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STANDARDS
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Management of electrical and electronic equipment for re-use or recycling



AS 5377:2022

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- Australian Council of Recycling
- Australian Industry Group
- Australian Information Industry Association
- Australian Mobile Telecommunications Association
- Better Regulation Division (Fair Trading, Safework NSW, TestSafe)
- Clean Energy Council
- Consumers Federation of Australia
- Department of Environment and Science, Qld
- Electronic Product Stewardship Australia
- EPA South Australia
- Joint Accreditation System of Australia and New Zealand
- Lighting Council Australia
- Local Government Professionals Australia
- NSW Environment Protection Authority
- Sustainability Victoria
- Waste Contractors and Recyclers Association of NSW

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Management of electrical and electronic equipment for re-use or recycling

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Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee EV-019, E-waste, to supersede AS/NZS 5377:2013, *Collection, storage, transport and treatment of end-of-life electrical and electronic equipment*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this document as an Australian Standard rather than an Australian/New Zealand Standard.

The objectives of this document are to —

- (a) prioritize the diversion of electrical and electronic equipment from landfill and maximize resource recovery in accordance with the waste management hierarchy;
- (b) provide guidance and minimum requirements for the collection, storage, preparation for re-use, treatment and transport of discarded electrical and electronic equipment for developing, implementing and maintaining management processes;
- (c) provide the means for responsible, safe, environmentally sound, transparent and traceable management of electrical and electronic equipment; and
- (d) facilitate the efficient use of resources in a circular economy.

This document is designed with the principles of circular economy and ecological sustainable development in mind, including lifecycle assessment, the precautionary principle and the principle of due diligence. Operations involved in the collection, storage, transport and treatment of electrical and electronic equipment, whether it be for re-use or recycling purposes, need to understand all requirements and take all reasonable and practicable steps to ensure that these products are managed in a manner that will protect human health and the environment against the adverse effects that may result from such discarded electrical and electronic equipment. Lack of full scientific certainty should not be used as a reason for postponing feasible measures to prevent environmental degradation or adverse health and safety effects. Rather, a precautionary approach should be taken to consider the implementation of appropriate controls.

This document notes that there are general laws in place regulating how to comply with work health and safety regulations and environment protection requirements. This document also notes that Australia is a signatory to transboundary agreements regarding the environmentally sound management of hazardous and other wastes, and elimination of pollutants.

The main differences between this and the previous edition are as follows:

- (i) Inclusion of traceability requirements for substances of concern ([Section 6](#)).
- (ii) Additional requirements for performing a mass balance and calculating the landfill diversion rate (previously called “recycling rate”) and recovery rate.
- (iii) Additional requirements for data security.
- (iv) Inclusion of an informative appendix on the hazards associated with handling electrical and electronic equipment ([Appendix B](#)).

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The terms “normative” and “informative” are used in Standards to define the application of the appendix to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

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NOTES

Australian Standard®

Management of electrical and electronic equipment for re-use or recycling

Section 1 Scope, application and general requirements

1.1 Scope

This document sets out principles and minimum requirements for the safe and environmentally sound collection and storage, preparation for re-use, treatment and transport of electrical and electronic equipment (EEE), including components, consumables and parts thereof. Maximizing material recovery, data security, traceability for substances of concern, risk management and quality management are also covered.

This document covers EEE designed for a supply voltage not exceeding 1 000 V for alternating current and 1 500 V for direct current.

NOTE See [Appendix A](#) for categories and examples of EEE.

1.2 Application

This document is intended to be used by parties involved in the collection, storage, preparation for re-use, treatment and transport of EEE and shall be as set out in [Table 1.1](#).

Table 1.1 — Application according to value chain participant

Section/Clause	Value chain participants				
	Collection	Storage	Preparation for re-use	Treatment	Transport
1.6 Identifying legal and other requirements	x	x	x	x	x
1.7 Health, safety and environmental management	x	x	x	x	x
1.8 Emergency response and business continuity	x	x	x	x	x
1.9 Business closure plan	x	x	x	x	x
1.10 Competency	x	x	x	x	x
1.11 Task related information	x	x	x	x	x
1.12 Documented information	x	x	x	x	x
1.13 Data security	x	x	x	x	x
1.14 Waste management hierarchy	x	x	x	x	x
Section 2 Collection and storage	x	x	x ^a	x ^a	
Section 3 Preparation for re-use	x	x	x		
Section 4 Treatment	x ^c	x ^c		x	

Table 1.1 (continued)

Section/Clause	Value chain participants				
	Collection	Storage	Preparation for re-use	Treatment	Transport
Section 5 Transport			x ^b	x ^b	x
Section 6 Traceability for substances of concern	x	x	x	x	
“x” denotes the sections/clauses that apply to each value chain participant. a Section 2 is applicable to repairers, refurbishers and recyclers who have collection and storage areas at their facilities. b Section 5 is applicable to repairers, refurbishers and recyclers who transport EEE. c Section 4 is applicable to collection and storage facilities who also perform activities defined as treatment of EEE.					

This document should be read in conjunction with the relevant legal requirements for work health and safety, environment protection and the interstate and international movement of waste.

