

AIIA E-SIG / PSA Interim Industry Standard

Collection, transport and recycling of end of life (EOL) televisions and computers

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Preface National Framework for Product Stewardship

Under Strategy 1 of the National Waste Policy: *Less waste, more resources* (the National Waste Policy), which has been endorsed by the Council of Australian Governments (COAG), the Australian and State and Territory Governments have agreed that:

The Australian Government, with the support of State and Territory Governments, will establish a national framework underpinned by legislation to support voluntary, co-regulatory and regulatory product stewardship and extended producer responsibility schemes to provide for the impacts of a product being responsibly managed during and at end of life.

The Environment Protection and Heritage Council (EPHC) agreed in November 2009 that televisions and computer products are the first products to be covered under the legislation.

The Bill and subordinate legislation (such as regulations) provide for a national collection and recycling scheme for end of life (EOL) television and computer e-waste. Under the National Television and Computer Stewardship Scheme (the Scheme), it is proposed that liable parties will meet their obligations by becoming a member of an approved Arrangement for the collection and recycling of EOL television and computer products.

Industry associations representing the Australian television and computer industries have expressed their intention to establish a product stewardship organisation to administer an Arrangement and to have it approved under the regulations.

Need for a Standard

Electrical and electronic products contain a complex mix of materials, components and substances. Many components in EOL televisions and computers are classed as hazardous e-waste when they are removed or dismantled. Dismantling, crushing, recycling or reprocessing EOL televisions and computers, if poorly managed, has the potential to release hazardous substances into the environment and to endanger human health. In addition, the management of EOL televisions and computers involves health and safety issues associated with the manual handling, storage and transport of heavy and bulky items that must also be taken into consideration. It is essential that the environmental and health and safety risks are identified and proactively managed by those involved in the collection, transport and recycling of EOL televisions and computers. This interim industry standard has been developed to address those risks and will be used by the TV and IT Product Stewardship Arrangement Administrator (Arrangement Administrator) while an official Australian and New Zealand Standard is being prepared through the Standards Australia/Standards New Zealand consensus process.

The Interim Industry Standard has been prepared by TV and IT industry members and has been the subject of consultation with a broad group of stakeholders, with a view to creating an interim standard that is broadly acceptable to most stakeholders. The document is based on a number of international e-waste standards and particularly on the *Electronics Product Stewardship Canada Electronics Recycling Standard 2009*. The remaining documents accessed in preparing this interim standard are listed in Appendix 3.

Preface National Framework for Product Stewardship

Certification and auditing

The Interim Industry Standard will be supported by education, certification and audit programs. It will be a contractual requirement that any recycler engaged by the Arrangement Administrator will be certified as complying with the international benchmark for environmental management, ISO 14001, and this Interim Industry Standard. The certification will not be performed by the Arrangement Administrator but by any independent certification bodies who are accredited as competent to do so by the government appointed accreditation body for Australia and New Zealand, JAS-ANZ (Joint Accreditation System Australia and New Zealand). Refer to Appendix 4.

Under the contractual arrangements, collection locations will be required to self assess and certify compliance with the standard to the arrangement administrator at specified periods.

The Arrangement Administrator will periodically audit a sample of collection locations, transport providers and recyclers for compliance with the standard, including the records required to be maintained. For recyclers this may be done in conjunction with their certification.

Review of the Standard

The Interim Industry Standard will be reviewed annually by the Arrangement Administrator in consultation with key stakeholder groups, until such time as an Australian Standard comes into force. The review will be undertaken with broadly the same group of stakeholders involved in the original stakeholder consultation on the *Draft Interim Standard (October 2010)*.

This Interim Industry Standard applies to the collection, transport and recycling of products covered under the National Television and Computer Product Stewardship Scheme (Television and Computer Scheme) i.e. EOL televisions and computers. It defines the minimum requirements to ensure that televisions and computers are managed safely and in an environmentally sound manner at the end of their useful life – from the point of collection from the end user to the point of final disposition for recovery of raw materials for future products or disposal. It defines the minimum required outcomes and sets out how they are to be measured.

Disclaimer

Whilst use and citation of the Interim Industry Standard by all stakeholders in the e-waste industry is encouraged, the document and connected intellectual property rests with PSA-AIIA.

The Interim Industry Standard is intended to provide general information and guidelines only about the expectations for best practice treatment of e-waste. It is general information only and users should seek professional advice about the application of the Interim Industry Standard to users' particular situation.

It is important that users assure themselves that they are using the current version of the Interim Industry Standard, which should include any amendments that may have been published since the Standard was published.

Written feedback on the Interim Industry Standard is welcome. Users should notify PSA-AIIA immediately of any ambiguities or inaccuracies contained in this document.

While care has been taken in the development of the Interim Industry Standard, PSA-AIIA and associated authors do not warrant that the Interim Industry Standard is free from errors or omission, or that it is current, or exhaustive.

The Interim Industry Standard does not address the reuse market. There are existing avenues and commercial markets for the reuse of televisions and computers. This document is designed to deal solely with televisions and computers consigned by the end user for final disposition as e-waste. Therefore the requirements for collection, transport and recycling set out in this document are targeted to handle this scrap or e-waste.

Please note: Further information about re-use options is available on the Australian Government's website www.environment.gov.au

This Interim Industry Standard is intended to be used as a primary contractual requirement between the Arrangement Administrator of the Television and Computer Scheme and organisations seeking to participate in the Scheme as collection locations, transporters and recyclers. It may also be used as a contractual requirement by companies, including members of the Product Stewardship Organisation (PSO), seeking to recycle their own end of life equipment. The Interim Industry Standard will be used in the auditing and where applicable, certification of participating organisations.

The Interim Industry Standard includes guidelines that provide further information on the potential hazards and environmental impacts associated with the collection, transport, recycling and processing of EOL televisions and computers as well as appropriate controls for those hazards and impacts.

The Interim Industry Standard does not absolve collection locations, transporters or recyclers from any Federal, State and/or Municipal legislation and regulations applicable to their business operation. It is the responsibility of the operator to be aware of and abide by all such legislation and regulations.

1. EOL televisions and computers shall be collected, transported and recycled to ensure that the health of people – either those involved in the process or those potentially affected at any stage of the process – is not adversely affected.
2. EOL televisions and computers shall be collected, transported and recycled to ensure that the environment including land, air, water and groundwater is not adversely affected.
3. Collection locations, transporters and recyclers have a duty of care to ensure that all activities are managed in accordance with applicable legislation, regulations, codes and directions and environmental management practices.
4. Recyclers have a duty of care to ensure that markets for materials accessed by downstream processors are legitimate and do not breach human health or sound environmental practice standards.
5. Decisions regarding treatment of EOL televisions and computers shall take into account the following principles:
 - Ensuring that the highest resource value is maintained.
 - Carbon emissions are minimised.
 - Landfill is a last-choice destination only.
6. Components and materials shall be traceable from the first point of removal from original product to the Point of Final Disposition.

The Arrangement Administrator is committed to comprehensive and appropriately assured public accountability regarding its performance. Consistent with this commitment, participating collection locations, transporters and recyclers shall maintain and provide access to records and data demonstrating compliance with this Interim Industry Standard.

This section describes requirements that apply to collection locations, transporters and recyclers.

4.1 Responsibility and authority

The collection location or recycler shall appoint a specific person with responsibility for compliance with this standard. This person shall have appropriate training and competence in the applicable collection and recycling processes and the identified health safety and environmental risks.

4.2 Risk management

Collection locations, transporters and recyclers shall have conducted a risk assessment to identify health, safety and environmental (HSE) hazards and risks associated with the products and activities included in the operation and have effective processes in place to mitigate the risks in accordance with the health and safety hierarchy of control. The risk assessment shall be conducted by a qualified person and take into account the guidance as outlined in Appendix 1.

For each risk that is identified, the following must be undertaken:

- Documented work methods describing safe and environmentally sound practices must be provided to all people who could be affected including staff, contractors and visitors.

For recycling facilities this includes documenting safe exposure limits for airborne hazardous emissions including lead, dust, silica, beryllium etc. It also refers to the noise levels and implementation of policies and procedures for hygiene, eating and drinking in order to reduce exposure to lead and other hazardous substances.

- All people involved in carrying out the identified activities shall be trained to a level of competence and their competence shall be assessed periodically in accordance with the severity of the risk.

- Monitoring that the controls are effectively implemented. For collection locations and recyclers, monitoring should include the following, depending on the risks identified:
 - Undertaking a baseline study of worker exposure to airborne toxins and noise (refer to first bullet point under 4.2 Risk management) and then periodic monitoring and testing conducted by specialised and qualified organisations with results documented.
 - Ensuring that personal protective equipment (PPE) complies with the appropriate standard and is fitted and maintained in accordance with the relevant standard.
 - Testing and monitoring of stormwater run off in instances where rainwater runs off through the product and the water is not captured on site and treated appropriately.
 - Site inspections or audits to ensure that procedures are being followed and that they are effective.
- Records of training, assessment and monitoring must be kept.

