Enbridge Pipelines Inc. ("Enbridge")
Application for the Line 10 Westover Segment Replacement Project (the "Project")
Hearing Order OH-001-2016 File No. OF-Fac-Oil-E101-2015-09-02

Enbridge Response to National Energy Board ("NEB" or "Board")
Information Request ("IR") No. 4

Decommissioning Matters

4.1 Clarifying Decommissioning Costs

Reference: A74506-6 Enbridge, Application, Section 3.3, Financing, PDF page 1 of 3

Preamble: In the Reference, on lines 29 and 30, Enbridge stated that "funding is available to finance the proposed decommissioning Project scope."

Request:

a) Discuss the funding mentioned in the Reference including instruments and sources;

b) Discuss whether Enbridge anticipates accessing its Abandonment Trust for any of these decommissioning costs; and

c) Should the Board direct removal of some of the pipeline as opposed to decommissioning in place, discuss how this new scope of work would be funded. Please also identify the associated funding sources.

Response:

a) To construct the Project, Enbridge entered into a commercial arrangement with a third party customer to finance the project. This commercial agreement includes both construction of the replacement segment and includes the funds for the decommissioning of the segment taken out of service.

b) Enbridge does not anticipate accessing its Abandonment Trust for any of the decommissioning costs associated with the Project.

c) The commercial agreement funding the project will cover the removal costs of any portion of the decommissioned pipeline that the Board may direct to be removed.

Engineering Matters

4.2 **Pipeline Specifications – Pressure Profile Clarification**

Reference:

i) A77227-10 Enbridge, Attachment 1 to Enbridge Response to NEB IR No. 2.8.a, PDF page 1 of 1

ii) A77227-2 Enbridge, Enbridge Response to NEB IR No. 2.8, PDF page 20 of 71

iii) A78683-4 Enbridge, Attachment 1 to Enbridge Response to NEB IR No. 3.2.a, PDF page 5 of 5

iv) CSA Z662-15 – Oil and Gas Pipeline Systems (CSA), Section 4.3.5 Pressure design for steel pipe — General, Page 92

Preamble: In Reference i), in response to an initial request for clarification regarding the new pipeline's pressure profile, Enbridge provided the graph of the maximum operating pressures (MOPs) per kilometer post, showing a steady MOP of at least 10800 kPa (1566 psi) along the line.

In Reference ii) Enbridge submitted the following updated new line pipe specifications: outside diameter = 508 mm, minimum wall thickness = 7.14 mm and Grade = 483.

In Reference iii), Enbridge stated that an MOP of 1440 psig was used in the transient analysis to be conservative for the new pipeline segment.

Reference iv) presents required design pressures of steel pipe for given design wall thicknesses.

The Board acknowledges Enbridge's statement in Reference ii) that if detailed engineering demonstrates that any changes are required to the pipe specifications as applied for, Enbridge will advise the NEB and make any necessary amendments to the application. However, the Board is of the view that the information in References i) and iii) that has been provided by Enbridge regarding the MOP of the new pipeline appears to be inconsistent.

Request: Provide the following information:

a) The main site specific MOPs (i.e. maximum and minimum due to elevation/topography, at Westover station, Nanticoke Junction, etc.) and corresponding kilometer posts along the new pipeline.

b) Specify for each site the pipe wall thickness and the maximum operating stress (i.e. ratio of MOP/ Pressure corresponding to the Specified Minimum Yield Strength).

Response: a) Enbridge uses different definitions for Maximum Operating Pressure ("MOP") depending on where the project falls within the project's lifecycle. The definitions are:

- Calculated MOP – this is used during the planning phase of a

project. The MOP is a straight line based on Barlows Equation and selected pipe wall thickness and any additional design factors.

- Engineered MOP – this is used during the detailed engineering phase of a project. The MOP is point specific based on a reference location (i.e. discharge of a pump station) and elevation profile. This MOP is used to develop the hydrotest plan and confirm the materials selected for the design.

The MOP profile presented in Reference i) was the Calculated MOP.

Please refer to Attachment 1 to IR No. 4.2.a for the updated engineered MOP profile. The attachment is point specific based on a discharge pressure of 9,930 kPag at Westover station as per Table 7.1 in Project Application [NEB Filing ID: A74508].

This MOP profile is still being investigated as part of detailed engineering to comply with CSA Z662-15 and other industry and company standards (as applicable). Enbridge will advise the NEB and make any necessary amendments to the application if this analysis demonstrates that any changes are required.

b) Please refer to Attachment 1 to IR No. 4.2.b showing the minimum pipe wall thickness and maximum operating stress.

4.3 Remote Sectionalizing Valves

Reference:

i) A77227-14 Enbridge, Attachment 2 to Enbridge Response to NEB IR No. 2.10.a – Intelligent Valve Placement (IVP) Analysis

ii) A77227-15 Enbridge, Attachment 1 to Enbridge Response to NEB IR No. 2.10.c, Nanticoke Water Crossings, PDF page 1 of 1

iii) A77227-2 Enbridge, Enbridge response to NEB IR 2.10, PDF page 24 of 71

iv) CSA Z662-15 – Oil and Gas Pipeline Systems (CSA), Section 4.4 Valve location and spacing, Page 106

v) A74508-10 Enbridge, Application, Appendix 6.1 Fisheries and Oceans Canada Self-Assessment Report for the Proposed Line 10 Westover Segment Pipeline Replacement Project, Table A-1 Watercourse Crossing Details, PDF page 24 of 68

Preamble: In Reference i), Enbridge provided the results of its IVP analysis for the Project. Enbridge stated that step 2 of the IVP process consists of placing valves on both sides of major water crossings (MWC). Enbridge further stated, in PDF page 6 of 15, that water crossing widths have been estimated using satellite imagery. If it is determined through field verification that any water crossing measures more than 100 ft from high water mark to high water mark then the project shall contact Liquid Pipeline Operations Engineering (LP Ops Eng) to determine additional valve requirements.

In Reference ii), Enbridge provided a table listing water crossings, kilometer posts and related volume out reductions resulting from the Remote Sectionalizing Valves (RSVs) placement.

