

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT
RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-53

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Abbreviations and Acronyms

EIS	environmental impact statement
EMP	Environmental Management Program
IAAC	Impact Assessment Agency of Canada
LAA	local assessment area
LMOC	Lake Manitoba outlet channel
LSMOC	Lake St. Martin outlet channel
PDA	project development area
PR	provincial road
RAA	regional assessment area
SAR	species at risk
WCP	Wetland Compensation Plan
WMP	Wildlife Monitoring Plan

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EIS Guideline Reference: 7.2.3 Changes to riparian, wetland and terrestrial environments;
7.3.2 Migratory birds; 7.3.4 Other valued components; 7.3.5 Species at risk

EIS Reference: 8.3.6.2 Change in Habitat

Context and Rationale

The EIS Guidelines require the proponent to assess the effects of the project on the habitat of migratory birds in terms of quality, quantity, diversity, distribution and functions and changes to critical habitat for federally listed SAR.

The EIS identifies wildlife use of project-area wetlands and species associations with wetlands are indicated in the appended Technical Reports (EEI 2017a, b). The EIS predicts project changes to water levels and inflow to waterbodies within the LAA and RAA and predicts residual effects to wetlands, such as alteration of vegetation cover types. Further, in its assessment of changes to habitat, the EIS states alterations of the sub watersheds in the intersection of the LMOC and PR 239 realignment may cause changes to wetland habitat quantity and quality resulting in impacts to Migratory birds and SAR. Migratory birds and SAR identified for the project use various wetland types for a variety of nesting, breeding, and staging activities.

Wetland compensation in the EIS includes both wetland creation and wetland enhancement, but information on wetland types to be included, habitat functions, restoration objectives, or post-construction revegetation monitoring is not included. The assessment of how the Project changes to wetland types by area will affect habitat functions of wetlands for SAR and migratory birds is incomplete as the description of pathway of effects is not extended to how these primary changes would alter habitat quality and function for migratory birds and SAR.

Migratory birds and SAR observed in the Project RAA/LAA/PDA include species that use various wetland types (e.g., open water, marsh, swamp, fen, bog) for a variety of nesting, breeding, and staging activities. Understanding potential changes to wetland habitat quality, function, and quantity by the Project, is important for planning mitigating and understanding potential effects to migratory birds and SAR.

Information Requests

- a) Describe interactions of predicted project abiotic changes in project-area waterbodies, wetlands and riparian areas with habitat quality, quantity and wetland function for migratory birds and SAR.
- b) Evaluate functional changes to habitat quality in the assessment of changes to wetland function. Explain how residual effects of the Project on wetlands relate to loss of habitat functions for migratory birds and SAR.

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- c) Identify mitigation measures for altered habitat functions resulting from the Project, and consider timing of Project changes with seasonality of habitat use. Include details regarding proposed wetland compensation offsetting and how habitat function will be considered in offset planning.
- d) Explain how habitat loss will be quantified for wetland dependent SAR and how this will be used to calculate wetland function compensation offsets.
- e) Describe monitoring and follow-up for habitat function of wetlands and effects of habitat changes or loss to migratory birds and SAR.

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- a) The environmental impact statement (EIS) identifies that some direct loss of wetland habitat will occur during construction (1,014.9 ha; Volume 3, Section 8.2.4.3, Table 8.2-10). In addition to the loss of wetlands intersected by the Project footprint, wetlands adjacent to Lake St. Martin and Lake Manitoba may be indirectly affected by the management of flood waters during Project operation (i.e., flood conditions) and through alteration of hydrology due to changes in surface and groundwater flows during non-flood conditions. Management of flood waters during operation could have indirect effects on adjacent wetlands but is not expected to change a wetland class (i.e., shallow open water to marsh) or remove structural layers (e.g., trees, shrubs, grasses).

Alterations to drainage flows will affect soil moisture regimes and hydrologic function upgradient and downgradient of the Lake Manitoba Outlet Channel (LMOC) and Lake St. Martin Outlet Channel (LSMOC) during operation (see IAAC-23, Figure IAAC-23-1). Surface drainage structures on the upgradient side of outlet channels are expected to limit the extent of effects on surface drainage and shallow subsurface flow to the project development area (PDA) for the LMOC (Volume 2, Section 6.3.4.2). Residual effects downgradient (i.e., on the east side) of the LMOC are expected to extend beyond the PDA into the local assessment area (LAA) (Volume 2, Section 6.3.4.2). The change in water balance east of the LMOC PDA may result in changes to water levels in wetlands (Volume 2, Section 6.3.4.2 and Section 6.4). Should this drying-down occur, it could reduce the area of open water, shift plant composition, favouring species adapted to less frequently flooded and shallower conditions, and reduce wetland extent. The degree of change will be measured through surface water and groundwater monitoring which will evaluate the magnitude of effects from the Project. Wetlands bordering the LMOC are predominantly marshes and shallow open water wetlands (Volume 3, Figure 8.2B-11) and possible changes in plant species composition (if any) are expected to mainly consist of changes in the dominance of different grass and sedge species. Wetland classes are expected to be unchanged (i.e., remain as marsh or shallow open water).

