study: Fujitsu Smart Bin

- Fujitsu's smart bins use IoT and Run My Process automation software to create a completely self-managing solution to collect eWaste
- The bins are designed to be attractive enough to site out in the open office, helping to raise awareness of eWaste recycling.
- In FY17 our fleet of Smart Bins diverted 3 tonnes of eWaste from landfill.



Vendor Takeback

Many electronics vendors will offer a takeback service for devices at end of life, although you may be responsible for packing and freighting the devices yourself. They should disclose to you how and where such devices will be treated. For bulk disposals a certificate of recycling should be provided. It is worth looking at your ICT procurement policies or guidelines to ask this question of potential vendors as part of the procurement process.

Set a budget

While higher-value eWaste types like laptops and servers might be able to be recycled for free, that is not always the case. There are also freight and logistics costs, as well as costs for any additional services you might need, such as serial number capture or data destruction.

Eight Questions to ask your eWaste processing partner

There are many eWaste processors out there, but not all are equal. Doing thorough due diligence is essential to protect your organisation's reputation and data, and avoid eWaste being illegally exported or sent to landfill. Like all due diligence processes, it helps to know what you should be asking for. This section is designed to help you get to grips with the task.

1. 'Tell me about your business.'

Some good follow-up questions to ask initially are:

- What is the address of your facility (or facilties)?
- How much eWaste do you handle every year?)The EPA will specify an upper limit on the site license).
- What certificate of recycling or reporting will I get? Can I see a sample?
- What is the normal elapsed time between you taking the eWaste and getting the certificate to me?
- What collection methods do you offer (eg. onsite bins, cages)?
- What is the billing process? In some states it is illegal to offer cash for scrap metals (eg cable or server racks).
- How many WH&S incidents have you had in the last 12 months?
- Have you ever had any EPA notices, warnings or an audit non-conformance finding?
- What types of eWaste will you accept for processing?
- Can you provide customer references?
- What insurance do you have? Look for Data & professional liability insurance as well as workers compensationa and public liability cover.

These questions will rule out any fly by night operators, but it is always best to visit an eWaste recycler's site and look for yourself, as well as to ask more detailed questions.

2. 'What are your recycling practices and outcomes?'

Recycling outcomes are a critical part of selecting a processor. Recovery rates should be over 90% for eWaste (at least – aim for 95-99%), and good operators will know the recycling rate for the entire operation (all waste streams).

- What is your recovery rate?
- Do you shred or manually disassemble eWaste?
- What percentage of eWaste is processed domestically? Is anything exported for processing (including downstream processing of components eg. batteries)? Does this also include component parts?
- Do you audit downstream processors (and at what frequency)?
- Do you have any stockpiles of eWaste (including leaded glass)?
- Do you have facilities to recycle associated items (e.g. packaging or pallets)?

3. 'What certifications do you have?'

There are a variety of externally audited certifications that eWaste processors should hold. At a minimum this would include:

- ISO 14001 Environmental Management Standard;
- OHSAS18001 – Occupational Health and Safety;
- ISO9001 – Quality Management Systems;
- AS/NZS 5377 - Collection, Storage, Transport and Treatment of End-of-Life Electrical and Electronic Equipment. This is an Australian/New Zealand standard that all eWaste recyclers that recycle under the Australian product stewardship scheme are required to hold.

Some recyclers may also have international certifications.

- Responsible Recycling (R2:2013) standard. Developed by the American National Standards Institute, there are a small number of eWaste recyclers in the Oceania region that hold this certification.
- E-Stewards. Endorsed by the non-government eWaste action group BAN (Basel Action Network), this certification covers both environmental and social impacts of eWaste processing. At the time of writing, all certified processors were in North & South America with a small number in Asia.

4. 'How can you protect my data?'

Most eWaste operators will offer a range of data destruction services. Each method has its advantages and also additional costs.

- What data destruction serivces do you offer?
- Can I physically witness secure data destruction (if required)?
- Can you do serial number/make/model capture and reporting?
- Do you have your own collection vehicles and staff, or use third parties?

Hard drive shredding is typical, but not all eWaste recyclers, particularly those that focus mainly on disassembly, will have shredding facilities themselves and may use a downstream partner for this task. Some eWaste recyclers can also shred an entire device. Data wiping services (e.g. magnetic disk degaussing) are also offered, useful if you want to remarket the device.

Some service providers will offer onsite data destruction or shredding, where drives, tapes, etc. can be processed at your premises. Other options you can consider include chain of custody tracking (e.g. recycler collects in own van, courier license details checked, GPS trackers, etc.), witnessed destruction at the recycling facility, or photographs/videos of data or device destruction.

Your eWaste recycling provider should also provide a certificate of data destruction (separate to the certificate of recycling). Ask your prospective eWaste recycler about their data protection policies. As well as having adequate procedural controls to prevent a breach, they should be periodically checking disk wiping with a third party to ensure it is being properly conducted.