1.3 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS/NZS 5761, *In-service safety inspection and testing—Second-hand equipment prior to sale*

AS/NZS 5762, *In-service safety inspection and testing—Repaired electrical equipment*

1.4 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

1.4.1

assemblies

set of components, at least one of which is an electronic component, assembled into a single unit

EXAMPLE Group of components mounted on a printed circuit board.

[SOURCE: IEC 62542:2013, 3.2, modified – “electronic assembly” replaced by “assemblies”. Copyright © 2013 IEC Geneva, Switzerland. www.iec.ch]

1.4.2

batch

manual or mechanical processing of a definite and well-defined amount of electrical and electronic equipment or fractions thereof to determine the yields and compositions of the resulting output fractions and treatment performance in material recovery and removal of hazardous waste

1.4.3

collection facility

collection location

place temporarily or permanently designated for receiving electrical and electronic equipment from the public in order to sort, aggregate or transport that equipment to storage or treatment facilities

Note 1 to entry: The collection facility or location may be co-located with storage or treatment facilities.

1.4.4

collection unit

container used to aggregate, store and transport electrical and electronic equipment

EXAMPLE Cages, stillages, bins, skips and shipping containers.

1.4.5

competent person

person who has acquired through training, qualifications or commensurate experience, or a combination of these, knowledge and skills enabling that person to safely perform a specific task

1.4.6

component

constituent part of electrical and electronic equipment which cannot be physically divided into smaller parts without losing its particular function, and consumables

Note 1 to entry: Typical items include batteries, capacitors, printed circuit boards, cathode ray tubes, mercury lamps, hard disk drives, transformers, power supplies, ink, toner and subassemblies.

[SOURCE: IEC 151-11-21, modified – “a device” replaced by “electrical and electronic equipment”, “and consumables” and Note 1 to entry added. Copyright © IEC Geneva, Switzerland. www.electropedia.org]

1.4.7

data

information stored in a persistent repository such as a disk drive, storage media or other digital media contained in electrical and electronic equipment

1.4.8

data destruction

use of data sanitization software or physical destruction methods to erase data or destroy storage devices so that they can no longer be used

Note 1 to entry: Physical data destruction methods include shredding into small pieces, melting, crushing and drilling.

1.4.9

data sanitization

process of deliberately, permanently and irreversibly removing or destroying data stored on a data storage device to make it unusable, unreadable or indecipherable

Note 1 to entry: Methods may include purging, clearing and wiping.

1.4.10

direct re-use

using again of fully functional electrical and electronic equipment that is not waste, for the same purpose for which it was conceived, without the necessity of repair or refurbishment

[SOURCE: United Nations Environment Programme (2019), *Technical Guidelines*, UNEP/CHW.14/7/Add.6/Rev.1, Glossary, modified – “equipment” replaced by “electrical and electronic equipment”]

1.4.11

disposal

operations which do not lead to the possibility of resource recovery, recycling, reclamation, direct re-use or alternative uses

Note 1 to entry: Typical operations include burial at landfill, incineration and release to water body.

[SOURCE: *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* (1989), Annex IV, modified – Note 1 to entry added]

1.4.12

downstream processor

entity that receives material from the first operator or other downstream processor for the purposes of additional processing and refining for maximum resource recovery or to prepare the material for re-use

1.4.13 **electrical and electronic equipment** **EEE**

components, consumables and parts of any equipment that is dependent on, or designed for, the generation, transfer, storage, conversion, transmission, control or measurement of an electric current and/or an electromagnetic field and designed for a supply voltage not exceeding 1 000 V a.c. and 1 500 V d.c

Note 1 to entry: See [Appendix A](#) for categories and examples of EEE.

1.4.14 **environmental management system**

part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, risk assessment and resources for developing, implementing, achieving and maintaining the environmental policy

1.4.15 **energy recovery**

production of useful energy through direct and controlled combustion or other processing of waste

14.16 **failure analysis**

test performed by the original manufacturer or a party on his/her behalf, collecting and analysing data to determine the cause of a failure

Note 1 to entry: Root cause analysis is a particular kind of failure analysis.

[SOURCE: United Nations Environment Programme (2019), *Technical Guidelines*, UNEP/CHW.14/7/Add.6/Rev.1, Glossary]

1.4.17 **fractions**

components of electrical and electronic equipment that have been dismantled or treated mechanically such as by grinding, shredding or sorting

1.4.18 **fully functional**

electrical and electronic equipment is fully functional if it has been tested and demonstrated to be capable of performing the key functions that it was designed to perform

[SOURCE: United Nations Environment Programme (2019), *Technical Guidelines*, UNEP/CHW.14/7/Add.6/Rev.1, Glossary]

1.4.19 **hazardous substance**

substance with the potential to cause harm to persons, property or the environment due to its properties, for example chemical, flammable, physical, radioactive or biological, or a combination

Note 1 to entry: Without limitation to any of the above, all dangerous goods and combustible liquids are hazardous substances.

1.4.20 **health and safety management system**

part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, risk assessment and resources for developing, implementing, achieving and maintaining the health and safety policy

1.4.21**health monitoring**

monitoring the health of a person to identify changes in their health status as a result of exposure to certain hazardous substances or noise

Note 1 to entry: Health monitoring involves the collection of data in order to evaluate the effects of exposure to hazardous substances and noise to determine whether or not the exposure is within safe levels.

