Requirement Guideline for End-Of-Life (EOL) Plan and Waste Management Report

Companhia de Electricidade de Macau – CEM, S.A.

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1. Introduction

As part of our commitment to Sustainable Procurement, we care about contribution towards a Circular Economy and responsible Waste Management as last resort when equipment goes End-of-Life (EOL). All contractors participating in projects that involve the disposal of materials, equipment, or waste must submit two critical documents: a comprehensive EOL Plan prior to project initiation, followed by a verified Waste Management Report upon completion of disposal activities.

The EOL plan ensures that the disposal process aligns with environmental regulations and best practices, socially responsible manner, and complies with applicable laws and regulations (e.g. WEEE Directive for electronic waste, the Basel Convention for hazardous materials, etc.).

The subsequent Waste Management Report provides evidence of execution, documenting final dispositions with traceability from planning to implementation.

These requirements are designed to ensure full transparency, accountability, and alignment with circular economy principles throughout the project lifecycle. Failure to comply with these standards may result in contractual sanctions including penalties, tender disqualification, or suspension from future bidding opportunities.

2. Basic Components of EOL plan

Waste Management Strategy

- Describe the methodology for waste disposal (recycling, refurbishment, landfill, etc.)
- Outline plans to minimize waste generation and maximize material reuse or recycling throughout the project lifecycle.
- Indicate whether materials will be sent to certified recycling facilities, landfills, or other destinations, and provide relevant details

Compliance with Environmental Regulations

- Demonstrate adherence to relevant local, national, regional and international environmental laws and standards (e.g. WEEE for electronics, Basel Convention for hazardous waste etc.)

Environmental & Social Impact Mitigation

- Provide detailed strategies and/or methodologies to reduce the environmental and social impacts of waste disposal, including carbon footprint reduction, pollution prevention measures, and ensuring worker safety during disposal processes.
- Identify potential risks associated with waste disposal, such as environmental contamination.

3. Additional Components for Special Waste Categories in EOL plan

For projects involving specific waste categories, the following additional components must be included in the EOL Plan:

Hazardous Waste Management

- Describe the disposal methods for hazardous waste (e.g., chemicals, batteries, etc.).
- Include a detailed plan and evidence records for the safe handling, transportation, and disposal of hazardous waste in compliance with regulations.

Procedures for Safe Destruction (for Sensitive Data)

- Outline procedures for securely destroying sensitive or confidential data stored on physical or electronic media.
- Specify methods and evidence records to ensure the data is irrecoverable, such as shredding, degaussing, or certified data wiping for electronic devices.

4. Basic Components of Waste Management Report

EOL Handling Overview & Scope of Disposal

- Provide a detailed list and description of the materials or equipment required EOL management.
- Classify waste into categories (e.g., recyclable, hazardous, electronic waste, etc.).

Disposal Vendor Information

- List the certified waste disposal or recycling vendors contracted for the project.
- Include vendor certifications, licenses, and compliance records to demonstrate their capability and reliability.

Waste Tracking and Reporting

- Submit a comprehensive waste management report, including but not limited to the following content *(template of waste management report is also provided in Appendix I):*
    - Detailed EOL Handling Process (with photos whenever applicable)
        - How each material/equipment was processed
        - Collection and segregation methods
        - Transportation procedures
        - Final disposal/recycling processes
    - Quantitative Disposition Data
        - Exact measurement of materials processed under each category (e.g. quantities recycled, reused/refurbished, landfilled)
    - Supporting Documentation
        - Information to prove the waste are being disposed properly (e.g. data destruction proofs, chain-of-custody records, official documents issued by the Macau Special and Hazardous Waste Treatment Plant, etc.)
    - Deviation Explanations (if any)
        - Compare the actual disposal outcomes with the submitted EOL plan, and explain the discrepancies.
- The report should be submitted to CEM within 30 days of completing the EOL process.
- Justifications must be provided to the CEM for late submissions, which will be subject to further evaluation.