Please note:

- Guidance on conducting health and safety and environmental risk assessments can be found in Standards Australia Handbooks on Health and Safety and Environmental Risk Management. Most State Health and Safety Regulators also have information and templates available to assist.
- Information on exposure standards is available from Safe Work Australia's *Hazardous Substances Information System* www.safeworkaustralia.gov.au

If relevant information on the hazardous nature of the material or components submitted for recycling is not known, information should be sought directly from the manufacturer or from the Arrangement Administrator.

4.3 Legal compliance

Operations

Collection locations, transporters and recyclers shall maintain a documented process to identify, assess and ensure compliance with this standard and all applicable regulatory requirements and codes, including, but not limited to:

- Environmental regulations, including permits or certifications for operating and regulations related to air emissions and other discharges.
- Occupational health and safety regulations and associated Codes of Practice including draft codes of practice published by Safe Work Australia.
- Australian Dangerous Goods Code.
- Privacy Act.
- Hazardous Substances legislation.
- State regulations for management and transport of trackable or prescribed industrial e-waste.

The provider shall have a documented process for the reporting of any legal breaches, environmental, health or safety incidents that are 'reportable' to both the appropriate regulatory authority and the Arrangement Administrator.

Reports to the Arrangement Administrator are to be made in writing as soon as possible or within 5 working days.

Import and export requirements

Collection locations, transporters and recyclers must comply with the Hazardous Waste (Regulation of Exports and Imports) Act 1989 (HWA) and its associated regulations.

As a general rule, all trans-boundary movements of EOL televisions and computers for disposal overseas are prohibited without a permit under the HWA. Similarly, all trans-boundary movements of EOL televisions and computers for recovery or recycling operations in a country that is a member of the Organisation for Economic Corporation Development (OECD) are permissible with a permit issued under the OECD regulation. In some instances where the material has been separated, segregated and sorted in compliance with OECD guidelines, exports may be allowed without the need of permits. Specific advice as to the permit requirements under the HWA should be obtained from Department of Sustainability, Environment, Water, Population and Community (DSEWPaC) by all potential exporters and importers of used electronic equipment.

4.4 Domestic transport requirements

Collection locations, transporters and recyclers shall ensure that television or computer e-waste under their control is transported in accordance with National and State transport and any dangerous goods regulations and that necessary documentation is maintained if the material is classified as trackable e-waste or prescribed industrial e-waste.

Please note:

Most States and Territories have in place regulatory arrangements to manage hazardous e-wastes. The interstate movement of hazardous e-waste is regulated by the National Environment Protection Measure (NEPM) for the transport of Controlled Waste. This NEPM establishes a national tracking system for controlled e-waste.

4.5 Export transport requirements

The international transfer and transportation of television and computer e-waste must at all times be packed according to the Australian Dangerous Goods Code and the Australian Maritime Safety Authority Regulations.

4.6 Emergency response

Collection locations, transporters and recyclers shall implement and maintain an Emergency Response Plan (ERP) to prepare for and respond to emergencies including fires, spills, natural disasters such as storms, floods and earthquakes and medical incidents. The ERP shall include:

- Action to be taken (including notifications required by law).
- Notifications to be made to the Arrangement Administrator.
- A Disaster Recovery Plan, for example:
 - alternative collection or notice of suspension
 - alternative storage
 - alternative transport
 - recovery timeline.
- Requirements for training all responsible people:
 - documentation to be available
 - review of documentation
 - periodic testing by drills.

4.7 Receiving handling and storage

Whole units and separated components of EOL televisions and computers shall be handled and stored in a manner that provides protection from:

- theft or vandalism
- exposure to the elements, for example because of leaching risk
- exposure of people on site to hazardous substances
- damage or breakage of cathode ray tube (CRT) or flat panel displays.

There shall be no uncontrolled tipping of containers with CRT or flat panel displays. Methods of handling and storage shall be undertaken with appropriate tools, containers and fixing to ensure that effective recovery and recycling in accordance with the Interim Industry Standard is not adversely affected.

CRT and flat panel displays shall be prepared and loaded for transport in such a way that they are not damaged during loading and transport.

4.8 Data security

Responsibility for removing private or confidential data from any equipment provided for recycling rests with the consumer. Collection locations must prominently display warning advice to this effect at both the collection location and in any information or advertising material.

4.9 Goods receiving and storage

Recyclers contracted to receive material from specific collection sites may provide additional guidance to collection sites and transporters regarding appropriate temporary on-site storage containers and preparation of goods for transport. The recyclers may also provide the collection receptacles.

4.10 Data reporting

Collection locations and recyclers shall provide reports to the Arrangement Administrator as follows:

- The quantity and source of EOL televisions and computers collected through the National Television and Computer Product Stewardship Scheme and those quantities collected through processes not connected to the National Scheme, such as manufacturer-run recycling programs or direct contracts with end users or other parties. The amount shall be reported in units or weight as prescribed in the contract with the Arrangement Administrator. The quantity of televisions and of computers shall be reported separately.
- The amount of each category of resource recovered from recycling processes (if applicable) and any e-waste consigned to landfill.
- The quantity of EOL televisions and computers and derivative components and materials dispatched to the next in line downstream processors and the name and address of those processors.

4.11 Records management

Collection locations, transporters and recyclers shall maintain and make available for audit documentation evidencing compliance with this Interim Standard. Records to allow the traceability of televisions and computer e-waste, including manifests bills of loading, chain of custody documents, applicable e-waste transport records and other records mentioned in this document shall be accessible, legible and maintained for at least three years and longer, if required by particular legislation or regulation.

4.12 Disposal to landfill

Any e-waste that is disposed of as landfill must be disposed of at an e-waste facility that is appropriately licensed under State or Local Government legislation or regulations.

Section 5

Requirements for collection locations

This section includes specific requirements for collection locations that are additional to the general requirements described in Clause 4. Refer to Appendix 2 for further guidance.

5.1. Access

Public access areas shall be clean and tidy, secure, free of hazards and easily accessible by the public.

5.2 Signage and information

Clear signage shall be provided, including:

- instructions to the public
- access times
- details of equipment that is/isn't included in the collection
- a warning stating that it is the responsibility of the equipment owner to remove any confidential or private data before the equipment is left at the collection location
- advice that monitors, CRTs or LCDs will not be accepted for recycling if they have broken screens
- products must not have been exposed to radiation, biological or chemical hazards
- hardware will not be returned after it has been dropped off.

Similar details must be included in advertising / display material used or published by the collection location.

5.3. Storage

Areas used for the receipt of EOL televisions and computers shall be a clearly marked and segregated from other activities.

5.4 Insurance

Collection locations must ensure that insurance coverage is in place which provides for:

- bodily injury of employees, contractors, visitors and neighbours
- other liabilities which may arise from the use of the site.

5.5 Broken or dumped material

Operators of collection facilities must have arrangements for the proper collection and recycling or disposal of material that is broken onsite, or dumped in the immediate vicinity.

5.6 Fees

There shall be no charge for members of the public to deposit EOL televisions and computers collected under the National Television and Computer Product Stewardship Program.

Please note:

This requirement is based on government policy outlined in a fact sheet on Product Stewardship under the National Waste Policy, issued in April 2010 by the Department of Environment, Water Heritage and the Arts. The fact sheet states that 'Consumers of televisions and computers will be responsible for ensuring that their unwanted televisions and computers are left at designated collection points to be recycled – but there will be no charge to recycle them'.

This arrangement may not preclude some charging arrangements e.g. for collection from locations other than designated collection points. This arrangement also does not apply to televisions and computers collected from business or industry where commercial relationships apply.

5.7 Recycling

EOL televisions and computers shall only be sent from a collection location to a recycler that has been certified as complying with this standard and has a contract with the Arrangement Administrator.

This section includes specific transport requirements that are additional to the general requirements described in Clause 4.

6.1 Training

The transport provider must ensure that all persons who handle the e-waste are properly trained and fully conversant with the nature of the materials being transported and the procedures for risk identification and management, mitigation measures and safe handling of the e-waste. They must also be properly trained and fully conversant with the procedures to be followed in case of an accident so as to safeguard human health and the environment.

6.2 Licences and registration

The transport provider must ensure that all necessary licences under relevant legislation are held and are current.

6.3 Insurance

The transport provider must hold insurance to cover liabilities arising from any occurrence during the transport operation.

This section includes specific requirements for recyclers that are additional to the general requirements described in Clause 4. Further guidance material is contained in Appendix 1.

