

LAKE MANITOBA LAKE ST. MARTIN

OUTLET CHANNELS PROJECT

MANITOBA TRANSPORTATION AND
INFRASTRUCTURE

Environmental Protection Plan

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 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 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 Protection Plan (EPP) is one component of the overall Environmental Management Program (EMP) framework, which 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 Indigenous 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 Indigenous 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.

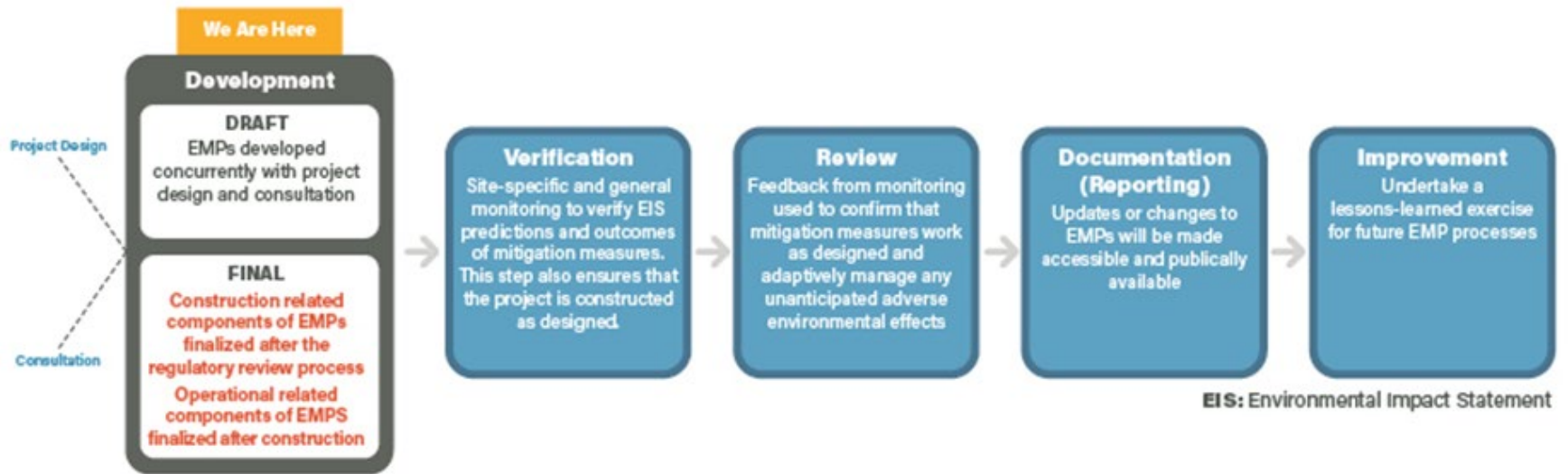


Figure A: EMP Process

LIST OF ACRONYMS

AgBMP	Agricultural Biosecurity Management Plan
AMP	Access Management Plan
CEMP	Construction Environmental Management Program
EAC	Environmental Advisory Committee
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
ESS	Environmentally Sensitive Site
GWMP	Groundwater Management Plan
ha	hectare
HMA	Habitat Mitigation Area
HRB	Historic Resources Branch
HRPP	Heritage Resources Protection Plan
LMOC	Lake Manitoba Outlet Channel
LSMOC	Lake St. Martin Outlet Channel
m	metre
MB CDC	Manitoba Conservation Data Centre
OEMP	Operation Environmental Management Program
PDA	Project development area
PER	Project Environmental Requirements
PR	Provincial Road
Project	Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project
RAZ	Restricted Access Zone
RM	Rural Municipality
RVMP	Revegetation Management Plan
SARA	<i>Species at Risk Act</i>
SMP	Sediment Management Plan
SOCC	species of conservation concern

1.0 PURPOSE

Manitoba Transportation and Infrastructure has developed this Environmental Protection Plan (EPP) for the Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project). Environmental protection and regulatory compliance during construction will be facilitated through the use of a Construction Environmental Management Program (CEMP). The CEMP has been prepared by Manitoba Transportation and Infrastructure and will be provided to contractors at the tendering stage. The Contractor(s) will adhere to the CEMP and its associated plans as a condition of the Project construction contract(s).

This EPP has been developed to support the Project's compliance with regulatory requirements and conditions of approval. The Project is being constructed, operated, and maintained under approvals and associated conditions of the *Canadian Environmental Assessment Act 2012* (Canada) and *The Environment Act* (Manitoba). Additional permits, licences, approvals or authorizations may apply to single or multiple Project components and will be obtained as required.

The EPP will support Project planning and reduce the potential for environmental effects during construction. The EPP is focused on identifying environmentally sensitive areas that require particular attention during Project construction, and identifies the associated potential effects, and mitigation measures for such sites.

The EPP provides references to detailed environmental management plans, including Manitoba Transportation and Infrastructure's Project Environmental Requirements (PER) to support decision-making and environmental compliance during Project construction. The environmental protection measures were committed to within the Project Environmental Impact Statement (EIS) and will be referenced to demonstrate compliance commitments for the various permits, licences, and approvals obtained for the Project. Where necessary, mitigation measures have been updated to reflect feedback from regulatory filings (e.g., information request responses), Public and Indigenous consultation and engagement, and the advancement of engineering design. The environmental protection measures will be implemented throughout the Project to promote compliance with conditions of approval and reduce Project-related environmental effects.

2.0 ENVIRONMENTAL PROTECTION PLAN MAPBOOKS

2.1 Overview

The core components of the EPP are a series of EPP mapbooks located in Appendices 1 through 3. Appendix 4 is the location where copies of the relevant approvals, licenses and permits will be located, once received. The EPP mapbooks identify site-specific environmental sensitivities and the associated environmental protection measures for the construction of the Lake Manitoba Outlet Channel (LMOC), Lake St. Martin Outlet Channel (LSMOC), and Provincial Road (PR) 239 Realignment. The EPP mapbooks supplement the various environmental protection measures provided in the PERs and other management plans in the EMP and are intended for use in the field by the Owner, Contract Administrator, Contractors, Inspectors and Monitors during Project planning and construction.

The purpose of the mapping is to provide a visual inventory of all known Environmentally Sensitive Sites (ESSs) that occur within the Project Development Area (PDA) for the three Project components listed above and identify key mitigation measures that are applicable to these ESSs during Project construction. ESS are locations, features, areas, activities, or facilities that were identified during the environmental assessment process to be ecologically, socially, economically, culturally, or spiritually important or sensitive to disturbance and require protection during construction of the Project. The determination of ESS included the consideration of feedback provided by Indigenous rights-holders, the RM of Grahamdale, and regulators.

