

LAKE MANITOBA LAKE ST. MARTIN

OUTLET CHANNELS PROJECT

MANITOBA TRANSPORTATION AND
INFRASTRUCTURE

Environmental Management Program Framework

June 30, 2022

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DISCLAIMER

This document was developed to support the Environmental Management Program (EMP) for the Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project). It has been prepared by Manitoba Transportation and Infrastructure as a way to share information and facilitate discussions with Indigenous rights-holders, stakeholders, and the public. It has been prepared using existing environmental and engineering information and professional judgement, as well as information from previous and ongoing public and Indigenous engagement and consultation. The contents of this document are based on conditions and information existing at the time the document was prepared and do not take into account any subsequent changes. The information, data, recommendations, and conclusions in this report are subject to change as the information has been presented as draft. This draft plan should be read as a whole, in consideration of the entire EMP, and sections or parts should not be read out of context.

Revisions to draft plans have been informed by and will be based on information received from the engagement and consultation process, the Environmental Assessment (EA) process, Project planning activities, and on conditions of provincial and federal environmental regulatory approvals received for the Project. As these will be living documents, any changes to the plans that occur after Project approvals are received will be shared with regulators, Indigenous rights-holders, and stakeholders prior to implementation of the change. Either a revision number or subsequent amendment would be added to the specific environmental management plan to communicate the revision or change.

PREFACE

The Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project (the Project) is proposed as a permanent flood control mitigation for Lake Manitoba and Lake St. Martin to alleviate flooding in the Lake St. Martin region of Manitoba. It will involve the construction and operation of two new diversion channels: the Lake Manitoba Outlet Channel (LMOC) will connect Lake Manitoba to Lake St. Martin and the Lake St. Martin Outlet Channel (LSMOC) will connect Lake St. Martin to Lake Winnipeg. Associated with these outlet channels are the development of bridges, control structures with power connections, a new realignment of Provincial Road (PR) 239, and other ancillary infrastructure.

Manitoba Transportation and Infrastructure is the proponent for the proposed Project. After receipt of the required regulatory approvals, Manitoba Transportation and Infrastructure will develop, manage, and operate the Project. This Environmental Management Program (EMP) framework describes the environmental management processes that will be followed during the construction and operation phases of the Project. The intent of the EMP is to facilitate the timely and effective implementation of the environmental protection measures committed to in the Project Environmental Impact Statement (EIS), the requirements and conditions of the provincial licence issued under *The Environment Act*, the federal Decision Statement issued under the *Canadian Environmental Act 2012*, and other approvals received for the Project. This includes the verification that environmental commitments are implemented, monitored, evaluated for effectiveness, and adjustments made if/as required. It includes a commitment that information is reported back in a timely manner for adjustment, if required.

A key component for the success of the EMP is environmental monitoring, such that environmental management measures are inspected and modified for compliance with environmental and regulatory requirements, including those set out in provincial and federal approvals received for the Project. As indicated, monitoring results will be reviewed and used to verify predicted environmental assessment conclusions and effectiveness of mitigation measures. If unanticipated effects occur, or if mitigation measures are inadequate, adaptive management measures and subsequent monitoring will be applied as described further in individual environmental management and monitoring plans.

Monitoring results and application of adaptive management measures will inform follow-up reporting to regulators and any required revisions to environmental management plans. Manitoba Transportation and Infrastructure has initiated discussions with rights-holders and the Rural Municipality (RM) of Grahamdale in the Project area on the establishment of an Environmental Advisory Committee (EAC). The EAC would be a platform for sharing monitoring results and discussing issues of concern. In addition, Manitoba Transportation and Infrastructure anticipates that the EAC will coordinate Indigenous Environmental Monitors and communications during the construction period and will be working with rights-holders and stakeholders on its structure and purpose.

Manitoba Transportation and Infrastructure remains committed to consultation and ongoing engagement with Indigenous rights-holders and stakeholders that are potentially impacted by the Project. Detailed EMP review discussions were incorporated into Indigenous group-specific consultation work plans. Engagement opportunities included virtual open house events, sharing draft environmental management, and monitoring plans, sharing plan-specific questionnaires, and meetings to discuss related questions and recommendations.

The intent has been to offer multiple avenues to share information about the Project so that rights-holders and stakeholders would be informed and could provide meaningful input into Project planning. The original draft EMP plans and questionnaires that were posted on the Project website for public review and comment are being replaced by the second draft of each plan as it becomes available. Feedback and recommendations received were used to update the current version of the draft plans, which are posted to the Project website at: <https://www.gov.mb.ca/mit/wms/lmblsmoutlets/environmental/index.html>.

Figure A displays a summary of the EMP process. The EMP provides the overarching framework for the Project Construction Environmental Management Program (CEMP) and the Operation Environmental Management Program (OEMP). These will be updated prior to Project construction and operation, respectively, and will consider applicable conditions of *The Environmental Act* provincial licence, *Canadian Environmental Assessment Act 2012* federal Decision Statement conditions and other approvals, any other pertinent findings through the design and regulatory review processes, and key relevant outcomes of the ongoing Indigenous consultation and public engagement processes. Until such time, these plans will remain in draft form.

The purpose of the CEMP and OEMP is to guide how environmental issues will be addressed during construction and operation, respectively, and how adverse effects of activities will be mitigated. The CEMP is supported by several specific or targeted management plans that will guide Manitoba Transportation and Infrastructure's development of the Project's contract documents and subsequently, the Contractor(s) activities, in an environmentally responsible manner and to meet regulatory compliance in constructing the Project. The OEMP will include some of the same targeted plans developed to manage issues during construction, but prior to construction completion, they would be revised and adapted to suit the specific needs during the operation phase

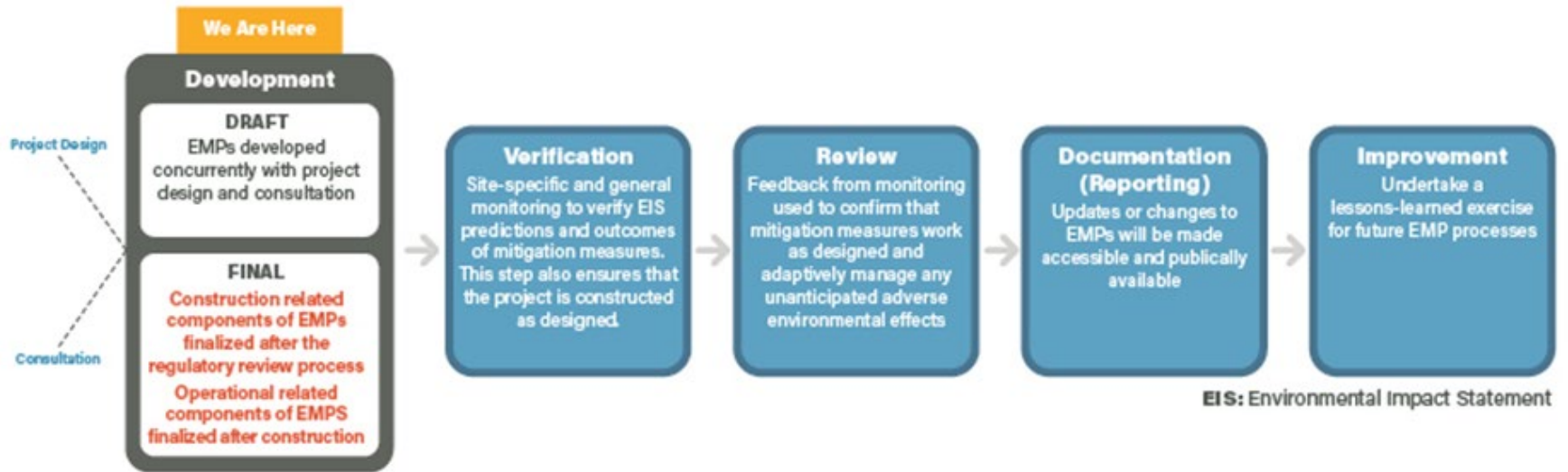


Figure A: EMP Process

LIST OF ACRONYMS AND GLOSSARY OF TERMS

Acronyms

AgBMP	Agricultural Biosecurity Management Plan
AMP	Access Management Plan
CEMP	Construction Environmental Management Program
cfs	cubic feet per second
EIS	Environmental Impact Statement
EMP	Environmental Management Program
EPP	Environmental Protection Plan
ft	feet
GWMP	Groundwater Management Plan
HRPP	Heritage Resources Protection Plan
IMP	Ice Management Plan
km	kilometre
kV	kilovolt
kW	kilowatt
LMOC	Lake Manitoba Outlet Channel
LSMOC	Lake St. Martin Outlet Channel
m	metre
m ³ /s	cubic metres per second
MECP	Manitoba Conservation and Climate
OEMP	Operation Environmental Management Program
PERs	Project Environmental Requirements
PR	Provincial Road
QMP	Quarry Management Plan
the Project	Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project
RM	Rural Municipality

ROW	right-of-way
RVMP	Revegetation Management Plan
SMP	Sediment Management Plan
SWMP	Surface Water Management Plan
WCS	water control structure
WetMP	Wetland Monitoring Plan
WMP	Wildlife Monitoring Plan

Glossary of Terms

Aquifer: A body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs.

Baseline: Initial environmental conditions, prior to construction or anthropogenic actions.

Bed load: The part of the sediment in a water body that moves by rolling or sliding along the bottom.

Contractor: refers to the individuals, entities or groups contracted by Manitoba Transportation and Infrastructure to undertake specific Project construction, operation, or maintenance activities, and includes all subcontractors and affiliates.

Contract Administrator: refers to the individuals, entities or groups delegated by Manitoba Transportation and Infrastructure to provide professional Engineering and Consulting Services for the Permanent Outlet Channels Project. This includes oversight of construction and maintenance contracts and operations; review of contractor submittals, plans and proposals for compliance with Project commitments and restrictions and making recommendation for acceptance or rejection of such plans by the Owner; and monitoring, inspecting, documenting, and enforcing compliance with contractual and regulatory requirements.