7.1. Certification

Recyclers shall hold current certification to AS NZS ISO 14001 Environmental Management System and to this Interim Industry Standard from an accredited certification body or bodies.

7.2. Insurance

Recyclers shall ensure that there is insurance coverage or other financial resources in place adequate to the nature and size of the operations. The insurances or financial resources shall, as a minimum, cover risks and liabilities of:

- bodily injury of employees, contractors, visitors and neighbours
- damage to neighbouring facilities
- damage due to accidental pollutant release to the environment where the owner of the property is liable.

In addition, recyclers must have a documented closure plan that assures proper closure of the facility in the event of business failure or shutdown to ensure the avoidance of any abandonment of any EOL television and computer recycling products, components, or materials. The closure plan must be supported by proof of a sufficient financial instrument to guarantee the execution of the closure plan.

7.3 Processing and handling

The resources embodied in EOL televisions and computers may be recovered using manual, mechanical, chemical or heat treatment processes provided the operation is in compliance with this Interim Standard – particularly the risk management requirements – and all applicable regulatory requirements, including permits.

Facilities employing mechanical material processing and separation activities shall be equipped with:

- dust collection system/apparatus engineered to reduce:
 - environmental emission of hazardous emissions and particulate matter
 - worker exposure to hazardous emissions and particulate matter
- an emergency shut-off system
- adequate fire suppression equipment for the size / type of facility
- other safety/environmental control equipment identified in the plan arising from the risk assessment.

Recyclers shall undertake the following monitoring:

- Air quality – in particular for lead levels.
- Noise levels in the vicinity of any mechanised processor.

Requirements for PPE and any health monitoring shall be determined on the basis of air monitoring.

If the risk assessment deems the mechanical processing of any component to pose a health and safety risk, the component shall be removed prior to mechanical processing. The following items – at least – must be removed before processing:

- mercury bearing lamps
- ink and toner cartridges
- batteries.

Substances of concern and ink and toner cartridges shall be kept separate to ensure integrity and traceability of the material stream.

Section 7

Requirements for recyclers

Equipment, components and any metal and/or plastic fractions from mechanical treatment from which hazardous substances might disperse to the environment, shall be stored under cover or in a manner that prevents dispersal to the environment.

Class 9 batteries must be packaged and stored in accordance with Australian Dangerous Goods Code.

Recyclers shall use Guiding Principle 4 (refer to page 5) in assessing the most suitable recycling

options. Recyclers shall not use landfill, energy recovery or incineration as standard practice for disposal, unless the practice can be shown to be the most environmentally sound solution. Components and materials arising from the processing of EOL televisions and computers shall only go to landfill where no economically viable recycling technology is available.

Separated materials shall be managed according to the table below.

Material processing and end use acceptability

The following table specifies acceptable recycling processing, end-use, or method of disposal.

Product / material	Minimum acceptable application	Acceptable process	Not acceptable process
EOL televisions and computers	Material recovery. Metals recovery.	Manual dismantling and sorting into major material categories. Mechanical processing to recover incorporated resources, with required dust collection & operator protection.	Landfill. Incineration. Exporting for the purpose of recycling and/or disposal without the appropriate permit under the Hazardous Waste (Regulation of Exports and Imports) Act.
CRT tubes, leaded plasma display glass and other leaded glass.	Glass product manufacturing. Lead recovery.	Mechanical cutting and crushing with required dust collection & operator protection. Glass refounding. Lead smelting. Landfill.	Exporting for the purpose of recycling and/or disposal without the appropriate permit under the Hazardous Waste (Regulation of Exports and Imports) Act.
Circuit boards	Metal recovery.	Manual processing Mechanical processing with dust collection and operator protection. Processing complete boards using pyrometallurgy or hydrometallurgy processes.	Landfill. Incineration. Exporting for the purpose of recycling and/or disposal without the appropriate permit under the Hazardous Waste (Regulation of Exports and Imports) Act.
Cable and wires	Metal recovery. Smelting.	Manual or mechanical processing. Pyrometallurgy or hydrometallurgy.	Landfill. Incineration. Export without the appropriate permit under the Hazardous Waste (Regulation of Exports and Imports) Act, if required.

Material processing and end use acceptability continued

Product / material	Minimum acceptable application	Acceptable process	Not acceptable process
Batteries	Extract from whole units. Metal recovery.	Manual or mechanical processing. Pyrometallurgy or hydrometallurgy.	Landfill . Incineration. Export without the appropriate permit under the Hazardous Waste (Regulation of Exports and Imports) Act.
Mercury containing lamps and switches	Extract from whole units. Mercury recovery.	Mechanical processing Mercury distillation.	Landfill. Incineration. Export without the appropriate permit under the Hazardous Waste (Regulation of Exports and Imports) Act.
Ink and toner cartridges ¹	Materials recovery with zero waste to landfill.	Manual or mechanical processing. Waste to energy (some components only).	Landfill. Incineration. Export without the appropriate permit under the Hazardous Waste (Regulation of Exports and Imports) Act.
Plastics	Plastic recovery ² . Energy recovery. Depolymerisation. Pelletising.	Manual or mechanical processing. Waste to energy Thermal depolymerisation.	Use in food or toy applications if containing Brominated Flame Retardants (BFR). Recovery of BFRs for the purpose of reuse. Incineration or depolymerisation without proper controls to ensure persistent organic pollutants (POPs) are within regulated limits.
Ferrous and Non-ferrous Metals	Metal recovery.	Manual or mechanical processing. Foundry.	Landfill.
Packaging	Material recovery. Recovery of cardboard, plastics, timber and polystyrene.	Mechanical or chemical processing.	Landfill. Incineration.

Notes – This table is based on the Electronics Product Stewardship Canada Electronics Recycling Standard 2009 modified for the Australian environment and legal requirements:

1. Ink and toner cartridges – incineration and landfilling have been deemed unacceptable because of the technology that is used in Australia and by OEMs i.e. remanufacturing and materials recovery with high recovery rates.
2. Under the Stockholm Convention, parties may allow recycling of articles containing BFRs under a time limited exemption provided that, among other things, it is carried out in an environmentally sound manner and the BFRs are not recovered for re-use. (Refer to Appendix 5 for further information about the Stockholm Convention).

Industry's intention is that as soon as commercially viable, separation methods are available and further guidance materials are available these will be adopted either in the Interim Industry Standard or in the broader Australian Standard under development.

7.4 Traceability

Recyclers shall fully account and report by weight the downstream flow and handling of materials and components from EOL televisions and computers from receipt at the recycler's facility to final disposition. The downstream flow shall be tracked by the recycler through each downstream processor to the point of final disposition, including details of how goods are processed at each point and the percentage of processed materials sent to each Downstream Processor.

Records maintained shall be sufficient to conduct a mass balance of the recyclers' operation, demonstrating that mass (inputs) equals mass (outputs) + losses in process on an annual basis.

For example $A + X - Y = B$ where:

A = Beginning unprocessed inventory

X = Incoming inventory over the period

Y = Outgoing inventory over the period

B = End unprocessed inventory

Some variance is acceptable to allow for natural entropy in the system.

7.5 Data security and destruction

Recyclers may offer data destruction services but these services are a commercial arrangement outside the scope of this standard.

7.6 Downstream processors

Recyclers shall maintain a documented process to evaluate and select Downstream Processors, including their ability to provide data and ensure proper handling to the point of final disposition.

The process shall include periodic audits by the recycler or an independent auditor to assess the environmental, health and safety impacts of the operation of the suppliers who are immediately downstream. The audit shall include traceability of the material to the point of final disposition. See also clause 7.4. Audits shall be performed by competent, trained people and records must be maintained to demonstrate compliance.

8.1 Accredited certification body

An organisation that conducts conformity assessments and third party certification of organisations against designated management system standards in the fields of quality, environment, occupational health and safety etc which is accredited as competent to do so by the government appointed Accreditation Body for Australia and New Zealand, JAS-ANZ (Joint Accreditation System Australia and New Zealand).

8.2 Arrangement

A set of measures that are implemented in order to meet the product stewardship obligations and requirements of a liable party, or group of liable parties, under the product stewardship legislation. The details of an Arrangement will need to be submitted to the Regulator for approval prior to implementation and each Arrangement will need to nominate an administrator.

8.3 Arrangement Administrator

An Arrangement Administrator is the entity responsible for administering an approved Arrangement. This may be a product stewardship organisation established for that purpose. Alternatively, an individual producer or importer may elect to administer their own individual product stewardship Arrangement.

8.4 Collection location / facility

A location other than a recycler that only serves as a site for receiving and possibly consolidating or aggregating television and computer e-waste prior to sending it to recyclers.

8.5 Component

An element of an appliance with a distinct proper function, which has been removed from the device as a larger unit, but is not yet physically destroyed.

