National Energy Board

Office national de l'énergie

Reasons for Decision

Enbridge Pipelines Inc.

Line 10 Westover Segment Replacement Project

OH-001-2016

January 2017

Facilities

Canada

National Energy Board

Reasons for Decision

In the Matter of

Enbridge Pipelines Inc.

Application dated 4 December 2015 for the Line 10 Westover Segment Replacement Project

OH-001-2016

January 2017

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Glossary of Terms and Abbreviations

ACE	Abandonment Cost Estimate
AEP	Enbridge's Aboriginal Engagement Program.
Applicant, Enbridge or the Company	Enbridge Pipelines Inc.
Application	Enbridge's application dated 4 December 2015, pursuant to section 58 of the *National Energy Board Act* (NEB Act) and section 45.1 of the *National Energy Board Onshore Pipeline Regulations* (OPR).
ATP	Application to Participate: The form by which interested persons applied or registered to participate as a Commenter or an Intervenor in this hearing.
AVB	Automated Volume Balance
Board or NEB	National Energy Board
CAPP	Canadian Association of Petroleum Producers
CA	Conservation Authority (including Hamilton Conservation Authority, the Grand River Conservation Authority, and the Niagara Peninsula Conservation Authority)
CEPA	Canadian Energy Pipelines Association
CLG	Copetown Landowners Group
Commenter	A person who, in the Board's opinion, has relevant information or expertise regarding the Project and who the Board decides may provide a letter of comment.
Community Meeting	A public meeting where all Participants (Commenters, Intervenors and the Applicant) have an opportunity to present an oral statement expressing their views on the Project directly to the Board.
CP	Cathodic Protection
CPM	Computational Pipeline Monitoring
CSA	Canadian Standards Association
Decision	The Board's Reasons for Decision.

Decommissioned Period	The period of time from when the Existing Line 10 Pipeline has been decommissioned (that is, the treatments have been applied) until leave to abandon the Existing Line 10 Pipeline is granted by the Board pursuant to paragraph 74(1)(d) of the NEB Act.
Decommissioning Activities	The treatment measures that would be applied to the Existing Line 10 Pipeline by Enbridge to decommission the Existing Line 10 Pipeline, including cleaning of the pipeline, isolation, segmentation, and work at railroad crossings, and buoyancy control measures.
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
EPP	Environmental Protection Plan
ERP	Emergency Response Plan
ESA	Environmental and Socio-Economic Assessment
ETCR	Electrical Transmission Corridor Route
Evidence	Reports, statements, photographs, and other material or information that Participants submit, in writing or orally.
Existing Line 10 Pipeline	The portion of the existing Line 10 pipeline, forming part of the Project, for which Enbridge requests an Order pursuant to section 45.1 of the OPR.
Fee simple land	Land that is owned by an individual or individuals.
Fee simple other land	Land that is owned by a mix of industry, municipalities, conservation authorities and provincial ministries. This category also includes Crown land.
HCA	High Consequence Area
HDB	Horizontal Directional Bore
HDD	Horizontal Directional Drill
HDI	Haudenosaunee Development Institute
HFD	Hamilton Fire Department
HONI	Hydro One Networks Inc.

Interested Person	An individual or group interested in the Project. An interested person may choose to apply to participate in the hearing as a Commenter or an Intervenor. An interested person may also have been granted Pre-decided Standing.
Intervenor	A person who is directly affected, has relevant information or has expertise regarding the Project and who has been approved by the Board to participate in this hearing as an Intervenor.
IR or Information Request	A written question about Enbridge's or an Intervenor's evidence.
IVP	Intelligent Valve Placement
KP	Kilometre-Post
LDS	Leak Detection System
List of Issues	The preliminary list of the relevant issues that the Board considered in this hearing – see Appendix I.
LSA	Local Study Area
MBS	Material Balance System
MNCFN	Mississaugas of the New Credit First Nation
MNRF	Ministry of Natural Resources and Forestry (Ontario)
MOP	Maximum Operating Pressure
MTCS	Ministry of Tourism, Culture and Sport (Ontario)
NEB Act	*National Energy Board Act*
NPS	Nominal Pipe Size
O&MM	Operations and Maintenance Manuals
O.D.	Outside Diameter
OPR	*National Energy Board Onshore Pipeline Regulations*
OTE	Oral Traditional Evidence

Participant	A person who has been approved by the Board to participate in the hearing or who has been determined by the Board to have Pre-decided Standing and has registered to participate. For this hearing, the Participants are Enbridge, Intervenors and Commenters.
PCEM	Post-construction Environmental Monitoring Program
PFP	Participant Funding Program
Pre-decided Standing	The process by which the Board has decided that those persons who are directly affected by the granting or refusing of the Application and are approved to participate in this hearing, provided that they register prior to the ATP deadline of 14 March 2016.
Process Advisor	Board staff assigned to provide assistance to the public, landowners, Aboriginal groups, and Participants to help them understand the process, the different roles of the hearing participants, and how to participate in the hearing.
Project	The Line 10 Westover Segment Replacement Project and all of its applied-for components.
PSW	Provincially Significant Wetland
Reliability	A measure of the leak detection system's false alarm rate.
Replacement Line 10 Pipeline	The pipeline and facilities, forming part of the Project, for which Enbridge requests an Order pursuant to section 58 of the NEB Act.
Reply evidence	Additional information Enbridge may file in reply to evidence filed by other Participants.
ROW	Right-Of-Way
RSA	Regional Study Area
RSV	Remote Sectionalizing Valves
SARA	*Species at Risk Act*
Section 58 Facilities	The construction and operation of the Replacement Line 10 Pipeline and associated facilities extending from Enbridge’s Westover Terminal to its Nanticoke Junction Facility, both near the City of Hamilton, Ontario.
Sensitivity	The size of leak that a leak detection system is capable of detecting, and the time required to detect a leak of that size.

Six Nations	Six Nations of the Grand River
SMP	Security Management Program
TLUS	Traditional Land Use Study
TWS	Temporary Workspace
VC	A Valued Component is an environmental element of an ecosystem that is identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance.

Symbols, Formulas and Units

bbl/d	Barrels per day
ft	Feet
ha	Hectare
km	Kilometre
kb/d	Thousand barrels per day
kPa	Kilopascal (one thousand pascals)
l	Litre
m	Metre
m^3/d	Cubic metres per day
mg/L	Milligrams per litre
mm	Millimetre
MPa	Megapascal (one million pascals)
%	Per cent

Recital and Appearances

IN THE MATTER OF the National Energy Board Act (NEB Act) and the Regulations made thereunder: and

IN THE MATTER OF an application filed with the National Energy Board on 4 December 2015 by Enbridge Pipelines Inc. Line 10 Westover Segment Replacement Project for an order pursuant to section 58 of the NEB Act and section 45(1) of the *National Energy Board Onshore Pipeline Regulations* (OPR) under file OF-Fac-Oil-E101-2015-09-02; and

IN THE MATTER OF Hearing OH-001-2016;

Heard in Hamilton, Ontario on 28 June, 2016 and 18-19 October, 2016;

BEFORE:

J. Ballem	Presiding Member
M. Lytle	Member
S. Kelly	Member

Oral Traditional Evidence

Six Nations of the Grand River	L. Bomberry P. General

Appearances	**Participants**	**Witnesses**
D. Purvis R. Bourne	Enbridge Pipelines Inc.	J. Houncaren M. Laybolt E. Prud'Homme K. Schwaebe R. Philipenko M. Yaremko A. McLandress A. Lees
B. Jetten	Six Nations of the Grand River	P. General C. Hostovsky
M. Haug	National Energy Board	

Written Final Argument

E. Farquhar

Disposition

The National Energy Board (Board or NEB) has considered the evidence and submissions made by all Participants in the OH-001-2016 proceeding. Having considered and weighed all of the evidence before it, the Board has decided that the Line 10 Westover Segment Replacement Project (Project), as proposed by Enbridge Pipelines Inc. (Applicant or Enbridge) is in the public interest.

Decisions and Orders

The Board has decided to grant Order XO-E101-001-2017 pursuant to section 58 of the NEB Act (Section 58 Order) exempting Enbridge from paragraphs 31(c) and 31(d), and section 33 of the NEB Act, subject to the conditions contained in the Section 58 Order. The conditions are set out in Appendix III. As a result, Enbridge is exempt from the requirement to file a plan, profile and book of reference for the section 58 facilities. The Board has not granted Enbridge's request for exemption from section 47 and requires Enbridge to apply for leave to open pursuant to section 47 of the NEB Act, prior to the facilities being placed in operation.

The Board has also decided to grant Order MO-001-2017 pursuant to section 45.1 of the *National Energy Board Onshore Pipeline Regulations* (OPR), subject to the conditions contained in the Decommissioning Order. The conditions are set out in Appendix IV. As a result, Enbridge may decommission the identified portions of the Line 10 pipeline in accordance with the methodology set out in its Application.

The Board's views and conclusions on individual matters which fall within the scope of the request authorizations are contained in the following chapters, and constitute our Reasons for Decision (Decision) in respect of this matter.

Jamie Ballem
Presiding Member

Murray Lytle
Member

Steven Kelly
Member

Chapter 1

Summary

This summary is provided for convenience only. The Board's detailed consideration of the issues is contained in the following chapters. If there is a discrepancy between the summary and the body of the Decision, the wording and determinations set out in the following chapters take precedence.

1.1 What did Enbridge apply for?

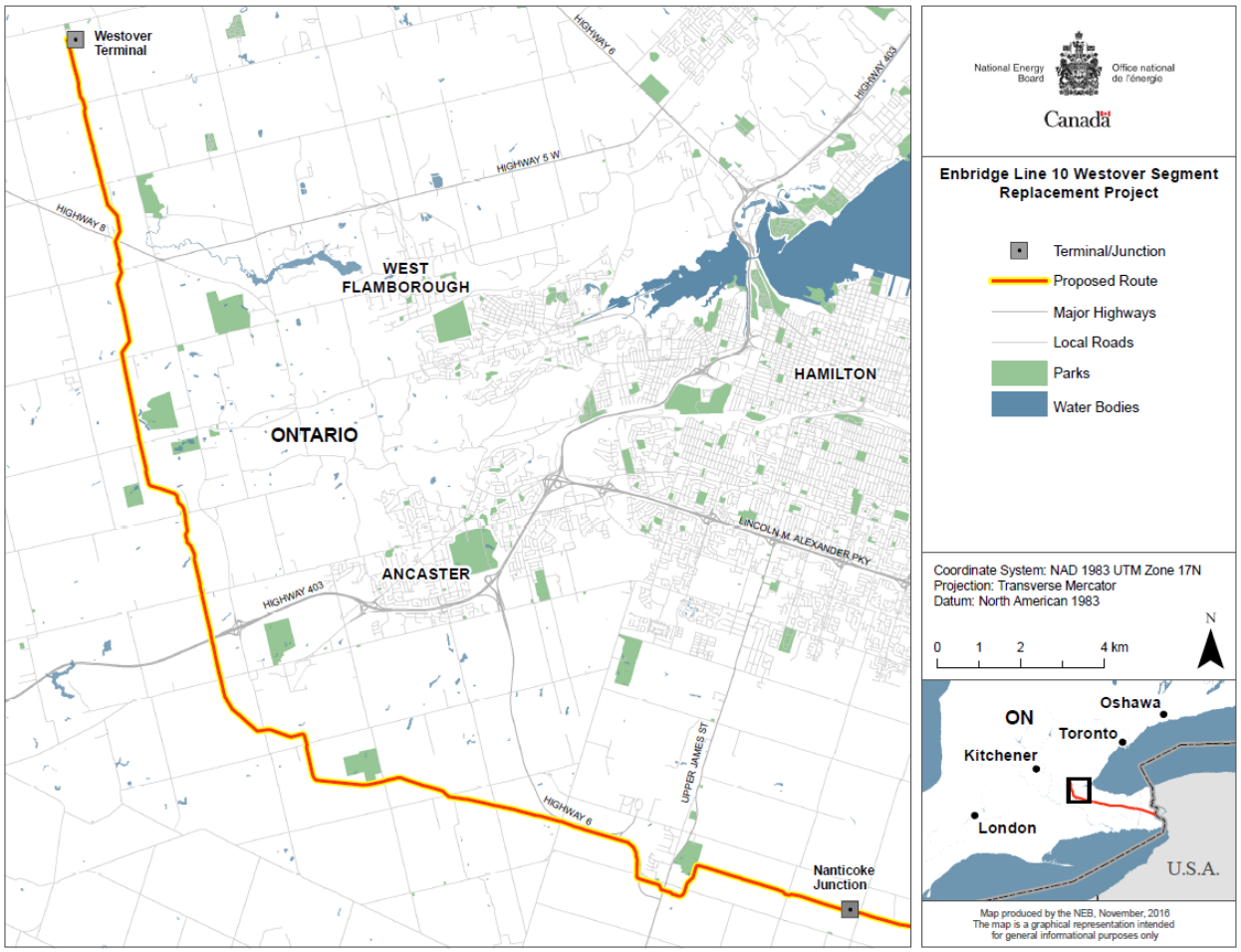
On 4 December 2015, Enbridge Pipelines Inc. (Enbridge) filed an application (Application) with the National Energy Board (Board or NEB) seeking approval for the Project.

The Project includes the decommissioning of approximately 32 km of existing 323.9 mm Outside Diameter (O.D.) (Nominal Pipe Size (NPS) 12) Line 10 pipe (Existing Line 10 Pipeline) and replacing it with approximately 35 km of new 508 mm O.D. (NPS 20) pipe (Replacement Line 10 Pipeline). The Project extends from Enbridge's Westover Terminal to its Nanticoke Junction Facility, both near the City of Hamilton, Ontario. See Figure 1-1 for a map of the Project.

Enbridge indicated that, subject to receipt of regulatory approvals, the construction of the Project is scheduled to commence by Q3 2017 and is expected to be completed within one year. Decommissioning Activities on the Existing Line 10 Pipeline would begin once the Replacement Line 10 Pipeline is in service and would last for approximately three months.

Enbridge stated the capital cost of the project is approximately $219 million and is financed through a commercial agreement with a third-party customer.

Figure 1-1: Project Location Map



1.1.1 Decommissioning and Replacement Pipelines

Enbridge indicated that the Project is a routine maintenance project that, upon completion, would restore this segment of Line 10 to its original annualized capacity of approximately 11 797 m^3/d (74,200 bbl/d), as Enbridge has been operating this particular section of the Existing Line 10 Pipeline at reduced pressure. Additionally, the Project is intended to alleviate landowner concerns related to increased preventative maintenance digs associated with the Existing Line 10 Pipeline. See Table 1-1 for a summary of the Project.

Table 1-1: A Summary of the Project

	Existing Line 10 Pipeline	Replacement Line 10 Pipeline
Approximate length	32 km	35 km
Outside diameter	323.9 mm (NPS 12)	508 mm (NPS 20)
Wall thickness	6.1 mm	7.14 mm
Design Flow Capacity	11 797 m^3/d (74,200 bbl/d)[1]	11 797 m^3/d (74,200 bbl/d)
Product carried	Low vapour pressure crude oil hydrocarbons	

1.1.2 CEAA 2012 and Environmental Assessment

Enbridge's proposed Project is under 40 km in length. It therefore is not considered a designated project under the *Canadian Environmental Assessment Act*, 2012 (CEAA 2012) and as a result does not require a CEAA 2012 environmental assessment. The Board, however, considers environmental protection as part of its broader mandate under the NEB Act.

The Board's complete Environment and Socio-Economic Assessment (ESA) for the Project is provided in Chapter 8.

1.1.3 Relief requested by Enbridge

Enbridge requested the following relief from the Board:

a) An order, pursuant to section 58 of the NEB Act, exempting the Project from the provisions of paragraph 30(1)(b) and 31(c), 31(d), and sections 33 and 47 of the NEB Act;

b) An order, pursuant to section 45.1 of the *National Energy Board Onshore Pipeline Regulations* (OPR), allowing Enbridge to decommission the identified portions of the pipeline in accordance with the methodology set out in its application; and

c) Such further and other relief as Enbridge may request or the Board may deem appropriate pursuant to section 20 of the NEB Act.

[1] Enbridge submitted that due to pipeline integrity concerns, the Westover segment of Line 10 is currently operating at a voluntarily reduced pressure which produces a flow capacity of approximatively 10 096 m3/d (63,500 bbd/d).

1.2 What did the Board decide?

This Decision contains the Board's decisions regarding the Enbridge's proposed Project. As explained in the Board's Disposition, the Board considered and weighed all of the evidence before making its decisions on this Project. The Board notes the importance of the whole Decision and cautions readers against reading individual chapters in isolation.

1.2.1 Decisions made by the Board

As explained in Chapter 2, the Board is satisfied with the economic feasibility and available financing for the Project and is confident that there is a sufficient market to absorb the volumes that would be delivered off the Replacement Line 10 Pipeline.

Subject to the conditions, the Board is satisfied that the general design of the Replacement Line 10 Pipeline is appropriate for its intended use. The Board is also satisfied that the Replacement Line 10 Pipeline would be constructed and operated in accordance with all applicable legislation and standards. Discussion relating to emergency response is provided in Chapter 10.

The Board is satisfied that, subject to the conditions, Enbridge's approach to decommissioning is appropriate in the current circumstances including its proposal to leave the Existing Line 10 Pipeline in-place. The Board has imposed a condition requiring Enbridge to apply for leave to abandon the Existing Line 10 Pipeline as described in Chapter 4.

The Board is of the view that, with the implementation of Enbridge's environmental protection procedures and mitigation, as well as the Board's imposed conditions, the Project is not likely to cause significant adverse environmental effects. The Board's ESA considered both the decommissioning of the Existing Line 10 Pipeline (see Chapter 4) and the construction and operation of the Replacement Line 10 Pipeline (see Chapter 3). A discussion of socio-economic impacts is provided in Chapters 6 and 9.

The Board is of the view that Enbridge's design and implementation of its Project-specific public and Aboriginal engagement activities are appropriate for the scope and scale of the Project. The Board is also of the view that all Aboriginal groups potentially affected by the Project were provided with sufficient information and opportunities to make their views about the Project known to Enbridge and to the Board. Public consultation is further discussed in Chapter 5 and consultation with Aboriginal groups is discussed in Chapter 7.

Overall, through its reasoning explained in this Decision, the Board finds the Project, inclusive of the terms and conditions set out in Appendix III and IV, to be in the public interest.

1.3 How did the Board process the Application?

On 17 February 2016, the Board determined that the Application was complete enough to proceed to assessment. Also on 17 February 2016, the Board issued Hearing Order OH-001-2016 (Hearing Order), which established a process with written and oral components for the Board's

consideration of the Application. The Hearing Order included the List of Issues (found in Appendix I of this Decision) that the Board considered during its assessment of the Application.

Appendix II lists the Board's rulings and directives.

1.3.1 Participation and Pre-decided Standing

Pursuant to subsection 55.2 of the NEB Act, the Board must determine who may participate in a hearing for a project before the Board. To be eligible to participate, interested persons or groups must request participation and demonstrate to the Board in their participation application that:

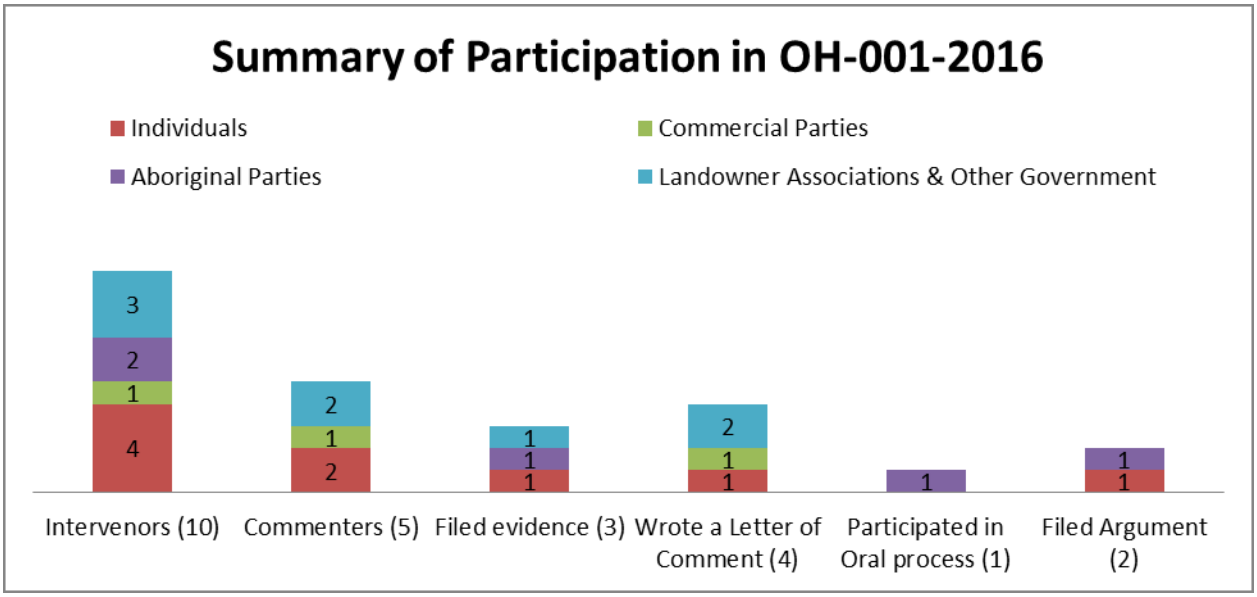
- they are directly affected by the proposed project; or
- they have relevant expertise or information that will assist the Board in making its decision in respect of a proposed project.

Anyone who wished to participate in the hearing process for the Project was required to submit an Application to Participate (ATP) to the Board by 14 March 2016.

The Hearing Order explained that the Board decided that Aboriginal groups, municipalities, landowners and occupants who are directly affected by the granting or refusing of the application had standing provided they register before the ATP deadline of 14 March 2016. This was referred to as Pre-decided Standing. Anyone who was not granted Pre-decided Standing could apply to participate through the ATP process. The Hearing Order provided information on how Commenters could file their letter of comment and how Intervenors could file written evidence and send and respond to information requests.

The Board received 15 ATPs. A total of 11 persons requested or registered for Intervenor status, of these the Board granted 10 Intervenor status. Four persons requested or registered for Commenter status and all were granted Commenter status by the Board. One person requested Intervenor status and was denied standing, but following a request for reconsideration was granted Commenter status. Four Participants withdrew from the hearing.

Figure 1-2: Summary of Participation in OH-001-2016



1.3.2 Oral Traditional Evidence and Community Meeting

As set out in the Hearing Order, the Board held a Community Meeting on the 26 June 2016 at which all Participants (Commenters, Intervenors and the Applicant) had an opportunity to present an oral statement expressing their views on the Project directly to the Board.

Six Nations of the Grand River (Six Nations) provided Oral Traditional Evidence (OTE) at the Community Meeting. See Chapter 7 for further information.

1.3.3 Cross-Examination and Final Argument

The Board held a further oral portion of the hearing on 18-19 of October 2016 in Hamilton, Ontario which consisted primarily of cross examination and final oral argument. Enbridge and Six Nations conducted cross examination and oral argument. Mr. Farquhar, an Intervenor, provided written argument.

1.3.4 Participant Funding

The Board administers a Participant Funding Program (PFP), which provides financial assistance to support participation of individuals, Aboriginal groups, landowners, incorporated non-industry not-for-profit organizations, or other interested groups who seek to participate in the Board's oral hearing process for facilities applications. The applications for PFP are reviewed by the Funding Review Committee, which operates independently from the Project regulatory review process.

On 17 December 2015, the Board made available $500,000 under its PFP to facilitate participation in the public hearing for the Project. Three eligible applications were received, with a total funding request of $409,306.

After reviewing the applications, the Board allocated funding awards totaling $142,000. More information on the program and the funding awards to all eligible applicants can be found on the Board's web-site at http://www.neb-one.gc.ca/pfp .

1.4 What does the Board do now?

The Board's role does not end once a hearing process is complete. The Board takes a lifecycle approach to regulation, holding regulated companies accountable so that Canadians and the environment are protected. The Board is present for all stages of a pipeline's lifecycle – from before a company applies for a project, to the assessment of that project, to the construction and operation of a project, and finally to the oversight and approval of abandonment, reclamation plans and post-abandonment conditions.

Should Enbridge decide to proceed with the Project, the Board would use ongoing oversight to regulate the applied-for Project facilities. Throughout the lifecycle process, the Board works with federal government departments including Fisheries and Oceans Canada (DFO), Environment and Climate Change Canada (ECCC), Transport Canada (TC) and other federal, territorial or provincial authorities in order to ensure effective coordination, emergency response readiness, and other outcomes. The Board also works with municipalities, Aboriginal groups, communities and associations through engagement initiatives (such as the Emergency Management Information Consultation Feedback) and as required for the review of programs and commitments made by Enbridge.

The Board requires the regulated company to protect the environment and public health and safety. The Board confirms this by inspecting and auditing the company's construction activities, maintenance and monitoring procedures during the operation of the pipeline and its procedures during abandonment and post-abandonment.

Management systems and developing a safety culture

The Board requires regulated companies to develop and implement management systems in accordance with the OPRs that set out policies, processes and procedures related to managing the safety of people and the protection of the environment. Under these regulations, companies must have comprehensive management systems and protection programs that provide for continual improvement. A carefully-designed and well-implemented management system supports a strong culture of safety, and is fundamental to keeping people safe and protecting the environment.

The Board enforces regulatory requirements in order to achieve compliance, deter future non-compliance, promote continual improvement of industry performance, and prevent harm by using the most appropriate tool or tools available including:

- NEB Inspections and Audits of company operations;
- Inspection Officer Orders;
- Board Orders (related to safety and environmental protection issues);
- Board Letters or Directives (related to safety and environmental protection issues); and
- Corrective Action Plans related to the above.

The Board may issue financial penalties to companies, third-party contractors and individuals for violations of safety and environmental protection legislation within the Board's jurisdiction.

Emergency management

In terms of emergency management, the Board also requires all of its regulated pipeline companies to anticipate, prevent, manage and mitigate potentially dangerous conditions associated with their facilities. The Board expects the companies it regulates to strive for zero incidents. Any release of product is considered unacceptable by the Board.

Failure to address a violation, non-compliance, or unsafe condition can result in further Board sanction, ranging from Board orders directing corrective action, possible monetary penalties, to ultimately a suspension of operation. The Board will verify that a company conducts an adequate and appropriate clean-up and remediation of any environmental effects resulting from the incident.

See Chapter 10 for further discussion on Emergency Management.

Conditions

The Board sets out conditions that it considers necessary or desirable in the public interest. The purpose of such conditions is to mitigate potential risks and effects associated with a specific project so that the project can be designed, constructed, operated and ultimately abandoned in a safe manner that protects the public and the environment. The following technical chapters explain the context and expectations of the conditions recommended for this Project..