In Reference iii), Enbridge submitted that its IVP methodology considers and protects all water crossings as well as other high-consequence areas (HCAs) reducing the maximum potential release volume to as low as reasonably practicable, mitigating the potential impacts to people and the environment. Enbridge asserted that, in doing so, it is reducing the risks of a release along the entire pipeline going above and beyond Canadian regulatory requirements of CSA Z662. However, Enbridge did not provide detailed rationales for specific locations, including where potential residual releases appear to remain high in proximity of multiple HCAs. In addition, Enbridge did not describe if the proposed IVP program would provide any improvement from the current valve placement along the pipeline.

In Reference v), Enbridge submitted a detailed list of watercourse crossings along the Project.

Request: Provide the following:

a) Clarification of Enbridge's criteria to select MWCs, in order to meet the requirement of Clause 4.4.9 of Reference iv) including its notes 1 and 2. The criteria should include factors such as channel-specific

seasonal hydrographs, flood frequency, storm flood volumes and flow analyses;

b) A discussion regarding the effectiveness/efficiency of the valve placement along the pipeline segment, before and after the Project implementation. Specify:

b.1) If there are areas along the line where the total volume out would increase as the result of the Project. If so, provide related volume out values and locations for these areas;

b.2) The type (RSV, manually operated, check valves, etc.) and location (kilometer post) of every valve along the existing pipeline, in the current operating condition.

c) An explanation of why Enbridge believes that additional valves are not necessary along the pipeline, particularly immediately downstream and/or upstream of the following water crossings listed in Reference iii), taking into account factors including, but not limited to, associated potential volume out reductions and impacts of oil release on surrounding HCAs:

c.1) The two Unnamed Creeks respectively at stationing 2,676 m and 3,017 m; and

c.2) The three Trib to Big Creeks from stationing 11,875 m to 12,308 m.

d) The updated list and location of MWCs along the pipeline (if any);

e) The list and location of additional RSVs along the pipeline (if any), resulting from the information required above.

f) Confirmation of whether Enbridge assessed the consistency between the information (i.e. water crossing names, dimensions, locations, etc.) presented in both References ii) and v). Explain the difference in their number of water crossings;

g) Enbridge's estimates of all water crossing widths based on the satellite imagery work, as describe in PDF page 6 of 15 of Reference i);

h) Description of which water crossings were subsequently identified for field verification; and

i) Results of Enbridge's field verification work, including measurements of water crossing widths, used in the Project's IVP process.

Response: a) Enbridge's conservative approach to risk management and valve placement is designed to ensure we not only meet, but exceed regulatory standards. Our Intelligent Valve Placement ("IVP") methodology applies competent engineering judgment and sound engineering practices to reduce potential release volumes to the

lowest level reasonably practicable along the entire pipeline. In doing so, it helps protect the public and the environment in the unlikely event of a pipeline release.

Due to the large number of watercourses, the short distances between them, and the presence of multiple high-consequence areas ("HCAs") along the Line 10 corridor, the IVP methodology applied to Line 10 was sufficiently conservative that it treated all watercourse crossings equally in terms of risk assessment and valve placement. In other words, Enbridge effectively treated every Line 10 watercourse crossing as a "major water crossing," and placed remote-controlled valves at optimal distances on both sides of the watercourse crossings to reduce the maximum release volume between valves to as low as reasonably practicable, and to minimize the risk to the public or the environment. Therefore, Enbridge satisfied the requirements of CSA Z662-15, clause 4.4.9.

b.1) The initial volume out will not change (flow rate is remaining the same) however the drain down volume without further valves will be higher due to the proposed increased line diameter of 20 inches. However, as a result of applying the IVP methodology to protect water crossings and HCAs, the replacement project also includes the installation of two additional remote controlled valves which will have the added benefit of reducing the volume out close to the original 12" volumes.

Please refer to Attachment 1 to IR No. 4.3.b.1 for a graph showing the baseline volume out, red line (current operations), the baseline volume out associated with the line size increase, blue line (20 inch no additional valves), and the new baseline with the proposed additional valves, orange line (20 inch with additional valves). As indicated in the graph the increase in volume out due to line size change is mostly countered by the placement of two additional valves, the difference between current operations (red line) and new proposed operations (orange line).

b.2) For the existing pipeline, in the current operating condition, there are two remote controlled gate valves, one at Westover station KP 0 and the other at Nanticoke KP 3031.23.

c.1) Enbridge took a conservative approach that treated all watercourse crossings equally in terms of impacts and valve placement. The IVP methodology was designed to best protect the public and the environment (HCAs) in the entire area, rather than focusing only on specific water crossings.

Moving RSV1 to upstream of the water crossing at stationing 2,676 m would decrease the volume out at the two water crossings in question (2,676m and 3,017). However, it would also result in an increase in volume out to eight other crossings, a high populated area, other population area, drinking water resource and environmentally

sensitive area.

Please refer to Attachment 1 to IR No. 4.3.c.1.

c.2) Enbridge took a conservative approach that treated all watercourse crossings equally in terms of impacts and valve placement. The IVP methodology was designed to best protect the public and the environment (HCA's) in the entire area, rather than focusing only on specific water crossings.

Moving RSV2 to downstream of the water crossing at stationing 11,875 m would decrease the volume out at the three water crossings in question, environmentally sensitive area, and other population area. However, due to the elevation profile, it would result in an increase in volume out to nineteen other crossings, drinking water resource, other population area, and environmentally sensitive area.

Please refer to Attachment 1 to IR No. 4.3.c.2.

d) The most current watercourse listing for the project was filed with the Board in the preliminary project Environmental Protection Plan ("EPP") on July 15, 2016 [NEB filing ID: A78552] in Appendix O, Table 2. However, further updates will be added to the table for the Electrical Transmission Corridor Route (once field data is summarized) and for any subsequent reroutes that may affect watercourses. Updates will be submitted to the Board prior to the commencement of construction.

e) There were no additional RSVs resulting from the information referenced in the question above.

f) The IVP report used water crossing provided by a third party consultant who used satellite imagery. The Fisheries and Oceans Canada Self-Assessment report performed a field identification of all water crossings where land access was granted.

g) Please refer to reference ii) A77227-15 Enbridge, Attachment 1 to Enbridge Response to NEB IR No. 2.10.c, Nanticoke Water Crossings, PDF page 1 of 1. Column title "width (m)".

h) The project conducted a Department of Fisheries and Oceans Canada Self-Assessment which field identified, and verified all water crossings (where access was granted) including all satellite imagery locations used in initial IVP report.

i) The results of the field verification work are in reference v). The IVP has been updated with this new data. Please refer to Attachment 1 to IR No. 4.3.i.