1.4.22**interstate**

movement between states or territories in Australia

1.4.23**material recovery**

operations which lead to resource recovery, re-use or alternative uses

Note 1 to entry: Operations include use as a fuel to generate energy, recovery of components and use of residual materials.

1.4.24**operator**

entity or person that engages in activities of collection, sorting, storage, transport, preparation for re-use or treatment of electrical and electronic equipment for the purpose of recovery, recycling or disposal

1.4.25**packaging**

material, or combination of materials, used to contain, protect, market, handle, transport or store electrical and electronic equipment

1.4.26**preparation for re-use**

any operation performed to recover discarded electrical and electronic equipment, assemblies, components or parts so that it is in a condition so that it can be re-used

1.4.27**point of final disposition**

point in the downstream material chain where separated materials generated from the processing of electrical and electronic equipment are physically altered from their original state and become commodities used to produce new products, or are used as an input into a manufacturing process or become a by-product waste for disposal

1.4.28**recycling**

processes for converting materials that would have otherwise been disposed of into new materials

[SOURCE: Department of Agriculture, Water and the Environment, *National Waste Policy Action Plan 2019*, Glossary]

1.4.29**resource recovery**

making use of material that would have otherwise been disposed of including re-use, recycling, energy recovery and other types of recovery

1.4.30**refurbishment**

modification of used electrical and electronic equipment to increase or restore its performance and/or functionality or to meet applicable technical standards or regulatory requirements, with the result of making it a fully functional product to be used for a purpose that is at least the one for which it was originally intended, including through such activities as cleaning and data sanitization

[SOURCE: United Nations Environment Programme (2019), *Technical Guidelines*, UNEP/CHW.14/7/Add.6/Rev.1, Glossary]

1.4.31**re-market**

action, including marketing activities, necessary to sell an electrical and electronic equipment product, or part thereof, that has reached the end of one use stage directly or indirectly to customers for re-use

1.4.32**repair**

fixing a specified fault in used electrical and electronic equipment that is a waste or a product and/or replacing defective components of equipment in order to make the equipment a fully functional product to be used for its originally intended purpose

[SOURCE: United Nations Environment Programme (2019), *Technical Guidelines*, UNEP/CHW.14/7/Add.6/Rev.1, Glossary, modified – “equipment” replaced by “electrical and electronic equipment”]

1.4.33**re-use**

using again of fully functional electrical and electronic equipment that is not waste for the same purpose for which it was conceived, possibly after repair or refurbishment

[SOURCE: United Nations Environment Programme (2019), *Technical Guidelines*, UNEP/CHW.14/7/Add.6/Rev.1, Glossary]

1.4.34**storage facility**

place where electrical and electronic equipment is stored before it is prepared for re-use or undergoes treatment

Note 1 to entry: A storage facility may be co-located with a collection location or facility, preparation for re-use facility or treatment facility.

1.4.35**substances of concern**

materials or components making up electrical and electronic equipment that when handled or processed may pose a risk to human health or the environment and therefore merit special environmental and safety controls

1.4.36**transboundary movement**

international transport of electrical and electronic equipment including import, transit and export

1.4.37**treatment**

recycling, resource recovery and disposal processes for electrical and electronic equipment, separated assemblies, components and parts, and substances of concern

EXAMPLE

Manual dismantling, mechanical separation, chemical extraction and smelting.

1.4.38**user-generated data**

data stored on a disk drive, storage media or other digital media contained in electrical and electronic equipment

EXAMPLE Files stored on a laptop hard drive or USB memory stick, telephone numbers stored on a mobile telephone, games saved on a games console and scanned information saved on a scanner or photocopier.

Note 1 to entry: The data may include personal information.

Note 2 to entry: The data does not include data generated by the manufacturer.

1.4.39

value chain

all the steps undertaken so that discarded electrical and electronic equipment can be re-used or recycled

Note 1 to entry: The steps include collection, storage, preparation for re-use, treatment and transport.

1.4.40

waste

any material or object which the holder discards or intends to or is required to discard

1.4.41

work in progress

electrical and electronic equipment that has been partially processed

1.5 Abbreviations

[Table 1.2](#) lists abbreviations used in this document.

Table 1.2 — Abbreviations

Abbreviation	Definition
ABS	Acrylonitrile butadiene styrene
A.C	Alternating current
BFR	Brominated flame retardant
CFC	Chlorofluorocarbon
CFL	Compact fluorescent lamp
CRT	Cathode ray tube
D.C	Direct current
EEE	Electrical and electronic equipment
HC	Hydrocarbon
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
HFR	Halogenated flame retardant
HID	High-intensity discharge
HVAC	Heating, ventilation and air conditioning
IT	Information technology
LCD	Liquid crystal display
LED	Light emitting diode
Li-ion/LIB	Lithium ion batteries
LP Gas	Liquified petroleum gas
MFD	Multi-function device
NiMH	Nickel metal hydride
NiCd	Nickel cadmium

Table 1.2 *(continued)*

Abbreviation	Definition
PC	Polycarbonate
PPE	Personal protective equipment
UPS	Uninterruptable power supply

1.6 Identifying legal and other requirements

Legal and other requirements that are directly applicable to the management of EEE shall be —

- (a) identified. Examples include the following:
 - (i) Environmental legislation.
 - (ii) Operational requirements including planning approval, site licensing and licences for the handling, storage, transport and treatment of EEE.
 - (iii) Laws relating to the handling, storage, treatment and transport of dangerous goods, controlled wastes and hazardous wastes.
 - (iv) Work health and safety legislation.
 - (v) Export licensing laws and regulations including transboundary treaty and convention obligations.
 - (vi) Commitments to customers.
 - (vii) Other standards and requirements to which the organization has committed.
- (b) kept up to date; and
- (c) communicated to relevant stakeholders, including employees and contractors.