The Board's conditions are requirements a company must adhere to in order to undertake a project, reflecting the circumstances of a project. Conditions are intended to achieve a specific outcome related to those circumstances, and are developed with regard to having clarity, certainty, and direct relation to a project. The Board's conditions do not detract from or duplicate the requirements set out in the OPRs – rather, they are specific requirements in addition to the overarching regulatory framework.

On 14 October 2016, the Board made potential terms and conditions for the Project available for review by Parties. The Board considered all comments it received from Parties before finalizing and setting out the terms and conditions.

The Section 58 Order and the Decommissioning Order are subject to the terms and conditions set out in this Decision (Appendices III and IV).

Company commitments

Commitments made by Enbridge in its Application or in its related submissions during the proceeding also become regulatory requirements. The Board has imposed **Section 58 Condition 11** (Appendix III) and **Decommissioning Condition 9** (Appendix IV), which collectively require Enbridge to track the commitments it made during the proceeding.

Compliance verification and enforcement

The Board will monitor and enforce compliance with these terms and conditions, along with overarching requirements of the OPRs, throughout the lifecycle of the Project through inspections, audits, and other compliance and enforcement tools, as explained in Section 1.4. Monitoring compliance enables enforcement, promotes continual improvement and facilitates an improved understanding of a regulated company's systems and practices. Compliance can focus on commitments made during the application stage and set out as the terms and conditions of approval, as well as those made during project operations. Additionally, the Board continues ongoing, periodic reviews of the manuals and reports of regulated companies, including those related to environmental protection. The Board also investigates compliance as a result of complaints, reports of high-risk activity or incidents.

Documents filed by Enbridge in relation to condition compliance and related Board correspondence will be available to the public on the project-specific website (http://www.neb-one.gc.ca/pplctnflng/mjrpp/ln10wstvr/index-eng.html).

Chapter 2

Economic Feasibility

When assessing an application for a physical project, the Board considers a variety of issues including the economic feasibility of the project. The Board's economic assessment considers issues of supply, markets, alternatives, and financial matters.

The Board finds, for the reasons given below, that the Project is economically feasible, has been justified, and that the facilities are expected to be used and useful for the economic life of the Project.

2.1 Need for the Project and Alternatives

Views of Enbridge

Enbridge submitted that the approximately 32 km segment of Line 10 proposed for replacement, has reached its conservative threshold for replacement and should be replaced rather than undergo a program of further digs, inspection and routine maintenance. Because the Project is a maintenance project, the alternatives Enbridge considered consisted of either continuing to conduct ongoing integrity digs and repairs or replacing the segment of pipe. Replacement is the most cost-effective approach to maintain the safety and reliability of this segment of Line 10. Replacement would reduce impacts to landowners, other stakeholders and the environment through reduced integrity digs and, upon completion, the segment would be more hydraulically efficient allowing transportation of product while using less energy.

Views of the Board

The Board notes that no Participant commented on the need for the Project.

The Board concludes that the Project has been justified, and that the facilities are expected to be used and useful for the economic life of the Project.

2.2 Economic Feasibility

Views of Enbridge

Enbridge stated the capital cost of the project is approximately $219 million and is financed through a commercial agreement with a third-party customer. Under this agreement, the third party would fund the entire pipe replacement and all integrity related costs for the Project from the date of signing (July 2014) forward to the end of the operations phase of the Project's life cycle.

Views of the Board

The Board notes that no Participant commented on the proposed method of financing.

The Board finds the proposed method of financing to be reasonable.

The Board concludes that the Project is economically feasible.

2.3 Commercial Impacts

Views of Enbridge

As Line 10 sources its supply from the Enbridge mainline, there is or there would be adequate supply to support the use of the applied-for facilities. The project would not introduce additional capacity and would restore the segment of Line 10 to its original operating capacity of an annualized average of approximately 11 797 m^3/d (74,200 bbl/d). The post-project capacity on an annualized average basis, excluding the impact of shutdowns or maintenance, is 13 108 m^3/d (82,444 bbl/d). Enbridge called this throughput the design capacity of Line 10. The design capacity is a design criteria Enbridge utilized to ensure safety and reliability of its system. It represents the maximum theoretical average throughput of the pipeline with no planned or unplanned outages. Enbridge Line 10 services one refinery with a stream day crude oil capacity of 11 129 m^3/d (70,000 bbl/d). Enbridge indicated that it is not aware of plans to expand the refinery and it does not have plans to increase the capacity of Line 10 beyond that specified in the Application.

On average twelve shippers transport product on Line 10, although any third-party shipper can transport product on Line 10. Enbridge notified all shippers of the Project on 30 November 2015.

Views of the Board

The Board is satisfied that there is a sufficient market to absorb the volumes that would be delivered off the Line 10 Replacement Pipeline. The Board notes that no Participant contested Enbridge's evidence on crude oil supply or markets in this proceeding.

2.4 Abandonment Cost Estimate

Views of Enbridge

Enbridge stated that the effect of the Project on Enbridge's Abandonment Cost Estimate (ACE) would be immaterial. Enbridge submitted that its ACE would be subject to regular reviews (at least every five years). Enbridge does not anticipate accessing the Abandonment Trust for any of the decommissioning costs associated with the project.

For further details see Chapter 4 Decommissioning.

Views of the Board

The Board reminds Enbridge of the Board letter dated 8 February 2016 initiating the process for the 5 year ACE review.

Chapter 3

Design, Construction and Operation of the Replacement Line 10 Pipeline

The Board uses a risk-informed lifecycle approach to ensure that NEB regulated pipelines and related activities are safe and secure from their initial construction through to their abandonment. In consideration of the safety and security of proposed facilities, the Board assesses whether the facilities are appropriately designed for the properties of the product being transported, the range of operating conditions, and the human and natural environment where the facilities would be located. Specific considerations include the company's approach to engineering design (such leak detection systems and remote sectionalizing valves), integrity management, security, emergency preparedness, and health and safety.

For the reasons outlined below, the Board has determined that the proposed activities related to the Project design and construction are appropriate, and that the facilities are expected to be operated safely and securely.

3.1 Facilities

When a company designs, constructs, operates or abandons a pipeline, it must do so in accordance with the NEB Act and NEB's regulations, including the OPR, the commitments made during a proceeding, and the terms and conditions the Board attaches to any approval. The company is responsible for ensuring that the design, specifications, programs, manuals, procedures, measures, and plans developed and implemented by the company are in accordance with the OPR, which includes by reference the Canadian Standards Association (CSA) Standard CSA Z662-15 – *Oil and Gas Pipeline Systems* (CSA Z662-15). In order to meet these obligations, the company must establish, implement, and maintain a systematic, explicit, comprehensive and proactive management system which integrates emergency management, integrity management, safety management, security management, and environmental protection programs. Management system elements and related requirements are detailed in the OPR, Sections 6.1 through 6.6, and fulfill the cycle of "plan, do, check, and act."

Throughout the lifecycle of a pipeline, the Board employs the compliance verification approach to hold the pipeline company accountable for meeting its regulatory requirements. NEB technical staff track and assess condition compliance and conditions requiring approval of the Board before the company can proceed with the next phase of the project. Through compliance verification activities, such as audits, inspections, meetings, and review of condition filings and other manuals and reports, the Board verifies a company's regulatory compliance and assesses the adequacy and effectiveness of a company's management system and programs.

3.2 Description of Facilities

The Project facilities include:

1. the replacement of approximately 32 km of the existing 323.9 mm (NPS 12) Line 10 with a 508.0 mm (NPS 20) pipe. The work would include the following two Horizontal Directional Drills (HDD):
    a. approximately 572 m to mitigate a Westover wetland crossing; and
    b. approximately 750 m for constructability considerations through the Copetown Woods Golf Club.
2. open cut or Horizontal Directional Bore (HDB) methods would be conducted at a number of road and railway crossings;
3. the installation of a new pig launching trap and leak detection meter at Westover Terminal, including electrical and instrumentation;
4. the installation of four Remote Sectionalizing Valves (RSVs):
    a. two at locations where new permanent easement would be acquired, complete with electrical building and wireless communication; and
    b. two at existing facility sites.
5. the decommissioning in place of approximately 32 km of existing NPS 12 pipeline from Westover Terminal to Nanticoke Junction in accordance with OPR section 45.1 and CSA Z662-15; and
6. the validation of installation on the HDD sections with a high resolution caliper tool run.

3.3 Design, Construction and Operation

3.3.1 Design

3.3.1.1 General Design of the Project

Views of Enbridge

The Project would be designed, constructed and operated in accordance with applicable regulations, and industry codes and standards. Enbridge would comply with the latest requirements of the OPR and CSA Z662-15, which references other standards that would be followed in the design of the Project. The Project would also be designed and operated to meet the requirements of the most recent versions of Enbridge's Engineering Standards and Guidelines.

The Replacement Line 10 Pipeline would be designed and operated as a non-sour service low vapour pressure pipeline. The Project has Class Locations 1, 2 and 3 designations in accordance with Table 4.2 of CSA Z662-15. As required by this standard, a class location factor of 1.0

would be used for general installation as well as bores and road crossings and a factor of 0.625 would be used for uncased railway crossings.

View of Participants

No Participants expressed any concerns regarding the general design of Enbridge's proposed Project.

Views of the Board

The Board is of the view that the general design of the Project facilities is appropriate for the intended use and that the facilities will be constructed in accordance with the widely accepted standards for design, construction, and operation, including the mandatory OPR and CSA Z662-15 requirements, as well as the standards, guidelines and procedures referenced therein.

3.3.1.2 Leak Detection System

Views of Enbridge

Enbridge currently operates the Leak Detection System (LDS) for the Line 10 pipeline in compliance with CSA Z662-15, including its Annex E, and would continue to do so when the Replacement Line 10 Pipeline is in service.

Enbridge would employ a comprehensive and multi-layered approach to leak detection on the Replacement Line 10 Pipeline. This approach involves the following five Computational Pipeline Monitoring (CPM) systems and three other leak detection methods:

Computational leak monitoring methods

i) **Material Balance System (MBS):** A Real Time Transient Model, the MBS will simulate the hydraulic state of the pipeline in real time, including transient conditions. The Real Time Transient Model is optimized to detect a range of larger releases with specific targets for short calculation windows (i.e., five minutes to two hours).

ii) **Automated Volume Balance (AVB):** The AVB is a continuous automated volume balance calculation which focuses on longer alarm windows (i.e., 24 hour, seven day and 28 day) for the detection of smaller releases which may occur over periods of time much greater than two hours.

iii) **Scheduled line balance calculations:** These calculations are commonly referred to as "over/short reports" and are calculations of oil inventory performed at fixed intervals, aligned with CSA Z662-15 Annex E.

iv) **Rupture detection:** The rupture detection system is a complementary computer-based pipeline monitoring systems which utilizes pump station pressure and flow measurements to identify and alarm on pipeline rupture events (i.e., leak sizes >30% of nominal flow). It does not make use of volume balance windows.

v) **Automated pressure deviation:** A complementary computer-based pipeline monitoring system that utilizes pressure measurements during pipeline shut-in conditions and generate alarms if a significant pressure drop is identified. It does not utilize volume balance windows.

Other leak detection methods

i) **Visual surveillance and reports:** Consisting of a public awareness program, a third party reporting program, and aerial pipeline patrols conducted in accordance with regulatory requirements and risk based approaches.

ii) **Acoustic In-line Inspection (ILI):** Acoustic inline inspection tools are used to confirm the integrity of the pipeline and for the detection and localization of small leaks.

iii) **Controller monitoring:** Line 10 operating conditions are monitored by Pipeline Controllers (i.e., operators) on a 24/7 basis through Enbridge's Supervisory Control And Data Acquisition system.

iv) **Tank gauge measurement:** During the infrequent circumstance where Enbridge's CPM system is significantly degraded upon loss of inlet or outlet flow meters, alternate means of leak detection are employed. These means of leak detection are typically based on tank gauge measurements, and are utilized until repairs can occur.

In this process, the Control Centre operators utilize tank gauge measurements at frequencies up to 30 minute intervals, comparing input and output volumes with an alarm threshold of 10 per cent. Enbridge indicated that even though tank gauge measurements are completed through an automated process, they are not considered CPM systems because the analysis is manual. Enbridge views the tank gauge measurement process to be consistent with Annex E of CSA Z662-15, because the standard allows for the temporary use of alternative methods of leak detection while the primary method is down. However, Enbridge has not defined its sensitivity.

Enbridge estimates that the initial volume out resulting from a full bore rupture (i.e., worst case release volume prior to shut down and valve closure) would be 744 barrels. This estimate is based on an assumed detection, shutdown and valve closure time of 13 minutes.

Enbridge submitted that its various levels of testing and continual improvement assure a safe, reliable, and robust leak detection system. Enbridge committed to parameter manipulation testing, using API RP 1130 methodology, on all CPM systems (i.e., MBS, AVB, scheduled line balance, rupture detection and automated pressure deviation) of the Replacement Line 10 Pipeline, at a minimum frequency of once per year. These parameter manipulation tests are supplemented with fluid withdrawal tests which are conducted three to four times per year on select Enbridge pipelines based on complexity, location, feasibility and safety. Fluid withdrawal tests are typically unannounced tests (i.e., blind tests).

Enbridge committed to regular monitoring of all critical leak detection infrastructures and expedited repairs if required in order to restore optimal leak detection performance. However, Enbridge argued that it cannot commit to developing a method that currently has not been developed by anyone in the industry prior to operation of the pipeline, as requested by

Mr. Edward Farquhar. Inclusions of undeveloped methods would not provide material benefit to operating the LDS.

Views of Participants

Mr. Edward Farquhar:

Mr. Farquhar asserted that the Replacement Line 10 Pipeline LDS would have no redundancy for 20 minute, 1 week and 1 month calculation windows. As a result, leaks that could be detected within these calculations windows under normal circumstances may not be detected in a timely manner during severe degradations of the primary CPM systems. Further, the Replacement Line 10 Pipeline's AVB system is not a very robust method of leak detection because it appears to be a simple volume balance method.

Mr. Farquhar also asserted that tank gauge measurement, as described by Enbridge, is an extremely poor method of leak detection, as it is limited to detecting medium to large size leaks. Tank gauging is not compliant with a number of sections of Annex E of CSA Z662-15 and therefore, Enbridge would, at times, be operating Line 10 out of compliance with Annex E.

Mr. Farquhar requested that:

- a number of additional specifications related to Line 10 LDS sensitivity performance be available to the public;
- Enbridge should develop an engineering assessment tool which estimates absolute sensitivity on a real time basis; and
- Enbridge should use this estimate to determine whether it is safe to operate the pipeline, among other things.

Views of the Board

The Board notes Annex E.1.3 of CSA Z662-15, which states that a LDS must be implemented using one or a combination of various methodologies. An operating company must evaluate applicable leak detection methodologies to determine their effectiveness for the pipeline under consideration and how various methodologies can complement each other.

The Board expects operating companies to implement performance-based LDSs capable of effective and timely detection of oil releases during all operating conditions. The Board expects Enbridge to implement on the Replacement Line 10 Pipeline the lessons learned from historical oil leaks involving Enbridge's system and across the pipeline industry.

The Board is of the view that tank gauge measurement, as presented by Enbridge, would not be a reliable and accurate alternative LDS. The Board imposes **Section 58 Condition 31** (LDS Methods) to specify a number of requirements related to the pipeline's future operating conditions.

To provide the Board with confirmation that the necessary procedures have been completed prior to the commencement of operation, the Board imposes **Section 58 Condition 21** requiring Enbridge to file the Project Leak Detection System Manual. This manual must include, among other things, Enbridge's management policy, commitment to leak detection, the theory and rationale for each LDS method, training of personnel, and the roles and responsibilities of Enbridge staff and leadership in the event of a suspected leak.

In order to validate the assumptions made by Enbridge in determining the performance of the Replacement Line 10 Pipeline's LDS, the Board imposes **Section 58 Condition 26** which requires Enbridge to file LDS test results that will incorporate actual operating parameters. These tests will ensure that Enbridge has implemented a reliable LDS that could potentially prevent spills in the event of a pipeline failure, and provide further confidence in the safe operation of the Replacement Line 10 Pipeline.

3.3.1.3 Pressure Surge Control

Views of Enbridge

Enbridge provided a Pipeline Transient Analysis Summary Report which summarized the transient simulations conducted on the Replacement Line 10 Pipeline. Transient simulations were conducted to identify pressure surges caused by abnormal operating conditions that would trigger a pressure exceeding the maximum operating pressure (MOP) in the pipeline system and or equipment by more than 10 per cent or 35 kPa, whichever is greater (i.e., overpressure, as defined by CSA Z662-15).

Views of Participants

No Participants expressed any concerns regarding the pressure surge control of Enbridge's proposed Project.

Views of the Board

The Board acknowledges Enbridge's conclusion that the scenario that was considered did not result in pipeline pressures exceeding 110 per cent of the pipeline MOP and that based on these results, no additional forms of overpressure protection are recommended for the Replacement Line 10 Pipeline. However, to ensure the validation of Enbridge's theoretical analysis and assumptions, the Board imposes **Section 58 Condition 27 (Pressure Surge and Overpressure Protection)**. This validation would provide further confidence in Enbridge's capacity to safely operate the Replacement Line 10 Pipeline without overpressure situations.

3.3.1.4 General Crossing Design

Views of Enbridge

The proposed pipeline would cross existing highways, roads, railway lines, pipelines owned by other companies and utility lines including overhead electric power lines. A detailed survey of

the pipeline route was being conducted. Enbridge submitted that, all crossings would be designed and constructed to conform to NEB regulatory requirements and applicable standards.

In response to the requests made by Hydro One Networks Inc. (HONI), outlined below, Enbridge committed to complete additional studies to determined and mitigate potential mutual negative impacts between these structures. Enbridge stated that it would:

- adhere to the guidelines of standard CAN/CSA-C22.3 No.6-13 *Principles and practices of electrical coordination between pipelines and electric supply lines* (CAN/CSA-C22.3 No.6-13);
- maintain the recommended separation as required in CSA Z662-15 clause 4.13.1, Pipelines in proximity to electrical transmission lines and associated facilities as specified in CAN/CSA-C22.3 No.6-13; and
- review with and reach agreement with HONI to ensure that pipelines in proximity to electrical transmission lines and associated facilities are as specified in CAN/CSA-C22.3 No.6-13, in compliance with the specifications of clause 4.13.1 of CSA Z662-15.

Views of Participants

HONI requested Enbridge to confirm that it would perform several actions including:

- sharing the detailed engineering and survey deliverables for this Project prior to construction commencement so that both companies can discuss necessary offsets between respective utility infrastructures;
- adhering to a number of construction requirements, including guidelines of CAN/CSA-C22.3 /No.6-13 and
- undertaking to study potential impacts and propose necessary mitigations in situations where minimum separation guidelines cannot be maintained, and that the mitigation measures need to be agreed to by HONI and Enbridge before construction commences.

Views of the Board

The Board acknowledges the concerns of HONI regarding the construction of pipeline portions near its power lines and related detailed engineering and survey deliverables that Enbridge committed to conduct. The Board also acknowledges that when installed parallel and in proximity to or crossing a power line, a pipeline can be affected by induced voltages or fault currents, creating a hazardous situation for the public and potential integrity issues to the pipeline. In addition, Cathodic Protection (CP) system currents can trigger integrity threats to power line structures, including corrosion of tower footings, buried grounding facilities, and guy anchors.

The Board notes that Enbridge has committed to evaluate potential impacts of the pipeline corrosion control system and to collaborate with HONI in the implementation of the findings. The Board imposes **Section 58 Condition 14** to allow the Board to review Enbridge's management of the implementation of these findings. This condition requires

Enbridge to file the results of its evaluations and the long-term integrity management program for the pipeline portions installed near power lines.

3.3.1.5 Other Crossing Methods

Views of Enbridge

Enbridge proposed to conduct two HDDs as crossing method for a Westover wetland crossing and the Copetown Woods Golf Club. In addition, HDB method would potentially be conducted at a number of road and railway crossings

Views of Participants

No Participants expressed any concerns regarding the implementation of the HDD or HDB crossing methods proposed by Enbridge.

Views of the Board

The Board notes that Enbridge did not provide detailed information on the crossing methods. The Board also notes that Enbridge's Geotechnical Field Program is ongoing and that Detailed Feasibility Assessments have not been completed. Therefore, the Board imposes **Section 58 Condition 13** which requires Enbridge to file the results of the Project's Detailed Feasibility Assessments for each crossing where Enbridge intends to employ HDD or HDB.

In addition to the requirements set in **Section 58 Condition 13**, the Board imposes **Section 58 Condition 24** regarding HDD and HDB Contingency Plans. In order to permit a continuous evaluation of the actual scope of the Project at wetlands, water, Environmentally Sensitive areas, roads and railway crossings, Enbridge must file detailed information regarding any unsuccessful HDD or HDB crossing where Enbridge would employ a contingency construction instead of its proposed primary plan.

3.3.2 Construction Schedule

Views of Enbridge

Subject to receipt of regulatory approvals, the construction of the Project is scheduled to commence by the Q3 2017 and is expected to be completed within one year. The Decommissioning Activities of the Existing Line 10 Pipeline would begin once the Replacement Line 10 Pipeline is in service and would last for approximately three months.

Views of Participants

No Participants expressed any concerns regarding the construction of Enbridge's proposed Project.

Views of the Board

The Board is satisfied with the information provided by Enbridge related to the construction schedule of the Project. The Board imposes **Section 58 Conditions 15** and **20** requiring Enbridge to file a construction schedule and progress reports to facilitate Board coordination of compliance verification activities including field inspections during construction.

3.3.3 Quality Assurance

Views of Enbridge

The Project Quality Manager would implement and coordinate quality processes and requirements with Project procurement. These work processes and requirements would address quality checks and management during the procurement cycle, including third party inspection at vendor facilities.

Views of Participants

No Participants expressed concerns regarding the quality assurance of Enbridge's proposed Project.

Views of the Board

As-built technical specifications

The Board acknowledges Enbridge's proposed quality management during procurement and its submission that it would design and construct the Project in compliance with applicable codes, regulations and Enbridge's manuals. However, the Board reminds Enbridge that, as specified in the Board's Safety Advisory SA 2016-01 dated 5 February 2016, existing industry-accepted standards such as CSA Z245.11, CSA Z245.1, and MSS SP-75 have appeared to be insufficient in preventing the manufacture of pipe and fittings with substandard material properties. Pipeline operating companies are wholly responsible for assuring that the pipe and fittings they purchase meet the specifications requested and required for the intended project.

In addition, the Board notes that Enbridge did not provide a detailed description of how it would assure high work quality during the Project's construction. To ensure that adequate as-built and tracking data are gathered for the pipeline's future lifecycle activities, the Board imposes **Section 58 Condition 19 (Technical Specifications Update)** which requires Enbridge to file technical specifications of the Project pipeline and facilities. Furthermore, **Section 58 Condition 28** requires Enbridge to provide detailed Geographic Information System information.

Joining Program

Section 16 of the OPR states that a company is required to develop a joining program and to submit it to the Board when required to do so. The Board notes that the Replacement Line 10 Pipeline would be manufactured using an electric resistance welding process and

that the joining program and non-destructive testing of welds would comply with the requirements of the OPR and CSA Z662-15. The Board imposes **Section 58 Condition 23** which requires Enbridge to file its Project-specific joining program to assist the Board in, among other things, verifying compliance in the field.

Pressure Testing Program

Section 23 of the OPR requires that before putting a pipeline into service, a company must develop a program in respect of pressure tests to be conducted for pipe and components used in its pipeline and shall submit it to the Board when required to do so. The Board notes that Enbridge stated that the Replacement Line 10 Pipeline would be hydrostatically pressure tested in accordance with the requirements of the OPR and CSA Z662-15. Further, the Board notes that Enbridge committed to developing a hydrostatic pressure test program and hydrostatic test plan during detailed engineering and design. In addition, before pressure testing, each section of pipeline would be cleaned with pigs and water to remove construction debris. **Section 58 Condition 22** allows the Board to assess Enbridge's Project specific hydrostatic pressure test program prior to its implementation.

3.3.4 Operation

Views of Enbridge

All facilities associated with the Project would be monitored and operated from Enbridge's Control Centre, located near Edmonton, Alberta. They would be operated in accordance with all applicable regulatory requirements, certificate conditions, licenses and Enbridge's own operating requirements. Field maintenance and operations staff would ensure the safe and reliable operation of the equipment and facilities in accordance with Enbridge's operating and maintenance procedures and preventative maintenance program.

Views of Participants

No Participants expressed any concerns regarding the operation of Enbridge's proposed Project.

View of the Board

The Board is satisfied with Enbridge's proposed continuous monitoring and control of Project operations. The Board is of the view that a proper implementation of Enbridge's commitments, including its operating and maintenance procedures and preventative maintenance program would ensure the safe operation of the pipeline.

3.3.5 Safety and Security Management

Views of Enbridge

During construction, contractors would be required to adhere to applicable local safety regulations in addition to their own corporate safety manuals. Contractors are also required to

follow the Enbridge LP/MP Safety Manual. Enbridge's safety inspectors would be on site to ensure that contractors follow all safety procedures throughout the Project.

Enbridge committed to complying with section 47.1 of the OPR, which requires operating companies to develop, implement and maintain a Security Management Program (SMP) that anticipates, prevents, manages and mitigates conditions that could adversely affect people, property or the environment. The existing SMP adheres to CSA Z246.1 and applies to all Enbridge pipeline systems and facilities. This SMP would be in effect during the project construction. It includes the following:

- security policies and procedure manuals;
- regional security response plans;
- security vulnerability assessments;
- threat monitoring, identification, analysis and mitigation;
- monitoring and tracking of security incidents;
- training and support of operations personnel; and
- physical security measures that reflect the size, location, risk and criticality of the assets that require protection. These measures generally include perimeter fencing, manual or automated gates, instruction alarms, access control, surveillance systems and lighting.

Construction of the new facilities would not negatively impact Enbridge's security response plans. All existing security plans and programs would be updated to include the new facilities as appropriate.

Views of Participants

No Participants expressed any concerns with respect to the safety and security of the Project.

Views of the Board

The Board requires that security programs are systematic, comprehensive and proactive in managing security risks and that it is appropriately integrated into a company's overall management system to provide for safe and secure practice in the design, construction, operation and maintenance of a pipeline system. The Board is satisfied with the evidence submitted by Enbridge with respect to safety and security. In the Board's view, the measures proposed by Enbridge to address safety and security are appropriate.

To facilitate the ongoing review by the Board of Enbridge's safety plans and performance, the Board has imposed **Section 58 Condition 16** requiring Enbridge to file the Construction Safety Manual and to provide confirmation that it has developed an SMP.