4.4 Project Flow Capacity

Reference:

i) A74508-13 Enbridge, Application, Section 7.1.2 Pipeline Specifications, Table 7.1, New Pipe Preliminary Design Parameters, PDF page 3 of 17

ii) A74506-4 Enbridge, Application, Section 1.3 Project Purpose, PDF page 2 of 2

iii) A77227-14 Enbridge, Attachment 2 to Enbridge Response to NEB IR No. 2.10.a – Intelligent Valve Placement (IVP) Analysis, page 3 of 15

iv) A78683-4 Enbridge, Attachment 1 to Enbridge Response to NEB IR

Preamble:

In Reference i), Enbridge stated that the Annualized Daily Average Capacity is 11,797 m3/d (74,200 bpd).

In Reference ii), Enbridge stated that the Project is a routine maintenance project that, upon completion, will restore this segment of Line 10 to its original operating capacity of approximately 74,200 bpd.

In Reference iii), Enbridge provided the values of parameters that were used in the IVP analysis, including a flow rate of 82,444 bpd.

In Reference iv), Enbridge stated that the scenario described for the Project IVP is based on an initial steady state condition where the system is operating at a flow rate of 92.1 kbpd (610.1 m3/hr), which is greater than 105% of the system's design capacity. The Board notes that this suggests a design capacity of about 87,714 bpd.

Request:

Provide the following:

a) Confirmation of the Project's operating flow rate that Enbridge is applying for; and

b) Clarification/explanation of each flow rate provided in the application and subsequent submissions.

Response:

a) The project is applying for an MOP of 9,930 kPag at the discharge of the Westover Station, which given current operating conditions would result in an annual average capacity of 11,797 m3/d (74,200 bpd) as per Table 7.1 in the Project Application [NEB Filing ID: A74508].

b) Reference i) refers to the "Annualized Daily Average Capacity" which Enbridge defines as the sustainable average throughput of the pipeline on an annual basis taking into account planned and unplanned events such as scheduled maintenance, impacts of construction in the area, power failures, etc. Reference ii) refers to the "original operating capacity" of Line 10 and represents the Annual Daily Average Capacity in Reference i). These references correspond to the MOP referred to in Enbridge's Response to NEB IR No. 4.4.a to yield an annual daily average capacity of 74,200 bpd. This capacity is utilized in items such as the operational philosophy of the

pipeline and customer agreements, and may also be referred to as the "Annual Capacity" or "Project Annual Capacity". It represents the commercially committed capacity (the average capacity Enbridge would anticipate over the course of a year).

Reference iii) refers to a "Flow Rate" of 82,444 bpd. This flowrate corresponds to the Annual Daily Average Design Capacity is the maximum theoretical average throughput of the pipeline assuming ideal operating conditions (i.e. all pumps available, no pressure restrictions, no impacts from inclement weather, etc.). This capacity is used in items such as the steady state hydraulic design of the pipeline and the intelligent valve placement assessment, and may also be referred to as the "Design Capacity" or "Project Design Capacity". It is a design principle Enbridge utilizes to ensure safety and reliability of its system, and represents the maximum theoretical average capacity of the pipeline should there be no planned or unplanned outages.

Reference iv) refers to "an initial steady state condition where the system is operating at a flow rate of 92.1 kbpd". This flow rate is based on the time-dependent relationships for operating the pipeline and corresponds to the instantaneous maximum flowrate within the steady state hydraulic assessment. The flowrate within the transient hydraulic assessment is used to prevent overpressure of the pipeline, and is not utilized to determine the capacity of the system.

4.5 Emergency Shutdown System

Reference:

i) A74508-13 Enbridge, Application, Section 7.1.1 Project Scope, PDF page 1 of 17

ii) National Energy Board Onshore Pipeline Regulations (OPR), Section 12 – Alternate source of power

iii) CSA Z662-15 – Oil and Gas Pipeline Systems, section 4.14.3.3, page 129

Preamble:

In Reference i), Enbridge committed to complying with the OPR, CSA Z662-15 and Enbridge's Engineering Standards and Guidelines. Further, Enbridge listed the equipment to be installed as part of the Project. However, Enbridge did not provide any detail on the design or installation of alternate sources of power and emergency shut-down systems at Westover Pump Station and other pump stations along Line 10 that may affect the operation of Line 10 Replacement Segment during emergency situations.

Reference ii) states the requirements for alternate power sources at compressor stations and pump stations.

Reference iii) states the requirements for emergency shutdown systems at pump stations.

Request:

Provide the following:

a) Confirmation whether every pump station that may affect the operation of the Line 10 Replacement Segment, has (or will have before the in-service date) an emergency shutdown system, including backup power supply which comply with the requirements of the OPR Section 12 and CSA Z662-15 Section 4.14.3.3;

b) A description of the alternate source of power for each station; and

c) A description of the means to bypass and isolate each station.

Response:

a) Westover Station is the only pump station affecting the operation of the Line 10 Replacement Segment. It has a backup power supply which complies with the requirements of the Onshore Pipeline Regulations ("OPR") and CSA Z662-15.

b) The alternate power source at Westover Terminal is a 200 kw/480 volt Cummins Diesel backup generator with an automatic transfer switch.

c) As Westover Terminal is the initiating location, there is no means to bypass the terminal.

Environmental Matters

4.6 **Groundwater Quality and Quantity**

Reference: i) A74508-2 Enbridge, Application, Section 6.2.3, Water Quality and Quantity, PDF page 95 of 316

ii) A74508-2 Enbridge, Application, Section 6.2.3, Water Quality and Quantity, PDF page 96 of 316

iii) A74508-2 Enbridge, Application, Table 6.2.3-1 of Section 6.2.3.2, PDF page 105 of 316

Preamble: In Reference i) Enbridge noted that there are 311 documented groundwater wells within the Local Study Area.

In Reference ii), Enbridge indicated that concerns regarding water quality and quantity were identified during its consultation with landowners, of which one was the proximity of water wells to the replacement pipeline Right-of-Way (ROW).