The EPP mapbooks have been developed for the Project to present the location and spatial extent of ESS. Each map will have a corresponding summary of relevant mitigation measures to address the potential environmental effects at each of the ESS. The mapping is an iterative process and will be updated and finalized prior to construction. This EPP will provide a framework for potential future updates that may be required as Project infrastructure and construction details are finalized.

The mapping is comprised of three separate series, one for each of the following Project components:

- LMOC – Appendix 1
- PR 239 Realignment (PR 239; part of the LMOC PDA) – Appendix 2
- LSMOC – Appendix 3

Each mapbook consists of a series of maps (1:5,000 scale for LMOC and LSMOC, 1:2,500 for PR239) that cover the entire length of the specified Project component and identify ESS that occur within that PDA. A list of general mitigation measures applicable to the ESS identified and specific to the construction phase of the Project will be located on the back of each map. This will be based on the mitigation measures discussed in Section 3.0.

2.2 ESS Selection

ESS mapping topics were selected by Project discipline leads and engineering teams from data sources assessed and referenced in the Project EIS submitted in 2019, as well as data collected from additional field surveys from 2019 - 2021. Traditional Knowledge data referenced and collected for the Project is considered confidential and therefore, any ESS identified from this information has not been documented in this mapping product.

2.3 ESS Classification

For mapping purposes, ESS are organized into a classification system based on the site type (e.g., heritage, land use, aquatics, etc.). The site type, or discipline, in which the ESS is assigned is referred to as the ESS “Category” and represents the highest classification level. “Category” is followed by a more detailed “Group” class, and then finally a “Name” class which provides additional detail of the site. ESS are displayed and symbolized on each map according to the Category, Group, and Name classification. For ease of reference, each ESS is also assigned a unique identification number (ID) based on this classification system. Table 1 outlines this classification and the corresponding ESS ID naming convention (see Table 2 and Table 3 for ESS Name descriptions).

The unique IDs assigned to ESSs are based on the Category and Group classification for that site. These IDs consist of two parts; an abbreviation of the ESS Category and a value from a number series assigned to each ESS Group (Table 1). Using this identification, ESS are numbered sequentially from south to north along each PDA component. ESSs that extend and occur outside the PDA are also identified on the maps, but not symbolized or identified by a unique ID. It should also be noted that wetlands are identified within the PDA, but the priority will be those segments that abut from outside or extend beyond the PDA, as measures will be taken to not discharge deleterious substances into these areas. Specific discharge sites will be established along the PDA borders that avoid these areas.

Table 1: ESS Classification and Naming Convention

ESS CATEGORY (Category Abbreviation used in ESS ID)	ESS GROUP (Number Series Representing ESS Group within a Category)	ESS-ID Series
Heritage (Her)	Heritage Sensitive Areas (100)	Her-100
	Heritage Trails (200)	Her-200
Land Use (LUse)	All Land Use Types (100)	LUse-100
Soils (Soil) & Agricultural Biosecurity	Manure Impacted Sites (Restricted Access Zones [RAZ]) (100)	Soil-100
Aquatics (AQ)	Watercourse/Waterbody Crossings (100)	AQ-100
	Waterbody Riparian Areas (30 m buffer of waterbody/watercourse) (B100)	AQ-B100
	Wetlands (200)	AQ-200
Vegetation (Veg)	Species of Conservation Concern (SOCC) (100)	Veg-100
	Invasive/Weed Species (200)	Veg-200
Vegetation (Veg) & Agricultural Biosecurity	Weed Infestation (RAZ) – Locations to Be Determined	Veg-300
Soil (Soil) & Agricultural Biosecurity	Manure Impacted Sites (RAZ)	Soil-100
Wildlife (Wild)	Stick Nests or Nesting Snags (100)	Wild-100
	Habitat for SOCC (200)	Wild-200
	Decadent Tree for Salvage	Wild-DT#
	Decadent Tree for Install	Wild-TG#

2.4 ESS Summaries

ESS identified in the LMOC and LSMOC PDAs are summarized in the tables below. Table 2 provides a summary of ESS identified within the LMOC PDA, including the PR 239 Realignment component (as shown in the LMOC mapping and PR 239 mapping). Table 3 provides an ESS summary of the LSMOC PDA only (shown in the LSMOC mapping).

Table 2: ESS Summary for LMOC/PR 239 PDA

ESS CATEGORY (Category Abbreviation used in ESS ID)	ESS GROUP	APPROXIMATE NUMBER OF ESS in PDA*	ESS NAME (Number in PDA)	TOTAL AREA in the LMOC/PR 239 PDA **
Heritage (Her)	Heritage Sensitive Areas	6	Heritage Sensitive Areas (5)	49 hectares (ha)
	Heritage Trails		Heritage Trails (1)	N/A
Land Use (LUse)	All Land Use Types	13	Recreation Shelter (1)	N/A
			Residential Sites (5)	N/A
			Recreational Trails (4)	N/A
Soils (Soil) & Agricultural Biosecurity	Manure Impacted Sites (RAZ)	52	Manure Impacted Site (2)	28 ha
Aquatics (AQ)	Watercourse/ Waterbody Crossings	130	Waterbodies (11)	83 ha
			Watercourses (4)	N/A
	Riparian Areas (30 m buffer of Waterbody/ Watercourse)		Riparian Areas (15)	98 ha
	Wetlands		Wetlands (Class III, IV)	237 ha
Vegetation (Veg)	SOCC	95	N/A (0)	N/A
	Invasive/ Weed Species		30 Plant Species (in 95 locations)	N/A

ENVIRONMENTAL PROTECTION PLAN MAPBOOKS

ESS CATEGORY (Category Abbreviation used in ESS ID)	ESS GROUP	APPROXIMATE NUMBER OF ESS in PDA*	ESS NAME (Number in PDA)	TOTAL AREA in the LMOC/PR 239 PDA **
Wildlife (Wild)	Stick Nests or Nesting Snags	54	Stick Nests (4)	N/A
			Nesting Snags (10)	N/A
	Habitat for SOCC		RHWO Habitat Management Area (40)	4 ha

Notes:

- * Total number of ESS reported within the PDA is considered an approximation and may vary for some features, such as wetlands which may merge with neighbouring in larger wetlands in seasons of high-water levels, or riparian buffers which will also vary seasonally with waterbody extents/levels
- ** Areas reported only include extents of ESS within the PDA boundary. Areas of waterbodies and wetlands reported are approximate and may vary depending on current water levels. Areas of waterbodies reported include the major waterbodies at the inlet/outlet components of the PDA boundary.