3.4 Pipeline Integrity

3.4.1 Pipeline Integrity Management

Views of Enbridge

The Project's new facilities would be managed using the Enbridge Integrity Management Plan consisting of routine internal inspection with in-line inspection (ILI) tools, a corrosion inhibitor program, and the CP system. A new pig launching trap and leak detection meter would be installed at Westover Terminal. Following the construction of the Replacement Line 10 Pipeline, Enbridge has committed to inspecting the HDD sections with a high resolution caliper to identify potential deformations that may have occurred during installation.

Metal Loss

External Corrosion

The primary external corrosion control for the proposed pipeline will be provided by a fusion bonded epoxy coating that will be applied at a pipe coating plant.

Pipe for trenchless sections of the pipeline will use dual powder coating that will provide an additional abrasion resistant coating to protect the fusion bonded epoxy coating. In addition, rock shield, sand padding, wooden lagging or concrete coating will be used, during construction, where required to provide additional mechanical protection against pipe coating damage. Field girth welds will be coated with a system compatible with the plant-applied fusion bonded epoxy coating.

An impressed current CP system will be used as a secondary corrosion control measure. It will be designed and installed in accordance with applicable codes, regulations and Enbridge Operations and Maintenance Manuals (O&MMs). Monitoring of the CP system will be ongoing and in accordance with CSA Z662-15. Test stations and coupon test stations will be installed at appropriate intervals along the proposed pipeline. The prevention system will also include adequate installation of cased crossings along the line.

Internal Corrosion

The Replacement Line 10 Pipeline will not transport hydrocarbons containing significant corrosive or abrasive properties. Therefore, an internal pipe coating is not required.
Internal corrosion prevention measures will include the use of in-line cleaning tools from pre-commissioning to decommissioning of the pipeline. Magnetic Flux Leakage and ultrasonic tools will also be used to inspect the line for internal and external corrosion, and other potential metal losses.

Cracking

During operation Enbridge will utilize ultrasonic ILI tools to inspect pipelines for threats associated with crack-related defects.

Mechanical Damage

Prior to construction, Enbridge, along with its contractor will develop and implement a strategy for managing all utility crossings and will ensure that all parties understand their roles and responsibilities. Once the Replacement Line 10 Pipeline is placed into operation, measures including the following activities will be implemented to address the threat of third-party damage to the pipeline:

- a ROW surveillance and maintenance program;
- standards for locating and marking pipelines;
- crossing and encroachment agreement process;
- risk assessment for third-party activity;
- land use monitoring program;
- public awareness program;
- One Call registration and management system;
- ground disturbance procedures;
- vehicle crossing management system; and
- unauthorized ground disturbance reporting procedure.

Views of Participants

No Participants expressed any concerns with respect to the integrity management of the Project pipeline.

Views of the Board

The Board is of the view that an effective implementation of Enbridge's planned integrity activities described above constitute an appropriate approach to addressing integrity concerns that may arise during the operation of the Replacement Line 10 Pipeline.

3.4.2 Pipeline Failure Risk Assessment

Views of Enbridge

Enbridge's operational risk management group performs hazard assessments and manages high consequence areas throughout Enbridge's pipeline systems.

Risk is evaluated by multiplying the likelihood of failure (i.e., oil release) with its potential consequence. The Risk Management Program involves:

i) **Threats to Pipeline Integrity**: These can include: corrosion, cracking, denting, mechanical damage, geohazard, theft and sabotage and incorrect operations. Please refer to Section 3.4.1 Pipeline Integrity Management for more detail.

ii) **Prevention and Control Measures**: These include: safer design and construction; public awareness and damage prevention; ILI and preventative maintenance; leak detection and remote controlled valves; and emergency responses.

iii) **High Consequence Area (HCA)**: Five types of HCA have been defined: high populated area, other populated area, environmentally sensitive area, drinking water and commercially navigable waterway.

iv) **Placement of Remote Sectionalizing Valves (RSVs)**: Enbridge submitted that while RSVs are effective at reducing consequence of oil release, valve sites themselves can increase the likelihood of a release. A RSV can be vulnerable to leaks and can create a greater potential for third party damage (either accidental or vandalism). Therefore, the proper balance is required to manage the overall risk.

The placement of four RSVs along the Replacement Line 10 Pipeline was determined using Enbridge's Intelligent Valve Placement (IVP) Program. The IVP methodology, which is one of the key elements of Enbridge's risk management program, involves modelling the pipeline route, ROW topography, elevation profile, flow capacity, and watercourse locations. It identifies the maximum unmitigated potential release volume at all points along the pipeline and specifies optimal valve placements to reduce potential release volume as much as reasonably practicable, in the unlikely event of a pipeline leak or rupture, considering sensitive features and HCA. .

Enbridge indicated that it is applying for a MOP of 9,930 kPa at the discharge of the Westover Terminal. Given current operating conditions, this MOP would result in an annualized average capacity of 11 797 m^3/d (74,200 bbl/d). The annualized average capacity, used in items such as customer agreements, would be maintained after the commencement of operations of the Project. Enbridge also referred to the following additional capacities (flow rates):

- The annual daily average design capacity of 13 108 m^3/d (82,444 bbl/d): is the maximum theoretical average throughput of the pipeline, assuming ideal operating conditions such as when all pumps are available, no pressure restrictions, and no impacts from inclement weather. Enbridge uses this capacity in items including the steady state hydraulic design of the pipeline and the IVP assessment; and

- The instantaneous maximum capacity of 14 468 m^3/d (91,000 bbl/d): is the maximum flow capacity used in transient hydraulic assessment to prevent overpressure of the pipeline. It is not utilized to determine the operating capacity of the system.

Enbridge stated that because pipeline annualized average capacity would remain the same, the implementation of the Project would not change the initial volume out of Line 10, in case of an oil release. However the drain down volume without further valves would be higher due to the proposed increased line diameter from 12 to 20 inches. But, as a result of applying the IVP methodology, the increase in volume out due to line size change is mostly compensated by the placement of two additional valves, bringing the RSV number from two to four.

Enbridge argued that the potential benefit of adding more RSVs, beyond the proposed four, is marginal when assessing the maximum release volume reduction, protection footprint, quantity and relative size of the protected watercourses, and ability to impact drinking water sources. Enbridge said that it determined that the direct environmental disruption, landowner impacts, practical limitations, and inherent risks outweigh the benefits of installing additional valves.

Views of Participants

No Participants expressed concerns with respect to the risk assessment related to potential pipeline failures.

Views of the Board

The Board concludes that Enbridge's IVP methodology was appropriate.

The Board is of the view that an effective implementation of Enbridge's preventive and control measures constitute an appropriate approach to addressing risk concerns that may result from potential pipeline failures. The Board accepts Enbridge's results related to the placement and spacing of RSVs along the pipeline component of the Project. However, the Board notes that these results are based on a number of current operating parameters, such as the pipeline flow capacity, pipe specifications and HCAs along the ROW. Significant change of any of these parameters, in the future, may affect the validity of Enbridge's evaluation and contribute to greater safety and environmental consequences of an oil release. To ensure that a continuous monitoring program is implemented to maintain an adequate RSV placement and spacing over time, the Board imposes **Section 58 Condition 32** which limits the operation of the pipeline in relation to RSV placement.

In addition, to adequately mitigate potential negative impacts of the pipeline on neighbourhood populations, the Board expects Enbridge to be actively engaged with relevant stakeholders (including landowners, land users, land developers, governments, first responders, emergency management services, conservation authorities (CA), and industry associations) with respect to future development projects close to the pipeline that are within the class location assessment area (extending 200 m on both sides of the centre line of the pipeline, as defined by CSA Z662-15) or within Enbridge's estimated danger zone, whichever is greater.

Chapter 4

Decommissioning of the Existing Line 10 Pipeline

An overview of Enbridge's decommissioning rationale and activities, from an engineering perspective, is provided below in Section 4.1. Section 4.2 provides the Board's assessment of the appropriateness of decommissioning the Existing Line 10 Pipeline segment in-place versus pipeline removal. In Section 4.3, 4.4 and 4.5, Enbridge's decommissioning plan is examined from environmental and socio-economic perspectives. Public consultation and land matters associated with decommissioning are discussed in Chapters 5 and 6 of this Decision.

For the reasons that follow, the Board approves Enbridge's request to decommission the Existing Line 10 Pipeline in-place.

4.1 Engineering Matters

4.1.1 Overview of Enbridge's Decommissioning Plan

Enbridge applied under section 45.1 of the OPR for approval to decommission in-place the Existing Line 10 Pipeline.

The Existing Line 10 Pipeline, with a total length of 143 km, has been in service since 1962 and currently transports a variety of crude oils from the Westover Terminal to Nanticoke Junction in in Hamilton, Ontario. Enbridge stated that the 32 km portion of the line had experienced an increasing number of preventative maintenance digs to visually inspect and repair the pipeline. As a result, Enbridge determined that the segment has reached Enbridge's conservative threshold for replacement. Enbridge has proposed to decommission the Existing Line 10 Pipeline, since it would be replaced and there would be no termination of service to Enbridge's customers as a result of cessation.

Enbridge's preferred method is to decommission the Existing Line 10 Pipeline in-place, as opposed to its removal. Enbridge provided a number of supporting studies that outline the potential long-term issues associated with pipeline decommissioning or abandonment. All the work associated with the decommissioning activities will be in accordance with CSA Z662-15, the NEB decommissioning provisions under the OPR and Guide K of the Filing Manual.

4.1.2 Decommissioning Activities

Views of Enbridge

Pending regulatory approval, construction of the Replacement Line 10 Pipeline is anticipated to commence in Q3 2017 and be in service during Q1 2018. The Existing Line 10 Pipeline would remain in operation until it is decommissioned, following the commencement of operations of the Replacement Line 10 Pipeline. The Existing Line 10 Pipeline is located in a primarily

agricultural setting in the Binbrook area of Hamilton, Ontario. The decommissioning will include the following activities:

Pipeline cleaning

Currently, there is no accumulation of water and sediment in the Existing Line 10 Pipeline. The Existing Line 10 Pipeline will continue to be cleaned, using internal cleaning tools, on a quarterly basis until 2018, the expected end of the segment's in-service. During decommissioning, all products within the pipeline will be displaced and the pipeline will be cleaned to reduce residual hydrocarbon deposits to the extent practical.

Isolation of Pump Stations and Terminals

The Existing Line 10 Pipeline will be physically separated from in-service piping at the Westover Terminal and the Nanticoke Junction Facility, in compliance with CSA Z662-15 to prevent the reintroduction of product into the decommissioned pipeline. Equipment and instrumentation will be de-electrified for safety reasons. The pressure containing side of the isolation location will be tied-in to the Replacement Line 10 Pipeline.

Mainline Block Valve

The single manually operated stand-alone mainline block valve on the Existing Line 10 Pipeline, at Powerline Road, will be closed. It will be removed to a depth of one metre below ground or to the top of the valve, whichever is less. The ROW will be restored following the removal.

Segmentation

The decommissioned Existing Line 10 Pipeline will be segmented to prevent the downslope movement of water within a subsection. The work will be achieved by:

- exposing the pipeline in place, cutting the pipeline, and installing plates on the ends;
- the removal of the stand-alone mainline block valve, as described above; and
- facility isolation at the Westover Terminal and the Nanticoke Junction, as described above.

Ground disturbance, if any, that is necessary for segmentation activities will meet regulatory requirements. Final segmentation locations will be determined upon the completion of the field assessment (taking into account Environmentally Sensitive Areas), detailed engineering review and constructability assessment. The segmented portions will be capped, plugged, or otherwise effectively sealed to protect against the creation of water conduits. Additional measures, such as filling the pipe with engineered material, will be taken to prevent potential ground subsidence at active road and railway crossings. Enbridge stated that all existing King's Highway and railway crossings were constructed with casing, as per the applicable design specifications. Casings provide a secondary barrier to failure, either by corrosion or structural collapse. Nitrogen is the proposed propellant for all displacement and cleaning activities.

Watercourse and Wetland Crossings

Preliminary analysis of the soil and depth of cover data along the Existing Line 10 Pipeline was conducted to determine areas with potential buoyancy control issues. Only one location along the ROW was identified. At that location, the corresponding pipe depth of cover measurements ranged from 1.4 m to 4.5 m. Any area identified with insufficient negative buoyancy will undergo further assessment during detailed engineering. Mitigation methods may include set-on or bolt-on weights, adding engineered fill to the pipeline, using screw piles with straps, or additional cover (where groundwater is causing buoyancy issues).

Cathodic Protection System

The CP system will be maintained on the decommissioned Existing Line 10 Pipeline in accordance with Enbridge's O&MMs and commitments made by Enbridge to landowners and the NEB.

Ongoing Monitoring

Enbridge will continue ongoing monitoring and maintenance of the decommissioned pipeline ROW including the following activities:

- assessing areas of potential geotechnical instability;
- ROW inspections during patrols;
- maintaining pipeline signage;
- maintaining the CP system; and
- continuing maintenance of the ROW, including locations where pipe sections may be exposed by buoyancy.

The decommissioned Existing Line 10 Pipeline will remain part of Enbridge's programs for damage prevention and safe work practices for ground disturbance and crossing activities. In addition, the depth of cover will be surveyed, assessed, and mitigated in accordance with Enbridge's O&MMs and Pipeline Depth Monitoring Program, at least once every ten years.

Site-specific Monitoring

Enbridge is engaged in ongoing consultation with federal and provincial transportation ministries and railway companies to develop monitoring programs for King's Highway and active railway crossings. Detailed engineering will address specific issues regarding crossings in the development of a program to decommission the Existing Line 10 Pipeline in-place. If a deficiency, or area of concern, is discovered during monitoring, a risk assessment will be conducted to determine if remediation activities are necessary.

Enbridge's Structural Integrity and Subsidence study indicated that the decommissioned Existing Line 10 Pipeline is predicted to maintain structural integrity for 500 years or more, depending on site-specific conditions and the assumptions applied. The proposed decommissioning strategy for

the Existing Line 10 Pipeline will build on, and incorporate lessons learned from Enbridge's ongoing detailed engineering, testing and development programs for decommissioned pipelines.

Enbridge stated that decommissioning in-place causes minimal disturbance to the environment, existing infrastructure, and general public with minimal risk that can be effectively managed by the proposed preliminary decommissioning plan and the continuation of Enbridge's monitoring program. Enbridge has committed to prepare and file for the Board approval a detailed decommissioning plan with site-specific land use considerations and mitigations.

Views of Participants

No Participants expressed any concerns regarding Enbridge's proposed decommissioning activities.

Views of the Board

The Board notes that Enbridge determined that decommissioning the Existing Line 10 Pipeline in-place is the most suitable approach from a technical perspective. The Board is satisfied by Enbridge's commitment to implement ongoing risk-based monitoring and ROW maintenance programs and activities of the decommissioned Existing Line 10 Pipeline (including for primary highways, railway crossings and areas of potential geotechnical instability), to better detect and mitigate potential hazards to the public or the environment.

The Board is of the view that maintaining the decommissioned Existing Line 10 Pipeline's CP system will help to reduce corrosion and help maintain the structural integrity of the pipe.

Enbridge committed to completing a detailed Decommissioning Plan for decommissioning the Existing Line 10 Pipeline and filing the plan for the Board's approval. The Board is of the view that a detailed Decommissioning Plan is necessary in determining the adequacy of the activities involved in the decommissioning of the Existing Line 10 Pipeline. The Board has imposed **Decommissioning Conditions 7 (Decommissioning Plans)**, **8 (Decommissioning Environmental Protection Plan)**, **9 (Decommissioning Commitments Tracking Table)**, **10 (Decommissioning Schedule)** and **11 (Decommissioning Progress Reports)** requiring Enbridge to file additional information. This information will aid the Board in its assessment of Enbridge's proposed decommissioning and help the Board in the tracking of work components and environmental, safety and security issues that may arise during decommissioning.

The Board also notes that there are no published standards that define cleanliness for decommissioned or abandoned pipelines, and that Enbridge is conducting ongoing Decommissioning Program field trials to establish and test an adequate pipeline cleaning criterion. Enbridge will also be conducting field trials to evaluate a minimally invasive procedure to segment the pipeline. The Board has imposed **Decommissioning Condition 12**, concerning decommissioning work results, to have Enbridge file the results of these trials.

4.2 Decommissioning In-Place versus Pipeline Removal

Views of Enbridge

In determining its proposed method of decommissioning the Existing Line 10 Pipeline, Enbridge cited analysis done by the Canadian Energy Pipelines Association (2007 CEPA Report)[2] and the NEB Pipeline Abandonment Steering Committee (1996 Abandonment Discussion Paper)[3]. These documents state that current and future land-use are key factors that must be considered in determining whether a pipeline, or section of pipeline, should be left in-place or removed. Enbridge indicated that it used CEPA's abandonment matrix for guidance purposes in the preliminary stages of decommissioning planning since, from a physical perspective, decommissioning a pipeline in-place is comparable to abandonment in-place.

CEPA recognizes that pipelines abandoned in-place may present a potential hindrance to ongoing land management, by providing constraints to future construction (for example, by causing a physical obstruction to future excavations, pilings, underground utilities or additional pipelines and future projects) or areas with special depth of cover concerns.

Since the Existing Line 10 Pipeline segment being decommissioned is parallel to the operating Enbridge Line 11 pipeline for its entire 32 km length, the ROW is not available for alternate land uses or future development. Further, the risks associated with pipeline removal, given that the general construction activity, including excavation, would be within a three metre proximity of an active pipeline (the 20-inch Line 11 pipeline), is considered a greater risk activity relative to the long-term assessment of the pipeline remaining in place. The installation of the Replacement Line 10 Pipeline will be at a minimum of nine metres from the nearest existing pipeline except during pipeline crossings (which may be Line 11 or the Existing Line 10 Pipeline, depending on location) to avoid any integrity damage that might occur during construction. However, in the event that any of the potential developments proceed, Enbridge has committed to conduct a re-evaluation of the potential land use issues associated with the decommissioned Existing Line 10 Pipeline.

For more information on the routing and land matters, see Chapter 6.

In Enbridge's view, the Existing Line 10 Pipeline can be safely decommissioned in-place with mitigation and monitoring to ensure public safety and environmental protection. By leaving the Existing Line 10 Pipeline in-place, stakeholder, environmental and community disturbance would be reduced. Specifically, Enbridge expects fewer overall impacts to environmentally sensitive areas (for example, wetlands, woodlands and species at risk habitats), road and rail crossings, and cultivated areas. Decommissioning the pipeline in-place is also preferred at water crossings to avoid disturbance of the bed and banks of watercourses and waterbodies.

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[2] Canadian Energy Pipeline Association, 2007: Pipeline Abandonment Assumptions – Technical and Environmental Considerations for Development of Pipeline Abandonment Strategies.

[3] NEB Pipeline Abandonment Steering Committee, 1996: Pipeline Abandonment – A Discussion Paper on Technical and Environmental Issues.

For more information about public consultation concerning decommissioning, see Chapter 5.

Views of the Board

The Board is satisfied with Enbridge's proposed rationale for decommissioning the Existing Line 10 Pipeline in-place. The Board is of the view that it is appropriate in the current circumstances. The Board acknowledges that the Existing Line 10 Pipeline lies in a corridor containing Enbridge's operating Line 11 pipeline, and that the pipelines are in close proximity to each other. The Board considered Enbridge's evidence related to the safety and environmental risks associated with excavating and removing pipeline from the ground, including the possibility of damage or ruptures to the adjacent active pipeline and resulting environmental damage. At this time, there is insufficient evidence to persuade the Board that the benefits resulting from removing the Existing Line 10 Pipeline outweigh the risks.

The Board notes that Enbridge has come to an agreement with all landowners impacted by the decommissioning. In addition, the Board notes that the mitigations set out by Enbridge as presented in the Decommissioning Environmental Technical Report and the Decommissioning Technical Report will be applied to all landowners affected by the decommissioning of the Existing Line 10 Pipeline. However, the Board will assess Enbridge's detailed Decommissioning Plan, pursuant to **Decommissioning Condition 8** of the decommissioning Order, to determine its appropriateness and to evaluate if further requirements are necessary for the decommissioning.

The Board acknowledges Enbridge's arguments that the activities associated with abandonment and decommissioning are similar from a physical perspective, and that the Existing Line 10 Pipeline, to be decommissioned, will cease operation without termination of service to Enbridge's customers. However, the Board reminds Enbridge that decommissioning is not the end of a pipeline lifecycle. The Board therefore imposes **Decommissioning Condition 14**, requiring Enbridge to apply for leave to abandon, as described in the condition.

4.3 Environment and Socio-Economic Matters

In designing a decommissioning plan, the Board expects applicants to consider environmental and socio-economic risks, and to incorporate measures to reduce those risks. In this section of the Board's decision, the Board examines the suitability of Enbridge's decommissioning plan from an environmental perspective. In particular, the Board examines the suitability of Enbridge's decommissioning plan to reduce environmental and socio-economic risks associated with leaving the Existing Line 10 Pipeline in-place.

4.3.1 Environmental Setting

For the majority of the applied-for route, the environmental setting for the Existing and Replacement Line 10 Pipelines is similar due to their close proximity. See Section 8.3 for more information. Enbridge provided the following details for routing in those locations where the

Replacement Line 10 Pipeline deviates from the corridor containing the Existing Line 10 Pipeline:

- The Existing Line 10 Pipeline that will be the decommissioned is approximately 32 km long, and is located in an agricultural setting in the Binbrook area of Hamilton, Ontario.
- The Project is located within the Municipality of Hamilton including the City of Hamilton. It is located on a combination of fee simple agricultural land, residential, commercial, industrial, transportation corridors (highways), utility corridors (transmission lines) as well as open space/vacant lands.
- The Existing Line 10 Pipeline segment being decommissioned is parallel to existing Enbridge infrastructure for its entire 32 km length and is generally within approximately three metres of the operating Line 11 pipeline located within the same ROW.
- Land along the Existing Line 10 Pipeline ROW is currently in a productive state and actively being used by landowners and other stakeholders.
- The Existing Line 10 Pipeline route crosses 23 wetland units and a total of 69 watercourse crossings. The pipeline is located within the Spencer Creek, Grand River and Niagara River watersheds.
- There are currently no known watercourse crossing locations on the Existing Line 10 Pipeline where erosion of overburden has required remediation.
- The Existing Line 10 Pipeline does not cross any steep slopes, valleys or coulees. The average depth-of-cover of the Existing Line 10 Pipeline is 0.9 m with the exception of rocky areas along the route where the depth of cover is approximately 0.6 m.
- West Spencer Creek has attributes (e.g., deep wet depth and wide wet width) that could make it suitable for recreational navigation.

4.4 Environmental Effects Analysis of Decommissioning

4.4.1 Interactions and Potential Adverse Environmental Effects

The Board assessed whether the Decommissioning Activities proposed by Enbridge appropriately take into account and address environmental and socio-economic risks associated with leaving the decommissioned Existing Line 10 Pipeline in-place. These risks include, but are not limited to:

- the decommissioned Existing Line 10 Pipeline being incompatible with present and future land use;
- the decommissioned Existing Line 10 Pipeline becoming exposed due to erosion, slope instability, or scour of overburden; and
- the decommissioned Existing Line 10 Pipeline acting as a conduit to transport water, soil or residual contaminants.

Each of these risks is discussed in more detail below, along with the Decommissioning Activities proposed by Enbridge to reduce those risks.

4.4.2 Mitigation of Potential Adverse Environmental Effects

In its Application, Enbridge identified standard mitigation, including certain best practices, to mitigate many of the potential adverse environmental effects identified in Chapter 8, Table 8-2. Enbridge's Application and supporting documentation, including its Environmental Protection Plan (EPP), outlines the details of Enbridge's proposed mitigation for the Decommissioning Activities.

4.4.3 Standard Mitigation

The Board recognizes that many adverse environmental effects may be resolved through standard mitigation. Standard mitigation refers to a specification or practice that has been developed by industry, or prescribed by a government authority, that has been previously employed successfully and is now considered sufficiently common or routine that it is integrated into the company's management systems and meets the expectations of the Board.

Enbridge's Application and supporting documentation, including the draft EPP, outline the details on all of Enbridge's standard mitigation, including certain best practices, to mitigate many of the potential adverse environmental effects for pipeline construction and the decommissioning of the existing Line 10.

Enbridge's EPP compiled into a single document all of the environmental protection measures to be implemented during the construction of the Replacement Line 10 Pipeline, the decommissioning of the Existing Line 10 Pipeline, as well as contingency plans related to environmental matters during construction. It further noted that many of the potential effects associated with the physical process of decommissioning a pipeline are similar to the potential issues associated with pipeline construction, specifically those related to activities that entail surface disturbance (those are, clearing, topsoil salvage, excavation, backfilling, topsoil replacement, revegetation, temporary access, spill prevention and clean-up).

Enbridge expects to further revise and refine its decommissioning plan, as a result of: field assessments; detailed engineering and constructability review including refinement of the segmentation locations; post-construction monitoring results from the Replacement Line 10 Pipeline; and stakeholder consultation.

4.4.3.1 Land use and future developments

Views of Enbridge

Enbridge anticipates that current land usage will be maintained by decommissioning in-place without additional reclamation, except at isolated locations that will be disturbed to accommodate the segmentation process. These locations will be reclaimed as per the guidance in the comprehensive Project-specific EPP which Enbridge will file with the NEB. Soils, vegetation

establishment, invasive weeds, wetland hydrology and surface and ground water monitoring of the decommissioned pipeline ROW will be managed in accordance with the Enbridge O&MMs, on file with the NEB.

In Enbridge's view, decommissioning the Existing Line 10 Pipeline in-place will reduce overall impacts to environmentally sensitive areas (for example, wetlands, water crossings, non-cultivated lands and habitats for species at risk). In addition, by leaving the pipeline in-place, disturbances to stakeholders and communities would be minimal as road and rail crossings, and cultivated areas would not be disturbed and would remain in service during the decommissioning period.

Further, as future land uses may be affected by decommissioning the pipeline in-place, Enbridge committed to re-evaluate future land use issues, as they arise during the Decommissioned Period (See Section 4.4.3.2). However, Enbridge pointed out that the Line 10 ROW would not be available for most alternate land uses or future development until the adjacent Line 11 pipeline ceases operation. In this regard, Enbridge indicated it would continue to consult with stakeholders and periodically re-evaluate the potential land use issues associated with the decommissioned Existing Line 10 Pipeline.

Views of the Board

By decommissioning the Existing Line 10 Pipeline in-place, the Board agrees that stakeholder, environmental and community disturbances will be reduced as the ground disturbance would be limited to the sites where the decommissioning activities are required. The Board is satisfied that Enbridge's proposed mitigation measures will address any potential environmental effects arising from the implementation of these measures as part of Enbridge's EPP.