1.7 Health, safety and environmental management

1.7.1 General

Specific procedures and safe work method statements to eliminate, reduce and control hazards and risks identified in [Clause 1.7.2](#) shall be developed, maintained, implemented, reviewed and updated periodically.

1.7.2 Risk assessment and management

1.7.2.1 General

A documented risk assessment process to identify and control any potential environmental, health or safety hazards associated with the management of EEE shall be performed, and be reviewed, retained and available.

NOTE 1 See [Appendix B](#) for guidance on hazards associated with handling EEE.

The risk assessment and management process shall include the following steps:

- (a) Define the responsibilities for the individuals involved in the process.
- (b) Prepare a risk register to identify, record and monitor any potential environmental, health or safety risks associated with the materials handled and tasks undertaken, as well as the overall operations, during both normal operating conditions and potential emergency situations.

- (c) Perform risk assessments to evaluate any potential environmental, health or safety risks identified.
- (d) Implement controls suitable to the identified risks to eliminate the risks where practicable, or to minimize them, to protect the environment and health and safety.
- (e) Prepare a risk assessment and management program, and review it annually or more frequently if needed as a result of any material change in operations or EEE received, emerging health and hazard trends, or regulatory changes. The program shall include —
 - (i) monitoring the effectiveness of controls;
 - (ii) assessing whether new controls need to be implemented; and
 - (iii) a schedule for reviewing risk assessments.

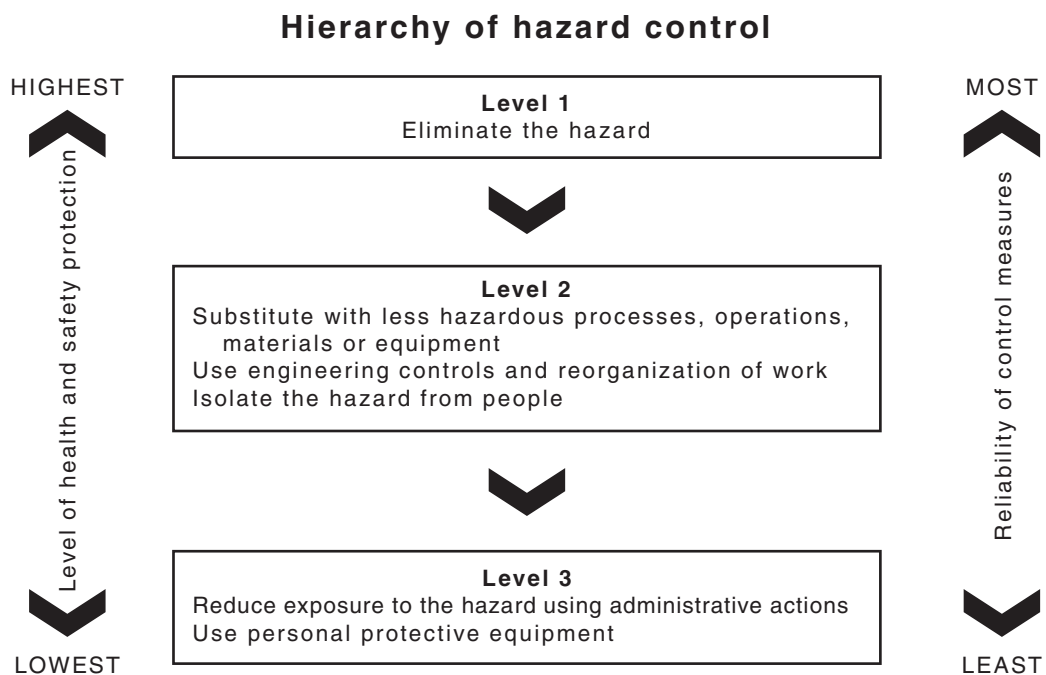
NOTE 2 Suitable risk assessment processes can be found in AS ISO 31000.

NOTE 3 State and territory work health and safety regulations include requirements for risk assessment and risk management.

1.7.2.2 Hierarchy of controls

The principle of hierarchy of hazard control shall be used in risk assessment and risk management as shown in [Figure 1.1](#).

NOTE The aim is to, firstly, try to eliminate a hazard and its associated risk. If this is not reasonably practicable, the risk should be minimized by using one or more of the approaches outlined in Level 2 and then Level 3.



[SOURCE: Safe Work Australia, *Model Code of Practice: How to manage work health and safety risks*. © Commonwealth of Australia 2018, <https://creativecommons.org/licenses/by/4.0/legalcode>]

Figure 1.1 — Hierarchy of hazard control

1.7.3 Workplace monitoring

Workplace monitoring identified in [Clauses 1.6](#) and [1.7.2](#) shall be undertaken.

Examples of workplace monitoring include the following:

- (a) Air monitoring of the airborne concentration of a chemical or mixture.
- (b) Health monitoring of a worker to identify changes in their health status due to exposure to hazardous substances or noise.
- (c) Noise assessment to measure noise emission and exposure.