Table 3: ESS Summary for LSMOC

ESS CATEGORY (Category Abbreviation used in ESS ID)	ESS GROUP	APPROXIMATE NUMBER OF ESS in PDA *	ESS NAME (Number in PDA)	TOTAL AREA in the LSMOC PDA)**
Heritage (Her)	Heritage Sensitive Areas	3	Heritage Sensitive Areas (3)	19 ha
	Heritage Trails		Heritage Trails (0)	N/A
Land Use (LUse)	All Land Use Types	1	Recreational Trails	N/A
Aquatics (AQ)	Watercourse/Waterbody Crossings	44	Waterbodies (3)	103 ha
			Watercourses (3)	N/A
	Riparian Areas (30 m buffer of Waterbody/Watercourse)		Waterbody/ Watercourse Riparian Areas (6)	113 ha
	Wetlands		Wetlands (Class III, IV & Fen-Graminoid)(20)	264 ha
Vegetation (Veg)	SOCC	8	2 Plant Species (in 3 locations)	N/A
	Invasive/Weed Species		4 Plant Species (in 5 locations)	N/A
Wildlife (Wild)	Stick Nest or Nesting Snag	0	N/A (0)	N/A
	Habitat for SOCC		EWPW Habitat Management Area (17)	3 ha

Notes:

* Total number of ESS reported within the PDA is considered an approximation and may vary for some features, such as wetlands which may merge with neighbouring in larger wetlands in seasons of high-water levels, or riparian buffers which will also vary seasonally with waterbody extents/levels.

** Areas reported only include extents of ESS within the PDA boundary. Areas of waterbodies and wetlands reported are approximate and may vary depending on current water levels. Areas of waterbodies reported include the major waterbodies at the inlet/outlet components of the PDA boundary.

3.0 MITIGATION MEASURES

As indicated, mitigation measures that will be applied to address potential issues in the various ESS will be provided on the back of each map sheet, with references to details provided in other management plans such as the PERs. Table 4 provides the master list of mitigation measures that will be adapted for each mapbook prior to construction.

Table 4: Master List of Mitigation Measures for use in Mapbooks

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics	Waterbody (AQ-100 Series)	Standing and flowing surface waters (such as a creeks, rivers, lakes, and wetlands with open water), including seasonally and ephemerally occurring surface waters.	Designated Areas shall be located a minimum of 100 metres (m) from waterbody or wetland or as approved by the Contract Administrator.	PERs (Section 2.1.1)
		Waterbodies within the PDA may provide habitat for fish or other species such as amphibians, and construction should occur after any sensitive life cycle activities (e.g., spring spawning/breeding) has occurred.	Construction activities shall not occur within 100 m of a waterbody with the exception of construction of a waterbody crossing or other authorized in-water or near-water works, or unless directed by the Contract Administrator.	PERs (Section 2.5.1)
		Waterbodies adjacent to and/or connected to the PDA may be exposed to deleterious substances discharged from the PDA.	If a 100 m distance is not possible, a buffer zone of undisturbed vegetation shall be provided between the work and the waterway. Using a buffer zone width of approximately 10 m plus 1.5 times the slope gradient or 30 m, whichever is greater.	PERs (Section 2.5.1)
			There shall be no fueling, equipment maintenance, repair or washing within 100 m of the ordinary high-water mark, and measures will be used so that runoff and water used for equipment cleaning does not enter any water body.	
			Clearing within 30 m of a waterbody shall be done by hand.	

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics (cont'd)	<i>See above</i>	<i>See above</i>	Cleared trees and vegetation shall not obstruct waterways during any season and shall be kept above the ordinary high-water mark. Stockpiles or windrows of any material are to be kept a minimum of 100 m from any waterbody's ordinary high-water mark.	PERs (Section 2.2.2)
			Temporary spoil piles, overburden and topsoil shall not be placed within 100 m of any waterbody's ordinary high-water mark. Temporary spoil piles shall be positioned and maintained in a manner that prevents direct or indirect sediment releases into a waterbody.	PERs (Section 2.2.2)
			Temporary spoil piles will be positioned and maintained in a manner that prevents direct or indirect sediment releases into a waterbody.	PERs (Section 2.3.1)
			Effective erosion and sediment control measures shall be properly installed before starting any work to prevent undesirable soil movement or the entry of sediment into any waterbody or wetland.	PERs (Section 2.3.1)
			Contaminated water or runoff will be contained and prevented from entering any waterbody. The collected contaminated water or runoff will be hauled off site for disposal at an approved disposal facility.	PERs (Section 2.3.1)

MITIGATION MEASURES

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics (cont'd)	<i>See above</i>	<i>See above</i>	Soils shall be spread or graded in a direction away from the waterbody and never into the stream itself.	PERs (Section 2.6.3) Surface Water Management Plan (SWMP) (Section 5.1.1 and 9.1.1)
			Immediately after disturbance or upon completion of the work in or around waterbodies, waterbody banks, and riparian vegetation areas, the disturbed areas shall be restored to the original contour and gradient and cover treatment applied.	PERs (Section 2.5.1)
			Machinery fording shall be limited to a one-time event (over and back) and shall occur only if an existing crossing at another location is not available or practical to use. Fording shall only be conducted in a manner approved by the Contract Administrator.	PERs (Section 2.5.1) Revegetation Management Plan (RVMP) (Section 5.2 and 11.2)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics (cont'd)	<i>See above</i>	<i>See above</i>	If minor rutting is likely to occur, waterbody bank and bed protection methods (e.g., swamp mats or rig mats) shall be used provided they do not constrict flows, block fish passage or cause sediment release into the waterbody.	PERs (Section 2.5.1)
			If rock is used to stabilize waterbody banks, it shall meet appropriate specifications, be clean and free of fine materials, and of sufficient size to resist displacement during peak flood events.	PERs (Section 2.5.1) Sediment Management Plan (SMP) (Section 4.1 and 9.1)
			The waterbody banks shall be stabilized, restored to their original shape, adequately protected from erosion and re-vegetated with native species.	PERs (Section 2.10.1)
			In-water work shall be restricted to low flow periods and shall be scheduled during a period when the waterbody is seasonally dry or frozen to the bottom whenever possible.	PERs (Section 2.5.1) SMP (Section 4.1 and 9.1) RVMP Section 5.2 and 11.2)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics (cont'd)	<i>See above</i>	<i>See above</i>	Sediment-laden dewatering discharge shall be pumped to a settling basin, filtering system or through dense terrestrial vegetation of sufficient distance from the waterbody to allow sediment deposition prior to re-entry downstream of the construction area, or as directed by the Contract Administrator.	PERs (Section 2.5.3)
			The Contractor is responsible for maintaining base flows for the duration of construction activities in waterbody's requiring in-water and near water work, including those works which may require the installation of cofferdams and related structures, unless otherwise approved.	PERs (Section 2.5.4) SWMP (Section 5.1.1 and 11.1.1)
			Temporary diversion channels shall be designed to accommodate expected waterbody flow from storm, runoff or spring melt events.	PERs (Section 2.5.7) SWMP (Section 5.1.1 and 9.1.1)

