



Transportation and Infrastructure

Lake Manitoba and Lake St. Martin Outlet Channels Project
1520-215 Garry Street, Winnipeg, Manitoba, Canada R3C 3P3

May 31, 2022

Mr. Sean Carriere
Impact Assessment Agency of Canada
Prairie and Northern Region
Canada Place
Suite 1145, 9700 Jasper Avenue
Edmonton, Alberta T5J 4C3

Dear Sean Carriere,

**Subject: Lake Manitoba and Lake St. Martin Outlet Channels Project
Information Request Response Submission**

Manitoba Transportation and Infrastructure (MTI) is pleased to submit formal responses to the Impact Assessment Agency of Canada's (the Agency) Technical (Round 1 Package 1) and Public (Round 1 Package 2A) information requests for the Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project).

Responses contained as part of this submission have built upon feedback received in response to the draft information request responses circulated to the federal review team, Indigenous groups and the Rural Municipality (RM) of Grahamdale. Please note that this submission does not include updated Environmental Management Plans as MTI endeavors to submit these as a supplemental filing by June 30, 2022.

MTI would like to draw the Agency's attention to the fact that simultaneous to the timing of this submission, the spring of 2022 has subjected Manitoba to unpredictable and sudden flooding in many areas of our province. The need for enhanced flood protection and climate resilience infrastructure such as that presented by the Project remains critical to all Manitobans.

As demonstrated in Appendix 1 (Attached), MTI has spent the last 10 years planning and working to improve flood protection measures to better protect Manitobans. In that time, the Project was identified as the preferred means of addressing a critical vulnerability in Manitoba's existing flood protection infrastructure network. Furthermore, MTI has developed means to avoid, mitigate and monitor potential effects while allowing for continued collaboration and input from those most impacted.

We look forward to continued collaboration with the Agency in further advancing the Project.

Sincerely,



Cynthia Ritchie
Assistant Deputy Minister
Infrastructure, Capital Projects



Amna Mackin
Director
Major Projects

Attachments

c: Sarah Thiele, Deputy Minister, Transportation and Infrastructure

Appendix 1 - The Lake Manitoba and Lake St. Martin Outlet Channels Project

Flooding in Manitoba

2021 marked a decade since the catastrophic 2011 flood event that significantly affected the lives and property of Indigenous people and other Manitobans. The enormity of the damage and disruption caused by the 2011 and 2014 flood events highlighted the need for improved flood protection on Lake Manitoba and Lake St. Martin and led to the proposed Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project).

The 2011 and 2014 floods were not isolated events. Manitoba continues to experience record flood events throughout the province and expects to be subject to more extreme weather events including both wetter and drier conditions in the future. In wetter periods, the Outlet Channels Project will help protect Manitobans in areas that currently remain vulnerable to flooding.

Due to Manitoba's geographic location and topography, many areas of the province are susceptible to flooding. Water flows into Manitoba from the south, east, and west before heading north and emptying into Hudson Bay. Manitoba's landscape was largely shaped by glacial processes and, as a result, large portions of the province are relatively flat and subject to flooding during high run-off events caused by spring melt, or heavy precipitation. While much of Manitoba is vulnerable, most areas are generally well protected because of investments in flood protection infrastructure.

After experiencing several major floods over the last century, an extensive network of flood control works was built across the province to protect against these risks. Despite this extensive network, the magnitude and duration of flooding in 2011 on the Assiniboine River, Lake Manitoba, and Lake St. Martin exceeded the capacity of Manitoba's flood control infrastructure. Shorelines and areas around Lake St. Martin were flooded, which forced the evacuation of residents from a number of Indigenous communities.

The impacts from larger flood events can be severe, disrupting and displacing people; damaging homes, properties and people's way of life; harming local and provincial economies, and; resulting in significant response and recovery costs for all parties. The estimated impact of the 2011 flood for both the provincial and the federal governments exceeded \$2.1 billion and highlighted several existing vulnerabilities in Manitoba's flood control network.

Assessment of Flood Protection Options and Alternatives

In 2012, the Manitoba government commissioned the Assiniboine River and Lake Manitoba Basins Flood Mitigation Study (the Study) to identify and evaluate a wide variety

of potential flood protection measures for the Assiniboine River and Lake Manitoba basins.

The Study reviewed/evaluated:

- More than 180 reports of previous work and studies
- Hydrologic, geotechnical, and GIS data
- More than 70 mitigation options

Through the Study, the Manitoba government did their due diligence to assess all feasible, environmental and/or socioeconomic options to best address the need to upgrade protection in areas that did not currently meet the provincial standards for flood protection. Communities have provided feedback on their preferred project alternatives, which in whole or in part, were assessed in the Study. The options assessed in the Study included standard measures such as dikes, reservoirs, diversion channels, channel improvements, and modifications to land use, as well as the purchase of vulnerable properties where protection measures were not practical across the basins.