Workplace monitoring shall not be used as an alternative to implementation and maintenance of control measures to prevent exposure to hazards.

NOTE 1 Information on exposure standards for airborne contaminants is available in the Safe Work Australia, *Workplace exposure standards for airborne contaminants*.

NOTE 2 Information on requirements for health monitoring for exposure to hazardous chemicals is available in the Safe Work Australia, *Health monitoring for exposure to hazardous chemicals: Guide for persons conducting a business or undertaking*.

NOTE 3 Information on requirements for noise assessments is available in the Safe Work Australia, *Model Code of Practice: Managing noise and preventing hearing loss at work*.

1.7.4 Products accepted

A list of the types of EEE that are accepted for collection, transport, preparation for re-use, treatment, storage or otherwise handled in a safe and environmentally sound manner shall be maintained.

1.8 Emergency response and business continuity

An emergency response plan and business continuity plan to prepare for and respond to emergencies shall be implemented and maintained. The following emergencies shall be included in the response plan, taking into account the type of EEE handled and managed:

- (a) Exceptional pollution releases and spills.
- (b) Fires.
- (c) Natural disasters such as storms, floods and earthquakes.
- (d) Medical incidents.
- (e) Accidental receipt of EEE or other items that due to the hazards they present cannot be treated or handled onsite.
- (f) Unauthorized access to or release of data contained on data storage devices.
- (g) Transport accidents.
- (h) Theft or loss of EEE.

The emergency response plan and business continuity plan shall include the following:

- (i) Action to be taken for each type of emergency.
- (ii) Persons who need to be notified of the emergency and the actions taken.
- (iii) Alternative collection or notice of suspension.
- (iv) Alternative storage.
- (v) Alternative transport.
- (vi) Recovery timeline.

- (vii) Clean up or remediation methodology and validation process.
- (viii) Requirements for training all responsible people.
- (ix) Documentation to be made available during and after the emergency.
- (x) Review of relevant documentation to prevent reoccurrence.
- (xi) Testing of the effectiveness of the emergency procedure through appropriate drills or reviews at least annually and within three months of a change of persons, procedures or actions identified in the plan.

Records of the emergency response plan and the business continuity plan shall be maintained.

The emergency response plan should consider all parties who may be affected by an emergency and the impacts of emergencies at neighbouring facilities.

Insurance shall be maintained to cover the potential risks and liabilities associated with responding to emergencies.

1.9 Business closure plan

A business closure plan shall be prepared outlining how all EEE will be managed in accordance with this document in the event of business closure, abandonment or bankruptcy. This includes transporting EEE or storing EEE at other premises.

Management tools included in the business closure plan may include financial assurances, such as a bank guarantee or bond, to cover the cost of implementing the business closure plan, as well as any site clean-up activities, and insurance to cover the potential risks and liabilities associated with business operations and closure (e.g. product and public liability, cyber security, professional indemnity, and environmental and workers' compensation).

1.10 Competency

Handling EEE and performing tasks associated with this document shall be carried out by competent persons. This includes —

- (a) being able to determine and recognize the risks and hazards; and
- (b) understanding risk management controls that are in place.

Records to verify competency shall be retained.

NOTE Examples of records to verify competency include training records, performance evaluation records and on-the-job-training materials.

1.11 Task-related information

Task-related information for workers and contractors shall be available and readily accessible. Task-related information includes the following:

- (a) Identified hazards, risks and risk assessments (see [Clause 1.7.2](#)).
- (b) Safety statements.
- (c) Photos or examples of different types of EEE and components being handled.
- (d) Safety data sheets for hazardous substances.
- (e) Videos and presentations.
- (f) Check lists.

- (g) Flow charts.
- (h) Procedures.
- (i) Operating instructions.
- (j) Technical guidance documents.
- (k) Equipment manuals.
- (l) Training material.

1.12 Documented information

Documented information shall be accessible, identifiable, legible, controlled, and maintained for at least five years. Documented information may be digital and/or paper based.

1.13 Data security

1.13.1 General

Processes shall be documented and implemented to prevent the risk of unauthorized access to or release of any user-generated data contained on data storage devices.

NOTE Protection of user-generated data is important to consumers, businesses and regulators. It is also a barrier to the uptake of EEE recycling services as consumers may retain EEE in their homes due to concerns about data privacy.

1.13.2 Public collection information

Where the public drops off EEE at a public collection point, information shall be provided to the public including the following:

- (a) A list of the types of EEE that are accepted for collection, transport, preparation for re-use, treatment, storage or otherwise.
- (b) Advice that data stored on EEE with data storage devices needs to be removed prior to dropping off the EEE.
- (c) Advice that file deletion and data wiping done at home may not delete all data from data storage devices.
- (d) Details of the intended treatment facility and data destruction process used.
- (e) Notification that once EEE has been dropped off at a collection point it cannot be retrieved.

The information should be made available on a website accessible by the public and at the collection point (e.g. signage, flyers).

1.13.3 Customer agreements

Where there is an agreement with a customer for treatment and/or preparation for re-use, traceability records shall be maintained.

When the EEE will be prepared for re-use, information shall be provided outlining how the data will be destroyed before the EEE is re-used.

NOTE An example solution for maintaining chain of custody records is blockchain.