MITIGATION MEASURES

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics (cont'd)	<i>See above</i>	<i>See above</i>	Water quality monitoring shall be required if described in tender documents for in-water work in fish-bearing waterbodies and may be required when working near fish bearing waterbodies or tributaries to fish bearing waterbodies to demonstrate that deleterious substances are not entering into the waterbody. Water quality monitoring shall also occur when working upstream and within 5km of a water treatment plant intake.	PERS (Section 2.5.10) SWMP (Section 6.2.2 and 10.2.2)
			Utilize culvert removal techniques that minimize impacts to the waterbody and riparian area.	PERS (Section 2.5.11)
			Contaminated runoff or water shall be contained and prevented from entering any waterbody. The collected contaminated runoff or water shall be hauled off site for disposal at an approved disposal facility.	PERS (Section 2.6.3)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics (cont'd)	Waterbody crossing (AQ-100 Series)	<p>Standing and flowing surface waters (such as a creeks, rivers, lakes, and wetlands with open water), including seasonally and ephemerally occurring surface waters.</p> <p>Waterbodies can provide habitat for fish, birds and other wildlife such as amphibians. Crossing waterbodies creates risks damages to shorelines, beds and potentially introduces deleterious substances.</p>	Where possible, existing stream crossings shall be utilized to traverse waterbodies.	PERs (Section 2.5.9)
			All stream crossings shall be constructed in accordance with The Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat (https://www.gov.mb.ca/fish-wildlife/pubs/fish_wildlife/fish/sguide.pdf) and DFO's Interim Code of Practice: Temporary Stream Crossings (https://www.dfo-mpo.gc.ca/pnw-ppe/codes/temporary-crossings-traversees-temporaires-eng.html?wbdisable=true).	PERs (Section 2.5.9)
			If there is no existing crossing and the waterbody must be crossed, the Contract Administrator may approve the construction of a temporary crossing to keep all vehicles and equipment out of the waterbody.	PERs (Section 2.5.9)
			Stream crossings shall be located at straight stream sections, perpendicular to the bank. In particular, meandering bends, braided streams, alluvial fans and other unstable areas shall be avoided.	PERs (Section 2.5.9)

MITIGATION MEASURES

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics (cont'd)	<i>See above</i>	<i>See above</i>	When feasible, the construction of stream crossings shall be scheduled for the period of lowest steam flow and should be a single event.	PERs (Section 2.5.9)
			The natural alignment of the stream shall be maintained.	PERs (Section 2.5.9)
			A minimum vegetated buffer strip of 30 m shall be maintained between the worksite and waterbody except at the actual crossing location.	PERs (Section 2.5.9)
			The number of temporary stream crossings constructed shall be minimized.	PERs (Section 2.5.9)
			Temporary stream crossings shall be removed as soon as possible following completion of the work or when it is no longer required, whichever is sooner.	PERs (Section 2.5.9)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics (cont'd)	Riparian area (AQ-B100 Series)	30 m buffer around waterbody containing woody vegetation. Riparian areas provide shade and shoreline stability for waterbodies. See Waterbodies for additional information.	Removal of riparian vegetation shall be kept to a minimum to help maintain the stability of waterbody banks. The area over which vegetation in riparian vegetation areas is removed shall affect no more than one third (1/3) of the total woody vegetation in the right-of-way (ROW) within 30 m of the ordinary high-water mark of a waterbody. Vegetative root masses found within the waterbody banks shall remain undisturbed unless specified in the Contract Documents.	PERs (Section 2.2.2)
			Immediately after disturbance or upon completion of the work in or around waterbodies, waterbody banks, and riparian vegetation areas, the disturbed areas shall be restored to the original contour and gradient and cover treatment applied.	PERs (Section 2.5.1) RVMP (Section 5.2 and 11.2)
			Utilize culvert removal techniques that minimize impacts to the waterbody and riparian area.	PERs (Section 2.5.11)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Aquatics (cont'd)	Wetlands (AQ-200 Series)	<p>Land that is saturated with water long enough to promote wetland or aquatic processes as indicated by the formation of water altered soils, growth of water tolerant vegetation, and various kinds of biological activity that are adapted to wet environments.</p> <p>Wetlands within the PDA may support important plant species and provide habitat for wildlife species such as amphibians, and construction should occur after any sensitive life cycle activities (e.g., spring spawning/ breeding) has occurred. Wetlands adjacent to and/or connected to the PDA may be exposed to deleterious substances discharged from the PDA.</p>	Excavation within wetlands will be completed during dry or frozen conditions whenever feasible.	PERs (Section 2.11.1)
			Exclusionary fencing will be installed around open excavations near wetlands when and where there is potential for entrapment of amphibians or other wildlife species, or as directed by the Contract Administrator.	PERs (Section 2.11.1)
			Sediment-laden dewatering discharge shall be pumped to a settling basin, filtering system or through dense terrestrial vegetation of sufficient distance from the waterbody to allow sediment deposition prior to re-entry downstream of the construction area, or as directed by the Contract Administrator.	PERs (Section 2.5.4) SMP (Section 4.1 and 9.1)
			Designated discharge sites will be established that avoid sensitive wetland areas.	PERs (Section 2.5.4) SMP (Section 4.1 and 9.1)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Soils	Manure-impacted site (Soil-100 Series)	<p>Location of site impacted by current cattle operations.</p> <p>Manure piles contain contaminated soil and if disturbed can result in contamination of adjacent areas and waterbodies.</p>	<p>Manure stockpiles should be relocated from the Project footprint prior to construction.</p>	<p>PERs (Section 2.6.6)</p> <p>Agriculture Biosecurity Management Plan (AgBMP) (Section 2.3)</p>
			<p>A plan for treatment and/or disposal of impacted soils will be developed. This may include excavation and spreading of identified impacted soils onto agricultural lands outside of the LMOC construction area, as appropriate.</p>	<p>AgBMP (Section 3.2.1)</p>
			<p>Workers should not access identified manure impacted sites within the PDA without explicit permission from Manitoba Transportation and Infrastructure (note: manure impacted site ESS are also considered RAZs under the AgBMP).</p>	<p>AgBMP (Section 3.2.1)</p>