Please note:

Typical components of EOL televisions and computers are batteries, capacitors, printed circuit boards, CRT and flat panel displays' hard discs. Once broken down, mechanical components become 'fractions'.

8.6 Computers

Computers are defined by the tariff codes in the regulation for the National Television and Computer Product Stewardship Scheme. The definition includes desktop computers, portable computers (laptops, notebooks, net-books), monitors, printers, multifunction printers/devices and general peripherals (hard drives, keyboards, mice, other computer hardware components, etc).

Please note:

Tariff Codes that industry expected to be included in the National Television and Computer Product Stewardship Scheme are shown in Appendix 6.

8.7 Downstream processor

An entity that receives material from the first recycler or other downstream processor for additional processing and/or disposition. This includes entities that:

- Bulk and blend materials that are sent to other vendors for additional processing.
- Shred and separate materials that are sent to other vendors for additional processing.
- Process materials into new products.
- Process materials to recover metals, energy and/or other resources.
- Dispose by landfill and/or incineration with or without energy from waste (EFW) recovery.
- Any other contracted party that handles, processes or disposes of materials on behalf of the first recycler.

8.8 End of life (EOL)

Product that is deemed obsolete or not fit for purpose and which would otherwise go to landfill.

8.9 Energy recovery or energy from waste (EFW)

Refers to the the heat treatment of material in which the heat produced is used to produce electricity or steam or to reduce the energy already required in a process. This includes the use of plastics as a fuel substitute, but does not include incineration without any resource or energy benefit.

8.10 E-waste

This is the definition of e-waste for the purposes of the proposed National Product Stewardship Act. This standard applies to only a small subset of e-waste i.e. EOL televisions and computers as defined by the list of tariff codes to be issued by the Product Stewardship Regulator. Refer to Appendix 6.

The term used to describe EOL or discarded devices, including all components, subassemblies and consumables which are part of the product at the time of discarding, that require an electric current but are no longer useable, including:

- Large household appliance, whether used inside or outside a home (washing machines, dryers, refrigerators, air conditioners etc).
- Small household appliance, whether used inside or outside a home (vacuum cleaners, coffee machines, irons, toasters etc).
- Office, information and communication (PCs, laptops, mobiles, smart phones, telephones, fax machines, copiers, printers etc).
- Entertainment and consumer electronics (televisions, VCR/DVD/CD players, Hi-Fi sets, radios, cameras etc).

- Lighting equipment (lighting fixtures, fluorescent tubes, sodium tubes).
- Any electrical or electronic tool (drills, electric saws, sewing machines, lawn mowers etc).
- Toys, leisure equipment or sports equipment (electric train sets, coin slot machines, treadmills etc).
- Medical appliances and instruments.
- Surveillance, monitoring and navigational equipment (alarm systems, cameras, etc).
- Automatic issuing systems (ticket issuing machines etc).

E-waste excludes such devices that are:

- Functionally or physically part of a motor vehicle or any component of a motor vehicle.
- Functionally or physically part of a larger piece of equipment designed or intended for industrial, commercial or research and development settings.
- Large-scale surveillance, monitoring and navigational equipment designed or intended for military or research and development settings.
- Bulbs and halogen bulbs.
- Large-scale stationary industrial tools.
- Implanted or infected medical instruments.

8.11 Hazardous waste

Hazardous waste refers to a substance or object that exhibits hazardous characteristics, is no longer fit for its intended use and requires disposal. Some of these hazardous characteristics include being hazardous, flammable, explosive and poisonous. Hazardous wastes include:

- Chemical by-products from industrial processes.
- Metals or metallic compounds such as lead.

8.11 Hazardous waste continued

- Mercury and cadmium.
- Waste mineral oils.
- Household chemicals and pesticides.
- Biological wastes.

Used electronic equipment proposed to be exported or imported may be considered hazardous e-waste under Australia's Hazardous Waste (Regulation of Exports and Imports) Act 1989 (the Act).

Further information on the classification of hazardous waste in relation to electronic waste is found in the Australian Government publication *Used Electronic Equipment – Criteria for the Export and Import of Used Electronic Equipment* at <http://www.environment.gov.au/settlements/chemicals/hazardous-waste/publications/pubs/used-electronics.pdf>

8.12 Health and safety hierarchy of control

The Hierarchy of Control is a method of ranking risk control options in a hierarchy from most to least preferred, as follows:

- Eliminate the hazard.
- Substitute the hazard with a lesser risk.
- Isolate the hazard.
- Use engineering controls.
- Use administrative controls.
- Use personal protective equipment.

8.13 National Television and Computer Product Stewardship Program

A program established by members of the IT and television industries to meet their obligations under the National Television and Computer Product Stewardship Scheme. The scope of the program is the collection and disposal of televisions and computers throughout Australia at the end of their life. It includes all equipment included in tariff code list regardless of whether it is sold to business or consumers and includes orphan (manufacturer no longer in existence) and unbranded (whitebox) products.

8.14 National Television and Computer Product Stewardship Scheme (Television and Computer Scheme)

A Scheme established by Commonwealth Regulation under the Product Stewardship Act. The Scheme describes the rules for implementing the Act in the case of televisions and computers and establishes specific requirements on manufacturers / importers to manage end of life products.

8.15 Point of final disposition

A point in the downstream flow of materials where the separated materials generated from the processing of EOL televisions and computers become commodities used to produce new products or become a by-product waste for appropriate disposal.

This includes:

- Use as a raw material in the production process of new products.
- Recovery of metal, energy and/or other resources.

8.15 Point of final disposition continued

- Palletisation of plastics.
- Landfill and incineration disposal.

This does not include:

- The despatch of materials that are sent to other vendors for additional processing.
- Processing to prepare materials for use as a raw material, such as size reduction for feedstock into another process.

8.16 Product Stewardship Organisation (PSO)

An organisation established by industry participants, some of whom may be competitors, to deliver a product stewardship function for products or materials on their collective behalf.

8.17 Recovery

Any operation, the principal result of which is waste that serves a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste that is prepared to fulfil that function, in the plant or in the wider economy.

8.18 Recycler

An entity that undertakes recycling.

8.19 Recycling

Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery.

8.20 Substances of concern (SOCs)

Refers to substances or components encompassed in EOL televisions and computers that in their normal state and under normal conditions of handling by a consumer pose little or no risk to human health or the environment, yet when handled, processed or transformed in large volumes at a recycling facility may be subject to specific regulatory requirements such as hazardous designation. These substances or components include mercury-containing devices, polychlorinated biphenyl (PCB) capacitors, leaded glass, batteries, etc.

Please note:

Further guidance on substances of concern is included in Appendix 1.

8.21 Television

Television is defined by the tariff codes in the regulation for the National Television and Computer Product Stewardship Scheme. The definition covers display devices, such as a CRT, LCD, plasma or projection systems, with an internal or external broadcast tuner. Currently defined by the following tariff codes outlined in the Decision regulatory impact statement 2009 (RIS):

- Analogue and digital colour television receivers, including but not limited to LCD, plasma, CRT and projection system technologies.
- Black and white or other monochrome televisions.

This definition does not cover other visual display units not described by the specified tariff codes, such as televisions that are incorporated in other products, such as refrigerators, automobiles and mobile phones.

The following documents and websites are referenced in this Interim Industry Standard:

AS NZS ISO 14001 Environmental Management Systems – Requirements with Guidance for Use

National Television and Computer Scheme
<http://www.environment.gov.au/settlements/waste/ewaste/index.html>

This guidance document was developed specifically to serve as an educational resource to inform interested parties about the environmental, legal, health and safety hazards associated with recycling End of life electronics (EOLE). This resource is designed to assist recyclers to develop environmentally sound recycling processes and to provide environmental auditors with a knowledge base for conducting assessments of electronics recyclers.

DISCLAIMER: This document is intended for information purposes only and is not intended to constitute or to provide legal advice. It does not address all of the legal, environmental, health, safety or scientific aspects of EOLE recycling and may not address new technologies that are available. Any application of this information must be in accordance with applicable legal and regulatory requirements. Processors of EOLE must exercise due diligence in ensuring that they remain up-to-date on applicable laws and regulatory requirements, as well as scientific and technological advancements and industry best practices.

Acknowledgements

The information contained in the 'Material Separation', 'Substances of Concern' and 'Smelting, Energy Recovery' sections is largely based on the *Technical Guidance Document for the Environmentally Sound Management of Specific Waste Streams: Used and Scrap Personal Computers (ENV/EPOC/WGWPR(2001)3/FINAL)* that was published by the OECD Working Group on waste prevention and recycling.

Information has also been extracted from the Electronics Product Stewardship Council of Canada *Guidance Document on Environmentally Sound Recycling of Electronics*.