Lake Manitoba and Lake St. Martin Outlet Channels - the Preferred Project

Although other project alternatives were evaluated, increasing the outflow from Lake Manitoba and Lake St. Martin to reduce flooding experienced on those lakes was found to provide the best balance of economic, environmental, and community benefits for wide-ranging flood events such as the 2011 flood.

The initial decision to select the Outlet Channels Project was made in 2016 when the Manitoba government accepted the recommendations from the Study. The existing government subsequently re-confirmed the decision in 2018 with the announcement of an infrastructure plan to develop a permanent flood protection infrastructure solution in Manitoba's Interlake Region. Further evaluation of Project alternatives identified preferred alignments for both the Lake Manitoba Outlet Channel and the Lake St. Martin Outlet Channel, which has been relocated away from the Lake St. Martin Emergency Outlet Channel to minimize impacts to sensitive wetlands surrounding Buffalo Lake.

Consultation and Engagement

Since its announcement, design and planning for the Project have progressed in parallel with ongoing Indigenous consultation and a public engagement program. Project design and Project planning have incorporated results from these consultation and engagement programs, including aligning the Lake St. Martin Outlet Channel away from Johnson Beach on Lake Winnipeg and contributing to the many environmental management plans being developed to mitigate and monitor potential Project effects. Manitoba Transportation and Infrastructure (MTI) is committed to continuing its engagement and

consultation process as Project planning proceeds so that community concerns can be identified and addressed as part of the design. Community engagement will continue into the construction phase for the Project through an Environmental Advisory Committee (the EAC), which includes several Indigenous groups and the Rural Municipality (RM) of Grahamdale. The EAC will provide opportunities for continued information sharing and coordinate direct community involvement in Project construction through monitors that will confirm that the Project is built in accordance with the Project's environmental commitments and requirements.

Based on current design considerations the Project will be able to convey floodwater flows for flood events up to and including a repeat 2011 flood and will improve flood protection, minimize disruption to people's lives, property and way of life, and provide Manitoba with improved resiliency for our changing climate.

Project Purpose and Benefits

The purpose of the Project is to provide improved flood protection for Lake Manitoba and Lake St. Martin. The Project is based on the need to provide a design that meets flood protection commitments, maximizes flood protection benefits, minimizes environmental impact, and provides a reasonable cost for Manitobans.

The Project, while not eliminating all future floods, lessens the impact of future flood events by increasing the outflow capacity of both Lake Manitoba and Lake St. Martin. Increased outflow capacity from both lakes allows for a more effective management of water levels on both lakes to meet the following objectives:

- Increase the amount of time that Lake Manitoba and Lake St. Martin remain within their desirable water level ranges.
- Reduce the likelihood of flooding on both lakes.
- Reduce the extent and duration of flooding on both lakes.

Achieving these objectives will lower the risk of disruption to communities and flood-related damages around both lakes.

Consideration of Local Water Control Infrastructure and Past Effects

Historically, Lake St. Martin has received increased flows from Lake Manitoba through the Fairford River Water Control Structure. The natural outflow capacity of Lake St. Martin has been insufficient to handle the increased inflows due to Lake Manitoba regulation resulting in more frequent flooding than that which would have occurred naturally.

The Project will not cause or worsen flooding on Lake St. Martin compared to floods on record. The Lake St. Martin Outlet Channel is sized to a greater capacity than the Lake

Manitoba Outlet Channel to better balance incoming and outgoing floodwater flows. It is designed to offset the inflow from the Fairford River Water Control Structure and the Lake Manitoba Outlet Channel. Therefore, it will provide enhanced flood protection to Lake St. Martin and mitigate historically adverse effects of the increased flows from the Fairford River Water Control Structure on Lake St. Martin.

Mitigating Potential Downstream Effects

Downstream Water Levels

The Project will also have a negligible impact on Lake Winnipeg water levels, potentially only increasing Lake Winnipeg peak water levels by up to 7 centimetres (cm) during major floods. This limited impact results from the overwhelming size of Lake Winnipeg.

Further downstream, the effect is even less pronounced with an anticipated average increase in water level at Cross Lake of 2.5 cm during flood events and an increase of 6 cm at the peak of the 2011 flood. MTI does not anticipate the Project will have an impact on water levels in Lake Winnipeg and downstream lakes and rivers that will be discernible from existing water level fluctuations. Currently, these fluctuations range, on average, by approximately 50 cm in a given year. Operation of the Outlet Channels will be independent of Manitoba Hydro and is specifically meant to mitigate flooding, not to contribute to hydroelectric energy production. The Outlet Channels Project is not being designed, nor is it meant, to regulate water levels on Lake Manitoba or Lake St. Martin for hydroelectric production.