1.13.4 Security measures

Security measures shall be implemented to prevent the theft, loss, misplacement, misappropriation, interference and unauthorised access of EEE or the data on the EEE and traceability records during collection, storage, transport, preparation for re-use and treatment. Examples include the following:

- (a) Storage and transport of EEE in a manner so that it cannot be viewed or easily accessed by the public.
- (b) Use of locked gates and doors, swipe card access, security systems, CCTV systems or manning by personnel.
- (c) Use of lockable collection units.

1.13.5 Data destruction

Unless otherwise requested by the customer in writing, treatment processes of hard drives and other data storage devices shall include physical data destruction or data sanitization so that they are permanently unusable, unreadable and/or indecipherable.

The data destruction procedure shall include —

- (a) for data sanitization, to be performed in accordance with a known standard;
NOTE One known standard for data sanitization is NIST SP 800-88.
- (b) for physical destruction, to be performed so as to ensure complete destruction of the data storage device with no ability to repair, recover or retrieve the data;
- (c) a requirement for the procedure to be documented; and
- (d) a requirement for the procedure to be reviewed for effectiveness on a periodic basis.

Records of physical destruction and data sanitization of data storage devices shall be provided to customers if an advance written request is made.

If physical destruction or data sanitization of data storage devices is performed by a downstream facility, the following shall be ensured:

- (i) Arrangements are in place outlining the details of the data destruction process.
- (ii) Data storage devices are tracked and secured during transport, storage, preparation for re-use and treatment.

1.14 Waste management hierarchy

Waste disposal shall be minimized, where possible, by following the principle of the waste management hierarchy outlined in [Figure 1.2](#).

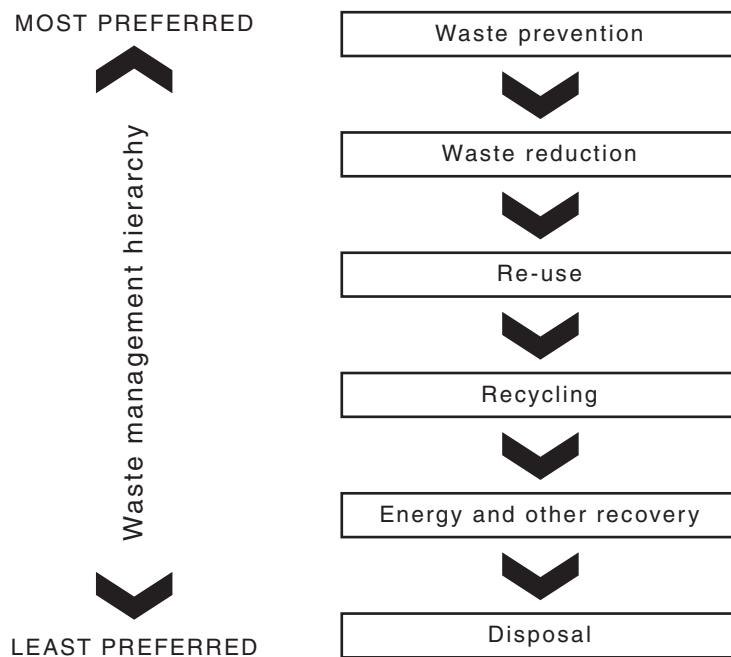


Figure 1.2 — Waste management hierarchy

1.15 Management system

The implementation of the EEE management program as set out in this document shall be documented in a quality management system. The documented management system shall include the requirements set out in [Clauses 1.6](#) to [1.14](#).

NOTE AS/NZS ISO 9001, AS/NZS ISO 14001, AS/NZS ISO 45001 or other equivalent standards are examples of standards that provide guidance on management systems.

Section 2 Collection and storage

2.1 Aim of section

The aim of this section is to specify requirements for the safe, secure and environmentally responsible collection and storage of EEE. This section applies to any facility that collects or stores EEE.

A summary of the collection and storage process is provided in [Figure 2.1](#).