The Board notes, however, that Enbridge's draft EPP is primarily focused on the construction of the Replacement Line 10 Pipeline. In the Board's view, the mitigation measures are not explicit enough in identifying which mitigation measures, management plans or contingency plans would apply to decommissioning of the Existing Line 10 Pipeline, and under what circumstances. The Board is of the view that this may create uncertainty in the implementation of the EPP by Enbridge's staff and contractors.

Therefore, to provide additional clarity and transparency, and ensure that all potential site-specific environmental effects will be appropriately mitigated, the Board imposes **Decommissioning Condition 8** which requires Enbridge to file a decommissioning EPP prior to commencing the decommissioning activities for the Existing Line 10 Pipeline.

The EPP must be comprehensive and cover general and site-specific mitigation related to all environmental elements. In those cases where there may be multiple ways of achieving the desired outcome, the EPP should state the goal, mitigation options and clear decision-making criteria for choosing which option to apply under what circumstances. Where a mitigation option is mandatory it should be clearly stated.

In addition, the decommissioning EPP should include a biosecurity management plan that details best practices for preventing the spread of weeds, as well as contingency plans to

account for unexpected events or atypical field conditions such as the discovery of plants, wildlife, fish, heritage resources and traditional land use sites during decommissioning or the discovery of contaminated soils.

4.4.3.2 Decommissioned Period

Views of Enbridge

Enbridge stated that it would continue to monitor the Existing Line 10 Pipeline ROW and address any concerns that arise in the future according to the standards and procedures of its operations and maintenance program.

If a deficiency, or area of concern, is discovered during the Decommissioning Period, Enbridge will conduct a risk assessment to determine if remediation activities are necessary. Remedial actions include providing additional depth of cover, buoyancy control, pipeline protection, cladding, matting, or drainage control, and would be conducted according to Enbridge's O&MMs.

Views of the Board

The Board notes that a decommissioning plan was not provided in the Application. However, Enbridge did submit that certain applicable and ongoing monitoring procedures, as outlined in Enbridge's O&MMs, would be extended to the decommissioned pipeline ROW. To ensure that Enbridge's plan for ongoing monitoring of the Existing Line 10 Pipeline is transparent, the Board imposes **Decommissioning Condition 7**, which requires Enbridge to file a decommissioning plan, including site-specific land use information and related mitigation measures.

4.4.4 Detailed Analysis of Key Environmental Issues

The environmental effects which may occur during the Decommissioned Period are discussed below. These effects may result from residual contamination both within the pipeline and historical contamination, the pipeline becoming exposed, or the pipeline acting as a conduit. An analysis of these issues is provided below.

Views of Enbridge

Pipeline becoming exposed

Pipelines may be exposed, particularly at watercourse crossings, as a result of flooding, erosion and/or buoyancy issues with the pipeline. Exposed pipelines are a concern for public safety, particularly at navigable watercourse crossings. West Spencer Creek is the only watercourse along the Existing Line 10 Pipeline with enough depth and width to be considered navigable.

Enbridge provided that ground disturbance activities may destabilize the soil and increase the potential for erosion at specific locations, thereby increasing the potential for slope instability and pipeline exposure. Exposed pipe is generally vulnerable to accelerated corrosion, though

ongoing CP will reduce pipeline corrosion rates and potential associated ground subsidence concerns. In addition, Enbridge will conduct ongoing ROW surveillance and maintenance of the pipeline ROW and will identify and mitigate future ground subsidence concerns in accordance with Enbridge's O&MM.

The Existing Line 10 pipeline does not traverse any steep slopes or valley or coulee crossings that could potentially be impacted by the decommissioned pipeline. Further, there are currently no known watercourse crossing locations were erosion of overburden has required remediation. Enbridge has, however, indicated several mitigation measures would be implemented in the event that depth-of-cover is reduced and the pipeline is at risk of exposure including:

- depth of cover restoration;
- installation of erosion protection for the bank, toe and/or bed of the watercourse which could include rip-rap, concrete aprons, hydraulic structures, barbes, weirs, etc.; and
- isolation and removal of the pipeline.

Pipeline acting as a conduit

The key mitigation measures to reduce the risks associated with the decommissioned Existing Line 10 Pipeline acting as a conduit are: cleaning the pipeline prior to decommissioning, segmentation, maintaining CP, and ongoing ROW surveillance and maintenance. However, once the Existing Line 10 pipeline has been emptied of service fluids, cleaned and decommissioned, residual contaminants may still be present.

As per CSA Z662-15, the decommissioned segment of pipeline will be physically separated from in-service piping to prevent the reintroduction of product into the decommissioned segment. At segmentation locations identified in the ESA, a plug will be installed by filling a section of the pipe with sufficient engineered fill to create an impermeable barrier to water flow. This will avoid or reduce the potential for the pipeline to act as a water conduit and will mitigate water migration to or from areas sensitive to drainage by water conduits (for example, wetlands, watercourses, water supply areas such as aquifers, agricultural lands, and areas with a high water table).

Enbridge plans to use a minimal disturbance method for installing the plugs. Excavation would be done by using a pneumatic or hydraulic drill to uncover small sections of the pipeline in order to drill or cut into the pipe from the surface and installation the containment bulkheads. Field trials are being conducted to evaluate this minimally invasive procedure, however, if it is not viable, segmentation will be accomplished by conventional excavation, and cut and plate methods.

Decommissioning in-place (as opposed to pipeline removal) is again preferred at water crossings to avoid disturbance of the bed and banks of watercourses and waterbodies. Criteria to determine if a wetland may be affected by the formation of a water conduit are outlined in Enbridge's ESA as well as the site-specific mitigation to reduce these potential effects. The formation of water conduits is influenced by a number of factors including estimated groundwater elevation, topography, and the location of engineering isolation and segmentation locations. With the

implementation of the segmentation criteria (as discussed in Section 4.1.2 above) and the restoration any areas disturbed by segmentation or isolation activities, Enbridge has determined that the Existing Line 10 Pipeline can be safely decommissioned in-place.

Residual Contamination

Migration of contamination could occur from the creation of a water conduit as a result of decommissioning the pipeline in-place. However, as the only known reportable incidents and contaminated sites occur at the Westover terminal, Enbridge did not consider migration of contamination with respect to the Existing Line 10 Pipeline to be a significant concern. All contaminated sites will continue to be managed as part of Enbridge's contaminated sites management program and as per the process outlined by the NEB Remediation Process Guide. Enbridge will work with provincial and federal authorities to obtain the applicable approvals and permits that may be required outside of Remediation Process Guide requirements.

The potential impacts associated with soil and groundwater contamination as a result of residual service fluids within the pipeline and their treatment are discussed in Section 4.1 above in association with a discussion of pipeline cleanliness.

Metals released due to the corrosion of CP surfaces are not anticipated to occur with accessible pathways or in sufficient concentrations to affect the environment. In addition, Enbridge will continue to identify, assess, and manage contaminated sites along the Existing Line 10 Pipeline ROW through Enbridge's Contaminated Site Management Program.

Ongoing Monitoring

Enbridge will continue to monitor the decommissioned Existing Line 10 Pipeline as part of its ongoing Operations and Maintenance Program (O&MM). Further, certain applicable monitoring procedures currently practiced on the active Line 11 and the Existing Line 10 Pipeline will be extended to the decommissioned Existing Line 10 Pipeline, in order to address the risks identified.

Enbridge's O&MM activities include: assessing areas of potential geotechnical instability; completing pipeline inspections during patrols; maintaining pipeline signage; continued maintenance of the ROW; and monitoring the CP system. Further, Enbridge noted that soils, vegetation establishment, invasive weeds, wetland hydrology and surface and ground water monitoring of the decommissioned pipeline ROW would be managed in accordance with the Enbridge O&MMs, on file with the NEB. Monitoring limitations related to natural revegetation are not anticipated. As a result of Existing Line 10 Pipeline being located adjacent to the operating Line 11 pipeline, Enbridge anticipates that the natural revegetation of any decommissioned facilities will not impede future abandonment choices.

Views of the Board

The Board recognizes that the Project will largely take place in an agricultural setting within and adjacent to a long-established pipeline corridor. The existing landscape has been highly altered. The Board notes that agriculture and urban development (including roads, cities, towns and communities) accounts for most of the disturbance, by area, in the relevant study

areas. In addition, the Existing Line 10 Pipeline is in a corridor with Enbridge's Line 11 pipeline in close proximity. The Board is of the view that the overall environmental effects associated with decommissioning the Existing Line 10 Pipeline in-place can be minimized by avoiding undisturbed areas and focusing potential Project effects to areas previously disturbed by other activities.

In addition, the Board agrees with Enbridge's identification of four main concerns associated with decommissioning the Existing Line 10 Pipeline in-place: restriction of future land uses; residual contamination; pipeline exposure; and the pipeline acting as a water conduit. The Board's view is that, overall, Enbridge's assessment of the potential environment effects, which remain following the decommissioning in-place of the Existing Line 10 Pipeline, is reasonable and comprehensive (as discussed in Section 4.1).

The Board imposes several conditions requiring Enbridge to monitor the effects of the Project on the environment in order to ensure that the magnitude, duration and extent of any residual effects are minimized. The Board finds that with the implementation of certain decommissioning mitigation measures, specifically including those listed below, the potential environmental effects of decommissioning would be of low to moderate magnitude, limited to the Local Study Area (LSA), reversible, and have a short to medium temporal extent.

Specifically, the Board requires Enbridge to file the following decommissioning mitigation measures:

- monthly progress reports during the decommissioning activities (**Decommissioning Condition 11**),
- a comprehensive Decommissioning Plan (**Decommissioning Condition 7**), and
- a separate Decommissioning EPP (**Decommissioning Condition 8**),

Accordingly, the Board is of the view that the potential residual adverse effects associated with the decommissioned Existing Line 10 Pipeline remaining in-place are not likely to be significant.

4.5 Environment and Socio-Economic Assessment Conclusion

The NEB has conducted an environmental assessment of the Project and is of the view that overall, with the implementation of Enbridge's environmental protection procedures and mitigation and the NEB's conditions, the decommissioning in-place of the Existing Line 10 Pipeline is not likely to cause significant adverse environmental effects.

Chapter 5

Public Consultation

The Board's Filing Manual sets out the Board's expectations of applicants regarding consultation to support a project application. Applicants are expected to undertake an appropriate level of public involvement, commensurate with the setting, nature and magnitude of a project. The Board considers public involvement to be a fundamental component during each phase in the lifecycle of a project (that is, project design, construction, operation and maintenance, and eventual abandonment) to address any potential impacts of that project. This chapter addresses Enbridge's public consultation for the Project, which, for the reasons that follow, the Board has found acceptable.

Enbridge's consultation with Aboriginal groups for the Project is discussed in Chapter 7.

5.1 Enbridge's Public Consultation Program

View of Enbridge

Through its public consultation for the Project, Enbridge has worked to build public awareness and understanding, gather and incorporate input, and answer questions raised by stakeholder and Aboriginal groups. The input received directly influenced the design of the Project.

The Project's consultation program was designed to ensure that the Enbridge Corporate Social Responsibility Policy principles and objectives were achieved, and that the program was in compliance with regulatory expectations.

Enbridge began its consultation program for the Project in 2013; however, the Project was postponed and the consultation program was reinitiated in June 2015. Enbridge identified stakeholders as being either affected by or having an interest in the Project. The stakeholders were consulted to identify and address concerns about the Project. Enbridge stated that this information was incorporated into the Project's ESA.

The following stakeholders were identified:

- directly affected landowners, landowner associations, tenants and residents along the existing Right of Way (ROW), potential new ROW, decommissioned ROW, and facilities;
- elected officials, municipal staff and local Emergency Management Service representatives along or near the existing ROW, and potentially new and decommissioned ROW, and facilities;
- local unions and trade organizations;
- conservation authorities and commissions;

- provincial and federal ministries and departments;
- Industry associations and institutions; and
- First Nations and Métis groups[4].

Views of the Board

The Board is of the view that Enbridge's consultation program was appropriate for the scope and scale of the Project. The Board is also of the view that Enbridge has adequately identified and engaged stakeholders, developed engagement materials, notified stakeholders and Aboriginal communities of the Project, and responded to their input.

5.2 Public Consultation Activities

Views of Enbridge

Enbridge's initial consultation efforts included the following: providing Project information by mail; face-to-face lunch-and-learn sessions; in-person meetings and presentations with a number of stakeholders; online communication; and a toll-free Project line. Since reinitiating consultation for the Project in 2015, Enbridge's consultation program included mail-outs of Project notification packages, meetings, establishment of a Project email address, toll-free telephone number and webpage, coffee talks; open houses; and distribution of subsequent Project update newsletters. Enbridge also established an office with public engagement staff in the City of Hamilton near the proposed Project.

Enbridge's consultation included the distribution of a notification package to 618 adjacent and affected landowners/occupants and other stakeholders to inform them about the Project, and to provide information about the NEB process and how to become involved and submit their comments on the Project to the Board. On 14 September 2016, Enbridge notified the Board that the proposed route through the Copetown area was revised. Enbridge's revision, specifically the use of a HONI transmission corridor, was a result of consultation. Enbridge consulted with all directly affected and adjacent landowners along the revised route. The revised route was referred to as the Electrical Transmission Corridor Route (ETCR). No outstanding concerns regarding the ETCR have been raised.

Enbridge's consultation about the decommissioning portion of the Project has been ongoing. Enbridge reached out to landowners identified as being in an area where segmentation of the pipeline for decommissioning was proposed. Through this consultation, Enbridge was able to identify properties where the landowner would allow Enbridge to complete any segmentation work. Enbridge explained to landowners the potential impacts of segmentation on their properties. Enbridge stated that Project consultation is ongoing and would continue through the life of the Project.

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[4] Enbridge's Aboriginal Engagement Program (AEP) is discussed in Chapter 7 (Aboriginal Matters).

Views of the Board

The Board is of the view that Enbridge's public consultation efforts were appropriate for the scope and scale of the Project.

The Board notes that Enbridge revised the Project route during the course of the Board's hearing process based on consultation from stakeholders. More information on the route is available in Chapter 6.

The Board expects Enbridge to continue its efforts to consult and to maintain effective and timely consultation activities with all stakeholders throughout the lifecycle of the Project. In particular, the Board encourages Enbridge to maintain an active role in future development plans (e.g., urban development, infrastructure projects) to ensure the ongoing safety of people and the environment. Enbridge's consultation activities must also include complaint tracking and resolution. **Section 58 Condition 18** requires Enbridge to track complaints from stakeholders relating to the Project, beginning with construction and for five years after commencing operations. **Decommissioning Condition 13** requires Enbridge to continue tracking complaints for five years following the completion of the Decommissioning Activities.

Chapter 6

Land Matters

The Board is of the view that Enbridge's proposed route for the Project is appropriate and that Enbridge has appropriately identified and engaged stakeholders, developed engagement materials, notified stakeholders of the Project, and responded to their input.

The Board's Filing Manual sets out the Board's expectations for lands information to support an application for an Order under section 58 of the NEB Act. Applicants are expected to provide a description and rationale for the proposed route of a pipeline, the location of associated facilities, and the permanent and temporary lands required for a project. Applicants are also expected to provide a description of the land rights to be acquired and the land acquisition process, including the status of land acquisition activities. This information permits the Board to assess the appropriateness of the proposed route, land requirements and the applicant's land acquisition program.

The proposed Project includes two requests: 1) to construct and operate Replacement Line 10 Pipeline within the proposed route; and 2) to decommission the Existing Line 10 Pipeline in-place. Land matters related to each part of the Project are discussed in Section 6.1 and 6.2, respectively.

6.1 Location and Route Selection Process

Enbridge's proposed route runs 35 km from the tie-in at the existing Westover Terminal to the tie-in at the existing Nanticoke Junction Facility. The Project is located within the Municipality of Hamilton on a combination of agricultural, residential, commercial and industrial land, transportation corridors (highways), utility corridors (transmission lines) as well as open space/vacant lands. Approximately 16 per cent of the Project is located on occupied fee simple other Crown land used for existing infrastructure. The remainder of the Project is located on fee simple or fee simple other land owned by individuals or organizations. Fee simple land is owned by individuals while fee simple other land is owned by a mixture of industry, municipalities, conservation authorities and provincial ministries.

Enbridge's Application filed in December 2015 contained its original proposed route. Enbridge's Application Update filed in early May 2016 contained proposed revisions to the route in response to requests from Copetown Landowners Group (CLG). Enbridge identified these route revisions as Revision 1.6. In mid-September 2016, Enbridge filed a proposed Electrical Transmission Corridor Route (ECTR) through the Copetown area.

Views of Enbridge

Enbridge's route selection was based upon a number of factors, including landowner consultation, current land use, adjacent developments (such as residential housing developments

or industrial developments), existing utilities, and the availability of adequate space for a pipeline's construction.

The existing Enbridge pipeline ROW was generally chosen as the preferred alignment for several reasons:

- It has been in use for over 50 years and the conditions along that easement are generally better understood than along a new easement.
- The impacts of widening an existing corridor would be incremental, while a new route would impact additional lands and increase the amount of land disturbance.
- Pipeline surveillance and maintenance activities can be conducted more efficiently for one ROW rather than two ROWs that are geographically separated.
- The Project is located predominantly in the same ROW as Enbridge's Line 11, allowing for concentration of operational and maintenance resources.
- The ROW would not be available for most alternate land uses or future development due to public safety, environmental and operational concerns associated with working immediately adjacent to an operating pipeline (Line 11).

The Project route that Enbridge initially proposed deviated from the existing Line 10 corridor for approximately 13 km. Planned deviations would have circumvented the Copetown Woods & Flamborough Hills Golf Clubs, the Knollwood Golf Club and the Mount Hope Subdivision and Southern Pines Golf & Country Club.

Enbridge's Application filed December 2015 stated that it was continuing to consult with landowners, local communities and officials with respect to opportunities to deviate from the Existing Line 10 Pipeline route in areas where there were benefits to the Project, community and environment. Enbridge's Additional Evidence and Application Update filed in early May 2016 contained minor revisions to the original route. These revisions were the result of consultation with stakeholders, including CLG, as well as refinement by engineering and construction.

On 14 September 2016, as a result of consultation with CLG and other directly affected stakeholders, Enbridge further revised its route within the Copetown area. This revision proposed to use a four kilometre HONI electrical transmission corridor. The ETCR is located approximately one kilometre from the originally proposed route and is four kilometres in length. It decreases the length of the overall Replacement Line 10 Pipeline by 700 m. By using the ETCR, no property owned by members of CLG is directly affected by the Project. However, Enbridge noted that there are two members of the CLG that are tenants on HONI properties directly impacted by the Project, but that both tenants and the CLG provided Enbridge a non-objection to ETCR.

Views of Participants

Copetown Landowners Group

CLG consists of landowners whose properties are situated on or near the original route in the Copetown, Ontario area. CLG raised concerns about the appropriateness of the route, and Enbridge's consultation with landowners about routing.

CLG opposed the original route and asserted that the Project should use the Existing Line 10 Pipeline corridor or the existing HONI electrical transmission corridor. CLG stated that the original route raised concerns about environmental and socio-economic impacts and the potential for future development.

CLG specified that the route would cross CLG properties that presently do not have a pipeline crossing them and that the Project would interfere with its members' ability to maintain agricultural practices and develop future potential agricultural practices. These practices include producing premium value vegetable crops, expanding a hazelnut tree field and developing a landscape construction and nursery stock business. CLG maintained that the route originally chosen by Enbridge, which deviated through CLG properties, would have higher environmental and socio-economic impact than if Enbridge used the existing Line 10 corridor.

On 3 October 2016, CLG withdrew from the Project hearing, stating that CLG supports the final proposed route, including the ETCR.

Hotz and Sons Limited

Hotz and Sons Limited stated concerns that the Project would impact potential future development of a storm water management facility along the proposed route.

On 23 June 2016, Hotz and Sons Limited withdrew from the hearing process (without disclosing the reasons for withdrawal).

Knollwood Golf Limited

Knollwood Golf Limited stated concerns about the route and its impact on agriculture, water supply, decommissioning of the existing Line 10 and the Project's impact on the greenbelt.

On 4 October 2016, Knollwood Golf Limited withdrew its participation from the Project hearing, stating that it has reached an agreement with Enbridge that addressed any concerns it had with the Project.

The Roman Catholic Episcopal Corporation of the Diocese of Hamilton (Diocese of Hamilton)

The Diocese of Hamilton is the owner of the Southern Pines Golf Course. The Diocese stated that its property is highly maintained, contains environmentally sensitive areas and is a source of exercise for the community. It stated support for the original proposed route, which bypasses the golf course. It further stated that the route would not interfere with their business and would

avoid future closures due to pipeline operations, including integrity digs, inspections and any required reclamation.

Views of the Board

The Board notes that the revised final route addresses the concerns raised by CLG and that no other issues about routing have been raised with Enbridge or the Board.

Consultation on route selection and the final route is an integral part of any pipeline project. The Board notes the importance of engaging early and engaging often with those impacted by a project's route in order to select the best route possible and minimize its impact on people and the environment.

The Board notes that Enbridge continued its consultation efforts with all stakeholders throughout the hearing process and responded to concerns that were raised. However, the Board also notes that Enbridge's actions in response to some concerns happened late in the application process (i.e.: the ETCR filing in September 2016, about one month before the scheduled hearing).

The participation of directly affected parties in the Board's process is equally important. The Board thanks CLG for its active participation in this hearing. CLG shared relevant evidence and Project-specific concerns, which assisted the Board during its review process. CLG also requested an extension to better participate in the hearing process. The Board found this request reasonable and accommodated CLG's participation. The Board commends both Enbridge and CLG for their ongoing dialogue with each other during the hearing process.

6.1.1 Land Requirements

Views of Enbridge

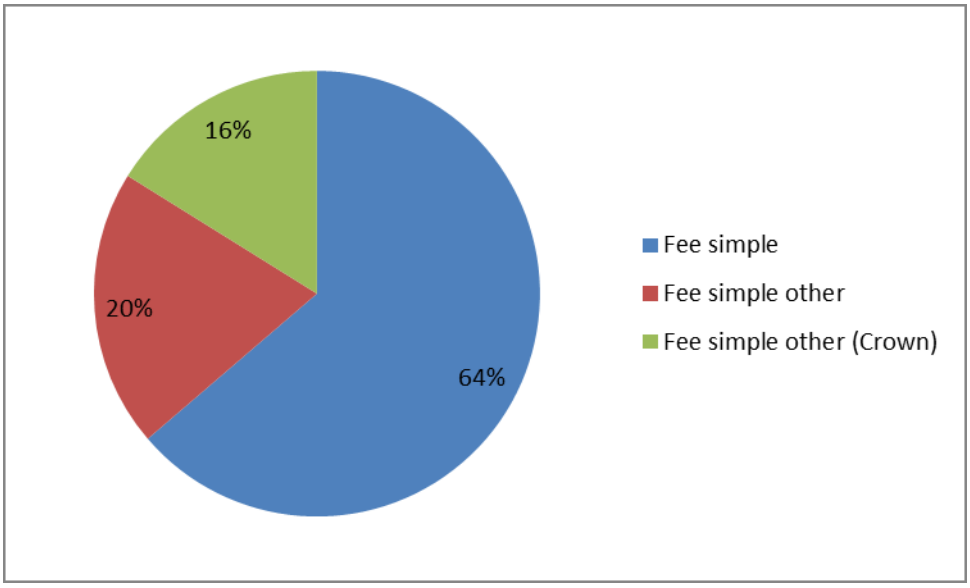
The Project would use the existing ROW and would require the acquisition of new ROW and Temporary Workspace (TWS). Where new ROW is required alongside existing ROW and along the route deviations, Enbridge would acquire new easement agreements, including TWS agreements.

The total estimated area for permanent ROW is approximately 29 ha, comprising 10 m of permanent easement. 133 ha of TWS is required both adjacent to the new and existing ROW. TWS would be approximately 23m wide (depending on the location). Additional TWS would be determined and acquired under a TWS agreement at bends, corners, road crossings, bores, and HDD's, as well as for construction activities such as stockpile sites, equipment loading/unloading locations, parking and access to the ROW. Where additional permitting is required, Enbridge would acquire the appropriate permits and authorizations.

Enbridge's final route adjusted the number of tracts of lands traversed by the ROW from 119 to 124. As seen in Figure 6-1, of the total tracts of land, 64 per cent (79 in total) are privately-held by landowners. The remaining 36 per cent (45 in total) of the tracts of land are owned by a mix

of industry, municipalities, conservation authorities and provincial ministries. Of these, 16 per cent (20 tracts) are Crown land used by the Ministry of Transportation and HONI.

Figure 6-1: Breakdown of land type by per cent



Views of the Board

The Board finds the location and amount of anticipated temporary and permanent land requirements to be reasonable and justified based on the Project design.

6.1.2 Land Acquisition Process

Views of Enbridge

Enbridge stated that it served section 87 notices on all landowners and that its land acquisition for the Project complied with the NEB requirements, including section 87 of the NEB Act.

As shown in Table 6-1, Enbridge has signed easement agreements with 67 per cent of all landowners for the Project. Specifically, all fee simple land and 11 per cent of fee simple other lands (5 of 45 in total) have been acquired.

Table 6-1: Easement Agreements

	Number of signed easement agreements	Number of easement agreements required	Per cent of signed easement agreements
Fee simple	79	79	100 %
Fee simple other (including Crown land)	5	45	11 %
Total	84	124	67 %

Enbridge stated that lands categorized as fee simple other land would be acquired through a variety of different agreements based on the requirements of the owners of those lands. In June 2016, Enbridge submitted applications to all the fee simple other owners. Enbridge anticipates receiving all approvals by July 2017.

Views of the Board

The Board finds the land rights documentation and acquisition process proposed by Enbridge to be acceptable.

6.2 Land Affected by Decommissioning

Views of Enbridge

Enbridge proposed to decommission in-place approximately 32 km of pipe. A total of 166 individuals or organizations representing 103 tracts of land[5] are directly affected by the decommissioning. Enbridge would address any potential issues that may arise from the decommissioned pipeline and monitor the pipeline in accordance with CSA Z662-15, the OPR, relevant industry codes and standards, and company specifications, standards and procedures.

Land Use

Enbridge cited the Pipeline Abandonment Steering Committee (1996) paper which states that land use is an important factor to consider when determining whether a section of pipeline should be decommissioned in-place or removed. Enbridge stated that some land uses are vulnerable to the effects of ground disturbance and may benefit from decommissioning in-place (e.g., parks and natural areas, unstable or high erodible surfaces, water crossings, and designated waterfowl and wildlife habitat).

[5] The land affected by decommissioning has existing easement agreements in place and is not impacted by the land acquisition process noted in the previous section.

