Metrolinx
Maintenance Procedure: Product Description

MX-SEA-PD-143

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Date: May 2023

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Amendment Record

Revision	Date (DD/MM/YYYY)	Description of changes

Preface

This is the first edition of the Metrolinx Maintenance Procedure Product Description (MX-SEA-PD-143). It forms part of a suite of guidance documents that describe the procedures to be followed to comply with Metrolinx's Reliability, Availability, Maintainability and Safety (RAMS) requirements.

The purpose of this document is to describe the documentation of procedures required for the maintenance of the railway system after the proposed change has been implemented. Project proponents may need to apply the process when they are undertaking a technical change to the railway system or modifying a maintenance regime or undertaking an operational change to the railway system.

Suggestions for revision or improvements can be sent to the Metrolinx Systems Engineering Assurance office at Engineering.Assurance@metrolinx.com. The Director of the Systems Engineering Assurance office authorizes the changes. Include a description of the proposed change, background of the application and any other useful rationale or justification. Be sure to include your name, company affiliation (if applicable), e-mail address, and phone number.

May 2023

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Documents

Table 1 Supporting Documents

Document Number	Document Title	Relation
BS EN 50126-1:2017	Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) – Part 1: Generic RAMS Process	Parent Standard
BS EN 50126-2:2017	Railway Applications – The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) – Part 2: Systems Approach to Safety	Parent Standard
MX-SEA-STD-100	RAMS Process Standard	Related Standard
MX-SEA-GDC-143	Maintenance Procedure Guidance	Guidance
MX-SEA-TPL-143	Maintenance Procedure Template	Template
MX-SEA-PD-128	Maintenance Plan Product Description	Product Description
MXSD-SSA-L1-STD-0001	Railway Risk Assessment Standard	Supporting Standard
ISO 9001:2015	Quality management systems – Requirements	Supporting Standard
MX-SEA-TOR-001	Metrolinx System Review Panel (SRP) Terms of Reference (ToR)	Review Panel ToR
April 5, 2023	Metrolinx Safety Certification Committee (SSC) Terms of Reference (ToR)	Certification Committee ToR

Acronyms and Abbreviations

Table 2 Acronyms and Abbreviations

Acronym	**Full Name**
CTO	Consent To Operate
FRACAS	Failure Reporting Analysis and Corrective Action System
ISA	Independent Safety Assessor
PDD	Process Description Document
PFD	Process Flow Diagram
RACI	Responsible, Accountable, Consulted and Informed
RAM	Reliability, Availability and Maintainability
RAMS	Reliability Availability Maintainability and Safety
SCC	Safety Certification Committee
SPRC	Safety Performance Review Committee
SRAC	Safety-Related Application Condition
SRP	System Review Panel
ToR	Terms of Reference

Definitions

Table 3 Definitions

Term	Definition	Source
Asset Owner	Groups and individuals that are responsible for asset ownership, asset maintenance, inventory management, document control, asset handover and reliability engineering	MX-ALM-STD-001
Availability	Ability of an item to be in a state to perform a required function under given conditions at a given instant of time or over a given time interval, assuming that the required external resources are provided.	BS EN 50126:2017
Maintainability	Ability to be retained in, or restored to, a state to perform as required, under given conditions of use and maintenance.	BS EN 50126:2017
Project Company	The private sector entity which enters into the Project Agreement with Infrastructure Ontario and Lands Corporation and Metrolinx to design, build and where applicable, finance, operate or maintain a Project. The special-purpose entity which has entered into a Project Agreement with the Contracting Authority.	CKH-QMA-FRM-003
Project Management	Appointed by Metrolinx as its representative and is responsible for the delivery of the Project within the prescribed Schedule and budget. Metrolinx employees fulfilling the role of the Project Manager may also be considered the Cost Centre Manager, if this person is also delegated signing authority in accordance with the Metrolinx Corporate Administrative Manual, Administrative Management, Approval Authorization Controls and Designations. It is noted that non-Metrolinx employees fulfilling the role of the Project Manager are not considered Cost Centre Managers. In such cases refer to	CKH-QMA-FRM-003

	approved Project Chart of Accounts for the Program for the designated Cost Centre Manager.	
Reliability	Ability to perform as required, without failure, for a given time interval, under given conditions.	BS EN 50126:2017
Safety	Freedom from unacceptable risk that related to human health or to the environment	BS EN 50126:2017
Safety Related Application Condition	Those conditions which need to be met in order for a system to be safely integrated and safely operated	BS EN 50126:2017
Subsystem	Part of a system, which is itself a system	BS EN 50126:2017
System	Set of interrelated elements considered in a defined context as a whole and separated from their environment	BS EN 50126:2017

1 Maintenance Procedure

1.1 Purpose

1.1.1 The Maintenance Procedure defines the procedures that are required for the maintenance of the railway system after the proposed change has been implemented.