Material separation

Recycling of electronics includes disassembly and processing to recover raw materials such as metals, glass and plastics. Ferrous and non-ferrous materials, including steel, aluminium, copper, wires and cables are often sold to smelters for the production of raw materials. Leaded glass from CRTs can be processed and sold to CRT manufacturers for use in new CRTs or can be sent to lead smelters for lead recovery. The market for recycling plastics used in electronics is slowly developing as a result of design for the environment initiatives and advancements in plastic recycling technology. Alternately, plastics are sometimes used in non-IT applications, are often incinerated with waste to energy recovery, are used as a coal fuel substitute in the smelting process with adequate emissions controls to remove dioxins and furans, or disposed in landfills.

Prior to being processed to recover raw materials, EOLE must often be dismantled manually or by a combination of manual and mechanical dismantling processes. Manual dismantling and separation involves the use of hand tools (not heating or shredding), in conjunction with adequate engineering controls and personal protective equipment (PPE), such as safety glasses and ergonomic workstations. Mechanical refers to the dismantling and separation of materials including shredding, heating and grinding.

Facilities engaged in electronics dismantling and processing should track, on a shipment specific basis, the fate of materials that are received. Transactions that involve the transboundary shipment (export) of materials resulting from electronics processing should be conducted in accordance with applicable legislation, including international conventions such as the Basel Convention.

The following components should be removed from EOLE prior to mechanical processing and managed separately:

- Mercury containing components such as lamps and switches (e.g. light bulbs found in scanners & laptops).
- All batteries, including coin cell batteries on motherboards.
- Ink and toner cartridges.
- Other materials specified by the processor that may pose environmental, safety, or mechanical risks.

Mechanical dismantling and separation processes as well as improper manual techniques can result in the release of hazardous substances, such as lead and beryllium in dust form. As a result, appropriate controls preventing worker exposure and environmental releases must be implemented and maintained. At a minimum, personnel should have adequate knowledge with regards to material and equipment handling, hazard exposure and control, control of releases and safety and emergency procedures.

Any dismantling or separation operations, as well as storage areas for components that may contain a hazardous substance, must be located in an indoor area equipped with adequate containment systems such as impervious floors. Storage areas should be adequate enough to hold all processed and unprocessed inventory.

A financial instrument should be maintained to assure that sufficient funds are available in the event of major pollutant releases, gross mismanagement, or closure of the facility. The facility itself should conduct regular audits and/or inspections of its environmental compliance.

Substances of concern

Nearly all of the substances of concern in EOLE are no cause for concern for human exposure or release into the environment during ordinary use and handling. None of these substances will be released through normal contact, including transportation and manual disassembly. However, human health and environmental concerns may arise if EOLE are improperly handled, landfilled, incinerated, shredded, ground, or melted. All of these exposures can be mitigated through appropriate work practices and engineering controls, such as combustion and air emission control systems.

Circuit boards

Substances of concern (note this is not an exhaustive list)

Antimony: Contained in some lead solder.

Beryllium: Small amount in the form of a copper-beryllium alloy (typically 98% copper, 2% beryllium) is used for connectors.

Cadmium: Small amounts in plated contacts and switches.

Chlorine and/or Bromine: Brominated and inorganic flame retardants may be present in the plastic in printed circuit boards.

Corrosive liquids: Contained in solid state capacitors present on some circuit boards.

Lead: Contained in solder and some board components.

Polychlorinated biphenyls (PCBs)*: Known to be used in some capacitors on old main frames and printers.

* Not to be confused with printed circuit boards which shares the same acronym.

PCBs may contain lead in solder and board components that can be released as a fine particulate if shredded or released as a fume if heated to remove components. To protect worker safety, shredding processes should be equipped with dust collection systems and workers may need to be provided with PPE to reduce exposure dependant on air monitoring results. Most jurisdictions in Australia require employers to implement a control programs to limit worker exposure to certain substances such as lead. PCBs may also contain small amounts of antimony and beryllium which can be released as a fine particulate from shredding, which can cause respiratory ailments such as berylliosis.

Heating of plastics on circuit boards to recover components can cause the halogens (chlorine and bromine) to be released in the form of dioxins and furans, so adequate ventilation to remove toxins is required in processes that involve heating of circuit board.

Capacitors may also be present on the circuit boards and as solid state devices. Small electrolyte capacitors may contain corrosive liquids and may be classified as hazardous waste. Although their historic use in personal computers is not clear, it is known that polychlorinated biphenyl (PCB) capacitors have been used in larger computer equipment such as mainframes and large printers.

Batteries

Substances of concern

Cadmium: Contained in nickel cadmium (Ni-Cd) batteries.

Lead: Contained in sealed lead acid batteries

Lithium: Contained in coin cell and lithium ion batteries.

Mercury: Small amounts contained with several battery chemistries.

Motherboards contain a small lithium cell battery often referred to as a coin cell battery. When lithium coin cells are sheared in the presence of oxygen and moisture, heat is generated which may cause a fire, therefore, they should be removed from the motherboard prior to shredding. Once separated, coin cells should not be accumulated in quantity without physical separation from each other so that uncontrolled electrical discharge will not occur. Separation can be achieved by using insulating tape on the contacts. Coin cells may be thermally processed with appropriate combustion and emission controls. Lithium can be recovered, after it has been fully discharged, to eliminate potential reactivity by shredding and gravity separation.

Nickel cadmium (Ni-Cd), nickel metal hydride (NiMeH), lithium ion and lead acid batteries should be removed before shredding and sorted by type. All battery cells should be managed to avoid inadvertent external short circuits and current flows and large inventories of batteries should be avoided. State and Territory governments should be contacted to determine whether there are maximum storage volumes and timeframes and material managed accordingly. Batteries can be recycled to recover the metal content. Lithium ion batteries do not have the fire hazard problem associated with lithium metal coin cell batteries because the lithium is in the stable form of lithium hydroxide. Care should be taken by workers if lithium ion batteries are opened or broken, as lithium hydroxide is somewhat corrosive. The lithium contained in these batteries can be recycled. Class 9 batteries must be packaged and stored in accordance with Australian Dangerous Goods legislation.

Cathode ray tube (CRT), leaded plasma display glass and other leaded glass

Substances of concern

Antimony: May be present in the screen and/or cone glass of CRTs.

Barium oxide: May be contained in the getter plate of the electron gun and deposited on the interior surface.

Cadmium sulfide: Has been used in phosphors in some older CRTs.

Lead: Contained in the CRT glass in the form of lead oxide (PbO).

Phosphors: A phosphor coating, typically zinc sulfide and rare earth metals, are used on the interior panel glass of a CRT screen.

The leaded glass in a CRT can be recovered in new CRT manufacture when all non-glass components are removed. These steps require aeration (release of the vacuum) and breaking of the bare CRT and careful separation of the glass parts, i.e. the faceplate, funnel and neck. Workers involved with the breaking of CRTs should be protected from inhalation of dust that may contain lead, barium oxide and phosphors.

The lead in a CRT and other leaded glass can also be recovered as lead by a lead smelter. The glass also serves as a silicate flux in the lead smelting process and is a substitute for silicate which the smelter would otherwise acquire and use. The leaded glass can also be used as a silicate flux by a copper smelter, again as a substitute for silicate which the copper smelter would otherwise acquire and use. The copper smelter may also have a subsequent procedure in which the by-products from copper smelting and electrorefining are treated for lead recovery.

Practices that would be considered as non-environmentally sound include the use of leaded glass in construction materials (as a substitute for

sand) and its use as blasting grit or other abrasive material. Some regions consider the use of leaded glass in making tiles and other ceramics as non-environmentally sound. The contamination of other glass which does normally not contain lead, especially container glass, should be avoided. Non-leaded glass could be used in building products.

Lamps, bulbs and switches

Substances of concern

Mercury: Mercury may be present in lighting devices and switches.

Many products use fluorescent bulbs that contain mercury. These bulbs are used for backlighting of LCD panels or the optical scanner of photocopiers, scanners and fax machines. Although the mercury in fluorescent lamps is in vapour form, to create the light arc, mercury adheres to the phosphor powder contained within the lamps. Mercury is also present in the ultra high performance (UHP) lamps used in data projectors and rear projection televisions and is contained within a small bulb within the lamp. The amount of mercury per bulb can range from 2.2mg in a fluorescent lamp to more than 30mg in a UHP lamp. Mercury switches are also used in several electronic products. The mercury contained in lamps, bulbs and switches can be released during shredding and therefore should be removed prior to mechanical processing of EOLE and sent to a specialised mercury recovery facility for treatment – such as a metal recovery operation or thermal treatment at an environmentally sound and appropriately authorised incinerator with modern flue gas cleaning systems. If processing of EOLE involves breaking of mercury vapour bulbs, the system should be equipped with a negative pressure dust evacuation system to prevent work exposure, a dust filtration system to remove mercury contaminated phosphor powder and an activated charcoal filter to remove any other trace elements of mercury. Consideration should also be given to mercury contamination of other materials being processed along with mercury bulbs, as well as the equipment used.