In Reference iii), Enbridge stated that it will install monitoring wells at select locations near residences in the vicinity of the replacement pipeline route to monitor water quality and support the Permit to Take Water requirements and that they will conduct pre and post-construction testing for all water wells, as approved by the applicable regulatory authority, and/or landowners.

Request: Discuss what corrective actions would be taken if, through the monitoring program, negative changes in groundwater quantity and quality are observed as a result of monitoring, as per Reference iii). Include the thresholds at which Enbridge would implement corrective actions.

Response: Impacts to domestic water wells from Project-related construction activities are considered to be unlikely. However, in support of Permit to Take Water ("PTTW") applications to the Ontario Ministry of the Environment, as required under O.Reg 387/04 (Water Takings and Transfer), Enbridge will conduct a pre-construction water quality and quantity analysis of water wells located within the estimated zone of influence of anticipated dewatering activities as determined in the PTTW applications, to determine baseline conditions before the start of construction. Water sampling will be completed during construction and/or post-construction, as required or warranted (e.g., if included in permit conditions or if a concern is raised regarding water quality and quantity), to assess potential changes in groundwater conditions.

Monitoring wells are planned at select locations along the replacement pipeline route (i.e., where dewatering needs are expected to be the greatest) based on the risk assessment to support the PTTW applications. These monitoring wells will be used to collect water level information prior to construction and during construction for reference purposes only. Should a water quantity concern associated with the domestic water wells be

identified, the information from the monitoring wells will be used as input into any subsequent investigations to determine the cause of the concern, and whether the concern is associated with Enbridge activities.

If a water quality or quantity concern is identified either during construction or post-construction, Enbridge will investigate the nature and cause of the changes, including obtaining a water quality sample and inspecting the well, as required. In the event that an exceedance in the Ontario Drinking Water Standards (health related parameters) is determined in the water quality sample that was not identified during the pre-construction sampling event, or if there is a substantial change in the flow characteristics of the well (water levels have reduced resulting in the well becoming dry during normal use), and the changes are found to be the result of Enbridge activities, Enbridge would take corrective action to address the concern. Determination of the threshold water level in the wells where normal use of the well is at risk of being impacted will be determined as part of a risk assessment to support the PTTW application.

Corrective actions will be site-specific and dependent on the specific nature and cause of the change in groundwater quantity and/or quality. As such, specific measures cannot be identified at this time, but may include measures such as temporary lowering of the pump level in the well (if possible), the provision of a temporary water supply, provision of water treatment (if concern is water quality related), a lowering of dewatering rates used for construction, or the potential provision of a new well.

As described above, monitoring wells will be installed at select locations along the replacement pipeline right-of-way ("ROW") to collect water quantity information, not quality information (i.e., groundwater chemistry), as previously stated in Table 6.2.3-1 of Section 6.2.3.2 of the Environmental and Socio-economic Assessment ("ESA") [NEB Filing ID: A74508-2].

4.7 Additional Mitigation for Woodland Areas

Reference:

i) A74508-2 Enbridge, Application, Table 6.2.9-1 of Section 6.2.9 Vegetation, PDF page 153 of 316

ii) A74508-2 Enbridge, Application, Section 6.2.9.3 Residual Effects Characterization and Significance Determination for Vegetation, PDF pages 156-157 of 316

iii) A77227-2 Enbridge, Response to NEB IR 2.13, PDF page 39 of 71

iv) The Greenbelt Plan (2005) Ontario Ministry of Municipal Affairs and Housing, 2005, Section 3.2.2, Natural Heritage System Policies, PDF page 20 of 63, http://www.mah.gov.on.ca/AssetFactory.aspx?did=11171

v) A77228-2 Enbridge, Response to Copetown Landowners Group IR No. 1.32, PDF page 56 of 69

Preamble:

In Reference i), Enbridge noted that a potential residual effect of construction and operation of the Project on vegetation is removal or alteration of ornamental trees, windbreaks or shelterbelts.

In Reference ii), Enbridge stated that, if a landowner requests that an agricultural vegetation feature not be disturbed, other options will be explored where feasible, such as: narrowing down the construction ROW; extending road bores beneath the feature; limiting grubbing; transplanting with a tree spade; or planting new trees/shrubs in another area.

In Reference iii), Enbridge stated that the Project will require the clearing of approximately 12.0 ha of woodland habitat, including the currently proposed ROW, temporary workspace and temporary access. Enbridge also noted that it has taken preventative or protective measures to avoid or reduce the Project's effects including pipeline re-alignment, reduced topsoil salvage width in areas of rare plants, seeding of disturbed areas as per the Line List after final clean-up, and post-construction monitoring of the ROW to identify areas where vegetation re-establishment has not progressed as expected.

Reference iv), refers to the requirements of Policy 3.2 of the Greenbelt Plan, including: minimize the amount of Greenbelt and Natural Heritage System that is traversed; avoid key natural heritage features unless there is no reasonable alternative; and minimize negative impacts and disturbances on features and their related functions, and where reasonable, maintain or improve connectivity.

Reference v), noted that the Copetown Landowners Group (CLG) requested additional information regarding treed land and wetland areas to be disturbed by the Line 10 Replacement Pipeline.

The Board notes that Enbridge's response to IR 2.13 did not provide sufficient mitigation to address the loss of woodlands and therefore requires clarification on when mitigative measures, such as those noted in Reference

ii), could be implemented to further ensure that that the amount of treed land cleared for the Project is minimized to the greatest extent possible.

Request: Provide:

a) A commitment to identify on the final environmental alignment sheets all areas where mitigation measures noted in Reference i) of woodland to be affected by construction of the Project and for each provide a description of how the mitigation options presented in Reference ii) could be applied to further reduce any residual effects; and

b) For all other areas not identified in a), the criteria for choosing the mitigation options that could be implemented to further reduce the amount of woodland to be cleared, to meet the intent of the Greenbelt Plan and address the Copeland landowner group's concerns (e.g., tree planting, limiting of mowing/clearing during operations in these areas).

Response: a) Yes, Enbridge will identify areas on the final environmental alignment sheets noted in Reference i) (i.e., ornamental trees, shelterbelts, windbreaks) where mitigation measures will be applied and include a description of how the mitigation options will be applied.

b) Enbridge has reduced the amount of woodland to be cleared, where feasible, through Project design, including reducing the amount of replacement pipeline ROW through woodlands. Additionally, temporary workspace required during Project construction will be located outside of woodland features to the extent possible and Enbridge will use existing cleared or disturbed areas, where available.