Conservation concern: Species that are either federally or provincially tracked by the *Species at Risk Act* Committee on the Status of Endangered Wildlife Species in Canada, or the Manitoba Conservation Data Centre and are considered rare or at risk of extinction are species of conservation concern.

Depressurization: Action of decreasing hydrostatic pressure. Active depressurization involves the use of pumps. Passive depressurization does not involve the use of pumps, but rather uses a relation between hydrostatic pressure elevation and topographic elevation.

Detailed Design: The project phase where structural engineering design principles and applicable design codes are utilized to produce a structural design complete with Drawings and tender documents in sufficient detail to construct the specific structure/rehabilitation identified as the preferred alternative from the preliminary design phase. While detailed design is primarily structural in nature, it may also include the development of the hydraulic, hydrotechnical, geotechnical, environmental and traffic control aspects of the project to support the structural design of the bridge or structure.

Dewatering: Removal or draining groundwater or surface water from a riverbed, construction site, caisson, or mine shaft, by pumping or evaporation.

Discharge: Rate of outflow; volume of water flowing down a river, from a lake outlet, or man-made structure.

Environmental Monitor: refers to the individuals, groups or designated representatives engaged by Manitoba Transportation and Infrastructure to monitor, inspect, and document compliance with contractual and regulatory requirements associated with the construction activities and associated works for the Project. The monitor may also be an active member (or representative) of the Project's Environmental Advisory Committee.

Groundwater: Water that occurs beneath the land surface and fills the pore spaces of soil or rock below saturated zone.

Groundwater quality: Refers to the chemical composition of groundwater and its suitability for various uses and also varies widely depending upon the local geologic setting, hydrogeological conditions, and past/current land use practices that may contribute anthropogenic effects.

Hydrogeology: The study of the interrelationships of geologic materials and processes with water, especially groundwater.

Preliminary Design: An engineering process undertaken at the pre-structural design phase. For structures, preliminary design includes some or all of the following: collection of survey information, preliminary foundation report (including soils investigation), hydrological analysis, hydraulic analysis and design, hydrogeological investigation, historical ice thickness and ice levels, condition assessment, geometric design, traffic forecasting, hazard protection, site location, environmental determinations, consideration of traffic accommodation, identification of constructability issues and possible construction staging, development of alternatives for advancement to structural design, life cycle cost analysis of alternatives, evaluation and selection of the preferred replacement structure/rehabilitation work. Preliminary design typically supports environmental submissions that satisfy environmental and/or regulatory requirements, as well as environmental applications. In addition, during preliminary design, all major stakeholders are consulted, and their issues addressed to the extent possible.

Private quarry permit: Refers to a permit for private aggregate or quarry operations in Manitoba.

The Owner: refers to Manitoba Transportation and Infrastructure or a designated representative delegated by Manitoba Transportation and Infrastructure with overall responsibility for, and oversight of, Project design, construction, and operation.

Quarry: An open excavation or pit from which stone, gravel or sand is obtained by digging, cutting, or blasting.

Rights-holders: include First Nations, Metis Communities and other Indigenous communities who hold Aboriginal or Treaty rights that are protected under Section 35 of the *Constitution Act 1982*. Commonly, these include hunting, trapping, fishing, or gathering rights.

Runoff: Surface water that flows overland and into streams, wetlands, or waterbodies, or into drainage systems.

Wetland: Refers to:

- (a) a marsh, bog, fen, swamp or ponded shallow water, and
- (b) low areas of wet or water-logged soils that are periodically inundated by standing water and that are able to support aquatic vegetation and biological activities adapted to the wet environment in normal conditions.

1.0 INTRODUCTION

1.1 Project Overview

The Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project (the Project) is proposed as a permanent flood control management system for Lake Manitoba and Lake St. Martin to alleviate flooding in the Lake St. Martin region of Manitoba. It will involve the construction of two new diversion channels: the Lake Manitoba Outlet Channel (LMOC) will connect Lake Manitoba to Lake St. Martin and the Lake St. Martin Outlet Channel (LSMOC) will connect Lake St. Martin to Lake Winnipeg. The presence of the new channels will facilitate better management and control of the water levels on these lakes by working concurrently with the existing Fairford River Water Control Structure in conveying water from Lake Manitoba, through Lake St. Martin to Lake Winnipeg in a manner that reduces or completely avoids overland inundation during high water events such as the 2011 and 2014 floods.

Associated Works of the Project include rock quarries and borrow areas, work camps, staging areas, fuel and waste storage, explosives storage, temporary access routes and realignment of existing drainage, as well as an electrical power distribution line that will be constructed and operated by Manitoba Hydro.

The Project is organized into three phases: site preparation and construction; operation and maintenance; and decommissioning and abandonment.

- **Site Preparation and Construction** – Site preparation for the Project will require vegetation clearing and grubbing of the final alignment right-of-way and excavating the channel to designed depths. In addition to constructing the above list of components, the construction phase for the Project includes preparation of equipment marshalling areas, construction camps and staging areas as well as transporting equipment, machinery, vehicles, construction materials and supplies to the Project construction and staging areas. Construction is currently anticipated to occur over a three to five-year period (Appendix 1) and is contingent on receiving the necessary environmental licenses and approvals. Temporary facilities and work areas, including quarries, laydown areas and construction camps, which will not be needed for future maintenance activities will be decommissioned and reclaimed at the end of the construction phase.
- **Operation and Maintenance** – This phase includes the periods when the control structures are managing flood and non-flood conditions, as well as any required maintenance. The LMOC and LSMOC will be operated by adjusting the gates on the respective water control structures, in response to monitoring and flood forecasting according to the operating guidelines. Operations and maintenance will adhere to Canadian Dam Safety Guidelines. A Project-specific Operation and Maintenance Manual will be developed for the Project structures to detail maintenance needs for the Project during the operation and maintenance phase. This manual will be initiated once the detailed design is completed and prior to commissioning the channels.
- **Decommissioning and Abandonment** – There are no plans to decommission or abandon the proposed Project, as it will provide flood relief to communities and landowners in the Lake Manitoba and Lake St. Martin areas in perpetuity. Should portions of the Project require decommissioning in the future, these activities will be undertaken in accordance with applicable guidelines and regulations at that time.

1.1.1 Lake Manitoba Outlet Channel

The LMOC consists of an approximately 24 kilometre (km) long outlet channel, with the inlet positioned at Watchorn Bay on Lake Manitoba and the outlet on the west side of Birch Bay on Lake St. Martin, as shown in Figure 1. The LMOC will provide a 212 cubic metres per second (m³/s) (7,500 cubic feet per second [cfs]) increase in the flow capacity out of Lake Manitoba when its water level reaches el. 248.11 metres (m) (814 feet[ft]), and the south basin of Lake St. Martin is at el. 244.14 m (801 ft).



Figure 1: LMOC Project Area

The proposed channel will have an invert elevation of about 242.1 m at Watchorn Bay and about 239.3 m at Birch Bay. The channel will have a trapezoidal shape with a flat base varying in width from 12 m to 22 m and side slopes varying between 4H:1V to 5H:1V. Embankment dikes will be constructed on both sides of the channel in areas where existing ground levels are low and will also be used to gain access to the channel for maintenance. Spoil berms will be located behind the dikes on either side of the channel. An outside drain will be constructed and located on the west side of the channel to collect surface water runoff originating from the west and convey it into Lake Manitoba and Lake St. Martin. A long-term passive depressurization system will be incorporated into the channel to control upward aquifer pressure and maintain geotechnical integrity. A typical cross section of the channel is provided in Figure 2.

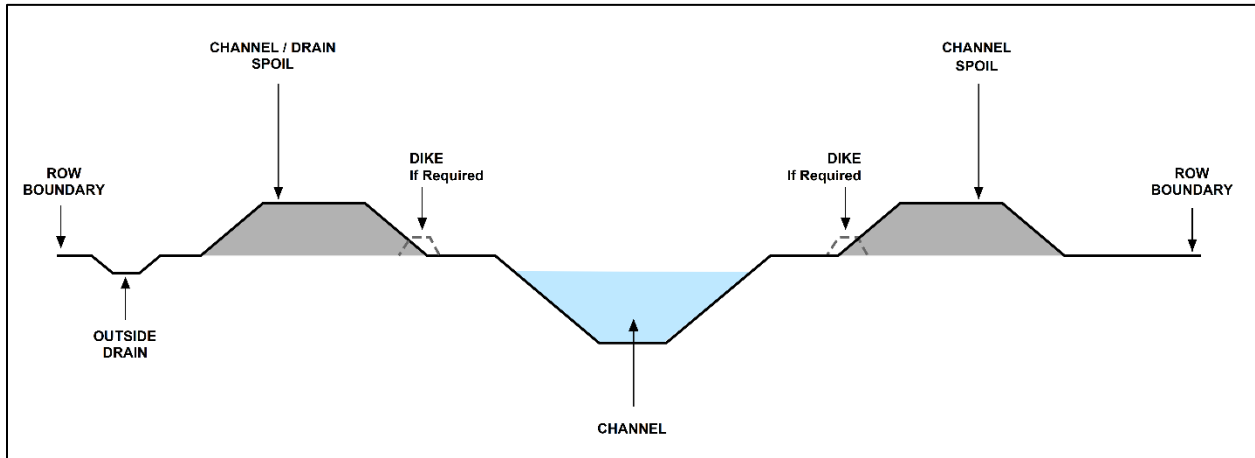


Figure 2: Typical Cross-Section of the Lake Manitoba Outlet Channel

Inlet and outlet works will be required to allow for a smooth transition of flow from Watchorn Bay into the channel and from the channel into Birch Bay. The hydraulic profile of the channel will require the lake bottom to be excavated at the channel inlet and outlet to match the proposed channel invert elevations. The excavations will be flared out and sloped upwards over a short distance out from the shoreline to meet natural lakebed elevations.

