ERL MAINTENANCE SUPPORT SDN BHD

(Company No. 498574-T)

E-MAS

Effective Railway Operations; Reliable System Maintenance

PROJECT AND ENGINEERING DEPARTMENT

OBSOLESCENCE MANAGEMENT PROCEDURE

Ref. No. G00.OMD.M12000.WO.1002.A

Release

Released:	Thomas Baake	Chief Executive Officer	11.6.19	
Checked:	David Thiagarajan	Documentation & Administration	03/06/19	
Checked:	Gan Lee Hong	Procurement	03/06/19	
Checked:	Ham Mow Wai	Maintenance	03/06/19	
Checked:	Jayaraj Savarimuthu	Rolling Stock & Engineering	03/04/19	
Checked:	Anthony Arokianathan	Wayside	28/05/19	
Checked:	Abdul Halim Baharom	Infrastructure	31/5/19	
Checked:	Aziz Hashim	Signalling	28/05/19	
Checked:	Noel Devan	Electrification	31 MAY 2019	
Checked:	Norazman	Rolling Stock	31/05/19	
Author:	Dzulfaqar	Project & Engineering	28/5/19	
	Name	**Dept.**	**Date**	**Signature**

Amendments or additions to this procedure must be indicated with a vertical black line in the adjacent left margin.

Change Record and Configuration Control

A	24 Apr 19	New Document	Dzulfaqar
Revision	**Date**	**Modification**	**Name**

Planning Of Changes Reference For Revision: Nil					
Issues To Consider	**Checked** *(Please mark X)*				**Remarks**
1) Are there any negative impact?	YES		NO		N/A
2) Will the integrity of QEMS be affected?	YES		NO		N/A
3) Resources available?	YES		NO		N/A
4) Allocation or relocation of responsibilities and authorities required?	YES		NO		N/A

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1 Purpose

The purpose of this document is to provide the basic process flow for coordinating and managing the obsolescence issue within ERL-CRS Systems perspective.

Application Guide for Obsolescence Management IEC-62402:2007 [Ref. No.: G00.OMD.M10000.CZ.1001.*] is available as an attachment (Appendix 1) to this document for those who want to know more about the obsolescence management in depth. However, it shall only be used as a reference, not as solid procedure for ERL-CRS Systems perspective.

2 Scope, Distribution & Access

This document shall be made available to all departments mentioned in the “Release” section on page 2 above via EDMS. Amendment to this procedure shall be governed by PNE.

3 Responsibility

Each department shall be responsible for governing obsolescence issue for the **hardware, software or facility (mention as “item” from here on)** that consumed or used by the department itself. The **department who is responsible for such item is defined as “end user”** further on in this document.

If such an item is consumed or used by two or more departments simultaneously, the department who have larger influence for the said item shall be the one who responsible for governing this matter. Otherwise, the department in charge of maintaining such item shall be responsible.

The following elaborates the guideline.

4 Obsolescence Recovery Option

Refer to Sections 7.3 and 7.4 in IEC-62402:2007 for explanation.

4.1 Cannibalization

Any cannibalization should be recorded for traceability purposes. Please note that same item in two different locations may not be able to be swapped directly. Please check for parameter, setting, program etc. from both locations before doing so.

4.2 Repair

An item can be sent for repair either external or internal.

For external, it is best suit if OEM provides repairing support. Else, local third party can be sourced to handle the repairing.

For internal repairing, it should be performed by the end user. For electronics items, the end user may send the defective item to ERC said purposes at its own discretion.

Repairing support capability is subjected to the availability of spare parts and facility.

4.3 Stockpiling and Lifetime Buy

This method is to purchase an item large quantity during its availability phase or when it is known to near its obsolescent point. However, please note that some item starts to decay from day one of its existence. Therefore, please be careful not to keep the stock too long and determine the shelf life of such item. Example: battery, grease, organic compound.

The best and economical timing for stockpiling is during the availability phase, where the cost per item is lower compared to when it is obsolete. However, please consider the storage facility to keep such item.

4.4 System Upgrade / Refurbishment

Early preparation is required for this to work, probably during the development stage of the original item itself. All parameters for the said item should be obtained and to be embedded into the legacy item. This is to ensure the legacy item is compatible with the obsolete item and the transition process runs smoothly. The following are the examples of parameters which is required when considering system upgrade but not limited to, if applicable:

1) Communication protocol and information about data transmission (for electronics items). Example: MVB, CAN, Ethernet.
2) Software source code.
3) Wiring diagrams and interfaces connection.
4) Structural integrity, load-bearing analysis, points and capacity (for mechanical items)
5) All documentation which is submitted to the local authority for endorsement purposes (for any Regulatory linked items). Example: PMA certificate, Certification of Fitness.
6) Calibration and adjustment procedure.
7) Datasheet for custom-built components.
8) Input and output parameters for transducers.
9) Training Requirements.