In addition to the land uses identified above as vulnerable to ground disturbance, Enbridge noted that the CEPA Pipeline Abandonment Assumptions identified agricultural areas under cultivation with special conditions (e.g., deep tilling and tree farms) as land uses where ground disturbance associated with pipe removal would adversely affect sensitive areas or existing infrastructure.

Enbridge also stated that agricultural and non-agricultural types of land use were used to identify portions of the pipeline which would be decommissioned in-place, decommissioned in-place with additional measures (e.g., filling the pipeline with solid material), or decommissioned in-place with the potential for pipeline segment removal in the future.

The majority of the land along the existing Line 10 pipeline ROW is currently productive and actively being used by landowners and other stakeholders. Given that, and that the pipeline is within an active pipeline corridor with another operating pipeline, Enbridge proposed to decommission the pipeline in-place. Enbridge stated that it anticipates current land usage would be maintained without additional reclamation, except at isolated locations that would be disturbed to accommodate the pipeline decommissioning segmentation process. Enbridge would reclaim these locations as per the guidance in the Project's EPP.

Line 10 crosses other infrastructure such as buried utilities, highways, railways, etc. and shares a ROW with Enbridge's Line 11, typically at a distance of approximately three metres centre to centre. This proximity greatly increases the risk of damaging other assets during pipeline excavation and removal activities. Enbridge stated that removal of the replaced portion of Line 10 pipeline would cause extensive, unnecessary environmental risks, public and landowner disruption, and threats to existing adjacent infrastructure. Based on current and anticipated land use, Enbridge assessed the risks associated with removal of the pipeline to outweigh the risks associated with leaving the pipeline in place.

Based on the land use assessment performed and risks associated with removal, Enbridge maintained that the existing Line 10 should be decommissioned in-place for the entire length.

Views of the Board

The Board notes that in its evidence, Enbridge relied heavily on the 2007 CEPA Pipeline Abandonment Assumptions to justify decommissioning in-place. Abandonment in-place versus removal is an ongoing discussion. The Board issued a letter on 8 February 2016, requiring Group 1 Companies to update ACE information as part of the Board's five year review of abandonment cost estimates. This review includes updated land use studies, recent research papers and updated estimates. Accordingly, the Board notes that best practices may be revised based on this review and expects Enbridge to remain open and responsive to potential changes.

The Board is of the view that decommissioning is an interim measure to abandonment. This was also noted in the 2007 CEPA Report, which defines decommissioning as "one of the steps of pipeline abandonment, generally involving the physical removal of all above-ground appurtenances". As discussed in Chapter 4, the Board has imposed **Decommissioning Condition 14**, requiring Enbridge to apply for leave to abandon, as described in the condition. The Board has also imposed **Decommissioning Condition 12**,

requiring Enbridge to file within 60 days of completing decommissioning activities information about the relevant activities of the Decommissioning Plan, the results of field trials and whether the results have met Enbridge's expectations.

6.3 Land Requirements

Views of Enbridge

Enbridge stated that additional permanent land rights are not required for the section of Line 10 that would be decommissioned. Enbridge stated that additional temporary working rights would be acquired under a Temporary Workspace (TWS) agreement.

Views of the Board

The Board finds the anticipated temporary land requirements to be reasonable and justified.

Chapter 7

Aboriginal Matters

7.1 Introduction

The Board has considered all of the evidence provided by Aboriginal groups and others including Enbridge about the potential impacts of the Project on Aboriginal interests, including rights, Enbridge's proposed mitigation of the Project's potential effects, requirements in the regulatory framework and the conditions imposed by the Board in the Orders. The Board interprets its responsibilities in a manner consistent with the *Constitution Act*, 1982, including section 35(1), which recognizes and affirms the existing Aboriginal and treaty rights of Aboriginal peoples. Further discussion of the Board's role in upholding section 35 of the *Constitution Act*, 1982 is available in Section 7.6.3. The Board is of the view that any potential Project impacts on the interests, including rights, of affected Aboriginal groups are likely to be minimal and can be effectively addressed.

This chapter includes summaries of evidence provided directly by Aboriginal groups through their participation in the hearing, as well as summaries of Enbridge's consultation with affected Aboriginal groups, which noted the concerns and interests, assessment methods and rationales, and any proposed mitigation by Aboriginal groups as recorded by Enbridge in its evidence. The Board notes that identifying and referring to specific passages within the record can lead to other direct and indirect references being overlooked. Therefore, anyone wishing to fully understand the context of the information and evidence provided by Aboriginal groups should familiarize themselves with the entire record of the hearing. This chapter of the Decision should not be considered in isolation from the Decision as a whole.

7.2 Enbridge's Consultation with Aboriginal Groups for the Project

7.2.1 Overview

Enbridge explained that its Aboriginal Engagement Program (AEP) aims to create and support meaningful engagement with potentially affected Aboriginal groups. Through the AEP, Enbridge stated that it works to build an understanding of project related interests, ensure regulatory requirements are met, mitigate or avoid project effects, and provide mutually beneficial opportunities.

To identify a preliminary list of Aboriginal communities and organizations that might be affected by the Project, Enbridge considered Aboriginal groups in proximity to the Project area, specifically First Nations whose reserve land are within 50 km of the Line 10 ROW, as well as:

- Adherence to NEB Filing Manual requirements;
- Aboriginal groups and organizations in Southern Ontario whose lands are not proximate to the Project area, but have identified an interest based on traditional territory, traditional lands or traditional land uses;
- Existing knowledge of Aboriginal groups in the area and relationships that have been developed as a result of previous projects as a basis to identify Aboriginal groups potentially affected by the Project; and
- The NEB's Traditional Territory Analysis which provided guidance for Enbridge regarding which First Nation groups and Métis organizations Enbridge should consult with on the Project.

Enbridge is committed to understanding potential Project-specific impacts to the exercise of Aboriginal and Treaty Rights and proactively sought out Aboriginal groups along the entire Line 10 ROW. Enbridge provided an overview of the Project, responded to questions and interests and reviewed input and concerns expressed by the Aboriginal communities.

Enbridge identified three Aboriginal groups to engage for the Project:

1. Mississaugas of the New Credit First Nation (MNCFN),
2. Six Nations of the Grand River (Six Nations), and
3. Haudenosaunee Development Institute (HDI).

Enbridge requested that the NEB conduct a Traditional Territory Analysis for Enbridge. Based on the analysis the NEB provided, Enbridge included the Métis Nation of Ontario (MNO) in its engagement.

The AEP was designed based on regulatory guidelines and Enbridge's Aboriginal and Native American Policy and principles. Enbridge stated its Policy and principles includes:

- respect for traditional ways and land, heritage sites, the environment and traditional knowledge;
- providing timely exchanges of information, attempting to understand and address Aboriginal project-specific concerns, and ensuring ongoing dialogue about projects, their potential implications and benefits; and
- aligning Aboriginal groups and Enbridge interests through meaningful, direct Aboriginal economic activity in projects corresponding to community capacity and project needs.

The AEP also recognizes the rights of Aboriginal groups and assisted Enbridge in engaging in meaningful dialogue with potentially affected Aboriginal groups about the Project. Enbridge submitted that it also assisted Enbridge in meeting the procedural aspects of consultation that may be required by the Crown and the NEB process.

The Project was initially scheduled to begin in 2013 and was launched publicly at that time in conjunction with work to be completed on Line 11. The Line 10 replacement, however, was postponed and the consultation program for the Project was reinitiated in June 2015. Aboriginal groups that were identified by Enbridge as being either affected by or having an interest in the Project were notified and engaged in order to identify and address concerns about the Project. Enbridge stated that information gathered through the AEP was incorporated into the Project's Environmental and Socio-economic Impact Assessment (ESA).

Enbridge's initial Aboriginal engagement included:

- phone calls, email and standard mail to:
  - notify Aboriginal groups of the Project, and
  - provide Project information, including a notification letter, Project area map, Project brochure, NEB pamphlets Information for Proposed Pipeline or Power Line Projects that Do Not Involve a Hearing and Living and Working Near Pipelines, Line 10 PowerPoint presentation, and open house notifications.
- in-person meetings to:
  - exchange information about the Project,
  - facilitate dialogue on environmental matters,
  - discuss culturally sensitive areas or traditional uses currently being performed along the proposed route, and
  - discuss any other concerns.
- open houses to:
  - provide opportunities for Aboriginal groups to become informed about the Project and obtain updated information on input received by the environment program, and
  - provide opportunities for Aboriginal groups to provide additional input into the Project.
- site visits to Crown parcels along the ROW, as requested.

In September 2016, Enbridge filed with the Board a revision to the proposed Project's route through the Copetown area. The revised route included using an existing hydro transmission corridor instead of agricultural lands. More information on the ETCR and routing is in Chapter 6 of this Decision. Enbridge consulted with Six Nations, MNCFN, MNO and HDI about the ETCR through meetings held in August 2016 (before filing the proposed revisions). Enbridge provided an overview of the ETCR, Project details and information about the Stage 2 archaeological surveys and other planned environmental field surveys. MNCFN and Six Nations were invited to participate in the Stage 2 archaeological assessments and subsequent environmental field

surveys, and HDI was extended verbal invitations (as of the September 2016 filing) for participation in the Stage 2 archaeological assessment.

7.2.2 Enbridge's Consultation with MNCFN

Enbridge met with representatives from MNCFN on 21 July 2015 and provided an overview of the Project. MNCFN expressed to Enbridge an interest in taking part in the environmental and archeological surveys.

Enbridge and MNCFN developed a capacity work plan budget, which included funding support for a document review of the Project, as well as a technical briefing meeting and archaeological and environmental monitoring engagement. Enbridge worked with MNCFN to identify culturally sensitive sites of interest along the Project ROW and stated it would continue to work with MNCFN to help gather traditional knowledge about cultural, environmental and spiritual areas of interest that MNCFN may still practice within the Project ROW.

On 25 November 2015, Enbridge and MNCFN signed an Archaeological Capacity Funding Agreement and MNCFN participated as archeological monitors in Stage 2 archaeological assessments. Enbridge stated that it also helped fund a five day training course for the MNCFN Archaeological monitors to facilitate capacity building and a better understanding of the traditional activities.

In early March 2016, MNCFN expressed to Enbridge an interest in being involved in the environmental field surveys planned for the Project. Enbridge stated that MNCFN participated in 2016 field investigations as Environmental Monitors. Enbridge and MNCFN signed an Environmental Participation Agreement in April 2016. Enbridge stated that a MNCFN representative actively participated in the environmental field surveys, including bat cavity surveys, bird surveys, migratory bird nesting surveys, botanical/weed surveys, tree surveys, aquatic wetland surveys and ground water monitoring and well sampling, and surveys for the municipal road allowances. Enbridge stated that no new issues or concerns were identified during the survey.

In June 2016, Enbridge and MNCFN signed a Line 10 Capacity Funding Agreement in order to facilitate meaningful engagement and provide input on the Project. During discussions for the Line 10 Capacity Funding Agreement, Enbridge stated that MNCFN noted general interests including the Project's potential impact on wildlife and wildlife habitat, vegetation, and water quality.

During spring and summer 2016, Enbridge continued to engage with MNCFN to discuss how the community can participate in the Project. Enbridge stated it provided MNCFN with details on environmental surveys.

Enbridge continued its engagement with MNCFN and advised it of the Project's revised route using an electrical transmission corridor. Enbridge also met with MNCFN to provide an overview of the ETCR, a map, Project details and to discuss the planned archaeological assessments. Enbridge stated that MNCFN did not express any concerns regarding the ETCR.

7.2.3 Enbridge's Consultation with Six Nations

Enbridge stated it met with Six Nations in August 2015 to provide an overview of the Project. Enbridge held an open house shortly after the initial meeting at the request of the Six Nations' Chief and Council. The purpose of the open house was to gather input, answer questions and build awareness and understanding about Enbridge's operations. It also provided an opportunity for Six Nations' members to speak directly with Enbridge representatives, for Enbridge to listen and learn about the interests of Six Nations members.

On 26 November 2015, Enbridge and Six Nations executed an Archaeological Capacity Funding Agreement. Six Nations archeological monitors participated in Stage 2 archaeological assessments between November and December 2015.

Enbridge stated that in March 2016, in collaboration with the Laborer's International Union of North America (LiUNA)[6], Six Nations and MNCFN, it funded 16 members to participate in employment initiative training, at the end of which all participants obtained a General Labourer Certificate that qualified them for potential employment opportunities with LiUNA.

According to Enbridge, in April 2016, Six Nations representatives inquired about a broad Traditional Knowledge and Land Use Study that would contemplate the impact of all projects (not Project-specific) and operations by Enbridge within Six Nations' asserted treaty and traditional territory. Enbridge stated that a Project-specific Traditional Land Use Study (TLUS) was not originally requested at that time, but that it proactively engaged in discussions with Six Nations to address any concerns about potential impacts on Haudenosaunee (Six Nations) practices. On 9 June 2016, both parties signed a capacity funding agreement to facilitate Six Nations' participation in the Project. Enbridge asserted that it was not aware of Six Nations' interest in a Project-specific TLUS until Six Nations filed with the Board its affidavit for OTE on 23 June 2016. Enbridge stated that despite not pursuing a TLUS, it met with Six Nations to discuss an overview of the environmental assessment process, potential impacts, and key mitigation measures for wildlife, fish habitat, watercourse crossing management, including protection of the Grand River.

Enbridge stated it met with the Six Nations' Consultation and Accommodation Process (CAP) team to discuss various issues, including the ETCR, in August 2016. Enbridge provided an overview of the ETCR and a map and informed Six Nations that Stage 2 archaeological and environmental survey assessments were being planned. Enbridge stated that Six Nations did not express any concerns regarding the ETCR.

In Enbridge's response to the Hostovsky Report (filed by Six Nations) and during the oral portion of the hearing, Enbridge stated its concern that Six Nations ceased its engagement with Enbridge during the process. These concerns are explained in Section 7.5.1.

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[6] A union of construction workers, waste management workers, show service workers and healthcare workers in Canada.

7.2.4 Enbridge's Consultation with HDI

Enbridge stated it notified HDI of the Project and that HDI confirmed to Enbridge receipt of these notifications. Enbridge stated HDI requested more information before scheduling engagement meetings.

Enbridge engaged HDI and committed to discussing an archeological monitoring agreement for the Project. HDI also indicated an interest to Enbridge in environmental participation.

In March 2016, Enbridge met with HDI to discuss environmental surveys and potential environmental impacts, as well as to provide a presentation regarding Enbridge's approach to environmental assessments and reporting. Enbridge stated that HDI did not raise concerns at that time. Enbridge stated that HDI made a request to participate in environmental field surveys for the Project, HDI has participated in on-site fieldwork as archaeological monitors since November 2015 and continues to participate in fieldwork.

Enbridge stated it met with HDI in August 2016 to discuss Line 10 archeological surveys and advised HDI about the ETCR. Enbridge stated the HDI executive was notified of the ETCR by letter including a map and other details regarding the proposed reroute as well as an invitation to HDI monitors to participate in archeological surveys along the revised route. Enbridge stated that as of the close of the record, HDI had not provided any response to Enbridge's communication and has not expressed any concerns regarding the ETCR.

On 14 September 2016, HDI wrote to the Minister of Natural Resources and copied the Board indicating its withdrawal from the hearing process. HDI's letter indicated concerns regarding the adequacy of the NEB's process to uphold Crown consultation.

7.2.5 Enbridge's Consultation with MNO

According to Enbridge, MNO indicated that it does not assert Aboriginal rights in the Project area at this time. MNO stated to Enbridge that it continues to be interested in potential employment and economic opportunities and wishes to be kept updated on Project milestones. Enbridge committed to continuing to provide MNO with Project updates.

7.3 The Board's Hearing Process and Participation of Aboriginal Groups

The Board's hearing process was designed to obtain as much relevant evidence as possible on Aboriginal concerns regarding the Project, the potential impacts on Aboriginal interests (as noted in the Board's List of Issues), and possible mitigation measures to minimize adverse impacts on Aboriginal interests. The Board was provided with and considered extensive information about concerns related to the Project, and the measures that would be required to address those concerns, as brought forward through consultation undertaken by Enbridge and through the participation of potentially affected Aboriginal groups and other participants in the hearing process.

7.3.1 Enhanced Aboriginal Engagement (EAE) Process

The receipt of the Project Description on 10 October 2015 initiated the Board's EAE process by coordinating with Natural Resources Canada to identify potentially affected Aboriginal groups. The Board's EAE process involves proactive contact with Aboriginal groups that may be affected by a proposed project, including those groups that have publicly claimed or asserted the right to use the land for traditional purposes. The Board identified the following Aboriginal groups and organizations that may be affected the Project:

- Mississaugas of the New Credit First Nation (MNCFN),
- Six Nations of the Grand River (Six Nations),
- Haudenosaunee Development Institute (HDI), and
- Métis Nation of Ontario (MNO).

On 18 January 2016, the Board sent a letter to each of the four potentially affected Aboriginal groups and organizations to inform them of the proposed Project and the Board's regulatory process. The letter included:

- Notification that Enbridge filed the Project application;
- An overview of the Board's hearing process and its PFP;
- Instructions on where and how to find regulatory filings;
- A statement that, with respect to Aboriginal consultation for the Project, the Crown is relying on the NEB process to the extent possible; and
- Contact information for both the NEB's Aboriginal Engagement Specialist and Natural Resources Canada's Manager of Aboriginal Affairs.

Board staff followed up by phone on 20 and 21 January 2016. Board staff responded to any questions and offered to hold information meetings on the Board's hearing process, PFP and how to participate. All four groups confirmed receipt of the letter. On 19 February 2016, an Aboriginal Engagement Specialist with the Board shared electronically the Hearing Order, Project factsheet, the completeness letter and the list of issues. The four groups were notified at that time that they had been granted Pre-decided Standing.

One group, Six Nations, requested a meeting. The meeting with Six Nations was held by phone on 29 March 2016. Six members from Six Nations, three Natural Resources Canada (NRCan) representatives were in attendance and two Board staff members participated by phone.

7.3.2 The Hearing

7.3.2.1 Participant Funding Program

Independent of the Panel's hearing process, the Board administered a PFP for the Project, which allocated funding to assist Intervenors with their participation. HDI and Six Nations were allocated $20,000 and $42,000, respectively, in participant funding for this hearing.

7.3.2.2 Aboriginal Groups, Government Organisations and the Board's Hearing Process

The Board's 18 January 2016 letter to each of the four potentially affected Aboriginal groups and organizations advised them that, with respect to Aboriginal consultation for the Project, the Crown is relying on the NEB process to the extent possible. The letter further advised that the Crown encourages all Aboriginal groups whose established or potential Aboriginal or treaty rights could be affected by the Project to apply to participate in the Board's process. The letter also provided a contact person at NRCan in case the letter recipient should have any questions with respect to the broader Crown approach to Aboriginal consultation for the Project.

Aboriginal groups who are concerned with potential Project-related impacts on their interests, including rights, had opportunities to present their views directly to the Board. While the Board required the applicant to implement a consultation program and undertake an assessment of the Project's potential effects, including its environmental and socio-economic effects, the Board also took steps to facilitate the direct participation of these groups in its proceedings through its previously described EAE process.

Section 55.2 of the NEB Act requires the Board to hear any person who is directly affected by the granting or refusing of an Application. The Board conducted an ATP process, which required interested persons or groups to request participation in the Board's hearing process by demonstrating that they are directly affected by the proposed project or that they have relevant information or expertise that will assist the Board in making its decisions in respect of a proposed project.

The Board decided that the Aboriginal groups, municipalities, landowners, and occupants who are directly affected by the Project will have standing provided they registered before the ATP deadline. This is referred to as Pre-decided Standing. All Aboriginal groups identified by the company and the Board through its EAE process were granted Pre-decided Standing. MNCFN and MNO did not register to participate in the proceeding. HDI and Six Nations were granted Intervenor status, as they requested. HDI did not, however, participate actively in the hearing process.

Aboriginal groups who were not granted Pre-decided Standing could apply to participate through the ATP process. No other Aboriginal groups applied for standing.

During the proceeding, Aboriginal Intervenors were able to obtain further information about the Project and present their views to the Board in numerous ways. Aboriginal Intervenors could submit written evidence, provide OTE, ask written questions of Enbridge and other parties

(information requests), respond to any written questions asked of them by the Board and Enbridge, conduct oral cross-examination of Enbridge, provide comments on draft conditions and provide final argument.

The Board understands that Aboriginal peoples have an oral tradition for sharing information and knowledge from generation to generation and that this information cannot always be shared adequately in writing. The Board extended an invitation to all Aboriginal Intervenors in the proceeding to provide OTE in-person or remotely. The Board held a community meeting in Hamilton, Ontario, a location near those interested in the Project. All Participants had an opportunity to present oral statements expressing their views on the Project directly to the Board; however, the opportunity to provide OTE at this meeting was unique to Aboriginal participants. The scope of OTE focuses on personal and community knowledge and experience as it may relate to the potential effects of a project and how the project would impact the Aboriginal group's interests, including rights. Six Nations provided OTE on 28 June 2016 in Hamilton, Ontario at the Community Meeting.

On 30 September 2016, Six Nations filed a motion with the Board requesting permission to file as evidence a report by Professor Charles Hostovsky, after the deadline to file written evidence. In making the request, Six Nations stated that it did not have enough time to prepare and file its written evidence because participant funding was not allocated soon enough. The Board granted permission for the late filing to accommodate Six Nations' full participation in the hearing. Six Nations provided comments on the draft conditions during the oral portion of the hearing (Appendix II lists procedural decisions by the Board that informed the participation of participants, including the Board's decision to grant Six Nations' 30 September 2016 request to file late written evidence).

The Board also hosted the oral portion of its hearing in Hamilton to allow for cross-examination of Enbridge and Aboriginal Intervenors' witness panels. On both occasions, the Board provided an audio broadcast, as well as transcripts of its proceedings, so that interested parties who were not in attendance could be aware of what was occurring during the hearing. The Board also offered remote participation in an effort to make the hearing as accessible as possible.

Six Nations took the opportunity to make submissions to the Board which included, among other things, their views on the potential Project-related impacts, and their views on the potential conditions the NEB released for comment. Over the course of the hearing, Six Nations participated in the hearing process by providing OTE, filing written evidence, participating in cross-examination and providing final argument.

On 28 January 2016, HDI submitted to the Board a letter that HDI had previously provided to an NEB Aboriginal Engagement Specialist with the Board expressing concern about Crown consultation. On 14 September 2016, HDI also wrote to the Minister of Natural Resources and copied the Board indicating that HDI had withdrawn from the hearing process. Though granted Intervenor status, HDI did not participate actively in the hearing process (e.g. did not file written evidence, ask IRs, provide OTE, cross-examine other parties, comment on conditions or submit final argument).

Given the comprehensiveness of the Board's process, the Board's technical expertise and its broad remedial powers that are generally not within the purview of other government departments, it was important that concerns related to the Project be brought to the Board's attention through consultation with the applicant and participation in the hearing process.

To the extent that other government organisations had information to provide to the Board, they had the opportunity to participate in the Board's process and file relevant information on the Board's record. Several government organisations participated in the Board's proceeding, including Hydro One Networks Inc., the Ontario Ministry of Energy, the City of Hamilton and Environment and Climate Change Canada. Some of these government participants filed information on the Board's hearing record that relates to some of the concerns raised by Aboriginal groups in this hearing, such as protection of wildlife habitat that are discussed further in Chapter 8.

7.4 Issues and Concerns Raised by Aboriginal Groups

7.4.1 Consultation

MNCFN

MNCFN did not express concerns to Enbridge or the Board on Enbridge's Project-specific consultation.

Six Nations

Six Nations stated that consultation has been insufficient and that Six Nations' treaty rights have not been investigated and assessed appropriately or sufficiently. Six Nations stated it has hunting, fishing and gathering rights in the peninsula of south-western Ontario affirmed, at least in part, by the Treaty of Albany 1701 (also known as the Nanfan Treaty). Six Nations stated its rights provided in the Treaty of Albany, 1701, are existing and constitutionally protected rights. Six Nations also referenced the Haldimand Treaty 1784, which secured a tract of lands with the Six Nations' beaver hunting ground six miles on each side of the Grand River.

Six Nations stated several concerns about Enbridge's consultation, including:

- Enbridge did not engage in pre-application consultation;
- Consultation was insufficient and only took place over a period of five to six months (June 2015 – 30 November 2015);
- Enbridge did not promptly provide Six Nations with all relevant documentation for the Project, including a hardcopy of the Application;
- Funding was provided late and would have been more meaningful had it been provided earlier in the process;
- The timing and notification for the open house were inappropriate and advertisements were published after the open house was held;

- Six Nations did not have sufficient opportunity or time to adequately participate;
- Enbridge did not sufficiently show in the ESA what information was obtained from Six Nations;
- Enbridge did not clearly demonstrate the results of its engagement in the ESA; and
- Enbridge did not adequately consult on the ETCR.

Overall, Six Nations described Enbridge's consultation as hurried, lacking traceability and vague, and that Enbridge did not abide by Six Nations' Consultation and Accommodation Policy with respect to the Project.

Six Nations also raised concerns about the timing of the Board's process. Six Nations applied to participate 14 March 2016, was granted Pre-decided Standing 4 April 2016, and was allocated participant funding 3 May 2016. According to Six Nations, this only provided two months to review the Project filings and to prepare and file written evidence before the 20 June 2016 deadline, which was set out in the hearing order.

Six Nations stated that due to the timing of consultation activities, Enbridge's conclusions about the need for a TLUS, its understanding of traditional activities in the Project area and its understanding of Six Nations' concerns may be incomplete. It also noted that Enbridge's initial understanding of Six Nations' desire not to have a TLUS was incorrect and that Six Nations wanted a Project-specific TLUS.

Six Nations raised concerns about Enbridge's perception of what happened at the meeting held 6 August 2015. Enbridge asserts that, at the meeting, it asked Six Nations for information about traditional land use practices and that Six Nations responded that there were no traditional uses presently being performed along the Project route. However, at the hearing, Six Nations' witness Mr. General stated that he did not recall making such a statement and did not believe that anyone in his group would make such a statement. Mr. General further stated that there is always activity in the area though at that particular date in the season there may not have been any activity.

Six Nations criticized Enbridge's approach to the TLUS as reactive and inconsistent with Six Nations' Consultation and Accommodation Policy, which requires consultation to occur before beginning a project. Six Nations maintained that conducting a TLUS during construction would not meet Six Nations' expectation and that Enbridge's approach to determining that a TLUS should not be conducted was inadequate and based on a generic approach to determine Project impacts and without consultation with Six Nations.

HDI

In a letter dated 28 January 2016 to an NEB Aboriginal Engagement Specialist, which HDI later filed with the Board on 5 April 2016, HDI stated that the Project would have a significant impact upon Haudenosaunee rights and interests and that, to date, there had been no engagement on the Project. In the same letter, HDI questioned whether the NEB believes that NRCan can delegate engagement obligations where NRCan failed to undertake a prima facie assessment of rights and

interests which would be impacted. HDI further questioned how the NEB would undertake Project engagement that upholds the honour of the Crown.