A water control structure (WCS) will be constructed at Iverson Road (approximately 21 km downstream of the inlet) to control flows through the LMOC while ensuring that the water level on Lake Manitoba water levels remains within its normal operating range when use of the channel is not required. A bridge will be integrated into the WCS to provide access across the channel. The WCS will consist of three 5.4 m wide sluice bays with vertical lift gates, upstream and downstream stoplogs, and a stilling basin with chute blocks, baffle blocks and an end sill. A gated valve will be provided in the vertical lift gates of the WCS to allow a riparian flow to be provided in the channel so as to maintain dissolved oxygen levels, if required. An ancillary building providing an enclosed space will also be constructed in proximity to the WCS to house the mechanical and electrical systems.

Permanent electrical service is required for power at the WCS to electrically raise and lower the gates, as well as to heat the gates to maintain winter operation capability. To provide this, Manitoba Hydro will upgrade an existing distribution line along Iverson Road and connect it to a pad-mount transformer that will be installed near the WCS ancillary building. A diesel genset will also be installed as an emergency backup power source at the WCS site.

The LMOC will intersect provincial highways and municipal roads. Realignment of Provincial Road (PR) 239 is required in order to accommodate the LMOC while still allowing for safe, economically feasible, and hydraulically efficient structures across the channel. Various sections of municipal road will also be realigned or extended for the purposes of maintaining residential access and agricultural activities.

A total of four new bridges are planned to span the LMOC, of which one will be combined with the WCS as described above. The other three will be dedicated multi-span bridges, constructed to maintain connectivity along the Township Line Road, realigned PR 239 (currently Carne Ridge Road) and Provincial Trunk Highway (PTH) 6.

The LMOC is designed to be operated under both open water and ice-covered conditions. The hydraulic profile for the LMOC is shown on Figure 3 for the normal operating range of the lakes (when the WCS gates are closed), as well as for the conveyance condition of 212 m³/s (7,500 cfs) in the channel with Lake Manitoba at el. 248.11 m (814 ft) and the south basin of Lake St. Martin at el. 244.14 m (801 ft). Average velocities in the LMOC are expected to range between approximately 0.8 m/s and 1.0 m/s during passage of this conveyance condition, with locally higher velocities occurring in the vicinity of the bridges and the WCS.

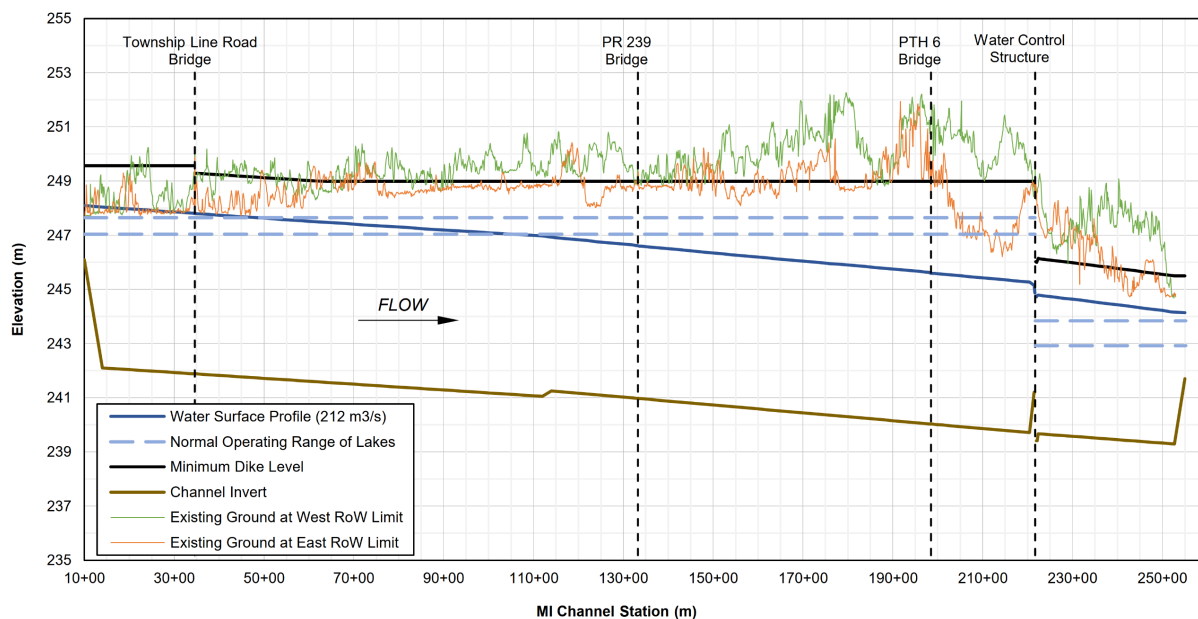


Figure 3: LMOC Water Surface Profile

1.1.2 Lake St. Martin Outlet Channel

The LSMOC Project consists of an approximately 23 km long outlet channel, with the inlet positioned at the northeast end of Lake St. Martin and the outlet south of Willow Point on Sturgeon Bay of Lake Winnipeg, as shown in Figure 4. Lake St. Martin consists of two basins (south and north basins) connected by a series of flow constrictions known as the Narrows. The LSMOC will provide 326 m³/s (11,500 cfs) of additional outflow capacity from Lake St. Martin when the north basin water level is El. 243.18 m (797.8 ft), and the south basin water level is El. 244.14 m (801 ft).

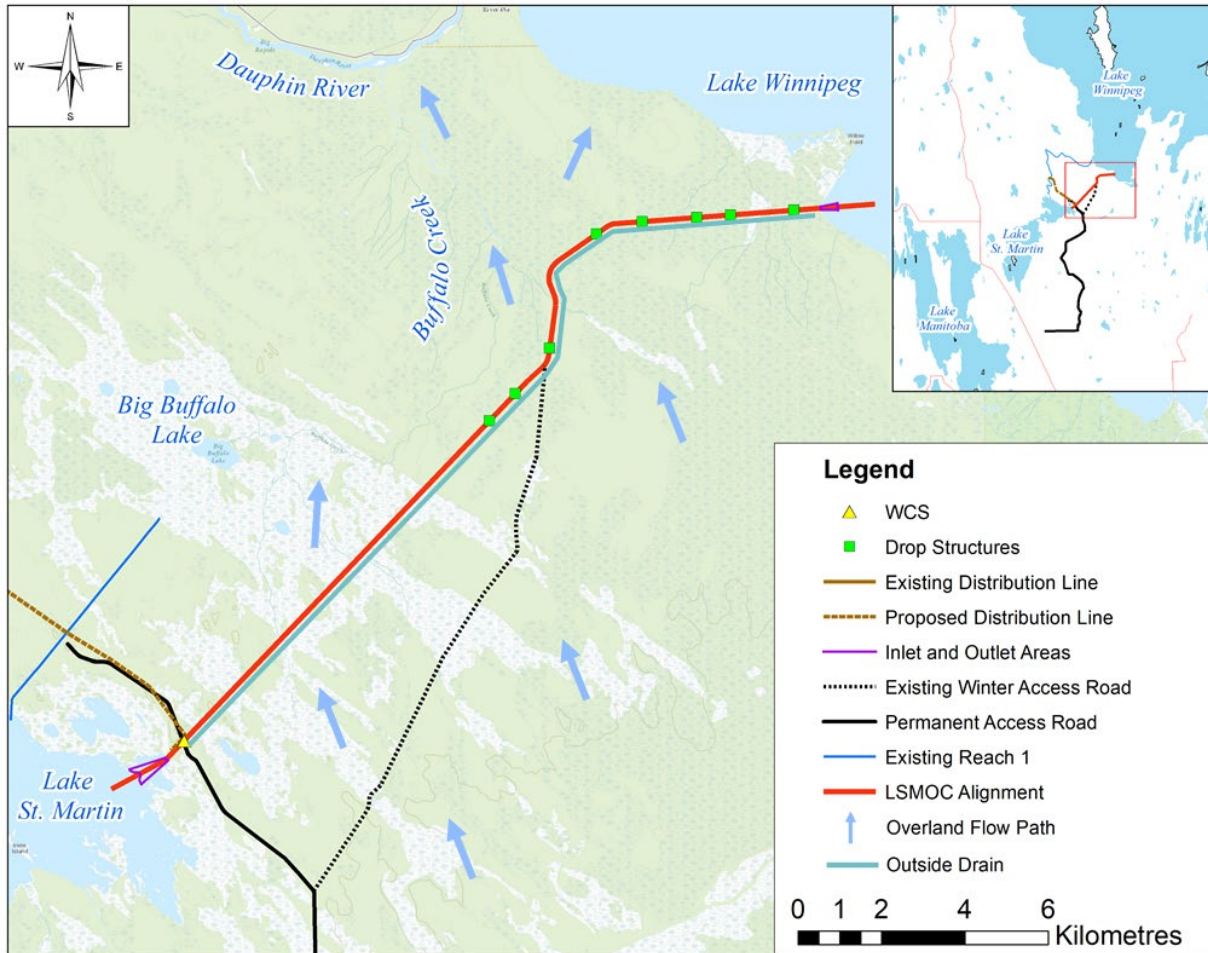


Figure 4: LSMOC Project Area

The proposed channel will have an invert elevation of approximately 240 m at the shoreline of Lake St. Martin and 215 m at the shoreline of Lake Winnipeg. The channel will have a trapezoidal cross-sectional geometry with a base width that varies from approximately 35 m to 59 m over its length. The invert slope will range from 0.021% to 0.04%. The side slopes of 5H:1V will include a bench located partway up the slope to enhance slope stability. Permanent water retaining dikes will be located on both sides of the excavated channel to contain design flows within the LSMOC and also to isolate the surface water and the upper saturated peat system from the excavated channel. To control erosion, the base and lower side slopes of the LSMOC will be armoured, while the upper side slopes will be revegetated. The channel armoring will comprise crushed limestone rock (screened to remove fines) with a median diameter of 50 mm. Spoil piles for the excavated material will be located outside of the channel dikes. Access for long term maintenance and inspection will be available via maintenance roads on top of the dikes/spoil piles on both sides of the LSMOC for the entire 23 km length. An outside drain will be constructed on the east side of the Project to intercept the surface water runoff flowing towards the LSMOC. A typical cross section for the LSMOC is provided in Figure 5.