It is advised to obtain all above informations during the development and procurement of the legacy item.

5 Work Flow

The process starts with end-user creating and establishing the monitoring system, based on the template mention in Section 6.

All informations from Original Equipment Manufacturer (OEM) shall be properly recorded. Any information received by PRC or any other department shall be channel through the end user via email.

End user is responsible to get more technical information about the obsolete item. PRC shall assist on the commercial context of the said matter.

Appendix 2: Obsolescence Recovery Process Flow Chart [Ref. No.: G00.OMD.M12000.WO.1001.*] summaries the work flow.

5.1 Initiating the Recovery Process

The following is only require for all recovery actions except for cannibalization and repairing process.

When such recovery measure is required, the end user shall issue the ECN (refer Section 5.4) and other supporting documentation for checking by the respective HoD and then approval from OMN. Leave the “Implementation by” and “Verified by” column blank.

In case a justification memo is required, the contents are as follow for example:

1) Brief introduction to the system
2) Problem statement
3) Solution / Proposal
4) Conclusion / Request for approval

All stakeholders (affected parties within E-MAS organization only) shall be notified about the recovery plan, and their feedback shall be taken into consideration when refining the plan. If possible, some alternative shall be made available to all these stakeholders during the implementation to lower the impact on ERL-CRS system operation.

The recovery process shall begin after the memo is approved by OMN.

5.2 Implementation of the Recovery Process

End user shall assign a representative within its department to be the person in charge (PIC) for such recovery. The PIC shall act as the correspondent between external parties, stakeholders and end user.

The end user is responsible to provide facility and workspace for such recovery process.

All paperwork mention in Section 5.3 shall be initiated in this stage too.

5.3 Closure of the Recovery Process

Upon the completion of such a recovery process, the PIC shall sign off the “Implemented by” as milestone marking that the recovery work is successfully implemented. The end user QMR shall sign off the “Verified by” after he verifies that the recovery action and the documentation are in order.

Apart from that, the following documentation, as such is required to ensure a smooth transition, for operation and maintenance of the **legacy** item.

1) Engineering Change Notice
2) Modification Manual
3) Operating and Maintenance Manual
4) Calibration, Self-Check Manual
5) Part List from Bill of material (BOM) and SAP
6) A copy of submitted documents to regulatory bodies, and their replies.

With the closure, the legacy item shall continue to be monitored until it becomes obsolete.

Follow-up work completion memo to be issued to Maintenance Manager as and when required and cc to all internal relevant stakeholders.

5.4 Engineering Change Notice

This section explains briefly on the Engineering Change Notice (ECN).

The ECN shall be profiled in EDMS using the code OM_.OMN.M11161.####.* where;

1) OM_ – department originating (OMR, OMW, OME, OMD)
2) OMN – recipient
3) M11161 – ECN code in the EDMS
4) #### – running number
5) * – version

When filling the ECN form, the requestor and PIC shall ensure the following:

1) The department(s) affected by the change shall also be included in the tick boxes provided
2) Fill up a brief description of the engineering change
3) The reason for the engineering change – obsolescence of parts, cost saving, process improvement or others
4) Details of the engineering change – part number, SAP number, proposed supplier or others shall be included in the space provided
5) Supporting documents – drawings, manuals, pictures or others shall be attached.

The verified ECN shall be kept by end user for future reference. The retention period of the records shall be at end user discretion.

6 Monitoring and Record Keeping

The monitoring records are available in EDMS as follow. The access to these documents shall be governed by respective HoD and access to all HoDs is available by default.

Department	EDMS Reference Number
Electrification (ELT)	G00.OME.M12000.WO.1001.*
Infrastructure (INF)	G00.OMI.M12000.WO.1001.*
Project and Engineering (PNE)	G00.OMD.M12000.WO.1003.*
Rolling Stock (RST)	G00.OMR.M12000.WO.1001.*
Signaling (SIG)	G00.OMW.M12000.WO.1001.*

Other parameter such elements mentioned in Annex A in IEC-62402:2007 may also be considered for accurate monitoring.

The revision of such monitoring record shall be done minimum once in three years. Shorter period of interval is encouraged to increase the effectiveness of the monitoring and accuracy of the data.

7 Budgetary Guideline

End user is responsible to prepare and obtain the budget for the obsolescence recovery at its own discretion. The following should be taken into account but not limited to:

1) Development and support costing
2) After sales services
3) Training for legacy item
4) Legal and Regulatory requirement
5) Calibration
6) Procurement of the legacy item
7) Downtime losses due to upgrading works or unavailability of the item

The budget shall be defined in the annual CAPEX for formalities.