Drainage changes along the east side of the LMOC could reduce habitat for migratory birds and Species at Risk (SAR) dependent on open water habitats (e.g., waterfowl such as dabbling ducks [e.g., mallard], horned grebe, northern leopard frog) and increase it for others that prefer shallower habitats or habitats less frequently flooded (e.g., shorebirds, least bittern, yellow rail).

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It is anticipated that residual effects to surface drainage and shallow subsurface flow along the LSMOC will extend beyond the PDA into the LAA (Volume 2, Section 6.3.4.2; IAAC-23). Following the implementation of surface drainage structures on the upgradient side of the LSMOC (i.e., the east side of the channel), the potential for increased wetness of land outside the PDA will be reduced. Natural surface and shallow subsurface drainage flow may be affected along the entire length of the LSMOC, with effects on drainage not expected to occur beyond 500 m upgradient and perpendicular to the channel (Volume 2, Section 6.3.4.2 and Section 6.4; IAAC-23, Figure IAAC-23-1 and IAAC-07). Therefore, during operation and non-operating conditions, up to 1,200 ha of land may experience increased soil wetness east of the LSMOC PDA. The wetting up on the east side of the LSMOC channel will result in wetter soil conditions, which will in turn, have the potential to shift plant composition favouring species adapted to wetter conditions, potentially increasing wetland sedge and grass abundance and reducing non-vascular plant abundance. Tree and shrubs may also be killed due to increased soil saturation and anoxic soil conditions.

Downgradient of the LSMOC (i.e., west of the LSMOC), conditions are expected to become drier with effects potentially extending along the entire length of the channel, but not beyond 500 m perpendicular to the channel (Volume 2, Section 6.3.4.2; see Section 6.4 Groundwater and Surface Water and IAAC-23 Figure IAAC-23-1). These drier conditions could shift plant composition to species adapted to drier conditions and increase tree and shrub growth and establishment.

Drainage changes associated with the LSMOC could result in a localized shift in the abundance and distribution of suitable habitats for some migratory birds including SAR. Wetter sites would provide a potential increase in suitable habitats for open-habitat species (e.g., savannah sparrow, Wilson's snipe, yellow rail) and species that use edge habitats or areas with dead standing trees (e.g., olive-sided flycatcher, tree swallow). Drier sites would provide a potential increase in suitable habitats for migratory bird species that use more complex habitats (e.g., song sparrow, vesper sparrow, American robin).

- b) See responses to (a) and (d).
- c) Monitoring through the surface water monitoring plan and groundwater monitoring plan will evaluate the magnitude of potential effects to wetlands and additional mitigation will be identified and prescribed to limit effects, as appropriate. Wetland compensation details have not been finalized; however, wetland area directly affected by the LMOC and PR 239 realignment footprint will be evaluated and considered for replacement elsewhere. A fulsome plan (see IAAC-46 for an outline of this plan) is being developed and will be shared with regulators, stakeholders and communities prior to construction. The plan will identify how wetlands will be replaced, including appropriate classes and will include measurable parameters that affect habitat for wetland-dependent species such as least bittern, waterfowl and yellow rail, and northern leopard frog.
- d) Habitat loss for wetland dependent SAR has been indirectly quantified using land cover data in Volume 3, Table 8.2-10 (see Volume 3, Section 8.2.2.1 for a description of how land cover data was developed for the PDA and LAA). Of the broad wetland types listed in Table 8.2-10, three have the potential to support wetland dependent SAR: marsh, shallow open water, and graminoid fen (see

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Table IAAC-53-1). Marsh, shallow open water, and graminoid fen are some of the wetland types that will be included in the Wetland Compensation Plan (WCP) that will be developed as part of the Environmental Management Program (EMP). Wetland field data gathered in 2020 will assist in further refining these broad wetland types to understand the specific wetland classes that need to be incorporated into the WCP. It is anticipated that some of these wetland classes will provide habitat attributes required by wetland-dependent SAR (e.g., Class III marsh with a mix of grasses and sedges used by yellow rail).

Table IAAC-53-1 Area of Wetland Types having potential to support SAR in the PDA

Wetland Type	Amount of Habitat Type Removed in PDA	SAR having Potential to occur
Marsh	283 ha	Yellow rail; least bittern
Shallow open water	38.7 ha	Least bittern; horned grebe; northern leopard frog
Fen graminoid	196.7 ha	Yellow rail

- e) A Wildlife Monitoring Plan (WMP) will be developed in consultation with regulators, stakeholders and Indigenous communities; it will contain monitoring methods for wildlife potentially affected by the Project including migratory birds and SAR. The WMP will provide details on seasonal monitoring of wetland-dependent migratory birds and SAR, which can be used as indicators of wetland function.

References

None