Avoidance is the preferred mitigation measure for woodlands along the replacement pipeline ROW; however, where there is no reasonable alternative, Enbridge will further reduce the amount of woodland to be cleared by implementing the mitigation measures outlined in Reference i), ii) and/or iv). Criteria for choosing the mitigation options are provided in Attachment 1 to IR No. 4.7.b.

The criteria and mitigation options outlined in Attachment 1 to IR No. 4.7.b align with Section 3.2.2 of the Greenbelt Plan (e.g., avoiding the removal of natural features) and/or the Copetown Landowners Group concerns (e.g., tree planting, seeding).

4.8 Contaminated Soils

Reference:

i) A74508-2 Enbridge, Application, Table 5.1-1 Summary of Environmental and Socio-Economic Settings, PDF Pages 44 of 316

ii) A74508-22 Enbridge, Decommissioning Technical Report, Section 1.31, Reclamation of Areas Disturbed, PDF Page 40 of 51

iii) A74508-9 Enbridge, Appendix 3 Decommissioning Environmental Technical Report, Table 7.0-1 Summary of Mitigation Measures, PDF Page 72 of 87

Preamble:

Reference i) stated that there is a possibility that contaminated soils could be unexpectedly encountered due to the presence of potentially contaminated sites, however, Enbridge's search of the Federal Contaminated Sites Inventory revealed no registered contaminated sites within 5 km of both sides of the centre line.

Reference ii), noted that if residual contamination from a historical release is encountered during decommissioning activities, it will be assessed and remediated according to the NEB Remediation Process Guide in accordance with the currently applicable standards.

Reference iii), stated if previously unidentified contaminated areas are discovered while conducting ground disturbance activities associated with decommissioning, they will be addressed according to the standards described within the EPP to be prepared for the Line 10 Westover Segment Replacement Program.

It is not clear how Enbridge will sample for contaminated soils and what monitoring measures will be undertaken.

Request:

Provide:

a) The process by which Enbridge will sample for contaminated soils along the replacement pipeline route and on the existing ROW to be decommissioned, and when such sampling will take place; and

b) What monitoring measures Enbridge will undertake.

Response:

a) In the unlikely event contaminated soil is encountered Enbridge will sample for contaminated soils as outlined in the Contaminated Soils Discovery Contingency Plan included as Appendix D9 of the Project-specific preliminary Environmental Protection Plan ("EPP") [NEB Filing ID: A78552-2].

Indications of contaminated soil may include: stressed vegetation on the surface of undisturbed soils, the presence of petroleum hydrocarbons (e.g., free product or an oily sheen), stained or otherwise discoloured soil (i.e., soil that is a notably different colour than the surrounding soil), petroleum hydrocarbon or other contaminant odour in soil (e.g., "chemical" or "pungent" odours), and poor quality fill (e.g., garbage, debris, construction materials). If any

of these indicators are observed in soils that require either excavation or handling during the Project, and it is the Environmental Inspector's opinion that the quantity of potentially impacted soil is significant (>1 m3), soil sampling and analytical testing will occur.

As specified in Appendix D9 of the EPP, in the event that contaminated soils are confirmed, they will be dealt with as per the Fuels and Hazardous Materials Contingency Plan (Appendix D6 of the EPP). All potentially contaminated soils encountered will be remediated as per the NEB Remediation Process Guide (2011) and Enbridge's Operations and Maintenance Manual, on file with the NEB.

To date current ground disturbance activities, including an extensive archeological assessment program covering the entire construction footprint have not discovered any indications of contaminated soils.

b) Enbridge will monitor and remediate any discovered contaminated soils by implementing the measures outlined in the NEB's Remediation Process Guide (2011), which include submitting a notification of contamination to the NEB, conducting the appropriate level of environmental site assessment and monitoring to delineate the nature and extent of the impacts. Enbridge would submit a Remedial Action Plan to the NEB for approval, and subsequently remediate the site as outlined in the approved Remedial Action Plan. Once Remedial Action Plan conditions are met, Enbridge will submit a request for closure of the site to the NEB. Additionally, Enbridge will periodically conduct patrols of the entire ROW and the land adjacent to the ROW for abnormal surface conditions, using methods of walking, driving, flying or other appropriate means, as outlined in Enbridge's Operations and Maintenance Manual (Book 3 – Pipeline Facilities).

4.9 **Butternut Trees**

Reference:

i) A74508-2, Application Section 6.2.11, Species at Risk of Special Conservation Status, page 6-100 (PDF page 169 of 316)

ii) A74508-2, Application Section 6.2.11 Species at Risk of Special Conservation Status, page 6-102 (PDF page 171 of 316)

iii) A78970-2 Enbridge, Supplemental ESA, Section 2.0 Changes to Project Details, PDF pages 8 of 57

iv) A78552-2 Enbridge, Supplemental EPP, Table 5 , Appendix 0, PDF Page 301 of 303

Preamble: Reference i) stated that one vegetation species at risk, Butternut (*Juglans cinerea* L.), was observed within 50 meters of the existing Line 10. Butternut is listed as Endangered on SARA Schedule 1 due to its restricted range, few populations, and recent and widespread declines in abundance. Further, it is stated that supplemental vegetation surveys will confirm the presence and location of additional trees.

Reference ii) stated that Butternut is impacted by Butternut canker, a fungal disease that has spread across its range throughout Ontario and if removed, individual trees must be appraised by a Butternut Health Assessor and additional actions may be required and/or the assessor may restrict the removal of the individuals entirely.

Reference iii) stated that Butternut was identified at multiple locations and that the results of the surveys are in the preliminary EPP and will be used to inform protection measures including contingency plans for Butternut and for other plant species at risk.

Reference iv) indicated that a Butternut Health Assessment will be completed to determine the class of Butternut trees within the project footprint. The Temporary Work Space will be narrowed up, if possible, to avoid removal or impacts to Butternut trees, however, if impacts cannot be avoided seedlings will be planted.