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Soils (cont'd)	<i>See above</i>	<i>See above</i>	<p>Prior to general construction activities being allowed to be undertaken within an area identified as a manure impacted site ESS (RAZ), the following must occur:</p> <p>Areas of manure stockpiles, if present, must be confirmed and delineated in the field, and relocated from the PDA and either applied to agricultural land outside of the PDA or disposed of at an approved landfill facility following provincial regulations.</p> <p>Soils within areas delineated as manure-impacted sites, including under manure stockpiles and associated with former cattle feedlot operations, will be assessed for degree and extent of impacts from nutrients (nitrogen and phosphorus) through sampling and laboratory analysis.</p> <p>A plan for treatment and/or disposal of impacted soils will be developed in order to remediate these areas. This may include excavation and spreading of identified impacted soils onto agricultural lands outside of the LMOC PDA, as appropriate.</p> <p>Equipment, vehicles and workers are required to utilize fine cleaning and disinfection, as described in the AgBMP, when exiting these ESSs (RAZs under the AgBMP) prior to these sites being cleaned-up and deemed remediated.</p>	AgBMP (Section 3.2.1)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Soils (cont'd)	<i>See above</i>	<i>See above</i>	<p>Soils from these areas should not be excavated, moved or stockpiled in general soil stockpiles prior to the implementation of a site-specific management plan.</p> <p>General construction activities should not occur within manure impacted sites located within the PDA until these areas have been cleaned-up (i.e., manure stockpiles removed, and manure impacted soils evaluated, treated and/or disposed of) and are deemed remediated. Once deemed remediated, Manitoba Transportation and Infrastructure must provide approval for these sites to cease to be designated an ESS (or RAZ within the AgBMP), following which time general construction activities may be undertaken in these areas and general biosecurity management measures under the AgBMP will apply.</p>	<i>See above</i>

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Vegetation	SOCC (Veg-100 Series)	Species in addition to species at risk (SAR) that are listed by the Committee on the Status of Endangered Wildlife in Canada; for listing under the <i>Species at Risk Act (SARA)</i> as special concern, threatened, or endangered, or those listed provincially under <i>The Endangered Species and Ecosystems Act</i> and by the Manitoba Conservation Data Centre (MB CDC) as provincially rare (i.e., S1 or S2 rankings).	The Contractor shall not remove, destroy or disturb species pursuant to Manitoba Regulation 25/98 of <i>The Endangered Species and Ecosystems Act</i> , or any future amendment thereof, respecting Threatened, Endangered and Extirpated Species, or species listed in the federal <i>SARA</i> .	PERs (Section 2.11.1)
			Terrestrial buffers, as identified by the MB CDC's <i>Recommended Development Setback Distances from Birds and/or Manitoba Sustainable Development's Forest Management Guidelines for Terrestrial Buffers</i> shall be adhered to for all applicable sites.	PERs (Section 2.11.1)
			A 30 m setback will be applied to known occurrences of provincially listed SOCC; however, where avoidance of SOCC is not possible, construction in sensitive areas will be restricted to the winter months (outside of the growing season).	CEMP (Section 5.7)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Vegetation (cont'd)	Invasive species (Veg-200 Series)	1) Non-native plant species to the Project agricultural region that can spread and outcompete/ replace native plant species, and 2) whose introduction will cause or will likely cause economic or environmental harm unless effectively controlled.	When weeds and invasive plant species are documented, a timely and appropriate control response should be undertaken to control the weed infestation. A site-specific weed and invasive plant control strategy will be implemented.	RVMP (Section 5.4 and 11.4)
			To prevent the transfer of weeds and terrestrial invasive species, all equipment is to be cleaned to remove all earthen material and plant debris and inspected before being brought to site and before it is removed from site. Cleaning should be carried out with a pressure washer or scrub brush. If soap is used it shall be phosphate free.	PERs (Section 2.16.1)
	Weed infestations (Veg-300 Series)	See above for general definition. Weed infestations are a larger issue that a single occurrence/individual or a few weed species and require more intensive management and monitoring to control or eradicate.	Workers should not access weed infestation ESS within the PDA without explicit permission from Manitoba Transportation and Infrastructure (note: weed infestation ESS are also considered RAZs).	AgBMP (Section 3.2.1)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Vegetation (cont'd)	<i>See above</i>	<i>See above</i>	<p>Prior to general construction activities being allowed to be undertaken within an area identified as a weed infestation ESS (RAZ), the following must occur:</p> <p>A site-specific (i.e., ESS specific) management and monitoring plan must be developed to control or eradicate the weed infestation, as described in the RVMP. This management plan will stipulate approved activities allowed to be conducted within the weed infestation ESS (RAZ).</p> <p>Vehicles, equipment and workers conducting approved work within a weed infestation ESS (RAZ) (e.g., weed control, mowing) are required to utilize fine cleaning (disinfection not required), as described in the AgBMP, when exiting the ESS (RAZ).</p> <p>Soils from within a weed infestation ESS (RAZ) should not be excavated, moved or stockpiled prior to implementation of the site-specific management and monitoring plan.</p>	<p>AgBMP (Section 3.2.1)</p> <p>RVMP (Section 5.4 and 11.4)</p>

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Vegetation (cont'd)	<i>See above</i>	<i>See above</i>	<i>(cont'd from above)</i> Mowing of these areas should not be conducted prior to implementation of a site-specific management and monitoring plan, and if mowing is required, approved mowing of the ESS (RAZ) should only occur after mowing of areas not deemed a weed infestation ESS (RAZ) or having known weed concerns.	<i>See above</i>
			Once weeds are effectively controlled or eradicated, as described in the RVMP, the weed infestation ESS (RAZ) designation may be removed on approval by Manitoba Transportation and Infrastructure, following which time general construction activities may be undertaken in these areas and general biosecurity management measures under the AgBMP will apply.	AgBMP (Section 3.2.1) RVMP (Section 5.4 and 11.4)
Wildlife	Stick nest (Wild-100 Series)	A large nest (> 60 cm) used by larger birds such as owls, hawks, ravens, etc. Stick nests provide important habitat for bird species during spring nesting periods.	Trees containing large nests of sticks and areas where active dens or burrows occur shall be identified, left undisturbed, and reported to the Natural Resources Officer.	PERs (Section 2.11.1)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Wildlife (cont'd)	Eastern whip-poor-will Habitat Mitigation Area (HMA) (Wild-200 Series)	HMAs for eastern whip-poor-will (listed as endangered under the federal SARA will be enhanced with shrubs and/or trees.	Minimize clearing and ground disturbance in eastern whip-poor-will HMAs to the extent feasible during construction.	EWMP (Section 3.2)
			Enhance HMAs with shrubs and/or trees post-construction.	RVMP (Sections 5.0 and 11.2)
			Revegetation activities will occur in spring or fall depending on the construction schedule and, if applied in the fall, prescriptions may require adjustments to improve survivability of seed during winter for herbaceous cover.	RVMP (Section 5.3 and 11.3) PERs (Section 2.21.1)
	Redheaded woodpecker HMA (Wild-200 Series)	Habitat Management Areas for red-headed woodpecker (listed as endangered under the federal SARA will be enhanced with shrubs and dead standing trees (snags).	Treed habitats within the PDA will be retained where safe and technically feasible to do so.	RHMP (Section 3.0)
Minimize clearing and ground disturbance in red-headed woodpecker HMAs to the extent feasible during construction.			RHMP (Section 3.0)	