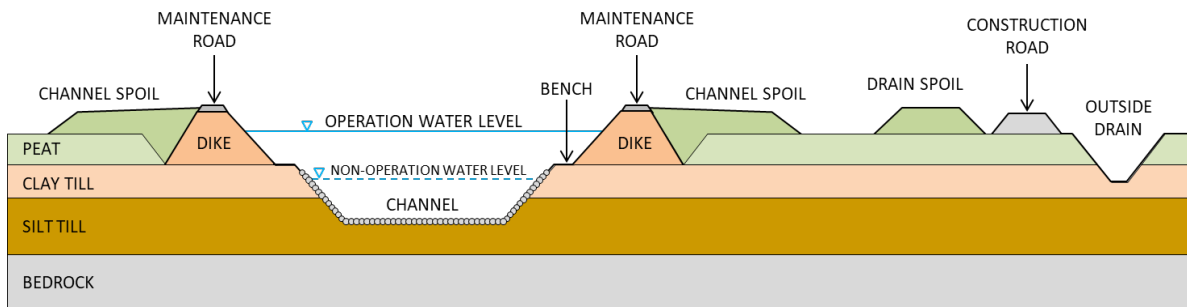


Figure 5: Typical Cross Section of the Lake St. Martin Outlet Channel

The profile of the channel will require areas of the lake bottoms to be excavated at the channel inlet and outlet to transition to the proposed channel invert elevations at the shoreline. The excavation width will flare out and the invert elevation will slope upwards from the shoreline to meet natural lakebed elevations. At the inlet, the excavation will extend approximately 1200 m from the shoreline. Since the inlet is located in a low wave energy environment within the north basin of Lake St. Martin, rockfill jetties are not required as part of the inlet works.

At the outlet, the excavation will extend approximately 200 m from the shoreline. Rock jetties will be situated along both sides of the excavation footprint over the first 100 m distance to reduce the potential for debris accumulation and sediment deposition within the excavation limits from littoral drift during non-operation of the channel. The length of the jetties was selected to limit sedimentation within the deepest portion of the outlet when the LSMOC is not in operation, while also limiting the length of the structures to minimize its footprint and cost.

A WCS is required to control flows through the LSMOC and water levels in Lake St. Martin. The structure will be constructed approximately 0.6 km inland from the Lake St. Martin shoreline. The WCS will also act as a bridge to provide access to both sides of the channel. The WCS will be a concrete structure with four bays, each 6 m wide. Two bays will have lower crests at El. 236.8 m, and two bays will have higher crests at El. 240.5 m. Heated vertical lift gates will be raised and lowered to control flow in the LSMOC. Each bay will include guides and sill beams for upstream and downstream stoplogs. Valved conduits through the WCS gates will provide a baseflow of 1.4 m³/s to the LSMOC during periods of non-operation (i.e., WCS gates closed) to maintain appropriate water quality conditions (dissolved oxygen levels) in the channel. An ancillary building providing an enclosed space will also be constructed in proximity to the WCS to house the mechanical and electrical systems. It is currently planned that the structure will be capable of being remotely operated and will require permanent communication services.

Permanent electrical service is required for power at the WCS to electrically raise and lower the gates, as well as to heat an appropriate number of gates to maintain winter operation capability. The permanent power loads of the WCS are estimated between 450 to 550 kilowatts (kW). A 15 km long 24 kilovolt (kV) overhead distribution line is proposed to service the control structure. The distribution line will extend from an existing 24 kV line which runs along PR 513 to a 600 V pad-mount transformer at the water control structure location. A 250 kVA (600 V, 3P) diesel genset along with local controller will be installed as an emergency backup source at site. The distribution line alignment will require a 30 m wide Right of Way (ROW).

Eight drop structures are located along the LSMOC to control water velocities and shear stresses to permissible levels to prevent erosion within the channel. The drop structures will be constructed of rockfill, with a sheet pile cut-off wall at the crest. When the WCS gates are closed, the sheet pile walls at the drop structures will maintain a minimum water depth of 1 m (above the invert) everywhere in the channel to minimize the growth of aquatic vegetation. The water surface profile when the WCS gates are closed and open is shown in Figure 6. Near the drop structures, the minimum water depth during non-operation will be at least 2 m to maintain a pool of water below the surface ice cover during the winter, to minimize potential impacts to aquatic habitat (fish).

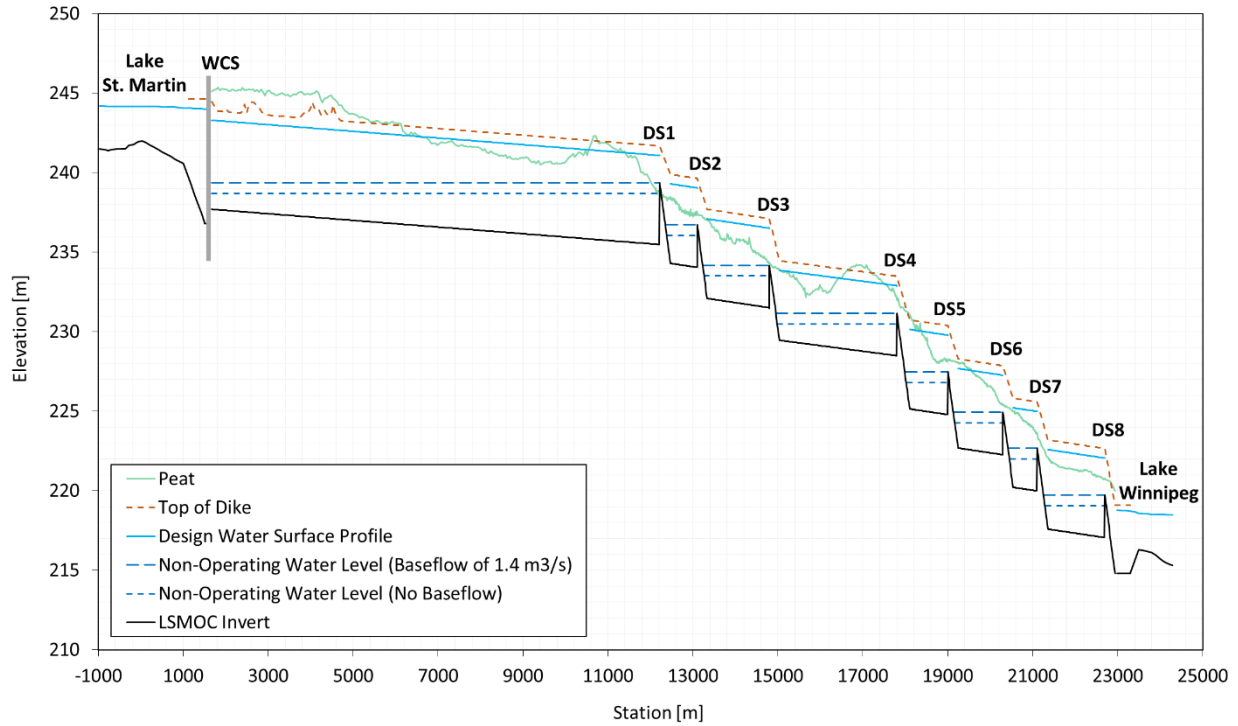


Figure 6: Hydraulic Profile of the LSMOC

1.2 Regulatory Framework

Manitoba Transportation and Infrastructure is the proponent for the proposed Project and after the receipt of the required regulatory approvals (Appendix 2), they will develop, manage and operate the Project. An Environmental Impact Statement (EIS) was prepared to meet the requirements of *The Environment Act* (Manitoba), and the *Canadian Environmental Assessment Act, 2012*. The Project is a 'Class 3' development under the Classes of Development Regulation (164/88) of *The Environment Act* (Manitoba) and therefore requires an *Environment Act* Licence. The Project is also a 'Designated Project' that requires the Minister of Environment and Climate Change's approval (via Decision Statement) pursuant to the *Canadian Environmental Assessment Act, 2012*. The Project EIS compares and describes the pre-development baseline conditions in relation to predicted conditions and identified environmental protection measures to minimize negative project effects. A comprehensive list of the relevant federal and provincial legislation for the Project is provided in Appendix 1A of the Project EIS.

1.3 Environmental Management

This EMP Framework describes the environmental management processes that will be followed during the construction and operation of the Project. The goal of the EMP is to confirm that the environmental protection measures committed to in the Project EIS and the requirements of the provincial *Environment Act* Licence and federal Decision Statement Conditions are undertaken in a timely and effective manner. An adaptive management approach that facilitates responsiveness to addressing issues and continuous improvement is an integral principle of this EMP. The EMP, as detailed in Section 2.0, provides the Manitoba Transportation and Infrastructure organization chart, describes the roles and responsibilities of the parties involved in implementing the Project, describes how information from consultation was integrated, outlines reporting and review requirements and provides a schedule of key activities.

1.4 Report Structure

This EMP Framework consists of the following sections:

- **1.0 Introduction** – Provides an overview of the Project components and phases, the regulatory framework which the Project falls under and an overview of the EMP.
- **2.0 Environmental Management Program (EMP)** – Provides an overview of the EMP and a Manitoba Transportation and Infrastructure organization chart, describes the roles and responsibilities of the parties involved in implementing the Project, describes how information from consultation was integrated, outlines reporting and review requirements and provides a schedule of key activities.
- **3.0 Construction Environmental Management Program (CEMP)** – Describes the development of an overall CEMP and provides an overview of the Project specific plans and procedures that will be developed to manage environmental concerns during the Project construction phase.
- **4.0 Operation Environmental Management Program (OEMP)**– Describes the development of an overall OEMP and provides an overview of the Project specific plans and procedures that will be developed to manage environmental concerns during the Project operation and maintenance phase.
- **5.0 Follow-Up and Monitoring Program** – Describes the environmental assessment (EA) verification monitoring and the compliance monitoring to be completed during the construction and operation phases of the Project.
- Supporting information includes lists of figures, appendices, and abbreviations and acronyms as well as a glossary of terms following the Table of Contents. The Appendices are provided at the end of the document.