5. Performance Evaluation and Compliance

Contractors are reminded that the execution of the End-of-Life (EOL) process must be strictly consistent with the approved EOL Plan and subsequently detailed in the Waste Management Report.

Should any issues, difficulties, or opportunities for optimization arise that necessitate deviations from the approved EOL Plan, the Contractor must formally notify CEM and obtain approval prior to implementing any changes. In the event of any disagreement regarding the EOL handling process, CEM's decisions and instructions shall be final and binding.

Furthermore, CEM will conduct a formal evaluation of the submitted Waste Management Report and the Contractor's performance against the approved EOL Plan. This evaluation will assess key performance indicators including, but not limited to:

- The extent and justification of any deviations from the plan.
- The transparency and completeness of the reporting.
- The quality and verifiability of supporting evidence and records.
- The accuracy and traceability of quantitative data.

The outcome of this performance evaluation will be recorded and used as a reference for assessing the Contractor's eligibility and scoring in future tender exercises. Significant negative performance may result in contractual penalties, warnings, or suspension from bidding on future projects, at CEM's discretion.

6. Appendix I - Template of Waste Management Report

Overview

Details refer to “Clause 4 - Basic Components of Waste Management Report”

List of materials or equipment collected for waste management

S/N.	Description	Quantity	Weight
1	MV RTU	X units	X kgs
2	Ring-Main-Unit	X units	X kgs

EOL Handling Process

Details refer to “Clause 4 - Basic Components of Waste Management Report”

Breakdown of components in handled materials or equipment and corresponding measurements

Description[1]	Category[2]	Net Weight	Recycle/Reuse/ Repurpose Weight	Disposal Weight	Final Destination
Iron	Recyclable	X kgs	X kgs		Region/Country/ Location
Plastic - HDPE					
Plastic - LDPE					
Plastic - PET					
Plastic - PP					
Plastic - PS					
Plastic - PVC					
PCB					
Metal					
Cable					
Batteries					
SF6 gas					
Total Weight		XX kgs	XX kgs	XX kgs	

Remarks:
1: For the types of components, please refer to “Clause 7 – Reference List of Components” for reference.
2: Category refers to the waste stream type (e.g., recyclable, hazardous, non-recyclable, reusable, electronic waste, general waste, or others).

Disposal/Recycling Vendor Information

Vendor Name	Handled Materials/Equipment	Contact (Email & Phone)	Qualification with Supporting Document (if applicable)
XXX Company	Batteries		
XXX Company	PCB		

Supporting Documentation

Details refer to “Clause 4 - Basic Components of Waste Management Report”

Deviation Explanations (if any)

Details refer to “Clause 4 - Basic Components of Waste Management Report”

Kindly note that your report is not limited to the above content; you may also include any other relevant information.

7. Reference List of Components

- Aggregates
- Average construction
- Asbestos
- Asphalt
- Bricks
- Concrete
- Insulation
- Metals
- Soils
- Mineral oil
- Plasterboard
- Tyres
- Wood
- Books
- Glass
- Clothing
- Household residual waste
- Organic: food and drink waste
- Organic: garden waste
- Organic: mixed food and garden waste
- Commercial and industrial waste
- WEEE - fridges and freezers
- WEEE - large
- WEEE - mixed
- WEEE - small
- Batteries: NiCd
- Batteries: Lead-Acid
- Batteries: Lithium

- Metal: aluminium cans and foil (excl. forming)
- Metal: mixed cans
- Metal: scrap metal
- Metal: steel cans
- Plastics: average plastics
- Plastics: average plastic film
- Plastics: average plastic rigid
- Plastics: HDPE (incl. forming)
- Plastics: LDPE and LLDPE (incl. forming)
- Plastics: PET (incl. forming)
- Plastics: PP (incl. forming)
- Plastics: PS (incl. forming)
- Plastics: PVC (incl. forming)
- Paper and board: board
- Paper and board: mixed
- Paper and board: paper