On 25 February 2016, the Secretary of the Board responded to HDI's letter to the Aboriginal Engagement Specialist advising that HDI had already been approved as an Intervenor or Commenter provided that it registers by the deadline through the ATP process. Further, the Secretary of the Board advised HDI that its questions and comments with respect to rights and interests, and fiduciary duties and obligations, must be placed on the record in the hearing process in order to be considered by the Board.

On 14 September 2016, HDI wrote to the Minister of Natural Resources and copied the Board. HDI stated that it undertook preliminary steps to participate in the NEB process but had withdrawn as HDI takes the position that the NEB process would not uphold the honour of the Crown or allow the Minister to discharge his obligations as the Minister of NRCan.

MNO

MNO indicated that they do not assert Aboriginal rights in the Project area at this time.

7.4.2 Project Impacts

7.4.2.1 Traditional Land Use Study

Six Nations

As introduced earlier in this chapter, Six Nations stated that Enbridge's argument for not conducting a TLUS is inadequate. Six Nations expressed its view that a Project-specific TLUS is necessary and that the Project appears to meet the NEB's Filing Manual criteria for doing so. Six Nations questioned Enbridge's position that, because the pipeline is primarily on developed land used for agricultural and urban development, a TLUS is not required.

7.4.2.2 Traditional Land and Resource Use

MNCFN

MNCFN expressed to Enbridge an interest in protecting and mitigating major water course crossings, wildlife and wildlife habitat, soil, vegetation and water quality.

MNCFN asked that should any white pine trees be identified for removal, that Enbridge work with the landowners affected by the removal of the trees to explore whether members of MNCFN could collect needles from the trees.

Six Nations

Six Nations raised Project-specific concerns with respect to its potential impacts on wildlife and wildlife habitat, vegetation, effects resulting from watercourse crossings, including at the Grand River, and fish and fish habitat, which could also impact Six Nations' ability to practice its

traditional activities. During the hearing, Six Nations indicated in response to a Board question that there are traditional uses that occur within the Project Local Study Area (LSA). However, Six Nations did not identify specific sites in the LSA.

Additionally, Six Nations raised concern that the Project may impact traditional deer hunting in the vicinity of Copetown Woods Golf Club, and that there has not been an impact assessment on deer habitat. The Project is located within two provincially identified deer wintering areas. Six Nations questioned whether Enbridge's consultants were aware of traditional activities in the deer wintering areas and if they consulted with Six Nations on this potential activity.

Six Nations also raised specific concerns about the Project's potential impact on the harvesting of traditional plants, including those with medicinal properties. Six Nations shared that this activity was also impacted by development in the area:

> *"…we have medicine people that go out and harvest plants…[but] we're in the area now that [is] so highly impacted by all of the development and all of these activities, [that our people] have to go farther and farther afield to find these things. You know, they're not available locally anymore as they once were."*

Six Nations also expressed reluctance in sharing information about medicinal plants with Enbridge for proprietary reasons but remained open to working with Enbridge to develop a plan to avoid and mitigate impacts of the Project on medicinal plants.

Six Nations shared in its oral presentations to the Board its general concerns about the cumulative impacts of development on traditional activities in the Project area:

> *"[Our] community still has concerns about all this stuff going on. And it's not just one thing. It's not just a pipe. It's not just, you know, a corridor. It's not just a highway. It's the accumulation of the impacts of all of this stuff on the environment that we're seeing more and more and more of now."*

Six Nations also raised concerns about some of the specific effects arising from cumulative development in the Project area. For example, Six Nations member Paul General noted that hunting has been impacted by general development in the Project area and Six Nations hunters must now travel further away from their community to practice traditional activities:

> *"…I guarantee you I can't go hunting deer in downtown Toronto…our treaty rights, even though we have them, are limited, severely limited in Southern Ontario."*

When asked by the Board if this information had been shared with Enbridge, Six Nations stated that it had in a general way and that hunting exists in most of Southern Ontario. Six Nations also indicated that it had not requested any specific mitigation to avoid impacts to deer habitat and that it could recommend some mitigation measures such as reforestation to Enbridge in future discussions.

Mr. General further added that this cumulative impact has affected their ability to use the land for traditional purposes:

> *"…we occupied this land; we used this land…for centuries. [For] the last couple hundred years our abilities to carry on our activities culturally have been severely diminished over the years."*

Six Nations further explained that its treaty rights have been limited due to urbanization, agriculture and the practical limitations of using private land for traditional activities on private property. Six Nations continued during OTE:

> *"…another issue [is] that our hunters get in trouble with…is trespass[ing], private property issues. So you know, they try to exercise their cultural rights as they're supposed to under the Supreme Court, but people don't appreciate [when] sometimes somebody [is] on their property."*

Mr. General also noted the challenging nature of long term cumulative change in a region, which are difficult to prevent and not all changes are inherently negative:

> *"You know, we're always trying to weigh the benefit versus, you know, the detriment to anything. I mean, we live close by to the Greater Golden Horseshoe…most of us are fairly well-educated…we have worked off-reserve and…a lot of us like to enjoy, you know, the more modern conveniences and such. So yeah, we're always in that philosophical argument…what [we do] versus what are we doing to the environment…I mean, we had to hop in a car to drive here to answer these questions today so, you know, it's something we're always fighting with, for sure."*

In its final argument, Six Nations requested that the hearing be adjourned as premature without prejudice to Enbridge bringing back the Project when consultation has been completed and incorporated into the Project. Alternately, Six Nations requested that appropriate conditions be imposed so that there is only a conditional approval of the Project and that there be appropriate conditions beyond the draft conditions shared by the Board. Specifically, Six Nations requested imposing a condition relating to an investigation of deer habitat and medicinal plants. Six Nations also requested a condition requiring a plan for participation in construction and post-construction monitoring for traditional uses or treaty uses that may be of concern to Six Nations.

HDI

Enbridge stated that HDI indicated that Enbridge requires its consent to proceed with the Project.

HDI did not provide written evidence. However, in its ATP, HDI stated that the proposed project would impair, interfere, and infringe Haudenosaunee rights and interests including underlying Haudenosaunee title to the land in question. HDI also stated that the Crown including the NEB has knowledge of the impairment and infringement and to date has taken no steps to obtain the consent of the Haudenosaunee through their representative government the Haudenosaunee Confederacy Chiefs Council and, at the same time, the Crown and the NEB have taken no steps to justify the infringement. Lastly, HDI stated that the Crown and the NEB have also breached fiduciary duties owed to the Haudenosaunee in relation to treaty rights infringement.

7.4.2.3 Heritage Resources

Six Nations

Six Nations specifically raised concerns about Enbridge's mitigation in the event of an archaeological or heritage site discovery during construction. Six Nations extended this concern to the pipeline's operation, stating that it is possible to cause damage to heritage resources during integrity digs or other maintenance that may not have been discovered through the archaeological surveys.

Six Nations requested that Enbridge meet directly with Six Nations archaeological monitors. Specifically, Six Nations wished to meet with the individuals involved with the Stage 3 and 4 archaeological assessments and have the opportunity to raise concerns.

7.4.2.4 Outstanding Surveys

Regarding outstanding studies and surveys for the Project, Six Nations requested clarification on if and how it would have an opportunity to provide comment. Six Nations also expressed an interest in seeing surveys for review.

7.5 Enbridge's Reply to Issues and Concerns Raised by Aboriginal Groups

7.5.1 Consultation

In its reply, Enbridge stated that how the duty to consult is to be undertaken and by whom with respect to an application under section 58 of the NEB Act is currently being reviewed by the Supreme Court of Canada appeal by the Chippewas of the Thames First Nation relating to the Line 9B reversal and Line 9 capacity expansion projects.

Enbridge stated it would continue to reach out to the identified communities and anticipates active involvement in community events and initiatives in an effort to build and foster long-term relationships between the Aboriginal groups and Project representatives. Enbridge also committed to engaging with any groups not previously engaged should they identify themselves as being potentially affected by the Project.

Enbridge's Response to Six Nations

In response to the concerns of Six Nations regarding timing of consultation, Enbridge noted that Six Nations was engaged before the Application was filed and throughout the course of the Application review process, including participation of Six Nations monitors through the signing of a Capacity Funding Agreement. Enbridge stated it disagreed with Six Nations' assertion that engagement was limited to five to six months. Enbridge argued that this appeared to be based on the mistaken belief that Enbridge stopped engaging after it filed the Project application.

Enbridge committed to engage in a discussion on how Enbridge can make sure that funding or resources are provided if Aboriginal groups expressed a need for additional information, time or

capacity concerns. Enbridge stated that as an example of this, it provided training for archaeological monitors for the Project.

Enbridge stated the Project application was provided electronically on 4 April 2016 to Six Nations, and that all subsequent filings were also served electronically. Enbridge stated that once Six Nations raised concerns about receiving a hardcopy of the Application, which was done through an affidavit provided before OTE, Enbridge provided a hardcopy.

In response to Six Nations' concerns regarding funding, specifically that the Capacity Funding Agreement would have been more meaningful had it been provided at the beginning of the environmental assessment, Enbridge noted that it presented the initial agreement on 17 November 2015. According to Enbridge, Six Nations provided a draft on 9 February 2016. On 25 February 2016, Enbridge advised Six Nations that it had no issues with the capacity funding budget, but noted comments on the agreement including a desire to keep the scope of the agreement limited to the Project. Enbridge stated Six Nations did not respond to these comments until 10 May 2016 and did not agree to limit the agreement to the Project until 6 June 2016. The agreement was finalized on 9 June 2016.

Regarding the timing and notification of Enbridge's open house, Enbridge hosted an open house with Six Nations on 12 August 2015 to provide general information about Enbridge's liquid pipelines in southern Ontario. Enbridge also addressed Project-specific questions at that time. Enbridge notified Six Nations of the open house through hand delivered postcards on 17 August 2015 and through published advertisements in a local newspaper, the Two Row Times on 5 August 2015. Enbridge therefore asserted that its open house did not occur before the notification was provided. Enbridge stated that Six Nations declined Enbridge's offer to host a Project-specific open house.

In response to Six Nations' request for a TLUS, Enbridge stated that it engaged Six Nations early during the engagement process and Six Nations advised Enbridge that it had no concerns with traditional land uses related to the Project. Enbridge stated the first time it became aware of TLUS concerns was when Six Nations filed the affidavit of Paul General, Wildlife Manager for Six Nations, with the Board on 20 June 2016. Enbridge met with Six Nations representatives after this filing to discuss traditional activities within the Project area. Enbridge acknowledged that Six Nations stated that traditional activities occur on Crown land, including hydro corridor and private lands. Enbridge stated, however, that Six Nations did not identify specific locations within the Project area. Enbridge further noted that a TLUS is not a requirement under the Six Nations Consultation and Accommodation Policy nor is it referred to within the Six Nations' policy.

Enbridge stated that while it maintains its position that a TLUS is not required for the Project, Enbridge offered $20,000 to Six Nations to fund a Project-specific TLUS. Enbridge further offered to work with Six Nations to develop a work plan and budget for the TLUS. Enbridge submitted that as of 19 August 2016, Six Nations has not responded to this offer. During the hearing, Enbridge reiterated that the offer was still available.

Enbridge expressed concerns that Six Nations ceased its engagement with Enbridge during the process. Enbridge noted that Six Nations stated in a letter on 10 May 2016 that it required

Enbridge to accommodate it on all pipelines in its traditional territory. Enbridge stated that this position was further emphasized on 26 September 2016 when Six Nations issued a news release stating it has ceased all current and future engagement with Enbridge about the Project.

Enbridge's Reply to HDI

Enbridge noted that on 14 September 2016, HDI wrote to the Minister of Natural Resources and copied the Board indicating its withdrawal from the hearing process. Enbridge noted concern that HDI ceased its engagement with Enbridge during the process. Enbridge stated it remains committed to engaging with HDI, if requested.

7.5.2 Project Impacts

Enbridge noted several concerns raised with the company by Aboriginal groups regarding the Project's potential environmental effects, including effects on wildlife, vegetation, and effects from proposed watercourse crossings. Enbridge's standard and project-specific measures to address effects on the environment are explained in detail in the Environment and Socio-Economic Matters Chapter 8.

Enbridge noted that the concerns raised by Six Nations with Enbridge about traditional land and resource uses included:

- The cumulative effect of development throughout Six Nations' traditional territory;
- The impact of the Project on traditional land uses such as medicinal plant gathering and hunting;
- The potential impact of the decommissioned pipeline on future land uses;
- Traditional land and resource use study; and
- Sacred and culturally sensitive sites.

7.5.2.1 Traditional Land Use Study

Enbridge did not complete TLUS for the Project. According to Enbridge's submissions, the Project is located on previously disturbed, privately owned or fee simple land, which limits access to the public, or on Crown land used for existing infrastructure.

Enbridge stated the land is primarily used for agricultural activities or development which Enbridge concluded would not be compatible with traditional land use activities. Enbridge stated that it conducted an in-person survey with all fee simple landowners along the Project's route, asking if landowners granted access to First Nations or were aware of traditional activities occurring on their property. Enbridge stated that all landowners responded to the survey and that none were aware of traditional activities being practiced on their land.

According to Enbridge, it had afforded Aboriginal groups opportunities to provide information about their traditional land use practices in the Project area. Enbridge stated that it was initially advised and understood that there were no traditional uses presently being performed along the

Project's proposed route. However, in its ESA, Enbridge assumed that the LSA could support potential traditional land uses by Aboriginal groups and therefore included mitigation measures to address the potential effects of the Project on traditional use activities that could potentially take place. Enbridge committed to implementing these mitigation measures despite its position that the Project's land use is incompatible with traditional activities. An overview of Enbridge's mitigation measures to address the Project's potential effects on valued components in the Project area, including the bio-physical components and ecosystems that support traditional land and resource use, is included in Chapter 8.

Enbridge's Response to MNCFN

Enbridge noted that MNCFN indicated its interest in a non-Project-specific TLUS for its entire traditional territory and the cumulative effect of development within it. However, Enbridge stated that MNCFN had not suggested that a Project-specific TLUS is required for the Project to proceed.

Enbridge's Response to Six Nations

Enbridge reiterated that a TLUS is not required for the following reasons:

- the Project would largely parallel other linear features;
- the Project is predominantly on agricultural land;
- Enbridge would implement a suite of field-tested mitigation measures; and
- Enbridge assumed traditional land uses by Aboriginal groups and included mitigation measures to address the assumed impact in the ESA.

7.5.2.2 Traditional Land and Resource Use

Enbridge's Response to MNCFN

Enbridge stated that its proposed mitigation with respect to watercourse crossings, wildlife and wildlife habitat, soil, vegetation and water quality were sufficient to mitigate any concerns about the Project's impact. These are discussed in detail in Chapter 8. Enbridge stated that MNCFN did not raise any traditional land use concerns as a result of its review of the Environmental Protection Plan. Enbridge noted several times that MNCFN has relayed to Enbridge its satisfaction with Enbridge's approach.

Enbridge stated that it would specifically address MNCFN's concern about white pine trees. Enbridge committed to working with landowners if any white pine trees are identified for removal due to the Project's construction and to request whether MNCFN could collect needles from the trees.

Enbridge's Response to Six Nations

Enbridge assumed that traditional land uses may be practiced by Aboriginal groups in the Project area, so it committed to the following mitigation measures to limit the Project's potential impacts on traditional activities:

- notifying Aboriginal groups of the proposed construction schedule and Project route prior to construction;
- installing signs notifying groups of construction activities, where appropriate;
- ensuring all equipment is clean to reduce the risk of weed introduction;
- implementing measures in Enbridge's Traditional Land and Resource Use Sites Discovery Contingency Plan, if warranted;
- if hunting sites are identified:
    - adhering to species-specific timing constraints or other suitable mitigation prepared by a professional biologist;
    - leaving breaks in the pipeline trench;
    - limiting the use of chemical applications; and
    - applying site-specific mitigation strategies recommended by participating Aboriginal groups.
- if fishing sites are identified:
    - recording and mapping fishing locales;
    - adhering to the regulations, standards and guidelines set by provincial and federal regulatory agencies for watercourse crossings; and
    - applying other site-specific mitigation strategies recommended by participating Aboriginal groups.
- if sacred sites are identified:
    - detailed recording, mapping and avoidance;
    - assessing the visual impact;
    - applying additional mitigation measures, which would be refined and optimized through community discussions; and
    - applying other site-specific mitigation strategies recommended by participating Aboriginal groups.

Enbridge also stated that its mitigation measures respecting fish and fish habitat, water quality and quantity, navigation and navigation safety, acoustic environment, sensory disturbance, loss or alteration of wildlife habitat and wildlife mortality, would be implemented. Additional details on Enbridge's environmental mitigation measures can be found in Chapter 8.

Enbridge acknowledged Six Nations' request for a TLUS, but noted that Six Nations did not raise concerns about the lack of a Project-specific TLUS until Six Nations filed an affidavit with the Board in June 2016. Enbridge stated that prior to that filing, no specific concerns about traditional land use were raised. Once the issue was raised, Enbridge tried to work with Six Nations to address concerns and met with Six Nations to understand what specific areas may be impacted. At that time, Enbridge further offered to enter into a confidentiality agreement with Six Nations to address concerns about sharing information on medicinal plants.

Enbridge restated that Aboriginal engagement activities are ongoing for the Project and if any new interests or concerns related to environmental or socio-economic elements are brought forward, it would consider the implications in the context of the ESA and re-evaluate the assessment, as warranted. Enbridge remains committed to working with Six Nations and confirmed that it is willing to have discussions directly with Six Nations monitors.

Enbridge concluded that if there are any impacts on traditional land use by Aboriginal groups they are limited, given that the Project predominantly follows the Line 10 existing ROW and is located on private or developed Crown land. Enbridge noted that no traditional activities have been identified specifically along the Project route. Enbridge asserted that the concerns raised by Aboriginal groups about traditional land use would be addressed through Enbridge's ongoing engagement process, commitments made by Enbridge to the Board and the Board's draft conditions. Enbridge also committed to retaining Aboriginal monitors, including those from Six Nations, to participate in construction monitoring for the purpose of monitoring effects of resource uses that are important to the impacted Aboriginal groups.

Enbridge's Response to HDI

Enbridge asserted that it attempted numerous times to engage HDI in discussions and initiatives relating to Project-specific impacts and that HDI did not provide Project-specific concerns to Enbridge or the Board. Enbridge offered a Capacity Funding Agreement and an Environmental Participation Agreement to HDI. Enbridge provided HDI with a Project-specific Engagement Agreement, which Enbridge stated HDI refused without offering a counter-proposal.

Enbridge noted that HDI expressed an unwillingness to discuss potential Project impacts before a comprehensive agreement is entered into. Enbridge stated that mutually agreeable terms for an agreement had not yet been reached as of the close of the hearing record.

7.5.2.3 Heritage Resources

Enbridge's Response to Six Nations

Enbridge noted that Enbridge representatives have been meeting with First Nations monitors, including Six Nations monitors, during archaeological surveying.

7.5.2.4 Outstanding Surveys

Enbridge's Response to Six Nations

Enbridge committed that it would share the results of surveys with Six Nations, if there is an interest in reviewing them, and that it would continue to serve Six Nations with any filings it makes through the construction phase.

7.6 Views of the Board

The Board thanks all participants in the Line 10 Hearing and, in particular, Six Nations for providing its local, traditional and cultural knowledge at the Community Meeting. The Board acknowledges Paul General, Wildlife Officer and Manager of the Six Nations Eco-Centre and Wildlife Management Office, and Lonny Bomberry, Director of Lands and Resources, for providing this important context and information.

7.6.1 Enbridge's Consultation

In addition to providing technical information addressing Project-related impacts on, among other things, fisheries, wildlife, vegetation, and heritage resources, Enbridge was required to make all reasonable efforts to consult with potentially affected Aboriginal groups and to provide information about those consultations to the Board. This included evidence on the nature of the interests potentially affected, the concerns that were raised and the manner and degree to which those concerns have been addressed. Enbridge was expected to report to the Board on all concerns that were expressed to it by Aboriginal groups, even if it was unable or unwilling to address those concerns. Therefore, even if an Aboriginal group chose not to participate in the subsequent hearing process, any concerns could be brought to the attention of the Board through the applicant's evidence.

This early consultation was guided by the Board's Filing Manual Requirements. The requirements reflect the fact that an applicant is often in the best position to respond to the concerns of Aboriginal groups about a project before an application is filed and while a project is still in the early stages of development. The Board expects an applicant to design and implement its consultation activities with regard to the nature and magnitude of a project's potential impacts both from early in the design phase and into the future operational phase of the Project. Where there is a greater risk of more serious impacts on Aboriginal interests (which would, in part, depend on the nature of that interest), the Board has greater expectations in terms of the applicant's consultation with the potentially impacted Aboriginal group. In contrast, where there is a remote possibility of an impact on Aboriginal interests, or the impacts are minor in nature, the applicant's consultation will generally not be expected to be as extensive.

A company's early consultation with Aboriginal groups is a critical part of the development of a proposed project, and a key matter for consideration within the regulatory review process. Timely, accessible and inclusive consultation facilitates the effective exchange of information, and provides opportunities for the company to learn about the concerns of potentially affected Aboriginal groups, to discuss how those concerns can be addressed through project design and

operations, and to develop and discuss measures to reduce and mitigate the effects a project may have on the interests of Aboriginal groups. Timely and effective consultation can help establish productive relationships that can carry on throughout the life of the project. It also informs the Board of the concerns Aboriginal groups may have about a project's impacts.

In assessing the consultation undertaken by Enbridge with Aboriginal groups, the Board evaluated the design and implementation of Enbridge's consultation activities. The Board reviewed the company's activities to engage Aboriginal groups and to learn about their concerns and interests, as well as the concerns and views expressed by Aboriginal groups. It also considered how Aboriginal groups responded to opportunities for consultation and how Enbridge sought to understand and address the concerns of potentially affected groups. The Board reflected on how this input influenced the Project's proposed design and operation.

Enbridge began consulting with Aboriginal groups it identified as being potentially impacted by the Project in 2013, and after briefly halting activities, reinitiated consultation in June 2015. The Board finds that the criteria used by Enbridge to identify potentially affected Aboriginal groups were appropriate.

Enbridge continued to facilitate opportunities with potentially affected Aboriginal communities to contribute to Project planning and design and committed to working with interested communities to address any Project-specific concerns raised and to identify further opportunities for consultation throughout construction and operation of the Project. Enbridge informed all affected Aboriginal groups of the ETCR, including providing an overview of the ETCR, relevant field surveys and opportunities to participate. The Board notes Enbridge's commitment to lifecycle engagement, including Enbridge actively engaging all identified Aboriginal groups in meaningful ongoing dialogue concerning the Project, responding to inquiries, and discussing issues or concerns that may arise regarding the Project.

The Board considered the concerns of Six Nations with respect to the adequacy of consultation, including the timing of notification for the August 2015 open house. The Board notes that Enbridge provided notification by hand and through published advertisements in local newspapers 7 and 5 days before the open house was scheduled, respectively. While the Board is satisfied that notification was provided in advance and through appropriate methods, it encourages Enbridge in future to provide notification as early as possible.

The Board also noted Six Nations' news release from 26 September 2016 stating its reluctance to engage further with Enbridge on the Project, as well as HDI's withdrawal from the hearing process. However, during the hearing, the Board was encouraged that Six Nations agreed to continue its engagement with Enbridge. The Board wishes to see both parties contribute to a meaningful relationship throughout the lifecycle of the Project.

Consultation needs to occur early in the planning stages of a project and continue throughout the lifecycle of a project. Information about a project is necessarily refined as project planning progresses, including in response to information provided by Aboriginal groups through consultation, and therefore, it is important that consultation is ongoing. As the regulator of a project throughout its lifecycle, the Board also has a number of processes and tools at its disposal to execute its oversight of a project, including ensuring compliance with any conditions imposed

by the Board and requirements that form part of the regulatory framework, including the OPR. Enbridge's approach to its ongoing consultation with potentially affected Aboriginal groups meets the Board's expectations. All potentially affected Aboriginal groups were provided with sufficient information about the Project. The Board notes Enbridge provided Project information to MNCFN, Six Nations, HDI and MNO, which included information about the project design, operations, environmental, social and economic effects, including potential economic development opportunities including contracting and employment.

The Board notes Enbridge's commitment to work with Aboriginal groups, including Six Nations, HDI and MNCFN to address Project-related concerns and finalize measures to address the Project's effects. The Board views consultation as an iterative and ongoing process of discussion and dialogue. The Board expects companies to continue to learn about the concerns that groups may have about a project, and to discuss ways to address those concerns to the extent possible. The Board also encourages Aboriginal groups to continue to engage with Enbridge.

Given that Enbridge maintained consultation with Six Nations and was responsive to concerns raised by Six Nations and other Aboriginal groups, the Board finds that the different perceptions held by Enbridge and Six Nations regarding a Project-specific TLUS did not substantially impede Six Nations' ability to share its concerns or Enbridge's ability to learn about and address concerns about traditional land use in the Project area.

Having reviewed all of the evidence, the Board finds that Enbridge provided Aboriginal groups that expressed an interest in the Project with sufficient opportunities to participate in Project planning and to share traditional knowledge and identify site-specific and general concerns about the Project.

The Board is satisfied with the design and implementation of Enbridge's consultation activities to date. Further, the Board finds that with Enbridge's commitments and the Board's **Section 58 Conditions 12** and **25**, which are discussed in greater detail in the paragraphs below, Enbridge can effectively continue to consult with Aboriginal groups in order to learn more about their interests and concerns, and to address issues that they may raise throughout the lifecycle of the Project.

The Board expects Enbridge's consultation with Aboriginal groups and other stakeholders will be ongoing throughout the life of the Project as conditions are met and any necessary additional permits are obtained from relevant authorities.

7.6.2 Project Impacts

The Board notes Six Nations' request that the hearing be adjourned as premature or, in the alternative, that the Board impose additional conditions beyond the draft conditions released by the Board for public comment. The Board is of the view that it is not necessary to adjourn the hearing as premature, as the Board has expanded the conditions to include some of the matters raised by Six Nations, as discussed in the paragraphs below.

7.6.2.1 Traditional Land Use Study

The Board notes that the NEB Filing Manual requires companies to describe how lands and resources in the study area are currently used by Aboriginal persons or groups for traditional purposes, including the spatial and temporal extent of use and how a project could impact this use. Companies are also required to describe the measures that would be taken to mitigate a project's impacts on Aboriginal traditional land and resource use. However, the NEB Filing Manual does not direct companies with respect to any specific methods of data collection and analysis, such as a TLUS. The Board has broad expectations of companies to engage with Aboriginal communities regarding the potential impacts of a project, including impacts respecting their ability to carry out traditional activities. To that end, the Board notes that Enbridge engaged with Six Nations over a number of months about the Project.