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Wildlife (cont'd)	<i>See above</i>	<i>See above</i>	Terrestrial buffers, as identified by the MB CDC's Recommended Development Setback Distances from Birds and/or Manitoba Sustainable Development's Forest Management Guidelines for Terrestrial Buffers shall be adhered to for all applicable sites (see Appendix 5). The provincially recommended setback distance for vegetation clearing and construction activities of 200 m from an active red-headed woodpecker nest will be adhered to between April 15 to August 15.	PERs (Section 2.11.1)
			Enhance HMAs with shrubs and dead standing trees (snags) post-construction.	RVMP (Section 5.2 and 11.2)
	Decadent trees for salvaging (Wild-DT# Series)	Dead/decaying trees that provide or have potential to provide important nesting habitat for red-headed woodpecker. Trees have been flagged and tagged with a unique identifier.	Locations of existing trees in PDA that need to be carefully removed for storing and repositioning in Red-headed Woodpecker HMAs post-construction. Trees will be re-inspected to determine if they still meet salvage criteria. Trees deemed suitable for salvage will be flagged by Environmental Monitor prior to removal. See Decadent Tree Supplemental Technical Specifications No.3031 for details regarding the salvage of trees on LMOC.	Decadent Tree Supplemental Technical Specifications No. 3031 RHMP (Section 4.2.1)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Wildlife (cont'd)	Decadent tree install target (Wild-TG# Series)	Dead/decaying trees that provide important nesting habitat for red-headed woodpecker.	Locations for repositioning decadent trees. See Decadent Tree Supplemental Technical Specifications No.3031 for details regarding the installation of trees on LMOC.	RHMP (Section 4.2.1)
Land Use	Recreation trail (LUse-100 Series)	Trail used for recreation purposes such as snowmobiling.	Recreation will not be allowed along the outlet channels through the life of the Project; Manitoba Transportation and Infrastructure will install warning signs indicating no authorized personnel where required.	PERs (Section 2.21.1)
		Construction activities can interrupt the use of trails and create safety risks if they continue to be used in the vicinity of the PDA.	Due to safety concerns, trails, including trapping routes, within the PDA will not be accessible to members of the public during construction, with some exceptions for Indigenous peoples who intend to carry out traditional practices to the extent that such access is safe (i.e., does not temporally and spatially overlap with construction activities), if approval is granted by Manitoba Transportation and Infrastructure in advance. The contractor and all of its associated employees will not use the trails for recreational purposes.	Access Management Plan (AMP) (Section 5.6 and 7.10)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Land Use (cont'd)	Recreation shelter (LUse-100 Series)	Location used by people during recreation activities. Construction activities can interrupt the use of shelters and create safety risks if they continue to be used in the vicinity of the PDA.	Recreation will not be allowed along the outlet channels through the life of the Project; Manitoba Transportation and Infrastructure will install warning signs indicating no authorized personnel where required.	PERs (Section 2.21.1)
	Noise Receptor (Not assigned an ESS ID because not located within the PDA)	Location of a building where people may be present and susceptible to noise disturbance.	Noise by-laws of the adjacent communities and municipal authorities shall be complied with.	PERs (Section 2.9.1)
			Residents near construction noise-generating activities will proactively be notified as required.	PERs (Section 2.9.1) CEMP (Section 5.1)
			Any operation of plant or equipment beyond dates or times as specified or regulated by applicable by-laws or adjacent communities or municipal authorities shall require an exemption in writing.	PERs (Section 2.9.1) CEMP (Section 5.1)

ESS Category	ESS Type	ESS Description	Key ESS Mitigation	EMP Plan Reference
Land Use (cont'd)	<i>See above</i>	<i>See above</i>	Temporary noise abatement barriers may be used to reduce noise levels. If noise abatement barriers are ineffective, a temporary reduction in the intensity of construction activities should be considered.	CEMP (Section 5.1)
Heritage	Sensitive heritage site (Her-100 Series)	Area containing or having high potential to contain one or more specific site with heritage value that needs to be protected.	For an ESS in which a Project Archaeologist is required to be present for heritage monitoring as directed by Historic Resources Branch (HRB), the Project Archaeologist will take the extra measures to inspect and provide direction for the excavation by mechanical means.	Heritage Resources Protection Plan (HRPP) (Section 5.1.2)
			For the remaining known heritage sites, the Environmental Monitor will take extra measures to inspect soil layers within the ESS and enact the Chance Find procedure if heritage resources are encountered. If this occurs, work at the location shall be suspended until a Historic Resource Consultant can assess the archaeological or historic artifacts encountered, and mitigation measures are confirmed with the Manitoba HRB.	HRPP (Section 5.2) PERS (Section 2.13.1)

MITIGATION MEASURES

These mitigation measures, and other management and contingency plans summarized in Table 5 have been developed to reduce the risk of adverse effects on the environment, communities, and human health and safety. The mapbooks link these measures and plans to specific ESSs along the construction areas.

Management and contingency plan requirements may vary based on the Project component and risk of issues or unplanned events. In addition to adhering to these plans, Contractors working on the Project will be required to develop, implement, and maintain their own management and contingency plans to deal with Project or site-specific issues or unplanned events, as stipulated in the PERs.

Table 5: Management and Contingency Plan Overview

Management or Contingency Plan	Description
Access Management Plan	<p>The 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:</p> <ul style="list-style-type: none"> • Provide safe, coordinated access to the PDA during construction and operation. • Provide safe passage for local residents and visitors to the area (both Indigenous and non-Indigenous) through the PDA at identified crossing locations. • Support sustainable use through the protection of the area’s natural resources. • Allow the Owner and contractors to construct, operate and maintain the Project year-round. • Provide security for Project personnel and property. • In addition to the objectives of the AMP, other considerations include: <ul style="list-style-type: none"> • Preserve and respect the socio-economic, cultural and heritage values of the lands around the Project. • 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. • Provide public education and communication about the Project to promote safety for all and to maintain an understanding among specific relevant groups and the public-at-large regarding the access management measures being implemented and maintained, and the rationale for doing so.