Insulated wire

Substances of concern

Cadmium: Very small amounts in some stabilisers for polyvinylchloride wire insulation.

Polyvinylchloride (PVC): Insulation on wires and cables.

The substance of concern is PVC, because of its chlorine content. In the past, the insulation was removed by burning, sometimes in uncontrolled combustion. This is not considered environmentally sound, because the burning may be incomplete, thereby emitting a variety of particles of incomplete combustion and chlorinated dibenzofurans and dibenzodioxins may form in the exhaust emissions. Insulated electrical wire should be separated if the wire is accessible during dismantling, then shredded or chopped (or both) to a relatively small size (typically between one to ten centimetres in length). It can then be burned under controlled combustion and at specific temperatures with an air emission control system designed to prevent formation of chlorinated dibenzofurans and dibenzodioxins. Shredded or chopped wire can also be granulated to separate the insulation from the copper. The resulting mixed material can be separated by a variety of physical means, using water or air. The entire process, when properly executed, will produce clean copper and a plastic fraction which is suitable for plastic recycling.

Plastics

Substances of concern

Cadmium: Very small amounts in some stabilisers for PVC plastic.

Chlorine and/or Bromine: Brominated and inorganic flame retardants may be present in the plastic in plastic housings and circuit boards.

Plastic is one category of material components for which recycling opportunities are currently

quite limited. This is because of the numerous resin types used in electronic equipment, because some manufacturers' plastic parts are not always labelled accurately according to their type, because plastics cannot be sorted and cleaned economically and due to the presence of chlorine and bromine compounds, especially in flame retardant plastic resins. A wide variety of brominated flame retardants have been used as additives to some plastic components, or chlorine in PVC insulation may recombine with carbon and hydrogen in various disposal or recovery processes that involve heat – such as combustion or plastics extrusion – to form other halogenated organic compounds such as dibenzodioxins and furans. Refer to Appendix 5.

The small amount of cadmium in some plastics may be released in the form of cadmium oxide dust if the plastic is burned prior to or in the course of metal reclamation. When hard plastic components containing brominated flame retardants are shredded, workers can be exposed to dust containing these chemicals. Therefore, measures are required for the protection of human health and the environment in operations where these plastics are shredded or heated. Shredding operations should be equipped with dust collection systems and – if air monitoring shows the need – should provide workers with PPE. Thus, opportunities for recycling need to regard not only the particular resin types of the various parts, but also the types of flame retardants that are present in the plastics, as the safety of the worker may be affected.

Smelting, energy recovery and disposal

Smelting is the process often used to recover precious and other metals from EOLE. Smelting operations require proper furnace combustion conditions and furnace emission control systems, such as acid gas scrubbers and particulate controls. The facility permit regarding air emission controls should specifically authorise the processing of electronic scrap.

Smelting, energy recovery and disposal continued

The presence of halogens (chlorine and bromine) in plastics which will be burned during metal recovery raises concerns which differ from those most commonly associated with copper ores and attention must be given to the possible creation of dibenzofurans and dioxins in the burning processes. Complete thermal destruction of hydrocarbons will substantially reduce the possibility of formation of dibenzofurans and dioxins in the furnace emission stream. Halogens will be converted to acids and then to salts in an acid gas scrubber. Likewise, the presence of beryllium and mercury can lead to serious emissions of these metals in vapour form, thereby endangering workers and the local environment. Care must be taken to monitor and reduce such emissions to a minimum. Lead smelters processing leaded glass do not usually have pollution control systems suitable for burning of plastic, so all plastic material should be removed from CRTs prior to smelting. A copper smelter may also have a pollution control system which permits it to burn plastic.

Materials should be recovered wherever possible, however, it is likely that some components cannot be recycled or recovered, such as plastics or resins with halogenated flame retardants or slag from smelting operations. However, recent technology has become available which more appropriately removes halogens from the plastics prior to further material recovery. Efforts should be made to implement these technologies in order to avoid contaminating secondary materials. Non-recoverable materials will need to be disposed of in an environmentally sound manner. Combustible fractions would preferably be used for energy recovery, as this method is higher in the waste management hierarchy than burning without energy recovery or landfilling. The lead in silicate slag resulting from copper smelting of CRT glass is immobilised and may be disposed of in an environmentally sound and appropriately authorised landfill. The incinerator or other combustion unit (with or without energy recovery) should be operated to minimise the formation of furans and dioxins, as well as be equipped with state-of-the-art flue gas cleaning systems. Combustion ash, as well as materials from the processing of materials that cannot be recycled, should be disposed of in an environmentally sound and appropriately authorised landfill.

Requirement	Describe the control	Does it comply?	Comment/ Actions required
Risk assessment			
Has a formal, documented risk assessment been undertaken of all activities that will be undertaken on site including: <ul style="list-style-type: none"> • Identification of all hazards and potential environmental impacts. • Risk assessment of identified hazards and impacts. • Elimination or reduction of risk where appropriate. 		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is there a process to review the risk assessment periodically and particularly if new products or activities are introduced?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
People, procedures and work			
Are there clear procedures or work instructions available for all activities?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Are they in a language or form that the people working on the site will understand?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Have people working in the facility had training in: <ul style="list-style-type: none"> • The procedures and safe work methods applicable to the work they will be doing. • Correct use of any PPE or other equipment, such as lifting equipment and spill kits. • The specific safety and environmental hazards or risks involved in the work they are performing and the potential consequences of not complying with the correct procedures. • Manual handling techniques. 		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Have they been assessed as competent and has this assessment been documented?		<input type="checkbox"/> Yes <input type="checkbox"/> No	

Requirement	Describe the control	Does it comply?	Comment/ Actions required
Legal compliance			
Have all applicable legal requirements been identified and documented?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
If the site is required to have any licences e.g. EPA licence, industrial waste permit, or registration of plant, are these available and up to date?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is appropriate insurance cover in place?			
Infrastructure and site characteristics			
Is there safe access to and egress from the site for:			
– People working on the site?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
– People dropping off equipment?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
– Instructions available for all activities?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Are there controls to prevent unauthorised people accessing the site?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Are there effective controls to prevent theft or vandalism of EOL televisions and computers and components thereof?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is the site large enough and are its characteristics and technology suitable for the activities performed on site?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Are appropriate traffic signs and/or control measures in place?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Are signs in place giving details of the collection process (see 5.2)?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is there a process for dealing with material which is dumped near the site?		<input type="checkbox"/> Yes <input type="checkbox"/> No	

Requirement	Describe the control	Does it comply?	Comment/ Actions required
Handling			
<p>Are there procedures in place to make sure that hazardous substances are not released into air, water, or soil, as a result of damage and/or leakage? In particular are there processes to ensure that:</p> <ul style="list-style-type: none"> • CRT displays will not be imploded or be broken and emit fluorescent coatings. • Flat panel screens are not broken so that gas discharge lamps can emit mercury. • Liquids and dusts e.g. toners and inks are not spilled or released into the air. <p>Please note: there should be no uncontrolled tipping of containers with CRT displays or flat panel displays.</p>		<input type="checkbox"/> Yes <input type="checkbox"/> No	
<p>Is the equipment handled so that effective recovery of materials and components in accordance with the standard is possible? Please note there should be no crushing or compacting of EOL televisions and computers before it is sent to the recycler for treatment.</p>		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Storage			
<p>Is there a process to deal with material which is broken onsite?</p>		<input type="checkbox"/> Yes <input type="checkbox"/> No	
<p>Are there impermeable surfaces for all storage areas?</p>		<input type="checkbox"/> Yes <input type="checkbox"/> No	
<p>Is there weatherproof covering for storage of CRT and flat panel displays?</p>		<input type="checkbox"/> Yes <input type="checkbox"/> No	

Requirement	Describe the control	Does it comply?	Comment/ Actions required
Storage continued			
Are CRT and flat panel displays stored in a manner to avoid breakage?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Are there facilities to ensure that the EOL televisions and computers are not mixed with other types of waste?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Has the recycler provided any further guidance that needs to be implemented?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Preparation for Transport			
Are CRT and flat panel displays prepared and loaded for transport in such a way that they are not damaged? Examples of appropriate methods to prevent damage of flat panel displays include the following: <ul style="list-style-type: none"> • Use containers not bigger than 2 cubic metres. • Load the container piece by piece. Ensure displays standing upwards and if necessary, on their smaller side. • Tightly pack the containers to prevent moving of the units during transport . 		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is there an emergency response plan?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is the documentation available and regularly reviewed?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is it tested by periodic reviews?		<input type="checkbox"/> Yes <input type="checkbox"/> No	

