CN Milton Logistics Hub – Fish and Fish Habitat Mitigation Measures (Condition 7.1)

The purpose of this memorandum is to document the mitigation measures to protect fish and fish habitat when conducting any Project activity in or near water in accordance with Condition 7.1 of the Decision Statement issued by the Minister of the Environment on January 21, 2021, which states:

> *The Proponent shall develop, prior to construction and in consultation with the Mississaugas of the Credit First Nation, the Six Nations of the Grand River, Conservation Halton and other relevant authorities, and implement, during all phases of the Designated Project, measures to protect fish and fish habitat when conducting any Designated Project activity in or near water not already approved under the Fisheries Act and its regulations, taking into account Fisheries and Oceans Canada's Measures to protect fish and fish habitat*.

Through the environmental assessment process, CN identified various mitigation measures to be implemented during construction and operation to protect fish and fish habitat. Such measures have been identified through the detailed design and tender process for implementation by the contractor during construction and to be incorporated into the final designs of the Project for implementation during operations. These measures were incorporated into the design plans, Letter of Intent, and proposed offsetting plan submitted to and approved by Fisheries and Oceans Canada (DFO), have been identified through the tender process and incorporated into the Environmental Protection Plan to be implemented by the contractor during construction.

Below is a summary of the proposed mitigation measures and commitments for fish and fish habitat to be carried out by CN, its contractor(s), and subcontractor(s) during construction and operation of the Project. Mitigation measures to protect fish and fish habitat include:

General Construction Mitigation

- Construction activities near water will be carried out following *DFO Measures to Avoid Causing Harm to Fish and Fish Habitat* and in accordance with the DFO Authorization.
- Erosion and sediment controls plans have been developed to implement measures to reduce erosion and sedimentation in waterbodies during construction of the channel realignment work, culvert installations, and area grading activities, which will be installed and maintained throughout all phases of construction.
- Fording of watercourses or water bodies will not be permitted unless approved by the applicable regulatory authority.
- Stream diversions and culvert installations will be conducted in isolation of stream flows (e.g., dam and pump, flume, diversion).
- Pump intakes will avoid disturbance of the watercourse bed and be screened in accordance with *DFO's Interim Code of Practice: End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater*.
- The Contractor will notify CN 72-hours before construction of any watercourse or water body crossing or diversions so that any necessary fish salvage operations can be conducted (i.e., all culvert installations, channel diversions or in-water work).
- CN will retain a qualified aquatic biologist to conduct fish salvages prior to dewatering areas for in-stream work in accordance with the DFO Authorization.
- Construction activities will be timed to avoid or reduce the extent and duration of watercourse diversions required during the realignment of Indian Creek, Tributary A and Tributary C.
- Designated refueling areas for yard equipment will be established at a safe distance (30 m setback minimum distance from top of bank) from fish habitat. Ultra-low sulphur fuel will be used when available.

- No fishing will be permitted on-site or surrounding areas.
- Passage for wildlife or fish through culverts will be maintained throughout construction, and access to culverts shall not be blocked or prohibited.
- The Contractor will develop a detailed site-specific mitigation plan that meets all applicable requirements and will submit the plan to CN prior to initiating any watercourse or water body crossing activities not already approved as part of the proposed channel realignments.

In-water Work

- All in-water work will be scheduled with CN's Environmental Monitor in advance to accommodate coordination with fish rescue activities.
- Once mitigation plans are in place, the Contractor shall notify CN's Environmental Monitor 72 hours before any in-water work, including but not limited to construction of any watercourse or water body crossing or diversions, so that any necessary fish salvage operations can be conducted (i.e., culvert installation, channel diversions or in-water work).
- Fish rescue activities will be undertaken by a qualified aquatic biologist contracted by CN. The sub-contractor shall not commence work until the fish rescue activities have been completed.
- Before the commencement of in-water activity, the Contractor will be responsible for making all necessary equipment and materials available on-site, including contingency equipment and materials.
- The Contractor will provide an updated schedule identifying when in-water work is proposed. All in-water work will be scheduled with the Environmental Monitor in advance to accommodate coordination of fish rescue activities conducted by a qualified fisheries biologist.
- Downstream flows will be maintained at all times during construction.
- Earthen plugs at the connection points with the existing channels will be left until such time that the realigned channels are vegetated, and stabilized, and the contractor commissions the realigned channels or channel segments.
- The Contractor will isolate in-stream cast-in-place concrete from fish-bearing waters until the concrete has properly cured (minimum of 48 hours), in accordance with the Channel Realignment drawings and associated Isolation and Dewatering Plans.
- In-water works in Indian Creek, Tributary A and Tributary C (i.e., fish habitat) will be restricted from March 15 to June 30, during the most sensitive periods for fish spawning, rearing and migration life processes. No in-water construction, fording or installation of temporary crossings of fish-bearing watercourses will occur during this period.