Request: Provide:

a) Whether the Butternut trees identified in Reference iii) will be impacted by construction;

b) When a Butternut Health Assessor will be able to assess the trees and provide a recommendation;

c) A discussion of the mitigation measures to be implemented if Butternut trees will be impacted by the proposed pipeline replacement project; and

d) An update on consultation with the Ministry of Natural Resources and Forestry with respect to Butternut trees including any correspondence which indicates their agreement with the proposed mitigation (i.e.,

planting of seedlings) referred to in Reference iv).

Response:

a) Of the Butternut trees observed during field studies to date, seven are anticipated to be impacted by construction. Any future trees identified will be assessed and evaluated by a Butternut Health Assessor.

b) Butternut trees at one location were assessed on July 6, 2016 by a Butternut Health Assessor. The assessment of the additional trees that may be impacted will occur in the fall of 2016. The results of these assessments will be submitted to the Ministry of Natural Resources and Forestry ("MNRF") after the results have been determined.

c) Enbridge will implement mitigation measures in accordance with Appendix O of the EPP [NEB Filing ID: A78552-2] for Butternut trees that will be impacted by the Project. This includes narrowing temporary working space to limit the removal of Category 2 Butternut trees, where possible. In the event that Category 2 Butternut trees will be removed or damaged as a result of Project activities, seedlings will be planted, consistent with Section 23.7(1)(10) of Ontario Regulation 242/08, under the *Endangered Species Act*, 2007. As identified in Section 23.7(1) (10), the number of seedlings to be planted depends on whether the tree is to be removed or harmed, and the corresponding diameter at breast height of the tree. In areas containing Butternut trees, weed management activities will be restricted to handpicking.

d) Enbridge consulted with the MNRF regarding Butternut trees on June 22, 2016 via conference call. During this call, Enbridge proposed to plant seedlings to mitigate impacts to Category 2 trees that may be harmed or removed as a result of Project activities. Enbridge indicated that compensatory planting, as outlined in Section 23.7 of Ontario Regulation 242/08, was proposed. The MNRF requested that Butternut Health Assessments be completed on two trees observed at a particular location, and that photos be provided to MNRF on one tree at a second location to assist in determining the Category of trees.

Since then, Butternut Health Assessments were completed in July 2016 and the associated photos were discussed with the MNRF on August 19, 2016. The MNRF has requested the full results of the assessment, which will be provided in the fall of 2016 following the additional assessments that will be conducted at that time.

Indigenous Matters

4.10 **Impacts on Traditional Land Use**

Reference:

i) A77766-1 Six Nations of the Grand River (SNGR), Oral Traditional Evidence (OTE) Affidavit, PDF page 5 of 11

ii) A78265-1 SNGR, OTE, PDF page 30-32, 39-40, 45-46 of 47

iii) A74506-31 Enbridge, Section 5 Aboriginal Engagement, PDF page 2 of 14

iv) A74508-2 Enbridge, Appendix 6.1 ESA Part 1a of 10, PDF page 214-215 of 316

v) A78970-2 Enbridge, Supplemental ESA, Section 3.0 Consultation and Engagement Update, PDF pages 10 of 57

vi) A78970-2 Enbridge, Supplemental ESA, Section 4.8 Traditional Land and Resource Use, PDF pages 28 of 57

vii) A78970-2 Enbridge, Supplemental ESA, Section 4.8 Traditional Land and Resource Use, PDF pages 29 of 57

viii) A78970-2 Enbridge, Supplemental ESA, Section 4.8 Traditional Land and Resource Use, PDF pages 38 of 57

ix) A78970-2 Enbridge, Supplemental ESA, Section 4.8 Traditional Land and Resource Use, PDF pages 38-39 of 57

x) A78970-2 Enbridge, Supplemental ESA, Section 3.0 Consultation and Engagement Update, PDF pages 9-22 of 57

Preamble: In Reference i) SNGR expressed concerns that the Project will disturb wildlife and their habitat which "…will create problems for Six Nations [of the Grand River] hunters and gatherers who may be using areas along or adjacent to the pipeline route." SNGR noted that there are SNGR hunters who hunt on or near the proposed Project route.

In Reference ii) SNGR raised several concerns about the impact of the Project on traditional activities, including gathering plants and fishing.

Reference iii) listed the Aboriginal groups Enbridge identified and consulted for the Project.

In Reference iv) Enbridge noted that the Project route is located in an agricultural setting on privately-owned and fee simple lands where hunting or trapping is only allowed with the permission of the landowner.

In Reference v) Enbridge stated that SNGR has not expressed that a Traditional Knowledge Study is necessary for the Project. Enbridge also stated that SNGR and Enbridge have been engaged in discussions around the environmental assessment process, potential impacts, and key mitigation measures for wildlife, fish habitat and watercourse crossing

management and that a Capacity Funding Agreement has been signed to facilitate SNGR's participation in the Project.

Reference vi) stated that Enbridge's field investigations identified multiple species of plants identified by SNGR to be medicinal. Enbridge stated that the species discovered are considered common and secure in Ontario and are widely available in the greater Project area.

Reference vii) stated that deer were identified as a species of interest by SNGR and that white-tailed deer were observed during field investigations along the Project route. Enbridge stated that they are considered common and secure in Ontario and are abundant throughout the province.

Reference viii) stated additional mitigation measures for vegetation are not required and are addressed in the Project-specific preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2], which will be updated prior to construction, as applicable.

Reference ix) indicated that the route revisions should reduce the impact of the Project on wildlife because the revisions have resulted in a larger proportion of the Project on agricultural and disturbed land, and have reduced the amount of the Project within treed land and wetlands.

Reference x) is a summary of Enbridge's consultation and engagement efforts between 28 April and 28 July 2016.

Request: Provide an update on consultation activities around traditional land use that have taken place with consulted Aboriginal groups (Reference v) since 28 July 2016, including but not limited to:

a) A summary of consultation activities carried out, including the dates and method of contact;

b) A summary of traditional land use issues and concerns raised and those mentioned in References i), ii), ix) and x);

c) Enbridge's consultation efforts around any new concerns raised and those mentioned in References i), ii), ix) and x); and

d) A description of how Enbridge has addressed or will address any concerns raised, including any mitigation measures for concerns raised in References i), ii), ix) and x); or an explanation as to why no further action is required to address any particular concerns.

Response: a – d) Please refer to Attachment 1 to IR No. 4.10.a-d.