Management or Contingency Plan	Description
<p>Agricultural Biosecurity Management Plan</p>	<p>The 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, pasture, and livestock operations. Through this AgBMP, Manitoba Transportation and Infrastructure will address biosecurity concerns related to Project activities. The AgBMP includes:</p> <ul style="list-style-type: none"> • Background information including a summary of agricultural land use in the Project area, regulatory context, industry guidelines, and related Project management plans. • Summary of biosecurity risk issues, risk mechanisms related to construction and operation activities, and risk levels to guide biosecurity management efforts. • Required actions by Manitoba Transportation and Infrastructure and Contractor(s) to protect agricultural biosecurity. • Identification of specific biosecurity risk areas within and adjacent to the PDA and controlled access points where workers will enter and exit the PDA. • Implementation plan to guide Manitoba Transportation and Infrastructure in implementation of 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.
<p>Complaint Resolution Process</p>	<p>The Complaint Resolution Process outlines the methods for complaint initiation, records management, and process tracking, as well as the process for complaint notification, investigation, and resolution.</p>
<p>Site Decommissioning Plan</p>	<p>The purpose of the Site Decommissioning Plan is to describe the processes and environmental requirements for the removal and closure of temporary designated areas, temporary access roads and quarry areas required during construction or operation of the Project.</p>

Management or Contingency Plan	Description
Dust Control Plan	The Dust Control Plan describes the requirements and application of dust suppressants and other mitigation measures used for dust control and stabilization. This includes 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 and includes measures for monitoring of dust and air quality.
Eastern Whip-poor-will Habitat Management Plan	The Project overlaps potential critical habitat for eastern whip-poor-will (<i>Caprimulgus vociferus</i>), listed as threatened under the federal SARA (Government of Canada 2020). Manitoba Transportation and Infrastructure is using the precautionary approach and committing to additional mitigation measures to reduce potential Project-related effects to eastern whip-poor-will habitat. The purpose of the Eastern Whip-poor-will Habitat Mitigation Plan is to describe the habitat mitigation and monitoring activities that will be implemented along the outlet channel right-of-way, including the application of revegetation prescriptions and vegetation management practices, that provide habitat opportunities for eastern whip-poor-will.
Emergency Response Plan	The Emergency Response Plan is described in the CEMP and 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.

Management or Contingency Plan	Description
<p>Groundwater Management Plan</p>	<p>The 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.</p>
<p>Hazardous Materials Management Plan</p>	<p>The Hazardous Materials Management Plan is part of the CEMP and 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.</p>
<p>Heritage Resources Protection Plan</p>	<p>The HRPP describes 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 based on the findings of a Heritage Resource Impact Assessment conducted prior to the start of construction. The HRPP includes the following:</p> <ul style="list-style-type: none"> • Heritage resources procedures and protection measures to be implemented during Project construction. • Specific measures required for any heritage sites located within the PDA and any adjacent site that may be affected by Project construction or operation. • Identification and characterization of any additional heritage resource protection measures. • Steps for reporting and follow-up related to any heritage resources unintentionally disturbed during construction.

Management or Contingency Plan	Description
Project Environmental Requirements	The PERs represent requirements and commitments that are fundamental to Manitoba Transportation and Infrastructure’s regulatory compliance requirements, including Project approvals, permits, licences and authorizations. They are specific to the work and activities conducted under the authority of any and all licences, permits, authorizations or approvals obtained for the Project. Requirements listed in these 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.
Quarry Management Plan	The Quarry Management Plan 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’s EIS. The plan also includes details on the transport and storage of explosives and measures to facilitate advanced planning and notice for blasting activities, such as requirements for Contractor submissions.
Red-headed Woodpecker Habitat Management Plan	The Project overlaps potential critical habitat for red-headed woodpecker (<i>Melanerpes erythrocephalus</i>), listed as endangered under the federal SARA (Government of Canada 2021). Manitoba Transportation and Infrastructure is using a precautionary approach and committing to additional mitigation measures to reduce potential Project-related effects to red-headed woodpecker habitat. 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 right-of-way (ROW).

Management or Contingency Plan	Description
<p>Revegetation Management Plan</p>	<p>The purpose of the RVMP is to describe the measures that will be used to establish vegetation in areas impacted by the Project. The objectives of the RVMP are as follows:</p> <ul style="list-style-type: none"> • establish self-sustaining permanent plant cover • provide erosion and sediment control • control the spread of invasive plant species along the channel and into adjacent environments <p>The RVMP provides a process to track revegetation progress, to monitor for environmental compliance, and to identify deficiencies and requirements for remedial planting work. Reclamation targets relate to plant community function and do not include targets for species richness, diversity, plant community structure or species composition. Long-term vegetation monitoring and management requirements will be developed as part of an operations and maintenance manual (to be developed). The RVMP also provides monitoring requirements for potential effects to the vegetation adjacent to the channel to identify Project-related changes to vegetation species diversity.</p>
<p>Sediment Management Plan</p>	<p>Sedimentation from the erosion of exposed soils can negatively influence fish and fish habitat. The 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:</p> <ul style="list-style-type: none"> • Define guidelines and procedures for construction to minimize the potential for erosion and sedimentation. • Identify site-specific erosion and sediment control measures to minimize adverse, sediment related, effects to receiving waterbodies. • Identify emergency response practices to mitigate extreme design conditions, respond to unforeseen events and accidents, and minimize potential environmental impacts.

Management or Contingency Plan	Description
Surface Water Management Plan	<p>The SWMP describes measures to be employed to mitigate or avoid impacts to surface water during and post-construction. These include methods to manage local runoff (both inside and outside of construction areas), and the associated potential transport and deposition of sediments beyond construction areas and into off-site receiving water bodies. The SWMP also identifies preliminary monitoring requirements to confirm mitigations are effective and the process for identifying and implementing adaptive measures if measures are not effective. The SWMP has been developed to address the following objectives:</p> <ul style="list-style-type: none"> • Describe measures to manage local surface water during and after construction of the LMOC and LSMOC, and the associated potential for erosion, transport and deposition of sediments and pollutants beyond construction areas and into off-site receiving water bodies. • Summarize monitoring plans for surface water quality and quantity in the vicinity of the LMOC and LSMOC to verify that the measures implemented meet requirements and identify additional contingency measures to be considered for implementation in the event of emergency conditions or undesirable circumstances.
Waste Management Plan	<p>The Waste Management Plan is located in the CEMP and 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 <i>Manitoba Waste Disposal Grounds Regulation 150/91 of The Environment Act</i>. All sewage and seepage from on-site sanitary facilities will be disposed of at a local licenced facility and in accordance with the <i>Manitoba Onsite Wastewater Management Systems Regulation 83/2003 of The Environment Act</i>.</p>

APPENDIX 1

LMOC Environmental Protection Plan Mapbook

APPENDIX 2

PR 239 Environmental Protection Plan Mapbook

APPENDIX 3

LSMOC Environmental Protection Plan Mapbook

APPENDIX 4

Approvals, Licences, and Permits

To be appended once received

APPENDIX 5

Recommended Setback Distances and Restricted Activity Periods

Table 5-1: Recommended Setback Distances and Restricted Activity Periods for the Lake Manitoba and Lake St. Martin Outlet Channels Project