Enbridge and Six Nations had different views about Six Nations' interest in a Project-specific TLUS. The Board notes Enbridge offered funding towards a Project-specific TLUS and offered to enter into a confidentiality agreement with Six Nations to address concerns about sharing information on medicinal plants. During the hearing, Six Nations indicated in response to a Board question that there are traditional uses that occur within the Project's Local Study Area (LSA). Six Nations did not identify specific sites in the LSA.

At the hearing Six Nations' again requested a Project-specific TLUS, and argued that traditional activities could occur on private land and Crown land used for infrastructure, such as a hydro corridor.

Enbridge's view is that a TLUS was not required because Enbridge assumed the potential for the practice of traditional activities in its Application and provided specific and broad mitigation measures that would be implemented to address potential effects on biophysical elements (such as fish and fish habitat, wildlife, wildlife habitat, vegetation, water quality and quantity) as well as the potential effects on traditional uses and socio-economic components, including heritage resources. These mitigation measures are outlined in Environment Matters, Chapter 8.

The Board has considered all of the evidence and positions of Six Nations and Enbridge. The Project predominantly follows the existing Line 10 ROW and is entirely located on previously disturbed land. The majority of the land is privately held; however, some is located on Crown land, which is developed and used for infrastructure. Enbridge has assessed the potential effects of the Project on environmental components, including those listed in the paragraph directly above, and that Enbridge has proposed measures to mitigate these effects. Also Enbridge has proposed mitigation measures to address the Project's potential effects on any traditional land and resources uses that may be occurring in the Project area.

The Board is satisfied that it has sufficient evidence to make a determination with respect to the Project's potential effects on traditional land and resource use, and that the Board does not require further information in order to make its determination. Therefore it is not necessary to impose a condition requiring a Project-specific TLUS.

7.6.2.2 Traditional Land and Resource Use

In assessing potential impacts on Aboriginal interests, the Board considered all of the evidence provided. The Board assessed the information provided in Enbridge's ESA on potential impacts on the interests, including the rights, of Aboriginal groups, the concerns raised by Aboriginal groups, and the measures Enbridge has proposed to minimize or eliminate the Project's potential impacts on the interests of Aboriginal groups.

Through the review process, Aboriginal groups had the opportunity to make known to Enbridge and the Board their views and concerns about the Project, including what effects it might have on their potential or established interests. Six Nations expressed their views and concerns about how the Project might affect their Aboriginal and treaty rights relating to hunting, the harvesting of plant resources for medicines, and the maintenance of cultural practices within their traditional territories. The Board notes that Six Nations, MNCFN and HDI participated in archaeological studies and that MNCFN participated in biophysical field studies.

While the Board appreciates the sensitive nature of sharing site-specific information, it encourages Six Nations and Enbridge to continue discussions to understand and arrive at any site-specific mitigation required. The Board notes that both Enbridge and Six Nations have committed to ongoing discussions, including discussions about how to avoid and mitigate the impacts of the Project on medicinal plants.

The Board acknowledges Enbridge's commitment to hearing and addressing concerns, as feasible, and ensuring on-going dialogue about the Project, its potential implications and benefits, and seeking information on the exercise of any potential impacts to aboriginal and treaty rights in the Project area.

The Board notes that Enbridge committed to a number of mitigation measures to address the Project's effects on wildlife and wildlife habitat. Enbridge stated that it re-aligned the route to avoid a woodland that is a provincially identified deer wintering area. In addition, Enbridge's proposed mitigation for wildlife species at risk includes using HDDs in sensitive areas and working with provincial authorities and Conservation Authorities with regard to permitting requirements.

Additionally, the Board finds that Enbridge took concrete steps to address some of the concerns and recommendations raised by Aboriginal groups, such as notifying MNCFN if white pine trees are discovered during any Project work, and committing to retaining Aboriginal monitors to participate in construction monitoring.

The Board considered the evidence provided by Enbridge, Six Nations and other participants about the exercise of rights in the Project area, including the activities, uses, and practices that are carried out by MNCFN, Six Nations, HDI and MNO. The Board acknowledges the concerns raised by Six Nations that their traditional harvesting (hunting and plant harvesting for medicines) have been and will likely continue to be disrupted by incremental industrial development in the region. The Board assessed the potential effects on those activities, uses and practices. The Board also noted the measures committed to by Enbridge to minimize such effects in the Project area.

The Board notes that Six Nations requested the Board broaden one of its conditions to include Aboriginal monitoring during construction and operation. The request also asked for monitoring to go beyond archaeological resources and include items or areas related to traditional land uses. In response to these requests, the Board has amended the draft conditions that it issued for public comment.

The Board includes **Section 58 Conditions 12** and **25**, requiring Enbridge to file with the Board plans describing participation by Aboriginal groups in monitoring activities during the construction and operation of the pipeline, respectively. Condition 12 also requires monitoring include archaeological resources and items or areas related to traditional land uses.

Though Six Nations requested to be served with certain information, the Board is of the view that the goal of Aboriginal groups receiving the information can be met without the more stringent service requirements imposed during the hearing process. **Section 58 Conditions 12** and **25** require Enbridge to provide copies of the filings to Six Nations and other identified Aboriginal groups no later than 3 days after filing the information with the Board.

The Board encourages Enbridge to provide such filings to Aboriginal groups on the same day the Board receives the filings (or earlier) but is of the view that the 3 day window offers Enbridge some flexibility. The Board also notes Enbridge's commitment to provide filings during construction to Six Nations and encourages Enbridge to maintain information sharing throughout the Project's lifecycle.

The Project is located within a highly altered environment that has absorbed significant and permanent changes over the past centuries. These cumulative effects have given rise to the current regional environment, which includes major urban centres, and agricultural and industrial development. Six Nations shared that the Project area was originally pristine wilderness and vividly described how the current landscape has evolved into what it is today. Due to the current land uses and activities in the region, vegetation, wetlands, wildlife and wildlife habitat, traditional land and resource use, and species at risk are experiencing and will likely continue to experience adverse cumulative effects.

As discussed further in Chapter 8, the Project's contribution to cumulative impacts in a highly developed area is insignificant. The Board notes that the Project will largely take place in an agricultural setting and mostly adjacent to an existing pipeline corridor, thereby minimizing the Project's contribution to effects on wildlife, wildlife habitat and vegetation. The Board particularly notes that Six Nations shared that the relationship between relative impacts versus some of the potential benefits of long term regional cumulative development can be difficult. The Board is of the view that Enbridge will appropriately mitigate the Project's potential effects.

The Board recognizes that Aboriginal peoples have a broad range of matters and concerns that they wish to raise, discuss and resolve with government authorities. While the Board recognizes the importance of these issues, the Board does not have the ability within its proceedings, to properly address issues that are unrelated to the application before it. Nevertheless, in this proceeding, the Board considered all of the submissions of Six Nations so that it could have a greater understanding of the context for their concerns about the Project. The Board is committed

to understanding Aboriginal concerns about a Project and welcomes information that provides relevant context.

As shown in the table below, the Board is of the view that the Project will occur primarily on previously disturbed land and that there will be temporary interruptions to the access and use of the Project ROW and temporary workspaces during construction. Short-term interruptions may occur for maintenance throughout the duration and eventual abandonment of the project. After these temporary interruptions, the ROW and temporary workspaces will be restored and monitored by Enbridge for the life of the Project including its eventual abandonment. The Board finds that effects of the Project on traditional land use will therefore be short-term in duration, reversible in the long-term and low in magnitude. The Board finds that the Project is not likely to cause significant adverse environmental effects on traditional land and resource use.

Evaluation of Significance of Residual Effects	Temporal Extent	Reversibility	Geographical Extent	Magnitude
	Short-term to long-term	Reversible	LSA	Low
	Adverse Effect			
	Not likely to cause significant adverse environmental effects.			

7.6.2.3 Heritage Resources

The Board notes Six Nations' request for notification and Enbridge's commitment to notify Aboriginal groups if previously unknown heritage resources are discovered during construction. Enbridge has also committed to a number of standard mitigation measures to avoid and protect heritage resources.

The Board notes Six Nations' interest in being served with condition compliance filings by Enbridge with respect to heritage resources. Therefore, the Board imposes **Section 58 Condition 17**, requiring Enbridge provide Six Nations with a copy of its filings confirming that Enbridge has received heritage resources clearance from the Ontario Ministry of Tourism, Culture and Sport. Further, **Section 58 Condition 17** requires this information to be provided to all affected Aboriginal groups that have reached agreement with Enbridge to participate in monitoring activities. As with **Section 58 Condition 12** and **25**, discussed above, the Board requires Enbridge to provide the copies no later than 3 days after filing the information with the Board.

7.6.2.4 Outstanding Surveys

The Board notes Six Nations' concerns about the completeness of Enbridge's studies. During the hearing, Enbridge confirmed that some studies, such as the botanical surveys, are outstanding, but are scheduled to be completed prior to construction. Enbridge confirmed it would provide a summary of the survey results to Six Nations.

The Board notes that Enbridge has a variety of standard mitigation measures, which are discussed in Chapter 8 of this Decision, which will mitigate the Project's impact on the environment. Further, Enbridge's EPP includes contingency plans to account for an unexpected event, such as the discovery of plants, wildlife, fish, heritage resources and traditional land use sites during construction.

7.6.3 Section 35(1), *Constitution Act*, 1982

Submissions were made during the hearing process regarding the adequacy of consultation to meet the requirements of section 35 of the *Constitution Act*, 1982 and the need for an assessment of consultation.

The Government of Canada has indicated that it will rely on the Board's process to the extent possible to discharge the Crown's duty to consult. The Board notes that a number of judicial decisions, including Taku River Tlignit First Nation v. British Columbia (Project Assessment Director) 2004 SCC 74, have acknowledged the Crown's ability to rely on opportunities for Aboriginal consultation available within existing processes for regulatory or environmental review.

Administrative tribunals play an essential role in the execution of the federal or provincial constitutional powers. Through their legislative mandates, they are charged with performing duties and exercising the powers that fall within the executive branch of government. Administrative tribunals such as the Board must perform those duties and exercise those powers, not only in accordance with their legislative mandates, but also in accordance with section 35 of the *Constitution Act*, 1982 and other applicable laws.

The NEB Act provides the Board with broad powers and expansive remedial authority to deal with the impacts of federally-regulated pipeline projects. The Board is the federal statutory body that has the most direct involvement in the assessment of applications to construct and operate interprovincial and international pipelines. The Board also has the technical expertise and the regulatory experience to understand a project, the likelihood of effects and the measures that can be implemented to minimize effects. In addition, the Board has the authority to elicit commitments from the proponent, impose conditions on an approval and ensure ongoing regulatory oversight of a project and a proponent's compliance. The Board also has been given the statutory mandate to impose and enforce mitigation measures to reduce negative project effects and hold a proponent to the commitments made in the Board's project assessment process to enhance benefits.

The framework within which the Board operates and decisions under the NEB Act are made, which includes the requirement that a project assessment process be conducted in a procedurally-fair manner, can provide a practical, effective and efficient way within which an Aboriginal group can request and receive meaningful assurances from the proponent or the Board about project-related effects on Aboriginal interests, including rights. Hearing directly and indirectly about an Aboriginal group's concerns about project-related impacts on its interests allows the Board to impose measures to mitigate the impacts and balance, as appropriate, any residual effects with the other societal interests at play when assessing a project. As a result, decisions on

pipeline projects can be made in a constitutionally-appropriate manner consistent with the honour of the Crown.

It should be understood that the Board's consideration of what is required in terms of consultation with Aboriginal groups is a fluid process as more information is obtained and assessed in the Board's proceeding. There are several points in a Board proceeding where the existence and extent of an Aboriginal interest and the potential impact on that interest will be considered with a view to determining the procedural opportunities that must be provided and the substantive outcomes that are warranted. For example, such factors may be considered when:

- the proponent determines who may be impacted by its proposed project;
- the Board decides who to send notices to;
- the Board considers the type of Board process that should be employed;
- the Board decides who should be allowed to participate in the proceeding and to what extent;
- the Board assesses the level of consultation expected of the proponent and any others who may have authority to deal with an issue;
- the Board considers the amount of information required from the proponent regarding potential impacts and proposed mitigation measures;
- the Board considers the amount of information required from Aboriginal participants;
- the Board determines what conditions would need to be imposed; and
- the Board determines whether the authorization should be issued.

The Board's process is designed to be thorough and accessible to Aboriginal groups so that they may make their concerns known to the Board and have those concerns addressed as appropriate. In addition to the mandated one-on-one consultation that is to occur between an applicant and potentially impacted Aboriginal groups (described in Section 7.2), it should be understood that the Board's hearing process itself (described in Section 7.3), including these reasons, is part of the overall consultative process.

In this Application, while much of the early consultation was performed by Enbridge, the Board process acted as a necessary and important check on that consultation and gave Aboriginal groups an additional avenue to explain their concerns about the Project and have those concerns considered by the Board.

The Board has considered the information submitted regarding the nature of potentially affected Aboriginal groups' interests in the Project area, including information on constitutionally-protected Aboriginal and treaty rights. The Board has also considered the anticipated effects of the Project on those interests and the concerns expressed by Aboriginal groups, as discussed in this Chapter and this Decision, in this regard. In light of the nature of the interests and the anticipated effects, the Board has evaluated the consultation undertaken with respect to this Project, including the mandated consultation performed by Enbridge and the consultation undertaken through the Board's project assessment process. The Board has also considered the

mitigation measures proposed to address the various concerns and potential effects. The Board is of the view that there has been adequate consultation and accommodation for the purpose of the Board's decision on this Project.

As a result of the above, considering all of the findings in this Decision, the Board is of the view that the requirements of section 35 of the *Constitution Act*, 1982 have been met, such that an approval of this project is in keeping with the honour of the Crown.

Chapter 8

Environment and Socio-Economic Assessment

Under the NEB Act, the Board considers environmental protection as a component of the public interest. When making its decision, the Board assesses the environmental and socio-economic effects of the Project throughout the life of the Project.

This chapter represents the NEB's Environment and Socio-Economic Assessment (ESA). For the reasons set out in this chapter, the Board finds that with the implementation of Enbridge's environmental protection procedures and mitigation and the Board's conditions, the Project is not likely to cause significant adverse environmental effects.

8.1 The NEB's Environment and Socio-Economic Assessment Methodology

In assessing the environmental and socio-economic effects of the Project, the NEB used an issue-based approach as set out in the NEB's Filing Manual for applicants.

This assessment begins with: a description of the Project (Section 8.2), a description of the setting and the environmental and socio-economic elements within that setting (Section 8.3), and a summary of those environmental and socio-economic concerns raised by the public (Section 8.4). Based on these, the NEB identified Project-environment interactions that are expected to occur (Section 8.5; Table 8-3). If there were no expected Project-environment interactions or interactions would be positive or neutral then no further examination was deemed necessary.

The NEB then assessed the potential adverse environmental and socio-economic effects, as well as the adequacy of the applicant's proposed environmental protection strategies and mitigation measures (Section 8.6). Specifically, Section 8.8 describes the extent to which standard mitigation is relied on to mitigate potential adverse effects. In Section 8.9, the NEB provides detailed analysis for issues that are of public concern or of environmental consequence, and that may require additional mitigation. For each issue considered in detail, views of the Board are provided and the Board determined whether further mitigation is required by way of condition on any potential Project authorization, in order to ensure any potential environmental and socio-economic effects would not be significant. Where there are any residual effects remaining after proposed mitigation, cumulative effects are considered in the following section (Section 8.10). The NEB's conclusion on significance is given in Section 8.11.

8.2 Project Details

Chapter 1 of this Decision provides a general description of the Project. In addition, Table 8.1 below provides further details on Project components and activities relevant to the environmental assessment.

Table 8-1: Project Components and/or Activities

Project Components and/or Activities
Construction Phase – Timeframe Fall 2017 through to Spring of 2018 (not including decommissioning activities)
• Construction of approximately 35 km of new pipeline 508.0 mm O.D. (NPS 20) pipeline. • Approximately 24 km or 69 per cent of the pipeline will be constructed alongside and contiguous to an existing Enbridge pipeline ROW and other linear disturbances, with approximately 11 km or 31 per cent requiring new non-contiguous ROW. • The construction ROW will be approximately 33 m wide. This will include approximately 10 m of new permanent easement, with an additional 23 m of temporary workspace. • The total footprint of the Replacement Line 10 Pipeline is 167 ha consisting of 28 ha for new easement and 139 ha for temporary workspace. • Construction of one Ultrasonic Leak Detection Meter to be installed at Westover Terminal, upstream of the pig launching trap, and pigging facilities at the Westover Terminal. • New permanent access is required (0.35 ha) for the valve site at RSV-1 and the associated access road. • Activities include: design, surveying, clearing, grubbing, stripping/salvage, grading, trenching, stringing and welding, pipe lowering, backfilling, temporary watercourse crossings for vehicle access, watercourse crossings, road, rail and other linear infrastructure crossings, clean-up and reclamation, waste disposal, pipeline integrity validation testing and Emergency Response Plan (ERP). • HDD will be used to drill in the pipeline at the Sheffflield-Rockton PSW (Westover Wetland) (572 m) and at the Big Creek Headwaters PSW (Copetown Woods Golf Club) (750 m). • HDB of major roads and railways may be used at five King's Highways (Ministry of Transportation - Ontario), and 16 City of Hamilton roadways, which are planned conventional trenchless crossings. HDBs will be specified when deemed appropriate upon the completion of Enbridge's geotechnical investigation and subsequent engineering..
Operation Phase – Timeframe: Service life of the Project (estimated in-service date: Q1 2018)
Activities include: • regular patrol programs along the pipeline ROW and associated facilities; • routine oil spill and emergency response exercises; • implementation of the Integrity Management Plan; and • conducting a Post-construction Environmental Monitoring Program (PCEM) during first five complete growing seasons following commissioning of the Project.
Abandonment Phase – Timeframe: indeterminate; at the end of the useful life of the Project
• All final abandonment activities will require prior approval by the NEB and other applicable agencies.

8.3 Environmental Setting

The following description of the environmental setting is based on the following three spatial scales:

- The Project Footprint (Footprint) – defined as the physical area required for Project construction and operation. This includes the permanent ROW plus the additional TWS required during construction, including the areas where trenchless crossings will occur.
- The Local Study Area (LSA) – the area within which mainly direct effects of the Project on the local environment are expected to occur. The LSA varies by Valued Component (VC). For example, the Terrestrial LSA is defined as a one kilometre wide corridor (i.e., 500 m on both sides of the centre line).
- The Regional Study Area (RSA) – the area within which most indirect and cumulative effects of the Project are expected to occur. The RSA consists of the area extending beyond the LSA boundary up to two kilometres on both sides of the centre line. The exception to this is the one kilometre radius around the Project for Heritage Resources, as directed by Ontario Ministry of Tourism, Culture and Sport (MTCS) in 2011, as well as an Aquatics RSA that extends up to 15 km on both sides of the centre line, up to the boundary of Lake Ontario.

Geographical Information, Human Occupancy and Land Use

- The Project is located within the Municipality of Hamilton including the City of Hamilton. It is located on a combination of fee simple agricultural land, residential, commercial, industrial, transportation corridors (highways), utility corridors (transmission lines) as well as open space/vacant lands.
- The land within the LSA and RSA is predominantly privately-owned. The Project crosses 124 tracts of land: 64 per cent (79 tracts of land) is fee simple land which is privately-held. 36 per cent is fee simple other (45 tracts of land) and held by a mix of Industry, Municipalities, Conservation Authorities and Provincial Ministries. 16 per cent (20 tracts) of the fee simple other land is Crown land used by the Ministry of Transportation and HONI). See Chapter 6; Table 6-1.
- The majority of the land use is rural/agricultural land interspersed with farmhouses and natural features (e.g., woodlots, watercourses, wetlands, and open space).
- Infrastructure located in the LSA includes: hydro transmission corridors, rail lines, existing pipelines, roads, and highways.
- The Replacement Line 10 Pipeline route departs from the Existing Line 10 Pipeline corridor in 2 places (approximately 11 km) to accommodate existing golf courses and planned residential development and other considerations.
- The proposed Project is not located on any federal lands.

Physical Environment and Soils

- Topography along the Replacement Line 10 Pipeline route is generally level and does not encounter any steep slopes.
- The dominant soil series along the Replacement Line 10 Pipeline are Grimsby sandy loam, Brantford silt loam and Alberton silt loam or silty clay loam. The medium and fine sandy loam has a gently to moderately sloping topography which allows the soils to drain well. The silt loam soils are well-drained. The silty clay loam is fairly undeveloped and found in level areas of valley land.
- There are no registered contaminated sites within five kilometres of both sides of the centre line and there are no reportable incidents of contamination in the Project area on file with the NEB, however, there are two areas of known contamination at the existing Westover Terminal.
- The Project is located in an area of low to moderate seismic activity, no permafrost, and low risk for tornados.

Vegetation

- Approximately 88 per cent of the Replacement Line 10 Pipeline route crosses previously cleared land (e.g., disturbed land, tame pasture, and cultivated land).
- Construction of the Replacement Line 10 Pipeline will result in disturbance of approximately 16.6 ha of native vegetation including of approximately 14.9 ha of treed land and 5.9 ha of wetland areas.
- The total area of woodlands located in the Vegetation RSA is approximately 1,993 ha. Woodlands that will be disturbed as a result of the Project is approximately 13.6 ha or 0.7 per cent of woodlands in the Vegetation RSA.
- Two Environmentally Significant Areas, including Westover Southwest Complex and Rockton Northeast Woodlot, fall within the boundaries of the LSA and generally overlap woodlands.
- All of the native plant species found in the LSA are considered very secure or secure in the Province of Ontario with the exception of Honey Locust (Gleditsia triacanthos), Awned Graceful Sedge (Carex davisii) and Butternut (Juglans cinerea). Butternut, listed as Endangered both federally and provincially, was the only plant Species at Risk observed during field surveys conducted for the Project.
- Twelve non-native, invasive species and noxious weeds were observed during 2016 surveys along the Replacement Line 10 Pipeline route (meadow fescue, common reed, hybrid cattail, poison ivy, reed canary grass, Kentucky bluegrass, garlic mustard, sweet coltsfoot, tall fescue, yellow sweet-clover, Canada thistle and crown vetch).

Ground Water

- The Guelph Formation is one of the most important formations for groundwater supply in the LSA, with the dolomite bedrock aquifer (i.e., a water-bearing geologic unit with high permeability) considered highly vulnerable to pollution. The water table in the Project area generally lies at approximately three metre depth within shallow bedrock, with seasonal fluctuations of between 0.5-2 m.
- Hamilton's water supply is sourced from Lake Ontario. However, residents in the Project LSA use domestic water wells and septic systems.
- Private well owners are the principal groundwater users. There are 322 registered water wells on record within 500 m of the Replacement Line 10 Pipeline route.
- Of the 68 active water wells in the groundwater LSA, eight wells are less than 15 m in depth. Most wells are used for domestic purposes, with the remainder used for irritation and livestock or commercial purposes.
- There are no known springs within the LSA.

Surface Water

- The Project is located within an agricultural landscape containing mostly ephemeral and intermittent watercourses.
- The Replacement Line 10 Pipeline route crosses four watersheds, three sub-watersheds and approximately 64 watercourses. The watercourses include: West Spencer Creek, Big Creek, and tributaries to West Spencer Creek, Big Creek, the Welland River and Twenty Mile Creek.
- Hydrometric data from the stations on two creeks in the area (Spencer Creek and Ancaster Creek) show a general trend of mean monthly flows being highest in March/April and lowest in August/September.
- West Spencer Creek has attributes (e.g., deep wet depth and wide wet width) that could make it suitable for recreational navigation. There is also a possibility that recreational boats could access West Spencer Creek through one of its tributaries during peak runoff seasons.
- Agricultural land use contributes to surface water quality risk due to point and non-point sources of pollution. Potential contributing factors also include urban runoff and habitat modifications (e.g., removal of riparian vegetation).
- Hydrostatic test water will be used to pressure test the Replacement Line 10 Pipeline. An estimated total of 5 000 to 9 000 m^3 of water will be used with the Ancaster Municipal Water system serving as the primary water source.
- Watersheds in the Project RSA are managed by three Conservation Authorities (CAs). CAs include the Grand River, Hamilton, and the Niagara Peninsula CA.

Fish and Fish Habitat

- The CAs, as noted above, have management, watershed and stewardship action plans with objectives and goals relating to fish and fish habitat.
- Watercourses crossed by the Replacement Line 10 Pipeline route include: West Spencer Creek, Big Creek, and the Welland River; as well as tributaries to West Spencer Creek, Big Creek, the Welland River and Twenty Mile Creek. In addition, the Replacement Line 10 Pipeline route crosses the Sheffield-Rockton wetland complex which may provide habitat for fish.
- All fish captured during the July 2015 survey were warm water common species including black crappie, Johnny darter, fathead minnow, pumpkinseed and central mudminnow. The Restricted Activity Period (RAP) for watercourses crossed by the Replacement Line 10 Pipeline route extends from March 15 to July 15.
- No species at risk were caught or observed during the 2016 fish community surveys.

Wetlands

- Spring 2013 field surveys determined that 13 wetlands are located within the Footprint (comprising 3.03 ha). Of these 13 wetlands, 12 are part of Provincially Significant Wetland (PSW) Complexes (i.e., Sheffield-Rockton, Hayseland-Christie and Big Creek Headwaters) and 1 was previously evaluated as "not significant" by Ontario Ministry of Natural Resources and Forestry (MNRF) protocols.
- The Big Creek Headwaters PSW (Copetown Woods Golf Club), and the Shefflield-Rockton PSW (Westover Wetland) will be crossed by HDD.
- At the Westover Terminal, there is the likelihood that a small portion of a wetland will be permanently disturbed resulting from site expansion, however, due to the size of the wetland directly affected (approximately 20 m x 33 m), overall wetland function is not predicted to be lost.
- Wetland distribution in the area of the Project is less than five per cent and the Replacement Line 10 Pipeline route does not encounter any Migratory Bird Sanctuaries, National Wildlife Areas, Western Hemisphere Shorebird Reserves or Ramsar Wetlands.

Wildlife and Wildlife Habitat

- Land use in the LSA and RSA includes agricultural, industrial development, residential, recreational (e.g., golf course) and oil and gas activities. These developments and resource uses have resulted in habitat loss and alteration.
- Field work conducted for wildlife in 2013 identified 70 wildlife species or their sign; during the 2015 field reconnaissance, 25 wildlife species or their sign were observed.
- In May and June of 2016, fourteen habitats were identified which contain bird species at risk and/or potential Significant Wildlife Habitat.