Land Matters

4.11 **Land Acquisition Update**

Reference: i) A76417-7 Enbridge, Section 8 Land Matters Update, PDF page 1-3 of 4

ii) A77745-2 CLG, Written Evidence, PDF page 1-2 of 14

Preamble: Reference i) stated that 100% of fee simple landowners and 13% of fee simple other landowners have been served with a Section 87 Notice. It also shows that Enbridge has acquired land rights for 90% of the required fee simple land and 12% of fee simple other land.

Reference i) noted that as of 18 April 2016 nine tracts of fee simple land have not been acquired. These tracts represent sixteen landowners, seven of whom are Intervenors in the Project's hearing process, either as individuals or represented by CLG.

Reference ii) listed four properties that are directly affected by the Project and CLG members whose properties are near the proposed route deviation.

Request: Provide:

a) Updated tables 8.3, 8.5 and 8.6 in Reference i) and include a row or create a separate table summarizing the status of notification and land acquisition for CLG members;

b) The approximate date Enbridge anticipates acquiring all land rights required for the Project;

c) Enbridge's next steps in terms of landowner consultation for these tracts around land acquisition; and

d) A summary of the actions Enbridge intends to take if land is not acquired by the date specified in b).

Response: a – d) Please refer to Attachment 1 to IR No. 4.11.a-d.

4.12 Copetown Area Landowners

Reference: i) A77745-2 CLG, Written Evidence, PDF page 1-2 of 14

ii) A78492-3 Enbridge, Response to NEB Ruling No. 6 – Attachment 1 – Appendix A – Line 10 Copetown Area Map, PDF page 1 of 1

Preamble: Reference i) indicated that there are seven other CLG members who own residential properties in close vicinity of the proposed route deviation.

Reference ii) is a map of the Copetown Area.

Request: Elaborating on the map provided in Reference ii), identify the locations, including tract numbers, of the other CLG members identified in Reference i).

Response: Please refer to Attachment 1 to IR No. 4.12. See parcels identified by cross-hatch in the revised Enbridge Response to NEB Ruling No. 6 – Attachment 1 – Appendix A – Line 10 Copetown Area Map, PDF page 1 of 1 with associated tract numbers.

4.13 Consultation

Reference:

i) A77228-2 Enbridge, Response to Copetown Landowners Group IR No. 1, IR 1.8 f), PDF page 14 of 69

ii) A77228-23 Enbridge, Attachment 1 to Copetown Landowners Group IR No. 1.8.f

iii) A77745-2 CLG, Written Evidence, PDF pages 4-7 of 14

iv) A78970-2 Enbridge, Supplemental ESA, Section 3.0 Consultation and Engagement Update, PDF pages 9-22 of 57

Preamble:

Reference i) indicated that there are eight directly affected tracts of land where landowners have expressed concerns regarding the Project's proposed route.

Reference ii) provided a table summary of consultation conducted with landowners.

Reference iii) provided the concerns relevant to Tracts 23, 24, 27, 34, 36, a summary of which includes:

- The quality of previous and current consultation conducted by Enbridge;
- The potential for impairment of soil and soil productivity;
- The potential for irreparable disruption of extensive and systematic tile drainage systems (clay tile) and grassed waterways;
- The potential for negative impacts on wetland(s);
- The potential for negative impacts on specialty crops such as hazelnut tree field test plot or premium value vegetable crop production, including impacts on future development potential;
- The potential impacts for future development plans such as: a landscape construction and nursery stock business; and
- The potential impacts to access to the remainder of certain properties.

Reference iv) is a summary of Enbridge's consultation and engagement efforts between 28 April and 28 July 2016.

Request:

a) Provide an updated consultation summary, as seen in Reference ii).

b) Provide an update on consultation activities that have taken place since 30 May 2016 with landowners. Indicate if the landowners are a part of CLG. The update should include but is not limited to:

b.1) A summary of consultation activities carried out, including the dates and method of contact;

b.2) The issues and concerns raised;

b.3) Enbridge's consultation efforts around any new concerns raised and those mentioned in Reference iii);

b.4) Any recommended input received on mitigation through consultation; and

b.5) A description of how Enbridge specifically has addressed or will address the concerns raised, including those mentioned in Reference iii), or an explanation as to why no further action is required or will be taken to address the concerns.

c) By 7 October 2016, file an update on consultation and engagement efforts, as seen in Reference iv). The update should include but is not limited to:

c.1) A summary of consultation activities carried out, including the dates and method of contact;

c.2) The issues and concerns raised;

c.3) Enbridge's consultation efforts around any new concerns raised; and

c.4) A description of how Enbridge specifically has addressed or will address the concerns raised, or an explanation as to why no further action is required or will be taken to address the concerns.

Response:

a) Please refer to Attachment 1 to IR No. 4.13.a for the Updated Consultation Logs regarding the 8 tracts in which landowners had previously expressed concerns regarding the Project's proposed route. Since the previous IR responses Enbridge was able to mitigate the landowners concerns for Tract 64 and Tract 93 and secure the necessary land rights for the project. As per the September 14, 2016 filing for the reroute in the Copetown Area the remaining 6 tracts (Tract 23, 24, 27, 34, 36 and 37) are no longer impacted by the project.

b.1) Please refer to Attachment 1 to IR No. 4.13.b.1 for Consultation Logs containing consultation activities occurring from May 30, 2016 up to and including September 7, 2016.

b.2) Please refer to Attachment 1 to IR No. 4.13.b.2 for a Landowner Issue Summary.

b.3) Please refer to Response to IR No. 4.13.b.1.

b.4) Please refer to Response to IR No. 4.13.b.1.

b.5) Please refer to Response to IR No. 4.13.b.2.

c.1) The response for IR No. 4.13.c.1 will be filed with the Board on October 7, 2016.

c.2) The response for IR No. 4.13.c.2 will be filed with the Board on October 7, 2016.

c.3) The response for IR No. 4.13.c.3 will be filed with the Board on October 7, 2016.

c.4) The response for IR No. 4.13.c.4 will be filed with the Board on October 7, 2016.

Socio-Economic Matters

4.14 Impact of HDD Noise on Human Receptors

Reference: i) A77227-2 Enbridge, Response to NEB IR No. 2.26, PDF page 69-70 of 71

ii) A78970-2 Enbridge, Supplemental ESA – Part 1 of 3

Preamble: Reference i) indicated that eleven tracts of land with thirteen landowners will be impacted at three HDD locations. Enbridge stated that the closest residence from each of the three HDD locations are located 62 m (HONI Corridor Valley HDD), 407 m (Westover HDD) and 525 m (Environmentally Sensitive Area HDD) away.