Fish Passage

- The new channels will be constructed in the dry, while leaving earthen plugs at the connection points to reduce the period when installation of coffer dams is potentially required, thus reducing potential to disrupt fish movement, migration and passage.
- Passage for wildlife or fish through culverts will be maintained throughout construction, and access to culverts shall not be blocked or prohibited.
- Culverts conveying Tributary A beneath the Terminal and gate area have been designed to accommodate fish passage through the incorporation of a low flow channel and resting pools within a larger single-cell culvert (rather than twin cell culverts originally proposed).
- Downstream flow will be maintained at all times when conducting in-water construction activities.
- Water and pump intakes will be installed to reduce or avoid disturbance of the watercourse bed and will be screened with a maximum mesh size of 2.54 mm and an approach velocity of 0.038 m/s. To

accomplish this, where pumps larger than 15 cm diameter are used, intakes will be placed in a mesh cage (2.54 mm) to reduce the approach velocity that fish are exposed to and prevent them from being impinged on the intakes. Pump intakes will be screened in accordance with *DFO's Interim Code of Practice: End-of-pipe Fish Protection Screens for Small Water Intakes in Freshwater*.

- Intake pump screens will be maintained free of debris.
- No more than 10% of the instantaneous water flow will be withdrawn (i.e., pumping) at any given time.
- In-water work will only occur in accordance with approved timing windows, which in this case allows in-water work from July 1 to March 14.
- *DFO Measures to Protect Fish and Fish Habitat* (DFO 2019) will be followed to reduce effects on fish and fish habitat (e.g., timing windows for in-water construction activities, fish relocations, sediment and erosion controls, operation of machinery, etc.).

Fish Mortality

- Stream diversions and culvert installation will be conducted in isolation of stream flows (e.g., dam and pump, flume, diversion).
- Project personnel will not be permitted to fish on the work site.
- The Contractor will notify CN 72 hours before construction of any watercourse or waterbody crossing or diversions to ensure fish salvage operations are conducted, where required.
- Fish salvages will be conducted by a qualified aquatic biologist, where required, in accordance with the Decision Statement (Condition 7.2) and DFO Authorization.
- Captured fish will be released to areas within the same watercourse, outside of the work area, where suitable habitat exists.
- Erosion and sediment controls will be installed at appropriate locations adjacent to all watercourses and/or water bodies, or as directed by the Environmental Monitor(s). Appropriate temporary erosion and sediment control structures will be installed, maintained and monitored through all phases of construction.

Water Quality

- A riparian buffer (i.e., vegetated area to be protected adjacent to Indian creek and Tributary A) will be established and clearly identified prior to the start of any clearing activities. Disturbance will be restricted in this area to activities associated with realignment, restoration and naturalization as per the channel design drawings and Final Restoration and Enhancement Plans, or where installation of SWM outlets are required.
- Erosion and sediment controls will be installed and maintained at appropriate locations adjacent to all watercourses and/or waterbodies, or as directed by the Environmental Monitor(s), through all phases of construction.
- Any flumes, dams and pumps, diversions or other methods to isolate and convey water in Tributary A and Indian creek will be designed and implemented so as not to cause erosion or introduce sediment into the channel.
- Grubbing, stripping and grading on approach slopes to watercourses and waterbodies will be restricted to the amount required to allow safe passage of equipment and completion of the relevant work (i.e., channel realignment activities and SWM outlets).
- Grading of the primary banks of watercourses and waterbodies will be delayed until immediately before construction of temporary crossings and watercourse realignment, where practicable.