1.1.2 The procedures shall include all the relevant information required to maintain the railway system safely and reliably and enable compliance with RAMS requirements to be maintained during the operation of the railway system with the proposed change implemented.

1.1.3 The procedures for maintenance shall consider any Safety-Related Application Conditions (SRACs) identified during the course of project development.

1.2 Applicability

1.2.1 This product is mandatory for any project that undertakes a technical change to the railway system (i.e. introduction of a new subsystem, renewal of an existing subsystem, a modification to an existing subsystem, or introduction of a new or modified maintenance regime) or undertakes an operational change to the railway system.

1.2.2 This product is not applicable for established routine maintenance activities including like-for-like replacement of components.

1.2.3 This product is considered good practice when developing or modifying any complex system.

1.3 Supporting Material

1.3.1 The Maintenance Procedure Template is located in MX-SEA-TPL-143.

1.3.2 Guidance on completing the Maintenance Procedure is located in MX-SEA-GDC-143.

1.4 Products

1.4.1 The Maintenance Procedure is a product of the System Assurance process. Guidance on this process is available via MX-SEA-STD-100.

1.5 Key Responsibilities

1.5.1 The Project Company is responsible for the production of the Maintenance Procedure. Preparation of the Maintenance Procedure may be delegated, however the Project Company is responsible for its content and quality.

1.5.2 The Project Company is the organization responsible for the design at the time of development.

1.5.3 The Project Management may be performed by Metrolinx or may be contracted, for example in a Design/Build, whereby Metrolinx Project Management would ensure contract

provisions for Maintenance Procedure are met and would not develop the Maintenance Procedure.

1.5.4 Some of the Asset Owner obligations and responsibilities may be transferred through contracting. The Metrolinx Asset Owner would participate in endorsing the Maintenance Procedure whereas a contracted party would develop the Maintenance Procedure as directed by the Project Management.

1.5.5 The System Review Panel (SRP) has delegated authority from the Safety Certification Committee (SCC) and is responsible for endorsing the Maintenance Procedure. The System Review Panel ensures that the Maintenance Procedure is compliant with the project requirements, applicable legislation, national, industry, and Metrolinx standards. The SRP may also identify uncertainties, issues, and assumptions that may arise as the project progresses that should be addressed.

1.5.6 The full Responsible, Accountable, Consulted, and Informed (RACI) information that sets out the interaction between all stakeholders involved in the production and endorsement of the Maintenance Procedure is available in MX-SEA-STD-100.

1.6 Competence

1.6.1 All personnel responsible for the Maintenance Procedure shall have knowledge of safety management and railway maintenance. Additional support may be needed from personnel with expertise of maintenance in the area of the project.

1.7 Structure

1.7.1 The Structure of the Maintenance Procedure should have the following section titles:

a) Introduction;

b) Project Scope;

c) Roles and Responsibilities;

d) Competence Required;

e) Schedule of Maintenance Activities;

f) Procedures for Maintenance Activities; and

g) Safety Precautions (if any).

1.8 Contents

1.8.1 The contents of the Maintenance Procedure shall contain the following:

a) the impact of the project;

b) description of the system;

c) the resources required for maintenance;

d) the schedule of maintenance activities;

e) the procedure to maintain the system safely and reliably after the change implemented by the project company; and

f) consideration for any Safety-related Application Conditions (SRACs) and any needed instructions on temporary and/or permanent conditions.

1.8.2 Any update to the Maintenance Procedure shall include the status of the implementation at the different Phase(s).

1.9 Quality Criteria

1.9.1 The Maintenance Procedure shall have sufficient detail for the audience to understand the changes to maintenance required by the project and the procedure for implementing those changes at the correct stage. It shall set a clear procedure for all actors responsible for maintenance activities.

1.9.2 The quality management system used shall conform to ISO 9001:2015 rules or equivalent rules accepted by the Metrolinx Project Delivery Team and be appropriate for the system under consideration.

1.10 Document Management

1.10.1 The Maintenance Procedure is produced at Phase 6 (Design) and reviewed through Phase 10 (Acceptance).

1.10.2 The Maintenance Procedure is a requirement for the Consent to Operate (CTO) gate.

1.10.3 Table 5 provides an overview of the Maintenance Procedure document phases.

Document	Phase
Maintenance Procedure	6- Design – 10 - Acceptance

TABLE 4: DOCUMENT PHASES