Downstream Water Quality – Learning from Past Experience

The purpose of the Project is to provide Manitobans with improved flood protection benefits while minimizing other undesired effects to the extent possible. MTI understands that flooding in 2011 and 2014 caused overwhelming hardship for Manitobans who reside along or depend upon Lake Manitoba, Lake St. Martin and Lake Winnipeg. MTI also recognizes that, while operating the Lake St. Martin Emergency Outlet Channel in 2011 and 2014 reduced flood levels on Lake St. Martin, it also had undesired impacts on downstream water bodies, such as Lake Winnipeg. These undesired impacts included reduced water quality caused by sediment and debris.

As part of its ongoing Project consultation and engagement with Indigenous communities, the RM of Grahamdale, and other stakeholders, MTI has received significant feedback regarding adverse effects experienced in the 2011 and 2014 floods. Consultation feedback and the undesired effects of emergency mitigation measures applied in response to these events have been a key consideration in MTI's design of the proposed Project.

MTI is confident that the proposed Project will not cause or worsen water quality in Lake St. Martin, Lake Winnipeg or further downstream. MTI has assessed the potential for the Project to cause adverse effects, has designed the Project to best prevent, minimize or control such potential effects, and has identified measures to operate the Project to achieve the desired objectives. The desired objectives are to mitigate flooding on Lake Manitoba and Lake St. Martin while minimizing impacts to those living, using, or relying upon Lake Winnipeg and the Nelson River system further downstream.

In addition to the measures put forward by MTI, feedback and concerns raised by regulatory agencies, Indigenous communities and groups, the RM of Grahamdale, and other stakeholders during the environmental assessment process have been integral to further understanding and addressing potential effects such as water quality.

Although MTI is confident in its assessment that the Project will not impact water quality in Lake Winnipeg or further downstream, MTI has committed to a comprehensive monitoring program to verify the accuracy of these predictions. This will allow MTI to implement adaptive measures if unanticipated effects arise.

The Project as Part of Manitoba's Flood Protection Infrastructure Network

Similar to the consideration of potential adverse effects on downstream environments, Project design and operation also consider and account for upstream water sources and pre-existing water management activities. The Project will operate as part of, and in conjunction with, Manitoba's flood protection infrastructure network. Even though other structures such as the Shellmouth Dam and Portage Diversion may affect water levels in upstream areas, this infrastructure is operated under their own sets of guidelines. These guidelines are independent of the Outlet Channels Project and address flooding in the regions around those structures.

Consideration of Upstream Water Control

The design and operation of each successive structure consider relevant upstream and downstream water management impacts to prevent the system from becoming overwhelmed or creating undesired vulnerabilities. During floods, the Portage Diversion will continue to be operated in the same manner as it has been historically, including the time prior to the Outlets Channels Project and after the construction of the Outlet Channels Project. Under a repeat scenario of the 2011 and 2014 flood, with the Outlet Channels Project in operation, flows from the Portage Diversion would not be greater than previously experienced and impacts of flooding to communities surrounding Lake Manitoba and Lake St. Martin would be reduced.

In this way, and as part of Manitoba's larger flood protection infrastructure network, the Project is adequately designed to manage future floods. MTI manages its infrastructure to support and benefit Manitoba communities.

Consideration of Future Climate Scenarios and Climate Resiliency

The major components of the Project, including the drop structures, bridges, water control structures, and channel dikes have been designed to pass the 2011 flood of record (1:300 year flood event) and have also been designed to withstand and convey a 1:1000 year flood event without risk of failure. During the 1:300 year flood event, a minimum of 0.6 metres (m) will be maintained between the water surface elevation and top of the channel dikes, and the erosion thresholds of the outlet channels will not be exceeded. During the 1:1000 year flood event, a minimum of 0.3 m will be maintained between the water surface and the top of the channel dikes, and the factor of safety against erosion would be temporarily decreased, but the primary Project components are protected against potential failure.

Manitoba recognizes a need to enhance its climate resiliency and provide protection for remaining flood vulnerabilities. Climate change projections indicate that climate change could have an impact by increasing the average annual runoff volumes for the watershed. This could in turn make major flooding more frequent. With the more severe climate change projections included, Project flows associated with a 1:300 year design flood event will be greater than at present. However, they would still be less than the magnitude of the estimated present-day 1:1,000 year flood event.

The Outlet Channels Project provides Manitoba with a means to improve flood protection on Lake Manitoba and Lake St. Martin. MTI's enclosed response to Technical and Public Information Requests is meant to:

- further demonstrate and clarify the Project benefits;
- address outstanding concerns regarding potential Project effects;
- demonstrate MTI's commitment to mitigate, monitor and address potential environmental effects; and
- outline MTI's commitment to continued dialogue, engagement and consultation with potentially affected Indigenous groups and the RM of Grahamdale.

Continued Collaboration and Project Advancement

MTI looks forward to continued collaboration with the Agency and other members of the Technical Advisory Group for the Project. We hope that your review of the enclosed submission will recognize the continued efforts put forward by MTI and that we can cooperatively progress to advance the Project for the benefit of all Manitobans.