- Dewatering will be completed in a manner that does not cause erosion or allow sediment to re-enter a watercourse or waterbody through the use of appropriate sediment control devices.
- Stormwater run-off from the Terminal will be collected and treated prior to release to Indian Creek or Tributary A.
- DFO Measures to Protec Fish and Fish Habitat (DFO 2019) will be followed to reduce effects on fish and fish habitat (e.g., timing windows for in-water construction activities, fish relocations, sediment and erosion controls, operation of machinery, etc.).

Vegetation Clearing

- When clearing vegetation to accommodate channel realignment, the Contractor will fell trees away from watercourses and water bodies.
- The Contractor will immediately remove any felled trees, debris or soil inadvertently deposited below the high watermark of a watercourse.

Operational Mitigation

- Potential operational effects will be mitigated through successful implementation of the SWM plan, which will include the construction and maintenance of a SWM system to manage the quality and quantity of runoff from the Project, which includes:
  - Oil/grit separators designed to reduce sediment loads in stormwater runoff from the terminal.
  - Grassed swales designed to convey storm runoff to the SWM ponds while filtering sediment, mitigating thermal impact (vegetation shading), and increasing infiltration and recharge of surface run-off from the impervious surfaces.
  - SWM ponds designed to attenuate active storage discharges to account for locally-derived erosion and sediment control criteria (AMEC 2013c) and to satisfy the *MOE Stormwater Management Planning and Design Manual* (2003) guidelines for an Enhanced level of water quality control (i.e., target removal rates for total suspended solids (TSS) and total phosphorus of 80% and 70%, respectively). The two SWM ponds include:
    - A sediment forebay to trap sediments at the inlet and facilitate maintenance
    - A floating boom to trap floatable hydrocarbons
    - A permanent pool of water
    - Extended detention volume, where water will be stored and gradually released through a controlled outlet
    - Flood storage volume to store water during larger storm events to attenuate peak flow rates to the predevelopment levels
    - An overflow spillway to safely pass the Regional storm event
    - Landscaped areas around the pond to promote evapotranspiration
    - Shut-off valve to contain flows in case of a spill
    - Thermal mitigation measures that include vegetated berms, planting along the wet ponds and outlet channel to provide dense shading, and a reverse bottom draw outlet pipe
- The restoration and enhancement areas, as well as the riparian and floodplain areas to be naturalized, adjacent to Indian Creek and Tributary A will be maintained as vegetated buffers maintained between terminal infrastructure and fish habitat.

Fish Habitat Compensation and Offsetting, Restoration and Enhancement

To mitigate or offset potential serious harm caused by Project-related activities, fish habitat altered or destroyed as a result of Project-related activities during construction will be offset by:

- Natural channel design principles have been applied to appropriately design and dimension the realigned channels, incorporating natural bed morphology (pools, riffles) and planform geometry
- Channel realignments have been planned such that they do not excessively aggrade or degrade
- Channels have been designed to be free of barriers to fish migration
- Existing flows will be conveyed such that flood elevations are not increased, bankfull frequency is maintained, and downstream channel morphology is not altered
- Aquatic and riparian habitat proposed as part of the realigned channels and enhancements along Tributary and Indian Creek will be functional over a range of flows, and include the:
  - creation of new, diverse habitat through the construction of a natural channels in Indian Creek and Tributary A
  - creation of supplementary habitat through the development of offline, but connected wetlands for fish rearing and feeding habitat
  - an increase in diversity of habitat types (e.g., grass spawning areas with suitable hydrology to permit egg deposition, maturation and movement of YOY back to the main branch)
  - in-water habitat enhancement measures in areas of poor or degraded habitat (i.e., upstream of the realignment reach)
- Improved water quality through the removal of an on-line agricultural pond and construction of a SWM system (increase in water quality, decrease in average water temperature)
- Increased riparian cover along the watercourse (decreased average water temperature, increased bank stability, increased cover, increased and more diversified allochthonous inputs)
- Naturalization and revegetation of the Indian Creek subwatershed (improved water quality and flow regime, which can result in reduced erosion, more baseflow, lower peak flows)
- Improved habitat conditions that could facilitate the possible future re-establishment of Silver Shiner (SAR)