Requirement	Describe the control	Does it comply?	Comment/ Actions required
Reporting of breaches			
Is there a documented process for reporting incidents or breaches of legislation, licences etc to the appropriate regulatory authority and to the Arrangement Administrator?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Records and monitoring			
Are there processes in place to keep accurate records of the amount of equipment collected and forwarded e.g. weight dockets, piece count, or number, size and filling level of receptacles?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Are these records maintained on paper or electronically for at least 3 years?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Downstream processors			
Is there a process in place to make sure that the equipment is only forwarded to recycling facilities that comply with this standard and have a contract with the Arrangement Administrator?		<input type="checkbox"/> Yes <input type="checkbox"/> No	

- *Code of Practice for Managing End of Life Televisions*, Blue Environment, August 2008.
- *Electronics Recycling Standard*, 2009, Electronics Product Stewardship Canada.
- *Guidance Document: Environmentally Sound Recycling of Electronics*, Electronics Product Stewardship Canada, March 2006.
- *Guidelines for Standard E-waste Containers*, ACOR, September 2006.
- *Responsible Recycling ('R2') Practices for use in Accredited Certification Programs for Electronics Recyclers*, www.decideagree.com, October 2008.
- *The e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment*, Version 1, July 15, 2009.
- IEEE P 1680.2/D1 *Draft Standard for Environmental Assessment of Imaging Equipment* August 2010.
- *Weelabex Draft Standards for Collection Logistics and Treatment*, Versions 6 and 7.2.
- Various proprietary standards (confidential).

Certification

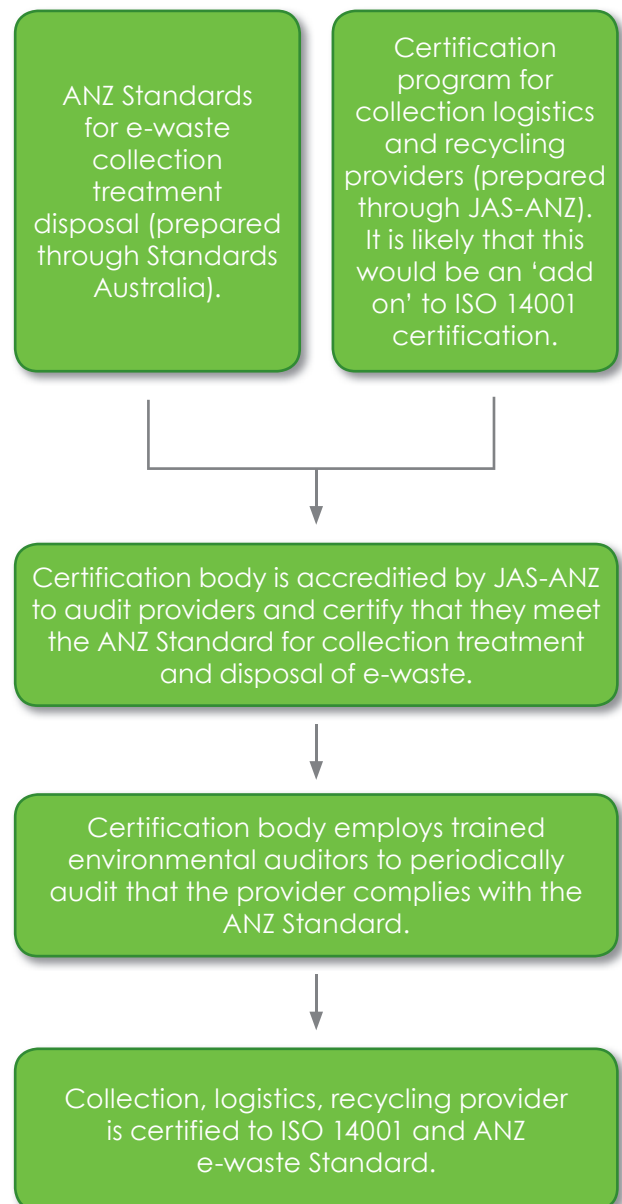
JAS-ANZ Joint Accreditation System of Australia and New Zealand is the government-appointed accreditation body for Australia and New Zealand responsible for providing accreditation of Conformity Assessment Bodies (CABs) in the fields of certification and inspection. Accreditation by JAS-ANZ demonstrates the competence and independence of these CABs. JAS-ANZ is a signatory to a number of bilateral, regional and international agreements. These agreements provide international recognition and acceptance of JAS-ANZ accredited certificates and inspection reports.



JAS-ANZ has a similar consensus based process for developing the requirements for a new certification scheme as the Standards Development Process i.e. it is a multi stakeholder consultative process. In this case, the proposed scheme would be developed on the back of the ISO 14001 accreditation process and based on the US and European accreditation programs.

Until the ANZ Standard becomes available, certification would be to the Industry Standard. Under that Standard, only the recyclers need to be certified. Audits of transporters and collection locations may be undertaken by the Arrangement Administrator.

Proposed environmental assurance process for the National e-waste Recycling Scheme



The Convention

In 2004, Australia ratified and became a Party to the Stockholm Convention on persistent organic pollutants (POPs). The Stockholm Convention is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife and have adverse effects to human health or to the environment. The Convention requires parties to take measures to eliminate or reduce the release of POPs into the environment. It also aims to ensure the sound management of stockpiles and wastes that contain POPs. The website address is <http://chm.pops.int/Home/tabid/36/language/en-US/Default.aspx>

Further Australian information on the new POPs can be obtained at <http://www.environment.gov.au/settlements/chemicals/international/index.html>

In 2004, the first twelve POPs to be listed in Annexes to the Convention were Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene (HCB), Mirex, Toxaphene, Polychlorinated biphenyls (PCBs), DDT, Dioxins and Furans.

Nine new chemicals

In May 2009, the conference of the parties to the Stockholm Convention agreed to add nine new chemicals to the Convention's Annexes. See table overleaf.

These are the first chemicals to be added to the Annexes since the entry into force of the Convention in 2004. Listing places an obligation on parties to eliminate or significantly restrict the use of these chemicals.

For 151 parties, the treaty amendment adding the nine chemicals to Annexes A, B and C came into force on 26 August 2010. For Australia, an amendment to the Annexes only enters into force upon Australia's ratification of that amendment. Accordingly, Australia must now undertake a domestic treaty-making process.

Both pentaBDE and octaBDE, which are brominated flame retardants, are present in consumer articles currently in use including but not all, electrical and electronic equipment, carpets, mattresses and foam cushions such as those used in furniture and car seats.

Chemicals added to the Annexes of the Stockholm Convention in 2010

Information about the effects of listing the nine new POPs

Chemical	Effect of listing
Chlordecone	Complete ban on production and use.
Lindane (gamma hexachlorocyclohexane)	Ban on production and use, however, that countries may apply for a specific exemption for continued use for control of head lice.
Alpha hexachlorocyclohexane (alpha HCH)	Complete ban on production and use.
Beta hexachlorocyclohexane (beta HCH)	Complete ban on production and use.
Perfluorooctane sulfonate (PFOS)	<p>Ban on production and use except for specified acceptable purposes and specific exemptions:</p> <p>Acceptable purposes: (not time limited)</p> <ul style="list-style-type: none"> • Photo-imaging. • Photo-resist and anti-reflective coatings for semi-conductors. • Etching agent for compound semi-conductors and ceramic filters. • Aviation hydraulic fluids. • Metal plating (hard metal plating) only in closed-loop systems. • Certain medical devices (such as ethylene tetrafluoroethylene copolymer (ETFE) layers and radio-opaque ETFE production, in-vitro diagnostic medical devices and CCD colour filters). • Fire-fighting foam. • Insect baits for control of leaf-cutting ants from <i>Atta spp.</i> and <i>Acromyrmex spp.</i> <p>Specific exemptions: (five years initially, renewal possible)</p> <ul style="list-style-type: none"> • Photo masks in the semiconductor and liquid crystal display (LCD) industries. • Metal plating (hard metal). • Metal plating (decorative). • Electric and electronic parts for some colour printers and colour copy machines. • Insecticides for control of red imported fire ants and termites. • Chemically driven oil production. • Carpets. • Leather and apparel. • Textiles and upholstery. • Paper and packaging. • Coatings and coating additives. • Rubber and plastics.