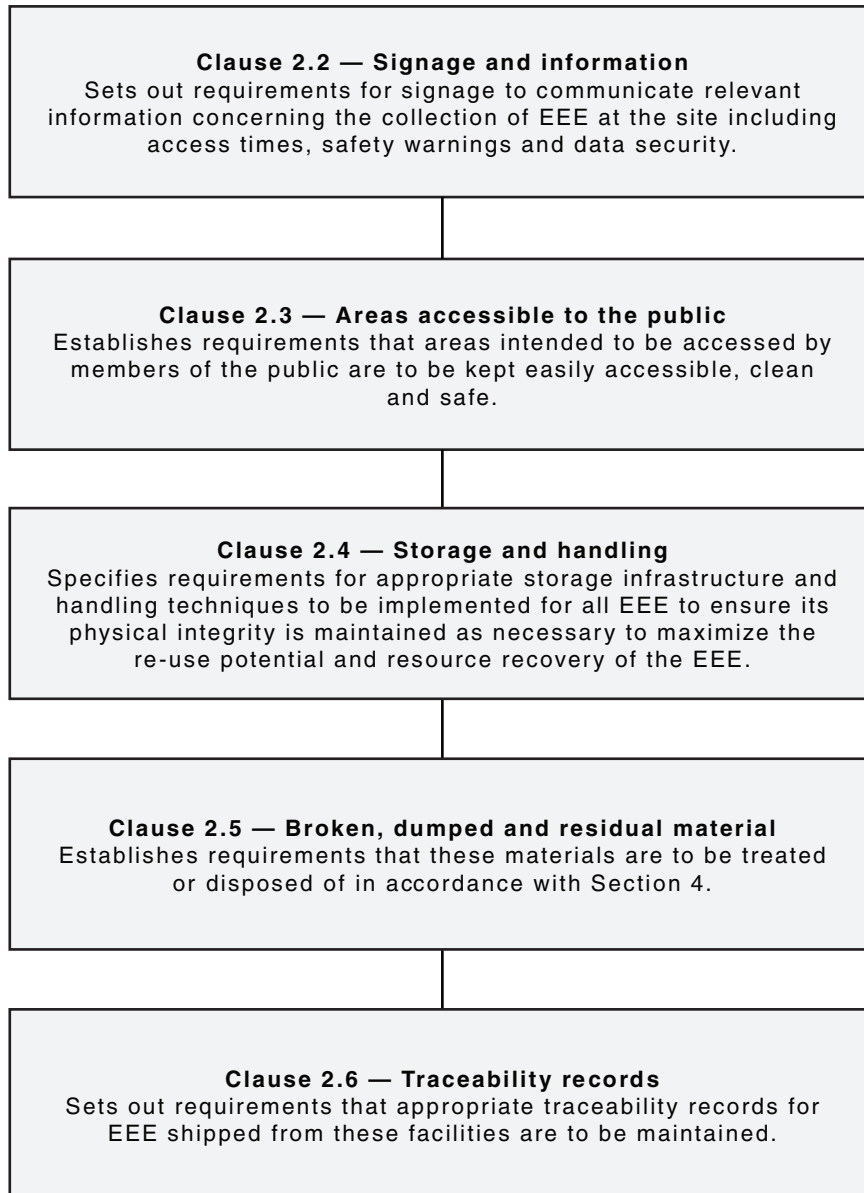


Figure 2.1 — Summary of the requirements for collection and storage facilities

2.2 Signage and information

Signage shall be provided to communicate relevant information including the following:

- (a) Type of EEE accepted.
- (b) Safety warnings.

- (c) Instructions on how to access the EEE drop off area or collection unit.
- (d) Type of EEE that can be placed into a collection unit.
- (e) Site access times for the public.
- (f) Notice that data stored on EEE with data storage devices needs to be removed prior to dropping off the EEE.
- (g) Notice that file deletion and data wiping done at home may not delete all data from data storage devices.

NOTE Similar details should be included in promotional and advertising information, including websites.

2.3 Areas accessible by the public

Areas designated for public access shall be easily accessible and kept clean.

Where possible, stairs and steps should be avoided.

Traffic management plans shall be in place to prevent —

- (a) vehicle accidents; and
- (b) the public and workers from coming into contact with vehicles and mobile plant.

Clear demarcation between public access areas and work areas shall be provided.

2.4 Storage and handling

2.4.1 General

Emerging best practices in the storage and handling of EEE should be monitored and processes and procedures updated as required.

2.4.2 Storage infrastructure

Storage infrastructure for EEE that contains substances of concern shall have —

- (a) impermeable surfaces;
- (b) weatherproof coverings;
- (c) measures to prevent potentially hazardous material entering stormwater drainage;
- (d) labelling to identify hazardous substances (if applicable); and
- (e) specified maintenance processes for storage and loading equipment.

2.4.3 Consolidation

During collection and storage, EEE shall not be mixed with other types of waste within the same collection unit.

Processes should be implemented to keep the stockpiling of EEE to a minimum.

2.4.4 Maintain physical integrity

The physical integrity of EEE shall be maintained during receiving, handling and storage, in order to —

- (a) avoid the release of hazardous substances into air, water or soil;

- (b) minimize damage; and
- (c) maximize re-use potential and resource recovery.

2.4.5 Storage and handling requirements

EEE shall be handled and stored in a manner that —

- (a) provides protection from exposure to the elements where hazardous substances may be released;
- (b) prevents exposure of people onsite to unsafe storage and handling conditions or hazardous substances;
- (c) prevents the combustion, explosion or leaking of batteries, and short circuits or flows of current;

NOTE 1 Special consideration should be given to wet cell batteries and exposed lithium type batteries.

- (d) clearly identifies the contents of collection units holding cooling and freezing appliances to avoid damage to the refrigerant system;

NOTE 2 Refer to applicable dangerous goods and United Nations Environment Programme (UNEP) guidelines for receptacles.

- (e) prevents CRTs from imploding and/or loss of phosphorescent coatings;
- (f) protects against damage to EEE with mercury containing lamps and globes, gas discharge lamps, batteries and smoke detectors containing hazardous components or materials to avoid breakage and discharge into the environment;

NOTE 3 Appliances that may contain gas discharge lamps include flat panel displays and sun beds.

- (g) protects against rough handling and damage to appliances containing petroleum fluids, polychlorinated biphenyls, refrigerant gases and other liquids and gases to avoid spillages and other emissions; and
- (h) protects against damage to appliances containing asbestos or ceramic fibres to avoid the release or inappropriate disposal of asbestos or ceramic fibres.

NOTE 4 Appliances that may contain asbestos include heaters and stoves.