2.0 ENVIRONMENTAL MANAGEMENT PROGRAM

2.1 EMP Overview

The EMP describes the environmental management processes that will be followed during construction and operation. One of the primary functions of the EMP is to demonstrate compliance with the various federal and provincial environmental regulatory requirements, including the verification that all environmental commitments are executed, monitored, evaluated for effectiveness, and that information is reported back in a timely manner to the Project management team for adjustment if required. The process of developing the EMP and associated topic-specific management plans, verifying Project EIS commitments and mitigation, review of monitoring results, and updating and improving the EMP is shown in Figure A.

The CEMP and OEMP are working documents, currently in a draft stage, that have incorporated relevant environmental effects and mitigation measures that are identified and reflective of up-to-date inputs through public and Indigenous engagement and consultation. Finalization of the CEMP and OEMP will consider applicable conditions of federal and provincial permits and/or authorization, any other pertinent findings through the design and regulatory review process, and key relevant outcomes of the ongoing public and Indigenous engagement process. The EMP is a living document that will be reviewed and updated by Manitoba Transportation and Infrastructure on a regular basis, with continuous improvement being made so that the Project is constructed, operated, and maintained in an environmentally responsible manner.

The EMP includes various environmental protection measures derived from Manitoba Transportation and Infrastructure's corporate, environmental and safety policies, which will be incorporated into relevant contract documents and inspection processes. The plans comprising the EMP will be finalized after input is obtained from potentially affected rights-holders and the regulatory review process is complete with the necessary approvals and associated conditions received.

This EMP document provides the overarching framework for the CEMP and an OEMP. To effectively address the specific issues involved with all phases of the Project, this EMP Framework document provides an overview but not the details of the CEMP and OEMP, which will be finalized prior to Project construction and ideally operation, respectively. Their finalization will consider any conditions of the *Environmental Act* Licence and associated approvals, any other pertinent findings through the regulatory review process, as well as key relevant outcomes of the ongoing Indigenous and public engagement process.

2.2 Organization

Manitoba Transportation and Infrastructure, as the overall Owner, is responsible for implementing, monitoring, and amending the environmental aspects of the Project. The overall Project organization structure, outlining the communication between Manitoba Transportation and Infrastructure, the federal and provincial regulators, construction Contractor and Indigenous Environmental Monitors is shown in Figure 7, with the roles and responsibilities outlined in Section 2.3. The Contract Administrator, while not shown in Figure 7, would work and communicate with the Manitoba Transportation and Infrastructure. Manitoba Transportation and Infrastructure has several staff and an existing overall framework that would support the construction and operational phases of the Project. The Construction Contractor resources shown in the organization structure will be more relevant during the construction phase, however, there may be a need to hire Contractors during the operation phase.

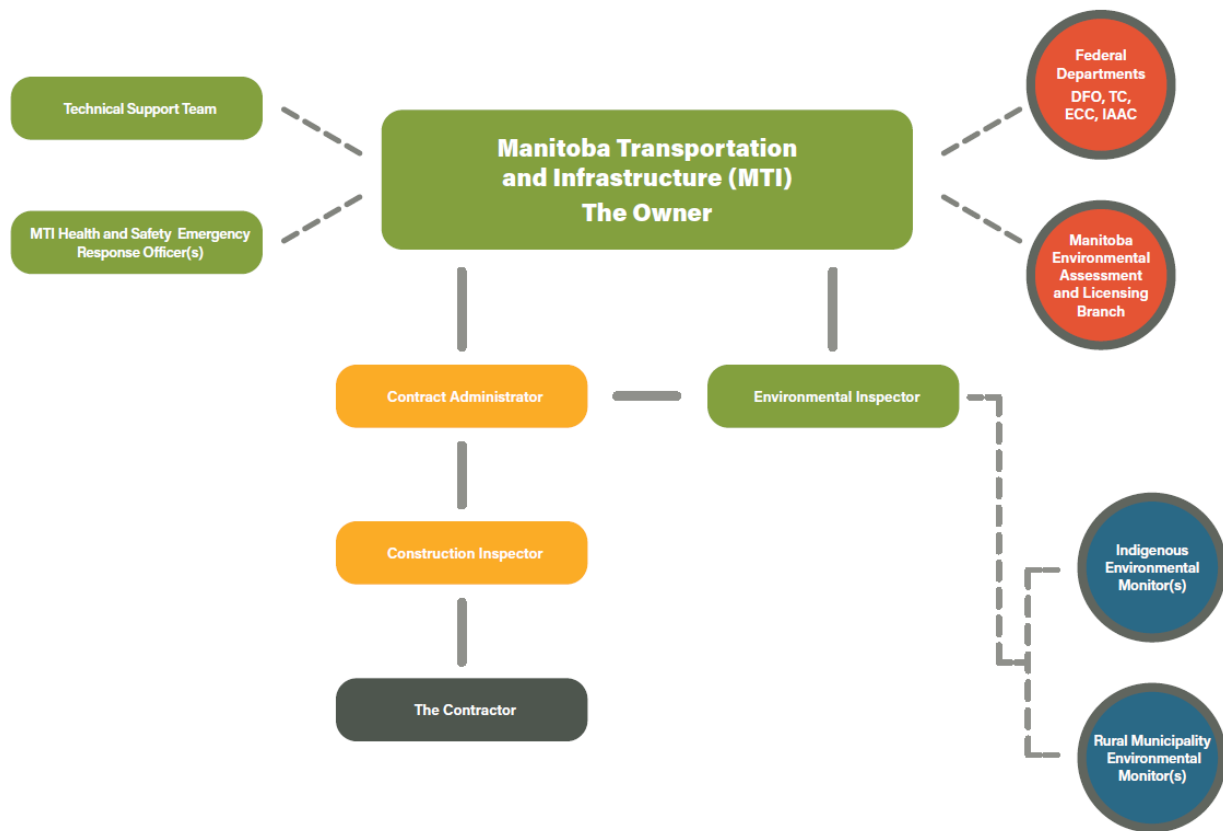


Figure 7: Project Organization Structure

2.3 Roles and Responsibilities

The roles and responsibilities of Manitoba Transportation and Infrastructure, the Contract Administrator, Contractor(s) and Indigenous Environmental Monitors involved in implementation of the Project will vary throughout the construction and operation phases. As such, the specific roles and responsibilities during these phases will be described in the respective CEMP and OEMP. However, a general description of the roles and responsibilities of the Manitoba Transportation and Infrastructure personnel identified in Figure 7 are as follows:

- Manitoba Transportation and Infrastructure, or designated representative, is responsible for completing the Project on time, on budget and ensuring overall compliance with applicable legislation, approvals and Manitoba Transportation and Infrastructure practices.
- Manitoba Transportation and Infrastructure, or designated representative, will confirm that on-site monitoring for works and activities for every contract is being carried out and will participate in weekly Manitoba Transportation and Infrastructure/Contractor meetings to confirm compliance with the construction contracts, approvals, legislation and best management practices.
- Manitoba Transportation and Infrastructure, or designated representative, will monitor the Project construction through weekly inspections and participation in weekly Contractor meetings to ensure compliance with environmental aspects of the construction contracts, environmental commitments, approvals, legislation, and best management practices.
- Manitoba Transportation and Infrastructure, or designated representative, will monitor the Project construction through weekly inspections and participation in weekly Manitoba Transportation and Infrastructure /Contractor Project Management meetings to ensure compliance with the health and safety aspects of the construction contracts, commitments, approvals, legislation, and best management practices.

2.4 Engagement and Indigenous Consultation

The development of the EMP considers the comments, concerns and issues expressed through letters, emails, discussions with community elected officials, community meetings, open houses, Traditional Knowledge and Traditional Land and Resource Use studies, stakeholder meetings, questionnaires, and the Project website, as documented in Chapter 5 of the Project EIS. This EMP also considers on-going involvement with the communities, through the Indigenous engagement and consultation process since the completion of the Project EIS.

Manitoba Transportation and Infrastructure will continue to engage with rights-holders, stakeholders, and the public. Project updates will be discussed to solicit community feedback and collaboration on Project related items. Manitoba Transportation and Infrastructure is committed to considering community input provided regarding development and implementation of the EMP. Two mechanisms established to facilitate input include the Complaint Resolution Process, and the Project Environmental Advisory Committee.

The CEMP and OEMP are working documents that have incorporated relevant environmental effects and mitigation measures that are identified and reflective of up-to-date inputs through public and Indigenous engagement and consultation. As demonstrated in the Indigenous Consultation and Stakeholder Engagement Report (ICSER; Project EIS Appendix 5C), the contents and implementation of these plans will be discussed with potentially affected rights-holders, so they have an opportunity to provide input and feedback. The CEMP, OEMP and associated environmental plans will be finalized based on input obtained from potentially affected rights-holders, and from any relevant environmental regulatory approvals' conditions.

2.5 Reporting and Review Function

The objective of reporting is to provide regulatory authorities, rights-holders, stakeholders, and the general public with timely and accurate information, such that they have opportunities to provide comments, suggestions, and opinions on the Project, the environment protection measures and the monitoring programs. Manitoba Transportation and Infrastructure and the Contractor(s) will prepare reporting to document observations and findings from the Follow-up and Monitoring Program described in Section 5.0. Manitoba Transportation and Infrastructure will ensure reporting and communication activities are conducted in accordance with requirements in the Licence, Decision Statement, other permits, authorizations, and approvals, and through the established communication channels formed as a part of the delivery of the Indigenous engagement and consultation process. Regular contact will also be made with the local Conservation Officers and with the Manitoba Environment, Climate and Parks's (MECP) Integrated Resource Management Team to keep them informed of Manitoba Transportation and Infrastructure activities as it pertains to the Project. Specific reporting requirements will be described in the CEMP and OEMP; however, typical information that will be shared as part of the reporting includes:

- progress of the Project
- up-coming construction activities in local areas
- opportunities for community involvement and dates of community information meetings
- environmental monitoring plans and activities
- measures to protect heritage and archaeological resources
- records of actions taken to address environmental incidents such as accidents, spills, leaks, and releases, the reporting and clean-up procedures used
- other items of interest

The Follow-up and Monitoring Programs results will also be reported to Manitoba Transportation and Infrastructure and senior officers, who can implement the necessary corrective action described in the specific program. This management review will maintain continuous improvement by reviewing the adequacy, suitability and effectiveness of the environmental management practices associated with the Project and the accuracy of prediction of environmental effects as the construction activities proceed. Manitoba Transportation and Infrastructure management will meet regularly to monitor on-going progress as the Project proceeds and will periodically review the EMP at a strategic level to ensure its continuing suitability, adequacy, and effectiveness. The review includes assessment of opportunities for improvement and the need for changes, including to environmental policies and objectives. On a strategic level, the

Manitoba Transportation and Infrastructure management has the authority to make decisions about the environmental protection practices and to take action, including through allocation of resources. Changes to elements of the EMP will be communicated to MECP and the Impact Assessment Agency as an amendment to this document or its appendices.