Information about the effects of listing the nine new POPs continued

Chemical	Effect of listing
Hexabromobiphenyl (HBB)	Complete ban on production and use
Commercial pentabromodiphenyl ether (c-penta BDE) (the commercial penta contains both tetra and pentabromodiphenyl ethers)	<p>Ban on production and use except that recycling of articles containing the chemical may be permitted under a time-limited specific exemption provided it is carried out in an environmentally sound manner and subject to other conditions, as follows:</p> <ol style="list-style-type: none"> 1. A party may allow recycling of articles that contain or may contain tetrabromodiphenyl ether and pentabromodiphenyl ether and the use and final disposal of articles manufactured from recycled materials that contain or may contain tetrabromodiphenyl ether and pentabromodiphenyl ether, provided that: <ol style="list-style-type: none"> (a) The recycling and final disposal is carried out in an environmentally sound manner and does not lead to recovery of tetrabromodiphenyl ether and pentabromodiphenyl ether for the purpose of their reuse. (b) The party does not allow this exemption to lead to the export of articles containing levels/concentrations of tetrabromodiphenyl ether and pentabromodiphenyl ether that exceed those permitted to be sold within the territory of the party. (c) The party has notified the Secretariat of its intention to make use of this exemption. 2. At its sixth ordinary meeting and at every second ordinary meeting thereafter the Conference of the Parties shall evaluate the progress parties made towards achieving their ultimate objective of elimination of tetrabromodiphenyl ether and pentabromodiphenyl ether contained in articles and will review the continued need for this specific exemption. This specific exemption shall in any case expire at the latest in 2030.
Commercial octabromodiphenyl ether (c-octa BDE) (the commercial octa contains hexa and heptabromodiphenyl ethers)	As for pentabromodiphenyl ether above.
Pentachlorobenzene	Complete ban on intentional production and use. Measures to reduce or eliminate unintentional production.

The Australian Government is monitoring the work of the scientific committee established under the Stockholm Convention to develop guidance materials regarding how to tackle issues such as identification of e-waste articles that contain BFRs, procedures for detection and separation, issues associated with recycling and appropriate methods of destruction.

Please note:

This list of products covered by the proposed legislation may change.

The following table shows which products are included under each tariff code as are applicable to televisions, computers and computer peripherals.

Tariff code	AHECC code	Customs description
8414.59.90/52 Computer peripherals Includes: • Fans	84145900	Air or vacuum pumps, air or other gas compressors and fans. Ventilating or recycling hoods incorporating a fan – whether or not fitted with filters.
8443.31.00/61, 62, 64 Multi-function devices (MFDs) Includes: • Printing as the principle function: – Inkjet – Dot matrix	84433105	Printing machinery used for printing by means of plates, cylinders and other printing components of 8442, other printers, copying machines and facsimile machines – whether or not combined, parts and accessories thereof. Other printers, copying machines and facsimile machines – whether or not combined. Machines which perform two or more of the functions of printing, copying or facsimile transmission, are capable of connecting to an automatic data processing machine or to a network.
8443.32.00/71, 72, 74 Personal or desktop laser and inkjet printers Includes: • Printers: – Inkjet – Dot matrix – Laser	84433207	Printing machinery used for printing by means of plates, cylinders and other printing components of 8442, other printers, copying machines and facsimile machines – whether or not combined – parts and accessories thereof. Other printers, copying machines and facsimile machines – whether or not combined. Machines which perform two or more of the functions of printing, copying or facsimile transmission, are capable of connecting to an automatic data processing machine or to a network.
8471.30.00/20 Computer mobile units Includes: • Laptops, notebooks and palmtops	84713011	Automatic data processing machines and units thereof, magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data – not elsewhere specified or included. Portable automatic data processing machines – weighing not more than 10kg – consisting of at least a central processing unit, a keyboard and a display.
8471.41.00/21 Computer desktops and similar Includes • Personal computers	84714121	Automatic data processing machines and units thereof, magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data – not elsewhere specified or included. Other automatic data processing machines. Comprising in the same housing at least a central processing unit and an input and output unit – whether or not combined.

Tariff code	AHECC code	Customs description
8471.49.00/22 Computer desktops and similar Includes <ul style="list-style-type: none"> Personal computers 	84714930	Automatic data processing machines and units thereof, magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data – not elsewhere specified or included. Other automatic data processing machines. Other presented in the form of systems.
8471.50.00/23 Computer desktops and similar Includes: <ul style="list-style-type: none"> Central processing units for personal computers 	84715040	Automatic data processing machines and units thereof, magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data – not elsewhere specified or included. Processing units other than those of 8471.41.00 or 8471.49.00 – whether or not containing in the same housing one or two of the following types of unit: storage units, input units or output units.
8471.60.00/55, 91, 92, 95 Computer peripherals Includes: <ul style="list-style-type: none"> Keyboards Joystick/game pads Mouse/trackball Scanners 	84716050	Automatic data processing machines and units thereof, magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data – not elsewhere specified or included. Input or output units – whether or not containing storage units in the same housing.
8471.70.00/20, 25, 74, 75 Includes: <ul style="list-style-type: none"> CD drives (inc. burners) DVD drives (inc. burners) Hard drives Floppy drives 	84717000	Automatic data processing machines and units thereof, magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data – not elsewhere specified or included. Storage units.
8473.30.00/62, 68 Computer peripherals Includes: <ul style="list-style-type: none"> Parts <ul style="list-style-type: none"> Cards (including network, sound, video, IDE, SCSI, and other similar cards) Motherboards 	84733010	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with the machines of 8469 to 8472. Parts and accessories of the machines of 8471.
8504.40.30/59 Computer peripherals Includes: <ul style="list-style-type: none"> Internal power supplies 	85044001	Electrical transformers, static converters (for example, rectifiers) and inductors. Static converters. Goods, as follows: (a) separately housed units, designed to be housed in the same cabinet as the central processing unit of equipment of 8471. (b) for telecommunication apparatus of 8517. Goods specified in sub-paragraph (a) of 8504.40.30 of Customs Tariff Schedule 3, Section 16, available on the Australian Customs Border Protection website.

Appendix 6

Customs Tariff Codes expected to be covered by the Scheme

Tariff code	AHECC code	Customs description
8504.40.90/80 Computer peripherals Includes: • External power supplies	85044001	Electrical transformers, static converters (for example, rectifiers) and inductors. Static converters, other.
8518.29.90/23 Computer peripherals Includes: • Speakers	85182900	Microphones and stands, loudspeakers – whether or not mounted in their enclosures, headphones and earphones – whether or not combined with a microphone, sets consisting of a microphone and one or more loud speakers, audio-frequency electric amplifiers and electric sound amplifier sets. Loudspeakers – whether or not mounted in their enclosures, other.
8525.80.10/15 Computer peripherals Includes: • Web cameras	85258090	Transmission apparatus for radio-broadcasting or television – whether or not incorporating reception apparatus or sound recording or reproducing apparatus, television cameras, digital cameras and video camera recorders. Television cameras, digital cameras and video camera recorders. Digital cameras.
8528.41.00/10 Computer displays – of a kind solely or principally used in an automatic data processing system of 8471	85284101	Monitors and projectors – not incorporating television reception apparatus, reception apparatus for television – whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus. Cathode-ray tube monitors – of a kind solely or principally used in an automatic data processing system of 8471.
8528.51.00/32, 33 Computer displays Includes: • Flat screen monitors • Other	85285101	Monitors and projectors – not incorporating television reception apparatus, reception apparatus for television – whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus. Other monitors – of a kind solely or principally used in an automatic data processing system of 8471. Please note: 8471 is essentially a computer.
8528.72.00 Televisions Includes: • Analogue Plasma, projection, LCD, cathode-ray tube: flat screen, cathode-ray tube: other • Digital Plasma, projection, LCD, cathode-ray tube: flat screen, cathode-ray tube: other	85287205	Monitors and projectors – not incorporating television reception apparatus, reception apparatus for television – whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus. Reception apparatus for television – whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus. Other, colour.

Appendix 6

Customs Tariff Codes expected to be covered by the Scheme

Tariff code	AHECC code	Customs description
<p>8528.73.00/35 Televisions</p> <p>Includes:</p> <ul style="list-style-type: none"> Black and white televisions 	85287305	<p>Monitors and projectors – not incorporating television reception apparatus, reception apparatus for television – whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus.</p> <p>Reception apparatus for television – whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus.</p> <p>Other, black and white or monochrome.</p>
<p>8544.42.19/02 Computer peripherals</p> <p>Includes:</p> <ul style="list-style-type: none"> Power cords 	85444221	<p>Insulated (including enamelled or anodised) wire, cable (including coaxial cable) and other insulated electric conductors – whether or not fitted with connectors, optical fibre cables made up of individually sheathed fibres – whether or not assembled with electric conductors or fitted with connectors.</p> <p>Other electric conductors for a voltage not exceeding 1000V.</p> <p>Fitted with connectors, other.</p> <p>Wires for electronic equipment (including radio and television hook up wires).</p>