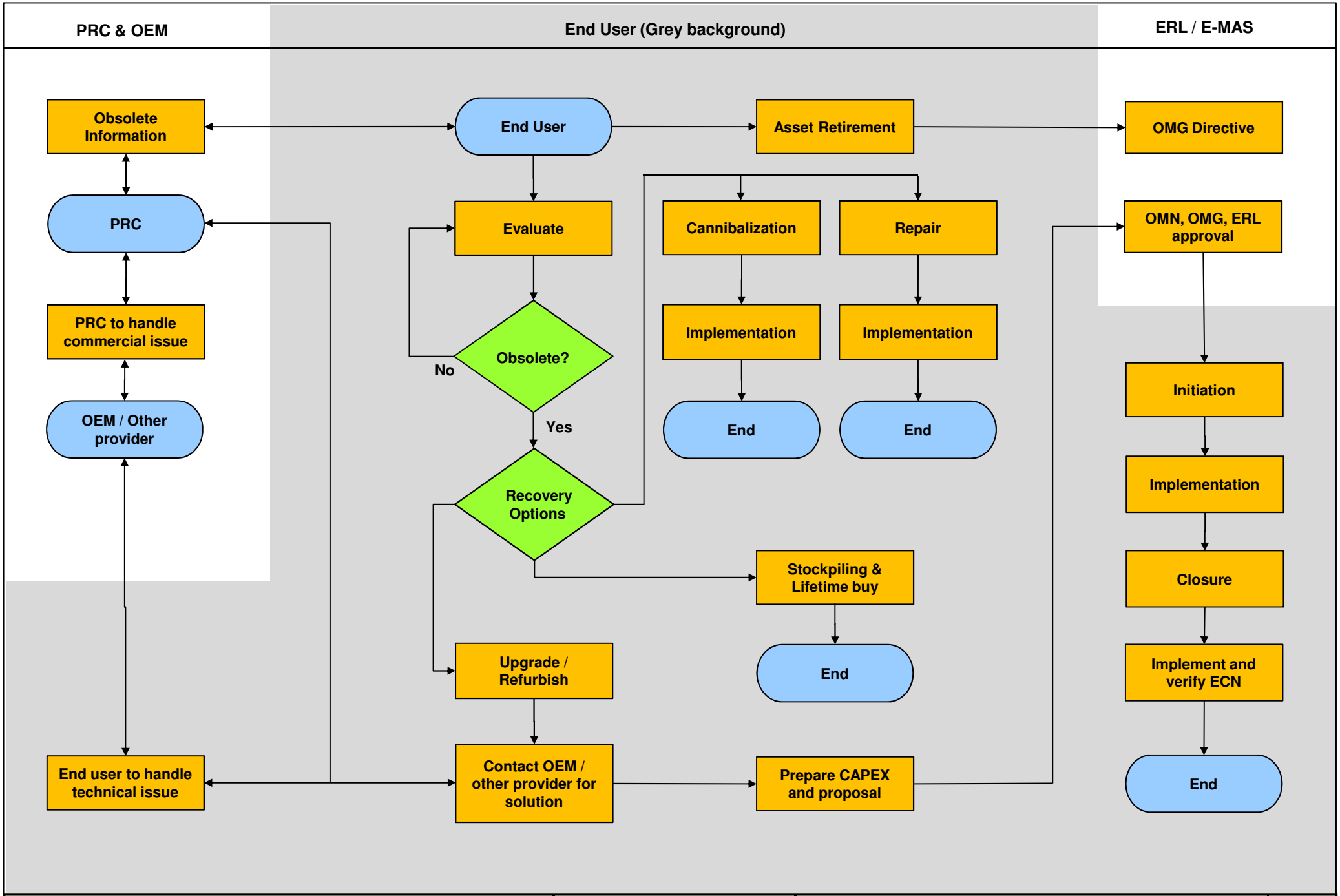
8 Asset Retirement

Any asset retirement shall seek approval from CEO.

9 Appendices and References

Appendices:

1) Obsolescence Management IEC-62402:2007 [Ref. No.: G00.OMD.M10000.CZ.1001.*]
2) Obsolescence Recovery Process Flow Chart [Ref. No.: G00.OMD.M12000.WO.1001.*]
3) Monitoring and record keeping list :-
   a. Electrification (ELT) [Ref. No.: G00.OME.M12000.WO.1001.*]
   b. Infrastructure (INF) [Ref. No.: G00.OMI.M12000.WO.1001.*]
   c. Project and Engineering (PNE) [Ref. No.: G00.OMD.M12000.WO.1003.*]
   d. Rolling Stock (RST) [Ref. No.: G00.OMR.M12000.WO.1001.*]
   e. Signaling (SIG) [Ref. No.: G00.OMW.M12000.WO.1001.*]



Obsolescence Recovery Process Flow Chart Doc. Ref. No.: G00.OMD.M12000.WO.1001.A Date: 24 April 2019	**Project and Engineering**	This document is linked to Obsolescence Management Procedure [Ref. No.: G00.OMD.M12000.WO.1002.*]	Page 1 of 1