NOTE 5 Guidelines for the safe handling and storage of EEE are provided in [Appendix B](#).

2.5 Broken, dumped and residual material

EEE that is broken onsite or dumped in the immediate vicinity of the facility should be treated or disposed of in accordance with [Section 4](#).

2.6 Traceability records

The following records shall be maintained for EEE shipped from collection and storage facilities:

- (a) Quantity or weight and type of EEE shipped.
- (b) Date of shipment.
- (c) Transporter.

This includes EEE sent for treatment, preparation for re-use and disposal.

Section 3 Preparation for re-use

3.1 Aim of section

The aim of this section is to specify requirements for the extension of the working life of EEE. This section applies to any facility that performs preparation for re-use activities.

Preparation for re-use comprises any operation performed to recover discarded EEE, assemblies, components or parts into a condition for re-use that extends its working life.

Direct re-use of EEE or re-use after repair or refurbishment can contribute to the highest form of recovery based on the waste management hierarchy outlined in [Clause 1.14](#). By extending the life of EEE, re-use reduces the environmental footprint of the resource-intensive processes involved in producing EEE. Re-use may also facilitate the availability of equipment to groups in society that otherwise would not have access to it, since the cost of second-hand EEE is lower than that of new EEE.

A summary of the preparation for re-use process is provided in [Figure 3.1](#).

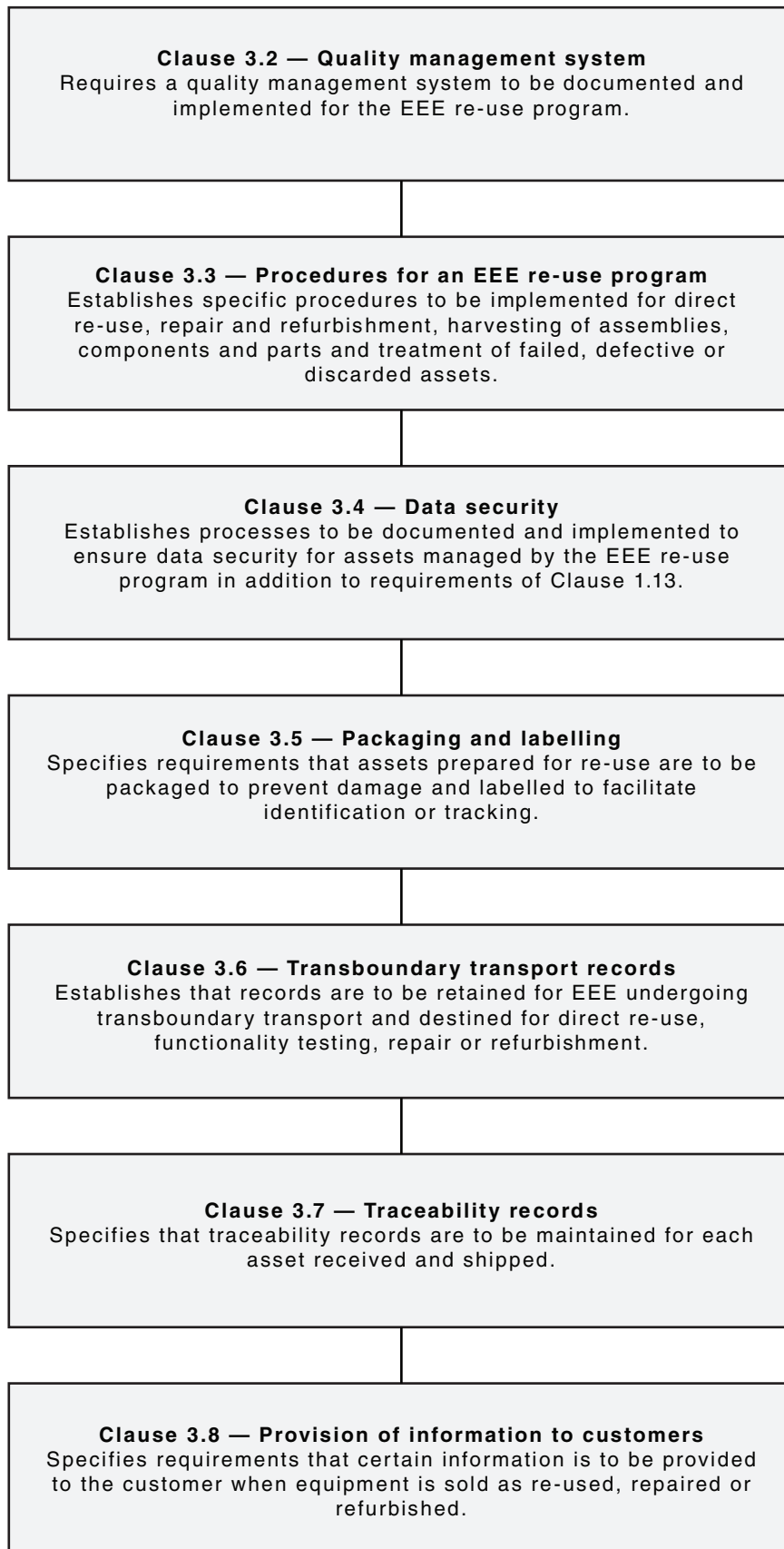


Figure 3.1 — Summary of the requirements for preparation for re-use