Species or Feature ¹		Key Wildlife Feature	Restricted Activity Period	Recommended Setback Distance by Disturbance Category (meters) ²		
Common Name	Scientific Name			Low	Medium	High
Mammals						
American badger^a	<i>Taxidea taxus</i>	Active den	Year round	100	500	500
Black bear^b	<i>Ursus americanus</i>	Active den	Year round	150	150	150
Little brown myotis^{a,c}	<i>Myotis lucifugus</i>	Roost	May 1 – August 31	100	500	500
Northern myotis^{a,c}	<i>Myotis septentrionalis</i>	Roost	May 1 – August 31	100	500	500
Bat cave^d	-	Cave	Year round	200	200	200
Wolverine^e	<i>Gulo gulo</i>	Den	Year round	100	250	500
Mineral lick^b	-	Mineral lick	Year round	120	120	120
Denning species (e.g., red fox, coyote, gray wolf, American marten, fisher, least weasel)^c	-	Active den	Year round	50	50	50

Species or Feature ¹		Key Wildlife Feature	Restricted Activity Period	Recommended Setback Distance by Disturbance Category (meters) ²		
Common Name	Scientific Name			Low	Medium	High
Birds						
American white pelican	<i>Pelecanus erythrorhynchos</i>	Nesting colony	April 1 - August 31	500	750	1000
Bald eagle	<i>Haliaeetus leucocephalus</i>	Active or traditional nest site	March 15 - July 15	250	500	1000
Bank swallow	<i>Riparia riparia</i>	Nesting colony	May 15 - July 31	50	150	300
Barn swallow	<i>Hirundo rustica</i>	Nest site	May 15 - Sept. 30	50	150	300
Barred owl	<i>Strix varia</i>	Active or traditional nest site	March 15 - July 15	250	500	1000
Bobolink	<i>Dolichonyx oryzivorus</i>	Nest site	May 15 - August 15	100	250	400
Boreal Owl	<i>Aegolius funereus</i>	Nest Site	March 1 - July 15	250	500	1000
Canada warbler	<i>Cardellina canadensis</i>	Nest site	May 1 - July 31	200	300	450
Common nighthawk	<i>Chordeiles minor</i>	Nest site	May 1 - August 31	100	200	500
Double-crested cormorant	<i>Phalacrocorax auritus</i>	Nesting colony	April 1 - August 31	400	500	750
Eastern whip-poor-will	<i>Antrostomus vociferous</i>	Nest site	May 15 - July 16	100	200	500
Eastern wood-pewee	<i>Contopus virens</i>	Nest site	May 15 - August 15	50	150	300

Species or Feature ¹		Key Wildlife Feature	Restricted Activity Period	Recommended Setback Distance by Disturbance Category (meters) ²		
Common Name	Scientific Name			Low	Medium	High
Golden-winged warbler	<i>Vermivora chrysoptera</i>	Nest site	May 15 - August 6	200	300	450
Great gray owl	<i>Strix nebulosa</i>	Active or traditional nest site	Feb. 15 - July 15	250	500	1000
Grebes	-	Nesting colony	May 15 - July 15	100	200	400
Gulls/terns	-	Nesting colony	May 1 - July 15	400	500	750
Hérons	-	Nesting colony	April 1 - August 31	400	500	750
Horned grebe	<i>Podiceps auratus</i>	Nest site	May 1 - Sept. 15	100	200	400
Least bittern	<i>Ixobrychus exilis</i>	Nest site	May 1 - July 31	100	200	400
Northern hawk owl	<i>Surnia ulula</i>	Nest site	Feb. 15 - July 15	250	500	1000
Osprey	<i>Pandion haliaetus</i>	Nest site	August 1 to March 31	100	100	1000
Olive-sided flycatcher	<i>Contopus cooperi</i>	Nest site	May 1 - August 31	50	150	300
Piping plover	<i>Charadrius melodus</i>	Active or traditional nest site	April 15 - August 15	200	400	600
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Nest site	April 15 - August 15	50	100	200
Rusty blackbird	<i>Euphagus carolinus</i>	Nest site	May 1 - July 31	50	150	300
Sharp-tailed grouse³	<i>Tympanuchus phasianellus</i>	Lek	Mar 15 - May 15	200	500	1000

Species or Feature ¹		Key Wildlife Feature	Restricted Activity Period	Recommended Setback Distance by Disturbance Category (meters) ²		
Common Name	Scientific Name			Low	Medium	High
Short-eared owl	<i>Asio flammeus</i>	Nest site	April 15 - Sept. 15	200	300	500
Trumpeter swan	<i>Cygnus buccinator</i>	Nest site	April 1 - July 31	500	750	1000
Yellow rail	<i>Coturnicops noveboracensis</i>	Nest site	May 1 - July 15	100	150	350
Amphibians and Reptiles						
Northern leopard frog^a	<i>Lithobates pipiens</i>	Hibernaculum and breeding habitat	Year round	10	200	500
Red-sided garter snake^b	<i>Thamnophis sirtalis</i>	Hibernaculum	Year round	200	200	200
Snapping turtle^{3, a}	<i>Chelydra serpentina</i>	Nest site	March 15 - June 30	0	400	400

Notes:

¹ - Recommended setback distances and restricted activity periods are derived from MB CDC's Recommended Development Setback Distances from Birds document (MB CDC 2021) unless otherwise specified (see a-e below)

^a - Saskatchewan Ministry of Environment's Saskatchewan Activity Restriction Guidelines for Sensitive Species (SK MOE 2017)

^b - Manitoba Hydro's Manitoba-Minnesota Transmission Project Construction Environmental Protection Plan (2019)

^c - Core maternity roost period for bats as defined by Fenton and Barclay (1980) and Barclay (1982 and 1984)

^d - Manitoba's Forest Management Guidelines for Terrestrial Buffers (Government of Manitoba 2017)

^e - Environment Canada's Petroleum Industry Activity Guidelines for Wildlife Species at Risk in the Prairie and Northern Region (Environment Canada 2009)

² - Low: foot traffic, occasional/infrequent/short-term small vehicle (<1 ton) or ATV use; medium: trucks>1 ton, regular/frequent/long-term small vehicle (<1 ton) or ATV use; High: road, distribution line, or outlet channel construction, forest harvest, rock crushing, asphalt batching, quarry or gravel pit operation

³ - Low disturbance category considered as foot traffic only; all other activities (i.e., occasional/infrequent/short-term small vehicle (<1 ton) or ATV use) considered medium disturbance; High: road, distribution line, or outlet channel construction, forest harvest, rock crushing, asphalt batching, quarry or gravel pit operation

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