2.6 Schedule

A schedule outlining the physical activities required for completion of the Project leading up to Operation is being developed as part of the Detailed Design stage and will be provided in Appendix 1 when available. Construction is currently anticipated to occur over approximately two and half to three years followed by an additional one to two years for site clean-up, surveying and environmental offset works following the major construction works. After this, operation and maintenance will begin and continue indefinitely.

In view of the complexity and the number of individual actions required for successful completion of the Project, a project management system will be modified during detail design and updated throughout the Project. Manitoba Transportation and Infrastructure, the Contract Administrator and Contractor(s) will develop and update the scheduling and tracking for the Project contracts. Included in the project management system schedule will be critical environmental management events such as authorization submissions and reporting requirements. This will facilitate the timely, efficient, and effective planning, approval and successful implementation of construction, studies, environmental submittal requirements and Project commitments.

3.0 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAM

The purpose of the CEMP is to guide the Contractor(s) on how environmental issues will be addressed during construction and how adverse effects of activities will be mitigated. The CEMP is supported by several specific or targeted plans (Figure A) that guide Manitoba Transportation and Infrastructure's development of the Project's contract documents and subsequently, the Contractor(s) activities, in constructing the Project in an environmentally responsible manner. These targeted plans are described in Sections 3.1 to 3.15 and will be embedded within the CEMP or provided separately as supporting documents.

Development of the CEMP is proceeding concurrently with Project design and will be updated as design for the Project and Project components advances. As previously stated, the CEMP and the environmental plans which comprise it are developed to a Draft stage, but purposely not finalized until input is obtained from potentially affected rights-holders, and from any relevant environmental regulatory approvals' conditions. Once finalized, the CEMP will form part of the contract documents used by Contractors and will act as guidance and/or requirements to implement and enforce environmental best management practices as well as precautionary avoidance and/or mitigation measures.

Manitoba Transportation and Infrastructure is responsible for incorporating the appropriate environmental protection measures, including best management practices, into the design of Project components. Construction contract specifications will detail the technical design as well as Project-specific restrictions respecting how the work is to be completed. Worksite-specific environmental contract documents will be prepared and added to Manitoba Transportation and Infrastructure's standard specifications. The environmental plans and other plans (e.g., Health and Safety Plan) that are pertinent to Project construction will be identified and accompany the tender documents to be provided to the Contractor(s).

The CEMP addresses many of the site-specific requirements of the Contractor(s) and those that are conducting inspections to facilitate compliance with Manitoba Transportation and Infrastructure's Project-specific commitments. The plans associated with the CEMP will guide the Contractor(s) work in a manner that promotes best management practices for environmental protection for the Project components being developed.

The CEMP addresses each phase of work and incorporates specific environmental protection measures during construction at the individual work sites. The Contractor will also be responsible to provide site-specific planning (e.g., location of laydown areas) to Manitoba Transportation and Infrastructure and identify quarry and borrow areas, which will go through the required review and approval process. This information will be described in detail and thereby augment the Environmental Protection Plans (EPPs) and other plans that collectively describe how to build the Project, with information on sites to avoid or provide specific measures. Manitoba Transportation and Infrastructure is responsible for confirming that the proposed steps outlined by the Contractor are appropriate and environmentally responsible.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAM

As indicated, the CEMP will integrate all relevant environmental regulatory approvals conditions to accompany contract documents. In other cases, Manitoba Transportation and Infrastructure requires Contractors to obtain relevant permits to conduct their work (e.g., Crown Lands work permits, casual or private quarry permits, etc.). Environmental permits or approvals obtained by the Contractor and any amendments will be identified and submitted to Manitoba Transportation and Infrastructure for compliance and record keeping purposes.

Manitoba Transportation and Infrastructure is responsible to conduct site inspections to confirm construction contract compliance with environmental specifications and legislated health and safety requirements. Manitoba Transportation and Infrastructure will also conduct an environmental audit of the construction work being done. The results of these inspections will be documented and, along with other pertinent information, contain regular progress reports to be provided to the designated regulator(s) throughout the construction phase.

Manitoba Transportation and Infrastructure will frequently meet with the Contractor(s) and require that regular updates be provided regarding progress on the environmental components of the work. Early and ongoing communication between Manitoba Transportation and Infrastructure and the Contractor is expected. In cases where a Contractor suggests methods to achieve a particular goal or objective that differ from their original site plan (i.e., component of the work such as managing erosion and sedimentation), approval will first be obtained through Manitoba Transportation and Infrastructure before any modification is allowed, based on discussions with regulators, as appropriate.

The environmental protection measures also incorporate best practices for compliance monitoring. The CEMP provides the framework for follow-up and monitoring, as described further in Section 5.0. The purpose of follow-up and monitoring is to:

- verify predictions of environmental effects identified in the EA
- determine the effectiveness of mitigation measures in order to modify or implement new measures where required
- support the implementation of adaptive management measures to address unanticipated adverse environmental effects
- provide information on environmental effects and mitigation that can be used to improve and/or support future EA's including cumulative effects assessments
- support environmental management systems used to manage the environmental effects of projects
- Manitoba Transportation and Infrastructure will facilitate effective environmental oversight of Project development through a compliance monitoring process. Manitoba Transportation and Infrastructure will provide ongoing oversight of the Project during the construction phase and coordinate with the Contractor.

3.1 Environmental Protection Plans

EPPs form part of the Project's EMP framework and describe the suite of environmental protection measures for key individual environmental areas. The purpose of the EPPs is to support Project planning and reduce the potential for environmental effects during construction. The EPPs are focused on describing the Project activities and the associated potential effects, mitigation measures, and plans. A Construction EPP mapbook has been developed to supplement the EPP by providing site-specific mitigation measures and considerations at environmentally sensitive locations. Together, these documents are intended to facilitate the operationalization of mitigation measures outlined in the Project EIS and be used for tendering purposes. These plans will guide the Contractor(s) and are supplemented with standard specifications included in each construction contract's Project Environmental Requirements (PER) and other plans. For example, Contractors will be required to provide details relating to:

- explosive storage facilities, in independent magazines, if required for the Project
- location and spatial extent of construction camps and associated facilities
- the number, location, and size of construction laydown areas to be established along the rights-of-way for the outlet channels
- sources and quantities of borrow material
- lists of the materials that will be stored including construction vehicles, machinery, construction materials, geotextile roles, explosives, erosion control supplies and other construction materials for the Project

3.2 Project Environmental Requirements

PERs are environmentally focused requirements and commitments for construction contracts that are fundamental to Manitoba Transportation and Infrastructure's regulatory compliance. PERs contain site-specific or point-source requirements for dealing with issues (i.e., access, sediment management, quarries, etc.). They are specific and applicable to all construction and maintenance operations under the authority of any and all licences, permits, authorizations or approvals obtained for the Project. Requirements listed within the PERs are not mutually exclusive of one another and must be adhered to for all activities pertaining to construction, post-construction, maintenance, and decommissioning activities for the Project.

3.3 Access Management Plan

An Access Management Plan (AMP) identifies specific measures that will be undertaken to manage access to the Project site during the construction phase. The AMP addresses access-related issues of concern expressed by rights-holders, stakeholders and the public during the Indigenous engagement and consultation process. It also integrates technical access-related effects on the environment. The AMP describes the access control measures that relate to protection of natural resources, public and worker safety and site security. The plan includes maps that show the locations of potential safety hazards that will be present as a result of the Project and mitigation measures (signage and fencing) that have been designed to reduce the risk posed by the hazards. The objectives of the AMP are to:

- provide safe, coordinated access to the Project site.
- protect the area's natural resources for sustainable use by rights-holders.
- preserve and respect the socio-economic, cultural and heritage values of the lands around the Project.
- allow Project staff and Contractors to construct, operate and maintain the Project year-round.
- provide security for Project personnel and property.
- prescribe measures to minimize potential negative direct and indirect effects on Project access.
- protect land users from hazards resulting from construction and operation of the Project.
- minimize land user conflicts.

3.4 Quarry Management Plan

A Quarry Management Plan (QMP) describes how quarries are selected, developed, operated, and decommissioned (where applicable). This plan specifies best management practices for the selection of quarry sites and quarry development that builds upon the requirements listed in the PERs. This will confirm that quarrying activities are conducted in accordance with all applicable permitting requirements and commitments made in the Project EIS. The plan also includes details on the transport and storage of explosives and measures to ensure advanced planning and notice for blasting activities, such as requirements for Contractor submissions.

3.5 Sediment Management Plan

Sedimentation from the erosion of exposed soils can negatively influence fish and fish habitat. A Sediment Management Plan (SMP) describes measures to minimize the impacts of in-stream sediment from construction activities in or near water, river management, shoreline erosion, and commissioning of the LMOC and LSMOC. These measures include temporary construction management practices, as well as permanent mitigations measures built into the channel design, to minimize the potential for erosion and to minimize and mitigate the transport and deposition of sediment beyond construction areas or into off-site receiving water bodies. The objectives of the SMP are to:

- Define guidelines and procedures for construction to minimize the potential for erosion and sedimentation.
- Develop site-specific control measures to manage potential drainage issues (e.g., run-off).

- Develop site-specific erosion and sediment control measures to minimize adverse, sediment related, effects to the receiving waterbody.
- Develop emergency response practices to mitigate extreme design conditions, respond to unforeseen events and accidents, and minimize potential environmental impacts.
- Ensure that Contractors maintain the expectations of the SMP.