5. 'Can I conduct an onsite audit?'

It is always best to visit an eWaste recycler's site and look for yourself. A reputable processor should welcome the chance for you to inspect their facilties and be able to facilitate announced and unnanouced audits.

- All eWaste should be stored in undercover areas. Some processing may be done in open air to reduce spark risk (eg removal of fused batteries), but items should be moved to an enclosed area at shutdown.
- Look at physical security controls (eg fencing, enclosed structures, guards, airport style wanding on exit, CCTV coverage etc) and process controls (sign in/out procedures for workers etc) that protect the eWaste and data stored on it.

Eight Questions to ask your eWaste processing partner (cont.)

- Look for clear, easy to understand signage on WH&S controls and safe processes for dissembly, machine operations etc
- What controls are in place to protect workers from prolonged exposure to toxins (eg. PPE, period blood tests for metals etc)?
- View evidence of downstream processing claims such as invoices or recycling reports.

6. 'Do you offer remarketing services?'

Questions to help you understand this option include:

- What are your usual remarketing channels?
- What is the return to my organisation based on (eg. profit share or after fee-for-service)?
- What data wiping do you do?
- What is the average elapsed time between you taking the asset and returning the profits to me?
- What certifcates & reporting will I receive?
- What do you do with equipment not suitable for remarketing? Is there an additional charge for recycling?

7. 'What shipping controls do you have for hazardous wastes?'

Some types of eWaste components are considered Hazardous wastes and require special controls and permits for shipping and export (especially CRT glass and toner). Remember export of whole, non-working eWaste is illegal in both Australia and New Zealand. When conducting a due diligence audit, look for:

- *Export/import permits*. In Australia, permits are issued under the Hazardous Waste Act for international export and by the EPA for movement across state boundaries. In New Zealand, export permits are issued by the NZ Environmental Protection Authority. The permit will specify the waste type and destination.
- *Records of shipping*. Ask to sight consignment notes and shipping receipts for any items shipped overseas, to ensure they match the destinations on the permits.
- *Hazardous waste transport procedure*. For hazardous commodities that the eWaste processor ships themselves, they should have a clear process that demonstrates how chain of custody is preserved and safely transferred. Ask to sight evidence of compliance for some recent consignments (eg. a completed checklist).

It is common for downstream processors of hazardous goods to arrange transport in their own vehicles and drivers. In this case, eWaste processors should have a procedure where they check key controls before they allow the shipment to leave their premises.

8. 'What do you do with Problem Waste Types?'

While eWaste as a category is often considered a problem waste type, there are some components that are particularly difficult, and are sent to specialist downstream processors to handle properly.

- *Waste toner*. Toner that is moved interstate for processing requires a consignment authority for the receiving state. These are valid for 12 months and each shipmment shoud have a waste transport certificate noted against that consignment authority.
- *Screen glass*. This is particularly a concern for CRT screen glass, which contains lead. While the proportion of CRT glass in the waste stream is diminishing, oftentimes all screen glass will be handled as if it were CRT glass to minimse risk. There is only one smelter in Australia that will handle CRT glass and all CRT glass in New Zealand is exported for treatment. Again, there should be consignment notes/export permits etc for these commodities.
- *Batteries*. There are limited battery recycling facilities in the region, so batteries may be exported for recycling. Batteries prepared for shipping should be in marked drums with terminals covered.
- *Items containing mercury* (mainly globes). Again, look for the appropriate shipping controls and recycling certificates issued by the downstream processors.

Conclusion

Effective management of eWaste not only protects human health and the environment, it reduces risk for your business. While due diligence may seem like an intimidating task at the outset, once you have a process in place, it becomes much easier!

Most organsations will see the amount of eWaste they produce grow over the coming years, so establishing a strong process is a worthwhile investment, especially in light of increasing leigslative controls and stakeholder expectations on waste management.

About Fujitsu Australia & New Zealand

Fujitsu Australia and New Zealand is a leading service provider of business, information technology and communications solutions. As one of the largest ICT companies in the Australian and New Zealand marketplace, we partner with our customers to consult, design, build, operate and support business solutions. Fujitsu sees ICT as a powerful tool in reducing our customers' burden on the environment and believe ICT can enable the transition to a prosperous and low carbon society.

Product Stewardship is core to our activities in the Oceania region and in FY2017 we handled more than 380,000kg of eWaste from our own and customer's operations. Fujitsu is a liable party under the Australian NCTRS Act and is a member of Electronic Product Stewardship Australia (EPSA).

Fujitsu sustainability consulting services help customers reduce costs, risks and emissions. Our unique ICT sustainability benchmarking service helps organisations improve practice across all aspects and dimensions of the ICT lifecycle. Contact us at sustainability@au.fujitsu.com to find out more about how we can help you.

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