Reference i) outlined mitigation measures that fall into three potential categories: avoidance, measures to be implemented during construction and operation, and compensation.

Reference also stated that of the eleven impacted properties, all but two have been acquired/optioned and that none of the impacted landowners have identified any concerns with the HDDs proposed to date.

Reference ii) is Enbridge's supplemental ESA, which provided an update on routing revisions.

Request: Provide the following:

a) Confirmation that Enbridge has indicated the approximate level of noise implications of HDD activities to directly affected landowners;

b) An update on the land acquisition process of the two impacted properties that have not been acquired; and

c) A description of any issues or concerns raised by affected stakeholders since 30 May 2016 and how these concerns have been or will be addressed or a justification as to why no further steps would be taken to address any concerns.

d) Update the response in Reference i) on HDD activities if it is impacted by changes explained in Reference ii).

Response: a) To date Enbridge has not consulted on noise levels associated with HDD activities to directly affected landowners. Once the pipeline route, construction methods (including HDD locations & lengths) and construction drilling rig specifications are finalized including anticipated noise levels, Enbridge will further consult with directly affected landowners within 200 m of the HDD location on the noise levels and appropriate mitigations as previously outlined in Enbridge's Response to NEB IR No. 2.26 a.3 [NEB Filing ID: A77227-2], as well Section 6.0 of the Preliminary EPP [NEB Filing ID: A78552-2].

b) Enbridge continues to consult with the two outstanding impacted properties. To date neither has been acquired. However, as a result of Enbridge's updated route filing of September 14, 2016, the proposed reroute acquisition of land rights for these two properties is no longer required.

c) There have been no concerns raised by affected stakeholders (general public) related to HDD construction since May 20, 2016.

Throughout the life of this Project, Enbridge is committed to engaging stakeholders by listening and addressing concerns in a timely manner.

Prior to HDD activity, an Enbridge representative will make reasonable efforts to contact the landowner a minimum of seven days in advance of startup. We will then work with the landowner to discuss access, estimated compensation for potential impacts, determine a preferred work schedule, review environmental and safety considerations provide Enbridge contact information, and address any questions and property-specific concerns.

Regarding noise from HDD activity, Enbridge will meet applicable noise bylaw requirements. We will seek to minimize the hours of work to daylight hours and workers will travel together in vehicles to and from the site where possible.

There will be no increase in noise levels associated with the operation of the pipeline once construction is complete.

d) Please refer to Section 4.0 (Table 4-1 – Summary of Environmental and Socio-Economic Setting and Considerations (Acoustic Environment) and Section 4.2 – Environmental and Socio-economic Effects) of the Environmental and Socio-Economic Considerations for the Proposed Electrical Transmission Corridor Route filed with the NEB on September 14, 2016. The reroute filed on September 14, 2016 eliminated the need for the HONI Corridor Valley HDD and the Environmentally Sensitive Area HDD described in Reference i). The Westover HDD described in Reference i), has not changed as a result of the reroutes described in Reference ii).

However, as a result of the reroute filed with the NEB on September 14, 2016, one additional HDD has been proposed. Response details to the request (i.e., NEB IR No. 4.14.d) regarding the HDD associated with the September 9, 2016 reroute have been included in that filing.

4.15 Future Enbridge Facilities

Reference: i) i) A77745-2 CLG, Written Evidence, PDF page 3 of 14

ii) A3T0V8 Enbridge, Application for the Line 11 Westover Segment Replacement Project (2014)

Preamble: In Reference i), in paragraphs 14 and 15 of the reference CLG stated concern that the width of the proposed Project route (10 m) is designed to contain the replacement Line 10 and future pipelines. CLG further stated that "[If the Project is approved]…any future Enbridge pipeline, including any Line 11 replacement pipeline, will follow the new corridor in the Copetown area."

Reference ii) is an application filed by Enbridge on 17 January 2014 for the Line 11 Westover Replacement Project, which included the replacement of approximately 3.2 km segment of Line 11 from the downstream side of the Westover Station isolation valve.

Enbridge stated that the project was a part of Enbridge's ongoing pipeline integrity management and maintenance program. The project was granted approval by the NEB in August 2014 (MO-113-2014 and XO-E101-016-2014).

Request: Respond to CLG's concerns in Reference i). Specifically, respond to CLG's concern that Enbridge will not follow the existing Line 10 ROW through the golf course but would use the new corridor for any future developments including any potential Line 11 pipeline.

Response: The application before the Board does not represent an application to install additional pipelines (new or replacement) other than the Line 10 Replacement pipeline as evidenced by the Grant of Easement filed within the application [NEB Filing ID: A74508-25]. The Grant of Easement is a standard agreement which clearly limits Enbridge to install one pipeline, and that any future pipelines cannot be installed without the landowners consent or approval from the NEB.

An excerpt from the Grant of Easement is provided below:

Paragraph One

"THE TRANSFEROR DOES HEREBY GRANT, CONVEY SET OVER AND TRANSFER to the Transferee, for itself, its employees, agents, contractors, subcontractors, successors and assigns, an easement (also referred to as "right-of-way") across, over, under, in, through or on that part of the Lands more particularly described in Schedule B hereto (the "Easement Land") for the surveying, construction, operation, maintenance, inspection (including aerial patrol), alteration, removal, replacement, reconstruction, and/or repair of one or more pipelines, subject to Clause 19 herein, and other facilities appurtenant, affixed or incidental thereto (collectively, the "pipeline") for the transportation, storage and handling of oil, other liquid and gaseous hydrocarbons and products thereof, together

with the right of ingress and egress over the remainder of the Lands, to and from the right-of-way, for the Transferee, its personnel, equipment, contractors and agents for all purposes necessary or incidental to the exercise and enjoyment of the rights herein granted.

Clause 19

The Transferee intends to install one (1) pipeline in the right-of-way. The Transferee will only install an additional pipeline or pipelines in the right-of-way with the consent and agreement of the Transferor, or, in the absence of such consent and agreement, in accordance with all authorizations and determinations, including with respect to any additional compensation payable, made under the *National Energy Board Act* (Canada).