3.6 Surface Water Management Plan

A Surface Water Management Plan (SWMP) describes measures to be employed to mitigate or avoid impacts to surface water during and post-construction. These include methods to be used for the temporary diversions of surface water (including but not limited to ditches and drains, dewatering, or deposition), management of water resulting from precipitation events (e.g., winter snow accumulation in excavated channel or heavy rainfall event), and management of natural watershed flows during construction. Measures identified in this plan shall minimize impacts to the environment (e.g., fisheries) and people (e.g., consideration given to avoid localized flooding due to surface water management activities).

3.7 Groundwater Management Plan

A Groundwater Management Plan (GWMP) describes measures to take to avoid or minimize adverse effects to groundwater or from groundwater during the construction and operation of the Project. These effects may include changes in groundwater quality and quantity in the vicinity of the Project, effects on construction from groundwater or changes in the relationship of the groundwater aquifer discharge to the surface water system. The GWMP outlines measures to manage groundwater which is brought to the surface because of depressurization activities, as well as measures to prevent/mitigate groundwater impacts to local well users. It also identifies adaptive measures to take if the outlined monitoring reveals the need for additional steps.

3.8 Revegetation Plan

The Revegetation Management Plan (RVMP) identifies the locations and methods of providing new or restoring existing vegetation cover following construction activities. The establishment of site appropriate, non-invasive perennial vegetation can serve to stabilize surface soils and protect against accelerated soil loss and erosion while limiting the establishment of non-native weedy plant species. Given the large scope and scale of the Project and the natural setting around LSMOC, if site restoration and revegetation is not planned and implemented in a considerate and responsible fashion, it can have disproportionately high impact on the local and interconnected environments. The RVMP for Project components such as the LMOC, LSMOC and associated works describe:

- Areas affected by construction of the Project.
- Areas designated for revegetation treatments, such as sites along the side slopes of the channels and temporary works decommissioned after construction.
- The approach for determining rehabilitation treatments for specific disturbed areas.

- The rehabilitation treatment options for regenerating vegetation in disturbed areas, including methods for site preparation that will contribute to revegetation success.
- How the rehabilitation will be implemented.
- How the rehabilitated areas will be monitored, the process for how improvements, if required, will be made, and how and to whom the results will be reported.

3.9 Agricultural Biosecurity Management Plan

An Agricultural Biosecurity Management Plan (AgBMP) identifies biosecurity issues, risk sites and risk types as well as specific mitigation requirements such as landowner communication, notification, and equipment cleaning and disinfection requirements. The objective of this plan is to mitigate adverse effects or changes in agricultural land use. The plan pertains to the LMOC and PR 239 realignment portions of the Project, as these portions of the Project traverse agricultural land use, including cropland, grazing land, and livestock operations. Through this plan, Manitoba Transportation and Infrastructure will address biosecurity concerns related to Project activities. This Plan includes:

- Background information including a summary of agricultural land use in the Project area, regulatory context and industry guidelines and related Project management plans.
- Summary of biosecurity risk issues, mechanisms and levels and issues related to construction and operation activities.
- Required actions by Manitoba Transportation and Infrastructure and Contractor(s) to protect agricultural biosecurity.
- Identification of specific biosecurity risk areas and controlled access points.
- Guidance for Manitoba Transportation and Infrastructure to implement the AgBMP for Project construction and operation, including roles and responsibilities, planning and preparation, facilities and equipment, worker requirements, record keeping and reporting, worker training, communication, monitoring, and implementation schedule.

3.10 Dust Control Plan

A Dust Control Plan describes the products to use and the methods of their application on PR 239, other access roads used and material stockpiles to minimize and mitigate effects from increased dust levels during the Project construction and operation. The plan also identifies the certification and submission requirements for products to be used.

3.11 Waste Management Plan

A Waste Management Plan describes how solid and non-hazardous liquid waste will be stored, managed, and disposed of during construction. The plan commits to keeping the construction area clean and orderly during and at completion of construction with waste materials and refuse removed and disposed of promptly in a manner that will not contaminate the surrounding area. Waste materials shall be recycled to a degree that is economically and practically feasible or disposed of at a Waste Disposal Ground operating under the

authority of a permit issued pursuant to Manitoba Waste Disposal Grounds Regulation 150/91 of *The Environment Act*. All sewage and seepage from on-site sanitary facilities will be disposed of at a local licenced facility and in accordance with the Manitoba Onsite Wastewater Management Systems Regulation 83/2003 of *The Environment Act*.

3.12 Hazardous Materials Management Plan

A Hazardous Materials Management Plan describes safe practices for transporting, storing, managing, and disposing of hazardous materials to protect the health and safety of employees, the public and the environment. The plan includes spill response guidelines and hazardous waste management guidelines for managing specific hazardous materials. The plan also identifies the applicable federal and provincial acts and regulations for the transportation, storage, handling and disposal of dangerous goods and hazardous wastes.

3.13 Emergency Response Plan

An Emergency Response Plan (ERP) identifies how the Contractor(s) will respond to environmental emergencies in a manner that protects people and the environment during Project construction. The plan outlines emergency spill response and reporting procedures and fire prevention and response procedures. Procedures to respond to spills, accidents, or malfunctions involving the release of fuels, dangerous goods or hazardous materials/waste are described. The plan identifies who is responsible for and methods of containment, clean-up, and reporting. The plan also outlines fire prevention measures to be implemented and response and evacuation procedures to follow in the event of a fire. A Health and Safety Plan separately addresses security, responses to medical incidents, transport to hospital and emergency contacts and notification.

3.14 Heritage Resources Protection Plan

A Heritage Resources Protection Plan (HRPP) outlines measures to mitigate effects to cultural and heritage resources that can occur from ground-disturbing Project activities, such as vegetation clearing and excavation and development of temporary construction camps, staging areas, and access roads. The HRPP is being developed based on the findings of a Heritage Resource Impact Assessment conducted prior to the start of construction. The HRPP when issued Final will at a minimum:

- Include general information about the Project.
- Outline the heritage resources procedures and protection measures to be implemented during Project construction.
- Outline specific measures required for any heritage sites located within the Project Development Area and any adjacent site that may be affected by Project construction or operation.
- Identify and characterize any additional heritage resource protection measures.
- Outline the steps for reporting and follow-up related to any heritage resources unintentionally disturbed during construction.

3.15 Site Decommissioning Plan

The Site Decommissioning Plan describes the process and environmental requirements for closure and reclamation of temporary construction facilities and borrow pits.

4.0 OPERATION ENVIRONMENTAL MANAGEMENT PROGRAM

The purpose of the OEMP is to guide how environmental issues will be addressed and adverse effects of operation and maintenance activities will be mitigated. The OEMP demonstrates Manitoba Transportation and Infrastructure's commitment to protection of the environment and compliance with the various federal and provincial environmental regulatory requirements. Standard operating procedures and environmental best management practices will be implemented during operation to promote the protection of environmental values potentially affected by the Project. The OEMP is a tool to ensure that the environmental management measures are executed, monitored, evaluated for effectiveness and that any required information is reported to Manitoba Transportation and Infrastructure for adjustments. The OEMP outlines the responsibilities of the various parties involved, provides a summary of potential activities related to Project operation and the subsequent potential environmental effects, and discusses the applicable environmental management measures, monitoring, and reporting procedures.

An OEMP is being developed for operation of the LMOC and LSMOC and will be finalized prior to completion of the construction phase. It is currently anticipated that a separate OEMP is not required for development of the PR 239 realignment. The road will be operated and maintained in a manner consistent with Manitoba Transportation and Infrastructure's practice for the current PR 239 and other public roads throughout the Province of Manitoba. Additionally, the distribution lines that will be powering the water control structures will be owned and operated by Manitoba Hydro and, as such, constructed and operated in a manner consistent with their best management practices and guidelines.

The OEMP describes the environmental protection measures to be implemented after construction is complete to address potential effects associated with the long-term operation and maintenance activities. As detailed for the CEMP, the OEMP and the associated environmental plans will be updated based on updates to the CEMP during construction and will also benefit from any additional input obtained from potentially affected rights-holders, the general public and regulators.

The OEMP is supported by the same targeted plans developed to manage issues during construction, as described in Sections 3.1 to 3.15, but prior to construction completion they would be revised and adapted to suit the specific needs during the operation phase and incorporate lessons learned through implementing the CEMP. The objectives of the supporting OEMP plans are similar to those described with respect to construction activities, with a focus on operational conditions. For example, the SMP would focus on minimizing the impacts of in-stream sediment from operation of the LMOC and LSMOC, particularly after a flood. These plans are embedded within the OEMP or provided as separate supporting documents. Additional Project operation-specific plans including an Ice Management Plan (IMP), as described in Section 4.1, are developed for implementation during the operations phase.

As with the CEMP, the OEMP outlines the recommended best practices for compliance monitoring (inspections). Ongoing monitoring regarding the functionality of the outlet channels and associated infrastructure will occur regularly during non-flood periods. The frequency and type of compliance

monitoring is expected to increase immediately before, during and after the flood operation of control structures in the LMOC and LSMOC. As such, Manitoba Transportation and Infrastructure has a role in ongoing environmental inspections of the Project infrastructure and components. Manitoba Transportation and Infrastructure will generate documentation related to the findings of these investigations, including Project functionality.

As with the CEMP, the OEMP provides the framework for the follow-up and monitoring program during the operation phase, as described further in Section 5.0. This includes continued monitoring to verify key predictions of the Project EIS, with a focus on the effectiveness of key mitigation measures that are proposed to be implemented. Reports generated through this process will be made available to regulators for review as required.

4.1 Ice Management Plan

An IMP describes measures to be employed to mitigate or avoid changes in regional and/or local ice processes and impacts to the environment or public and worker safety post construction associated with changes in ice processes. The LMOC and LSMOC will be operated in accordance with the Operating Rules developed for the Project, which includes considerations for ice management. The plan describes the location of signs indicating potential areas of thin ice at the LMOC and LSMOC inlet and outlet to provide public and worker safety.

5.0 FOLLOW-UP AND MONITORING PROGRAM

The follow-up and monitoring program for the Project includes EA Verification Monitoring and Compliance Monitoring to be completed during both the construction and operation phases of the Project, as described in the following sections, and shown as the 'verification' box in Figure A. This program and the associated topic-specific monitoring plans are developed in accordance with the requirements described in both federal and provincial guidance documents for the Project. As results become available from the follow-up and monitoring program, they will be provided to regulators, posted to the Project website, and shared during any meetings or open houses. Manitoba Transportation and Infrastructure and its consultants will consider the results from the follow-up and monitoring programs and input received from rights-holders, regulators, and others in its review of the status of the environmental protection activities on an on-going basis and amend programs, as necessary. As the proponent/owner of the Project, Manitoba Transportation and Infrastructure will make final decisions on adjustments to environmental activities.

An adaptive management approach will be followed, whereby lessons learned, and improvements identified during the inspection, follow-up and monitoring programs will be applied to continually improve subsequent environmental protection activities. Manitoba Transportation and Infrastructure will also monitor the application of action plans and emergency response procedures for environmental protection and human health and safety.

5.1 Environmental Assessment Verification Monitoring

The follow-up and monitoring program, as described in Project EIS Chapter 12, will verify the accuracy of key components of the EA and determine the effectiveness of measures taken to mitigate the adverse environmental effects of the Project, through the following:

- Verify predictions of environmental effects identified in the EA.
- Determine the effectiveness of mitigation measures in order to modify or implement new measures where required.
- Support the implementation of adaptive management measures to address unanticipated adverse environmental effects.
- Provide information on environmental effects and mitigation that can be used to improve and/or support future EA's including cumulative effects assessments.
- Support environmental management systems used to manage the environmental effects of projects.

Various topic-specific monitoring plans have been developed for the Project, as described in the following sub-sections. Manitoba Transportation and Infrastructure will engage in-house environmental staff and potentially contract specialized environmental consultants to conduct monitoring of specific components of the environment in accordance with these monitoring plans and as required with assistance from local Indigenous people. These plans are developed to a Draft stage to meet regulatory requirements, but purposely not finalized until input is obtained from potentially affected rights-holders and appropriate federal and provincial authorities. Additional monitoring or adjustments to the plans will be made in consideration of the responses received.

5.1.1 Aquatic Effects Monitoring Plan

As part of EA verification, this includes any ongoing surface water quality monitoring as well as fish-related sampling. The plan provides information on the methodologies to address monitoring requirements outlined in the Project EIS. Monitoring study design is described in terms of the frequency of monitoring, field methods, parameters to be measured, data analysis and how benchmarks will be used to guide follow-up management actions. The Aquatic Effects Monitoring Plan (AEMP) describes monitoring activities that will commence during construction and in association with two flood events that occur post-construction. The specific objectives of the AEMP are to:

- Determine if the effects assessment predictions in the aquatic environment sections of the Project EIS (including surface water quality and fish and fish habitat) are correct.
- Determine the effectiveness of mitigation measures.
- Assess the need for additional mitigation measures if initial measures are not adequate.
- Determine the effectiveness of any additional/adapted measures.
- Confirm compliance with regulatory requirements relevant to surface water quality and fish and fish habitat set out in the Project approvals (compliance monitoring).

5.1.2 Surface Water Monitoring Plan

Surface water monitoring will be conducted to assess whether there are changes to the water levels or quality of the surface water in the Local Assessment Area as a result of construction or operations. Surface water levels and quality will be monitored in proximity to the Project prior to construction (baseline), during construction, and following construction (for a period of two years). Longer-term operation monitoring (which includes consideration of the frequency of use of the LMOC and LSMOC) will take place beyond the 2-year post-commissioning period as outlined in the AEMP and the Operation and Maintenance Manual. This will help to identify if the management measures implemented as part of the SWMP are effective at mitigating impacts to surface water. Water discharged from the Project construction area to surface water will be monitored to ensure it complies with applicable Canadian Council of Ministers of the Environment and Manitoba Water Quality Standards, Objectives and Guidelines criteria for the Protection of Freshwater Aquatic Life. Finalization of surface water quality monitoring objectives will be undertaken at Detailed Design with consideration for the other environmental management and monitoring plans.

5.1.3 Groundwater Monitoring Plan

Groundwater monitoring will be conducted to assess whether there are changes to the volume and accessibility or quality of the groundwater in the Local Assessment Area as a result of construction or operations. Groundwater elevations and quality will be monitored in proximity to the Project prior to construction (baseline), during construction, and following construction (for a period of two years). Recommendations will also be provided for long term groundwater monitoring based on the Project monitoring data and an assessment of Project effects. This will help to identify if the management measures implemented as part of the GWMP are effective at mitigating impacts to groundwater. Groundwater discharged to surface water during construction will be monitored to ensure it complies with applicable Canadian Council of Ministers of the Environment and Manitoba Water Quality Standards, Objectives and

Guidelines criteria for the Protection of Freshwater Aquatic Life. Finalization of groundwater quality monitoring objectives will be undertaken at Detailed Design with consideration for the other environmental management and monitoring plans.

5.1.4 Revegetation Monitoring Plan

As part of pre-construction sampling being completed in 2020, rare plant surveys are being completed along the final channel alignment and a RVMP has been developed. Pre-construction monitoring work involves an evaluation of species of conservation concern present. The RVMP provides detailed methods on how predicted changes to vegetation species diversity will be verified and how the effectiveness of mitigation strategies (e.g., revegetation) will be evaluated. The RVMP also includes assessing revegetation success shortly after construction and for several years following construction. Monitoring will be focused on assessing the rate of establishment of a healthy vegetation cover, and the quick recognition and mitigation of soil erosion. Areas of poor vegetation growth will also be identified for additional seeding. To avoid growth and establishment of regulated weeds, soil piles will be monitored for weed growth during construction.

5.1.5 Wetland Monitoring Plan

The Wetland Monitoring Plan (WetMP) has been prepared in response to comments received from regulators, rights-holders, and other stakeholders to assesses potential effects on wetlands outside of the project development area that do not receive offsetting through the Wetland Compensation Plan. The WetMP includes an assessment of changes to class/size of wetlands, surface and groundwater quality and quantity, vegetation cover (plant species compositions/abundance) and wildlife habitat from changes to groundwater and surface water regimes. The purpose of the WetMP is to provide a comprehensive, integrated monitoring plan that tests key predictions of the Project EIS with respect to wetland effects, determines the effectiveness of mitigation measures, and the requirement for, and nature of associated follow-up where required. The plan integrates prior information collected for the Project EIS, information collected through pre-construction vegetation and wetland surveys and associated mapping completed in 2020, and feedback received from rights-holders, regulators, and various stakeholders.

5.1.6 Wildlife Monitoring Plan

The purpose of the Wildlife Monitoring Plan (WMP) is to describe the monitoring activities that will be undertaken to address follow-up requirements identified in Chapter 12 of the Project EIS. Follow-up requirements are actions implemented to verify key EA predictions, to reduce potential adverse effects on wildlife and their habitat(s), and to confirm compliance with regulatory requirements (compliance monitoring contained in the EPP).

The wildlife assessment identified potential changes to wildlife habitat, mortality risk, and movement during construction and operation of the Project. The monitoring criteria established for the WMP were informed by concerns raised through the Project EIS review and subsequent information requests received from federal and provincial regulators, rights-holders, and stakeholders. Thus, the monitoring criteria reflect measurable and meaningful parameters to verify key Project EIS predictions and to evaluate the effectiveness of mitigation measures as they relate to the potential changes described above.

5.1.7 Red-headed Woodpecker Habitat Mitigation Plan

The purpose of the Red-headed Woodpecker Habitat Mitigation Plan is to describe the red-headed woodpecker habitat mitigation and monitoring activities that will be implemented along the LMOC outlet channel ROW for a federally listed endangered species. Manitoba Transportation and Infrastructure is using the precautionary approach and committing to additional mitigation and monitoring measures to reduce potential Project-related effects to red-headed woodpecker habitat, despite no evidence that critical breeding habitat will be directly affected by the Project.

5.1.8 Eastern Whip-poor-will Habitat Mitigation Plan

The purpose of Eastern Whip-poor-will Habitat Mitigation Plan is to describe the habitat mitigation and monitoring activities that will be implemented along the outlet channel ROWs for a federally listed threatened species. Manitoba Transportation and Infrastructure is using the precautionary approach and committing to additional mitigation and monitoring measures to reduce potential Project-related effects to eastern whip-poor-will habitat, despite no evidence that critical breeding habitat will be directly affected by the Project.

5.2 Compliance Monitoring

Manitoba Transportation and Infrastructure will facilitate effective environmental oversight of Project development through a compliance monitoring process. This compliance monitoring verifies whether the plans (including the PERs and EPPs) are being followed during construction and operation and whether required mitigation measures are being effectively implemented. The compliance monitoring also confirms compliance with the regulatory requirements and authorizations for the Project.

Manitoba Transportation and Infrastructure will provide ongoing oversight of the Project during the construction and operation phases and coordinate with the Contract Administrator and Contractor(s). The specific roles and responsibilities for Manitoba Transportation and Infrastructure, the Contract Administrator and Contractor(s) in relation to monitoring are identified in the CEMP and OEMP. The compliance monitoring developed during the construction phase may evolve and be adapted into the operation phase in response to varying conditions between construction and operation. The environmental protection measures also incorporate best practices for compliance monitoring.

Manitoba Transportation and Infrastructure standards for monitoring dams and flood control channels will be implemented during operation to ensure it is operated and maintained in a safe manner consistent with the Canadian Dam Association Dam Safety Guidelines. Ice conditions within the channel be monitored, particularly when the channel is operated at higher winter discharges, to ensure that adequate freeboard remains on the channel dikes to prevent a winter overtopping breach. A Project-specific Operation and Maintenance Manual will be developed for the Project structures to detail monitoring and maintenance needs for the Project during the operation and maintenance phase.

APPENDIX 1

Project Schedule

Under-development

APPENDIX 2

*The Environment Act License & Canadian Environmental Assessment Act, 2012
Decision Statement, and Conditions*

To be appended once received