- Woodlots, streams and remnant natural areas provide some habitat for migratory birds; nesting period in this area is 4 May to 18 July.
- In association with the Big Creek Headwaters PSW Complex there are several seasonal concentration areas, a turtle overwintering area, a turtle nesting area, waterfowl nesting areas, and marsh breeding bird habitat.
- Two deer wintering areas are designated as Stratum 2 by the MNRF. These wintering areas are associated with the Big Creek Headwaters PSW Complex.

Wildlife Species at Risk

- Eleven *Species at Risk Act* (SARA) Schedule 1 and/or Committee on the Status of Endangered Wildlife in Canada species occurrence records were identified in the NHIC online database as being observed within one kilometre of the Replacement Line 10 Pipeline route.
- The desktop study initially identified that the Project crosses approximately 875 m of treed habitat which provides potential nesting habitat for Eastern Whip-poor-will *(Antrogstomus vociferous)* (threatened on Schedule 1 of SARA*),* as defined by Environment and Climate Change Canada (ECCC). However, supplemental studies and consultation with MNRF confirmed that the remnant forest patches in the Project area are densely treed and do not contain the matrix of open and half-treed areas that generally characterize suitable breeding habitat for Eastern Whip-poor-will (MNRF, 2013) and there are no records of Eastern Whip-poor-will breeding in the LSA.
- Proposed critical habitat has been partially identified for Little Brown Myotis, Northern Myotis or Tri-colored bat. Any site where these species have been observed hibernating during the winter at least once since 1995 has been proposed as critical habitat.
- A total of 24 woodlands along the Replacement Line 10 Pipeline route were surveyed for bat habitat and two Assumed Significant Bat Maternity Roosting Habitats, as defined by ECCC, were identified.
- The Project footprint occurs in an area partially identified as containing critical habitat for the Western Chorus Frog (Great Lakes/St. Lawrence – Canadian Shield population), designated as Threatened on SARA Schedule 1 and Jefferson Salamander (Endangered on SARA Schedule 1).

Atmospheric and Acoustic Environment

- Air quality in the RSA is influenced by local sources from the Hamilton region as well as by long-range transport of contaminants from other regions. Typical air emission sources in the RSA include vehicles, farming equipment, industrial activities and manufacturing facilities.
- Current sources of noise emissions along the Project route are: traffic (highway and local roads), the Hamilton Airport, farming equipment, and recreational activities.

- There are approximately 84 people along the existing ROW. It is anticipated that four will be influenced by construction traffic during decommissioning activities.
- There are approximately 26 people along the Replacement Line 10 Pipeline route (four along the existing route and approximately 22 along the anticipated deviations).

Heritage Resources

- Archaeological clearance is required from the MTCS.
- A Stage 1 Archaeological Assessment was conducted. Approximately 227 archaeological sites were registered within a one kilometre radius of the Project. Of these, 19 have more than one cultural component, and 258 discrete cultural components are represented. Eight registered archaeological sites are located within 100 m of the existing and proposed route.
- A Stage 2 archaeological assessment began in April 2016 along the Replacement Line 10 Pipeline ROW, and in consultation with MTCS.
- A Stage 3 and 4 archaeological assessment work is scheduled for completion in the third quarter of 2016. Results of the archaeological assessments will be used to support mitigation measures for the protection of heritage resources (e.g., archaeological, palaeontological or historical sites) to be implemented during construction.
- A Stage 2 archaeological survey is anticipated to occur along the ETCR in the fall of 2016.

Traditional Land and Resource Use

- A complete description of the potential impacts of the Project on Aboriginal interests including traditional land and resource use is provided in Chapter 7 of this report.
- Enbridge stated that land use along the Existing Line 10 Pipeline and Replacement Line 10 Pipeline route is primarily rural and agricultural, with considerable urban and residential development and therefore the Project's land use is incompatible with traditional activities.
- Enbridge engaged Aboriginal communities to provide information about their traditional land use practices in the Project area. Enbridge was initially advised and understood that there were no traditional uses presently being performed along the Project's proposed route. However, during oral traditional evidence, Six Nations expressed that a Project-specific TLUS is necessary.
- Enbridge noted that Six Nations did not provide site-specific concerns about traditional land use and revised its previous understanding. Enbridge stated that it remains committed to gathering as much specific information about traditional land use practices as Six Nations is willing to share. Enbridge offered to facilitate a targeted Project-specific TLUS. Enbridge stated that it would evaluate any traditional land use information that it receives from Six Nations, discuss that information with Six Nations and, where appropriate, incorporate it in Enbridge's mitigation strategies.

- Enbridge stated that its ESA makes assumptions about traditional land uses by Aboriginal groups and included mitigation measures to address the assumed impacts. Enbridge stated that it would implement these mitigation measures despite its position that the Project's land use is incompatible with traditional activities.
- Enbridge's mitigation measures concerning traditional land and resource use are included in Chapter 7 and will be addressed in the updated EPP required as per **Section 58 Condition 8**.

8.4 Environmental Issues of Public Concern

The Board received a number of submissions from Participants that raised particular concerns related to environmental and socio-economic issues, including species at risk, nesting birds, wetlands, fish and fish habitat, reclamation, traditional land and resource use and cumulative effects. Sections 8.8, 8.9 and 8.10 of this chapter, and Chapters 5 and 7, Public Consultation and Aboriginal Matters respectively, provide further details regarding the concerns raised.

Table 8-2 lists the environmental issues raised by participants.

Table 8-2: Environmental Issues Raised By Participants

Participant	Environmental Issue(s) Raised
Copetown Landowner Group	• Impacts to wetlands • Impacts to natural heritage systems
Six Nations of the Grand River	• Impacts to wildlife and wildlife habitat • Impacts to fish and fish habitat • Impacts on vegetation • Impacts on watercourses and water quality
City of Hamilton	• Impacts on natural features (e.g., wetlands, woodlands, streams and environmentally significant areas) • Impacts on surface and groundwater
Environment and Climate Change Canada	• Impacts to Schedule 1 of SARA wildlife species and their critical habitat • Impacts to Migratory Birds listed on Schedule 1 of SARA • Air quality & Greenhouse

Participant	Environmental Issue(s) Raised
Louisette Lanteigne	• Impacts on Species at Risk, specifically the Jefferson Salamander • Impacts to wildlife and wildlife habitat • Impacts to fish and fish habitat • Impacts on watercourses and water quality

8.5 Environmental Effects Analysis

8.5.1 Interactions and Potential Adverse Environmental Effects

The Table 8-3 below identifies the expected interactions between the Project and the environment, and the potential adverse environmental effects resulting from those interactions.

Table 8-3: Project-Environnent Interactions

	Environmental Element	Description of Interaction (or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Discussed
Bio-Physical	Physical Environment	• Construction activities (clearing, stripping, topsoil salvage, watercourse crossings, backfilling, cleanup and reclamation) • Pipeline maintenance activities required to address terrain instability issues during operations	• Trench instability or subsidence potential at watercourse crossings • Changes to drainage characteristics in areas with tile drains	Standard Mitigation (8.8)
	Soil and Soil Productivity	• Clearing, topsoil salvage, stripping, grading, trenching and backfilling • Road, rail and water crossing construction and HDD pull back areas • Cleanup and reclamation during construction	• Trench instability and subsidence • Reduction in soil productivity due to soil drainage issues and impacts to tile drains • Reduction in trench stability at watercourse crossings • Less productive soil due to wind and water erosion, topsoil-subsoil admixing, compaction and rutting	Standard Mitigation (8.8) Detailed Soil Production and Tile Drainage Analysis (8.9.2)

	Environmental Element	Description of Interaction (or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Discussed
	Vegetation	• Clearing during construction • Reclamation during construction • ROW weed and vegetation control during operation	• Loss or alternation of woodlands and wetlands • Loss of terrestrial ecological land classification (ELC) units • Alteration of native species composition • Introduction and/or spread of noxious, invasive or non-native plant species	Standard Mitigation (8.8) Detailed Analysis of Woodlands and Species at Risk habitat (8.9.4) Cumulative Effects Assessment (8.10)
	Water Quality and Quantity	• No interaction with surface water for watercourse crossings constructed by trenchless methods • Trenched watercourse crossing construction where flow is isolated • Construction of temporary vehicle crossings at watercourses • Clearing, trenching, excavation of HDD entry/exit pits, backfilling and dewatering • Water withdrawals for construction activities (hydrostatic testing, dust control) if water not taken from municipal source • Pipe maintenance during operation, including integrity digs	• Alteration of streamflow or natural drainage patterns • Reduction of lateral and/or vertical stability of watercourses • Reduction in surface water quality due to increase in suspended sediment load and sediment deposition • Localized, temporary alteration of groundwater flow during trench construction and dewatering of HDD entry/exit pits	Standard Mitigation (8.8) Detailed Analysis of Watercourse Crossings (8.9.3)

	Environmental Element	Description of Interaction (or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Discussed
	Fish and Fish Habitat	• No interaction for watercourse crossings constructed by trenchless methods • Construction of trenched watercourse crossings and temporary vehicle crossings • Clearing, topsoil salvage, stripping, trenching and backfilling • Hydrostatic testing, if water not from municipal source • Integrity digs during operation	• Loss of instream and/or riparian habitat • Reduction in the amount or quality of habitat from increased suspended sediment load and deposition • Fish mortality or injury	Standard Mitigation (8.8)
	Wetlands	• No interaction where wetlands crossed using HDD construction methods • Clearing, topsoil salvage, stripping, grading, trenching, backfilling • Integrity digs, if required during operations	• Loss or alteration of wetland habitat • Introduction of noxious, invasive or non-native plant species • Reduction of wetland hydrological function	Standard Mitigation (8.8) Detailed Analysis of Wetlands (8.9.1)
	Wildlife and Wildlife Habitat	• Clearing, topsoil salvage, stripping, trenching and backfilling during construction • Construction vehicle and equipment traffic • Vegetation maintenance or integrity digs during operation	• Loss or alteration of wildlife habitat • Reduction in habitat effectiveness as a result of fragmentation, creation of edges, or sensory disturbance • Reduction in abundance and distribution due to harm, harassment, injury or death	Standard Mitigation (8.8)

	Environmental Element	Description of Interaction (or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Discussed
	Species at Risk or Species of Special Status and Related Habitat	• Refer to interactions for Fish and Fish Habitat, and Wildlife and Wildlife Habitat	• Change in quantity and quality of habitat for migratory birds, amphibians and bats • Construction vehicle and equipment traffic • Vegetation maintenance or integrity digs during operation	Standard Mitigation (8.8) Detailed Analysis (Amphibian SAR 8.9.5 and Bat SAR 8.9.4)
	Atmospheric Environment	• Operation of construction equipment for site clearing, stripping, grading, trenching, backfilling and HDD/boring • On-site office trailer heaters • Pipeline inspection and maintenance activities (venting for pressure release; aerial patrols) • Fugitive emissions during operation	• Increase in ambient concentrations of criteria air contaminants (including oxides of nitrogen, sulphur dioxide, carbon monoxide, particulate matter, suspended particulate matter) • Increase in greenhouse gas emissions	Standard Mitigation (8.8)
	Acoustic Environment	• Ground clearing, grading, trenching, HDD/boring and pipe lowering activities • Construction equipment • Aerial surveys, vehicle and equipment use during operations or maintenance activities	• Increase in noise levels during construction and during pipeline maintenance and inspection activities	Standard Mitigation (8.8)

	Environmental Element	Description of Interaction (or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Discussed
Socio-Economic	Human Occupancy/Resource Use (including Fisheries)	• Site clearing; stripping; grading; trenching; boring road, rail, and water crossings; backfilling; and associated human activity during construction • Pipeline inspection and maintenance during operations	• Change in availability of lands for future development • Temporary change in agricultural activities and land use • Interference with existing power infrastructure	Standard Mitigation (8.8)
	Heritage Resources	• Trenching during construction	• Damage to or loss of previously unidentified archaeological resources or sites	Standard Mitigation (8.8) Detailed Analysis of Heritage /Archaeological Resources (8.9.6)
	Navigation and Navigation Safety	• Pipeline and temporary bridge construction	• Temporary change in access to and along navigable water bodies and in navigation safety	Standard Mitigation (8.8)
	Social and Cultural Well-being	• Site clearing, stripping, grading, trenching, road and water crossings and backfilling during construction • Pipeline inspection and maintenance during operation	• Increase in the level of disturbance due to increased traffic and associated increased noise levels • Decrease in social and cultural well- being due to a perceived reduction in water quality and quantity • Decrease in social and cultural well- being due to change in air quality	Standard Mitigation (8.8)

	Environmental Element	Description of Interaction (or Why No Interaction is Expected)	Potential Adverse Environmental Effect	Mitigation Discussed
	Human Health/Aesthetics	• Site clearing, stripping, grading, trenching, road and water crossings and backfilling during construction • Pipeline inspection and maintenance during operation	• Change in human health due to an increase in traffic accidents resulting from increased traffic • Alteration of visual aesthetics due to construction activities and clearing of ROW	Standard Mitigation (8.8)
Other	Accidents/Malfunctions	• Spill or leak of a deleterious substance during construction or operation • Release of drilling fluid during HDD • Pipeline rupture including due to a third-party	• Loss or alteration of soil quality and productivity; vegetation; ground or surface water quality; wetland habitat and wetland function; fish and fish habitat; and wildlife and wildlife habitat • Increased criteria air contaminants and greenhouse gas emissions	Standard Mitigation (8.8)
	Effects of the Environment on the Project	• Severe weather events during construction and operation • Contaminated soils may be encountered and mobilized during construction	• Severe weather events during construction could result in construction delays with further resulting environmental impacts (e.g., on timing windows) • Decrease in pipeline integrity • Reduction in soil quality • Damage to infrastructure	Standard Mitigation (8.8)

8.6 Mitigation of Potential Adverse Environmental Effects

In its application, Enbridge identified routine design and standard mitigation to mitigate most of the potential adverse environmental effects identified in Table 8-3. The details are set out in Enbridge's application and supporting documentation, related submissions, and draft EPP.

Among the mitigation strategies to avoid or minimize the effects of the Project, Enbridge is relying in part on minimizing the disturbance footprint by selecting a route that parallels existing disturbances and by constructing during a time of least impact to the environment as described in Section 8.7. Standard mitigation is discussed in Section 8.8 and where there are outstanding issues regarding key environmental elements, or the applicant's proposed mitigation may not be sufficient and additional mitigation may be necessary, then a detailed analysis is presented in Section 8.9.

8.7 Project Routing and Scheduling

Views of Enbridge

Enbridge submitted that siting of the Replacement Line 10 Pipeline was influenced by a desire to: limit the amount of new disturbance; reduce potential environmental effects by routing away from waterbodies and wetlands; and optimize maintenance activities. The proposed pipeline is therefore located as near as possible to the existing Enbridge facilities as well as other existing infrastructure (e.g., powerlines and fenced site boundaries) so that any new permanent disturbance is reduced to the extent feasible.

To lessen the potential environmental effects of the Project, Enbridge proposes to construct the Replacement Line 10 Pipeline outside of the restricted activity timing windows for watercourses crossed by the pipeline route which extend from March 15 to July 15. In addition, the migratory bird nesting period as specified by ECCC of April 4 to August 12 will be avoided with Enbridge's current proposed construction schedule.

Views of Participants

Environment and Climate Change Canada

ECCC noted that route revisions shown in the Supplemental ESA filed in August 2016 generally reduced impacts to biodiversity. ECCC acknowledged that further route refinements may be warranted as a result of ongoing project planning. ECCC also noted that Enbridge proposed to minimize the project's effects on wildlife populations and habitats by timing the construction activities to avoid removal of habitat during key wildlife life cycle stages.

For additional Participant views on Project routing, please see Chapter 6.

Views of the Board

The Board finds Enbridge's rationale for routing, to the extent possible, the Replacement Line 10 Pipeline adjacent to the Existing Line 10 Pipeline corridor acceptable and notes that Project activities are scheduled to avoid restricted activity periods for both migratory birds and fish in the area. The Board imposes **Section 58 Condition 15** requiring Enbridge to provide detailed construction schedule(s) identifying major construction activities and **Section 58 Condition 20** which requires Enbridge to provide construction reports noting any changes in schedule, as well as any issues encountered during construction and how each issue was or will be resolved.

8.8 Standard Mitigation

The NEB recognizes that many adverse environmental effects are resolved through standard mitigation. Standard mitigation refers to a specification or practice that has been developed by industry, or prescribed by a government authority, that has been previously employed successfully and is now considered sufficiently common or routine that it is integrated into the company's management systems and meets the expectations of the NEB.

Views of Enbridge

Enbridge has proposed standard mitigation to avoid or minimize potential adverse environmental effects on the terrain and topography of the area, soils, native vegetation, water quality and quantity, fish and fish habitat, wetlands, wildlife and wildlife habitat, species at risk, atmospheric and acoustic environments, navigation and navigation safety, and people (as identified in Table 8-3.

As examples, Enbridge noted that the Project's environmental effects would be minimized by:

- alignment of the Replacement Line 10 Pipeline route parallel to the Existing Line 10 Pipeline for approximately 69 per cent of its length.
- paralleling the existing ETCR for four kilometres of the route and using previously disturbed or cultivated lands for ROW and temporary workspace where possible.
- employing trenchless construction methods (e.g., HDD) where feasible, and extending road bores to avoid shelterbelts; about 1.3 km of the total 35.1 km of pipeline will be constructed using trenchless crossing methods, including at the Westover Wetland and the Copetown Woods Golf Club.
- scheduling construction activities to avoid sensitive timing windows for migratory birds, fish and fish habitat, and species at risk. Enbridge stated that it would follow provincial Codes of Practice, and applicable Fisheries and Oceans Canada's (DFO) Measures to Avoid Causing Harm to Fish and Fish Habitat. Enbridge also stated it would adhere to the recommendations as outlined in ECCC's letter of comment, to comply with the *Migratory Birds Convention Act*.
- constructing in the fall and winter when the waterways are seasonally dry or frozen to minimize Project effects on waterbodies and wetlands.

- reducing the amount of woodland to be cleared, through Project routing and design. Additionally, temporary workspace required during Project construction will be located outside of woodland features to the extent possible and existing cleared or disturbed areas will be used, where available.
- implementing the management and contingency plans included in its EPP. This includes management plans for chemicals and waste; traffic control; and hydrovac slurry handling. Contingency plans include plans for spills; adverse weather; wet soils; fire suppression; soil handling; soil erosion; directional drilling procedures and instream drilling mud release; and discovery contingency plans for plant and ecological communities of concern, wildlife species of concern, heritage resources, and traditional land use sites.

In addition to standard mitigation, Enbridge stated it would retain the services of an Environmental Inspector(s) to; develop an environmental orientation for Project personnel; monitor the implementation of planned mitigation during all critical phases of Project construction; ensure any chance finds related to wildlife, traditional land use or heritage resources are appropriately addressed.

Enbridge also confirmed that its environmental orientation program for the Project would include communication about the migratory bird nesting season and the vulnerability of birds and other wildlife to vehicle and equipment collisions. Finally, Enbridge committed to updating the Environmental Protection Plan (EPP) and alignment sheets prior to construction and to conducting post-construction environmental monitoring (PCEM) to evaluate the reclamation of disturbed areas, assess the status of outstanding issues, identify any new issues, recommend remedial measures and document PCEM results and post-construction remedial measures.

Views of the Board

The Board is of the view that Enbridge has committed to sufficient and appropriate routine design and standard mitigation measures to mitigate the potential adverse environmental effects identified. Additional mitigation is discussed in Section 8.9 for the potential effects which required further analysis. To confirm that all general and site-specific mitigation measures are appropriate and will be implemented according to their intent, the Board includes conditions as outlined below.

The Board notes that Enbridge has filed a preliminary Project-specific EPP with the Application and has committed to having and implementing the EPP on-site. However, as Enbridge has made a number of additional commitments since the preliminary EPP was filed, the Board imposes **Section 58 Condition 8**, requiring Enbridge to file an updated, Project-specific EPP, 45 days prior to commencement of construction, including clearing. The EPP must include any additional mitigation, as agreed to through consultation or as a result of permits issued by other agencies including site-specific mitigation for migratory birds, species at risk and wetlands. Updated Environmental Alignment Sheets and current drawings for typical construction practices are to be included in the EPP.

In addition, prior to commencing construction, the Board requires Enbridge to update its watercourse crossing inventory and provide it to the Board, as set out in **Section 58**

Condition 7. The Board also requires Enbridge to notify the Board if implementing a contingency crossing method as set out in **Section 58 Condition 9**. Pursuant to **Section 58 Condition 10**, the Board expects Enbridge to confirm whether any authorizations under the Fisheries Act were required and to notify the Board, prior to commencing any activities that will require an authorization.

To capture commitments made by Enbridge to address Project effects on the environment, the Board imposes **Section 58 Condition 11**. This condition requires Enbridge to file with the Board, prior to commencing construction, a Commitments Tracking Table that lists all commitments made by Enbridge in its Application or in its related submissions, or during the OH-001-2016 proceeding in relation to the Project.

The Board also notes that Enbridge proposes to begin its PCEM program during the first full growing season after final clean-up, and to prepare post-construction environmental monitoring reports after the first, third and fifth years of monitoring. The reports would document all environmental issues identified during inspections, and construction and post-construction environmental monitoring, their status and any need for further monitoring or corrective action measures to resolve outstanding issues. Where remedial measures are required, Enbridge stated that further consultation with landowners and appropriate regulatory agencies may be warranted.

To be satisfied that monitoring is thorough and effective, and that Post-Construction Environmental Monitoring Reports are prepared and submitted, the Board imposes **Section 58 Condition 30**.

8.9 Detailed Analysis of Key Environment and Socio-Economic Issues

This section provides a more detailed analysis of six issues which were either raised by Participants or are of environmental consequence, and which may require additional mitigation by way of Board conditions. Table 8-4 specifies the definitions for criteria used in evaluating the significance of residual effects.

Table 8-4: Criteria, Ratings and Definitions Used in Evaluating the Likelihood of Significant Effects

Criteria	Rating	Definition
All Criteria	Uncertain	When no other criteria rating descriptor is applicable due to either lack of information or inability to predict.
Temporal Extent	Short-term	An effect, either resulting from a single project interaction or from infrequent multiple ones, whose total duration is usually relatively short-term and limited to or less than the duration of construction, or one that usually recovers immediately after construction. An effect usually lasting in the order of weeks or months.
	Medium-term	An effect, either resulting from a single or infrequent project interaction or from multiple project interactions each of short duration and whose total duration may not be long-term but for which the resulting effect may last in the order of months or years.
	Long-term	An effect, either resulting from a single project interaction of long lasting effect; or from multiple project interactions each of short duration but whose total results in a long lasting effect; or from continuous interaction throughout the life of the project. An effect usually lasting in the order of years or decades.
Reversibility	Reversible	An effect expected to, at a minimum, return to baseline conditions within the lifecycle of the Project.
	Permanent	An effect that would persist beyond the lifecycle of the Project, or last in the order of decades or generations. Some social or cultural effects that persist beyond a single generation may become permanent.
Geographic Extent	Project footprint	Effect would be limited to the area directly disturbed by the Project development, including the width of the ROW and the TWS.
	Local Study Area (LSA)	Effect would generally be limited to the area in relation to the Project where direct interaction with the biophysical and human environment could occur as a result of construction or reclamation activities. This area varies relative to the receptor being considered (e.g., Wildlife and wildlife habitat LSA - one kilometre wide corridor centred on the pipeline.
	Regional Study Area (RSA)	Effect would be recognized in the area beyond the LSA that might be affected on the landscape level. This area also varies relative to the receptor being considered (e.g., Aquatic RSA - fully encompasses the aquatic resources LSA, the Spencer Creek watershed, the Grand River watershed, and the southern portions of the Welland River watershed and the Twenty Mile Creek watershed).

Criteria	Rating	Definition
Magnitude	Low	Effect is negligible, if any; restricted to a few individuals/species or only slightly affects the resource or parties involved; and would impact quality of life for some, but individuals commonly adapt or become habituated, and the effect is widely accepted by society.
	Moderate	Effect would impact many individuals/species or noticeably affect the resource or parties involved; is detectable but below environmental, regulatory or social standards or tolerance; and would impact quality of life but the effect is normally accepted by society.
	High	Effect would affect numerous individuals or affect the resource or parties involved in a substantial manner; is beyond environmental, regulatory or social standards or tolerance; and would impact quality of life, result in lasting stress and is generally not accepted by society.
Evaluation of Significance of Residual Effects	Likely to be significant	Effects that are either: (1) of high magnitude; or (2) long-term, permanent, and of regional geographic extent.
	Not likely to be significant	Any adverse effect that does not meet the above criteria for "significant".

8.9.1 Wetlands

Enbridge submitted that that pre-construction planning has been used to reduce the potential environmental effects to wetlands through continual refinements as a result of supplemental surveys, regulatory discussions and stakeholder input. Project specific mitigation measures were developed in consultation with the Hamilton, the Grand River, and the Niagara Peninsula Conservation Authorities (CAs). Enbridge indicated that these CAs have developed wetland objectives aimed at conservation, stewardship, and education that aid in addressing cumulative effects on wetlands. In addition, federal and provincial policies such as the Federal Policy on Wetland Conservation and the Provincial Policy Statement under Ontario's *Planning Act* were followed for the Project and in conjunction with the regulations developed by the different CAs, the potential for a significant effect of disturbance to wetland function is expected to be reduced.

Where possible, wetlands encountered by the Replacement Line 10 Pipeline route will be crossed using HDD or an isolated open cut construction technique and temporarily disturbed wetlands are anticipated to return to pre-construction conditions. HDD will be used at the Sheffield-Rockton PSW (Westover Wetland) (572 m) and at the Big Creek Headwaters PSW (Copetown Woods Golf Club) (750 m).

Where avoidance and or HDD construction is not possible due to topography and space constraints, Enbridge submitted that it would use appropriate construction techniques and reclamation mitigation as outlined in the final EPP to minimize any potential adverse effects on wetland function. The proposed mitigation is based on accepted and proven best management practices that have been applied to numerous pipeline construction projects completed by

Enbridge throughout Canada and that a permanent loss of overall wetland function (i.e., habitat, hydrological and biogeochemical function) is not anticipated to result from the construction, operations, or maintenance phases of the proposed pipeline.

A wetland at the Westover Terminal may be permanently disturbed due to a small amount of land required for construction activities (20 m x 33 m), however overall wetland function is not anticipated to be lost. If the construction of the extension at the Westover Terminal results in permanent loss of wetland function, Enbridge will develop a remedial plan in conjunction with appropriate regulatory agencies (i.e., ECCC and CAs) and will implement additional measures (e.g., wetland compensation) to ensure that potential residual effects of permanent disturbances on wetland function remain not significant.

Following construction of the Replacement Line 10 Pipeline, Enbridge stated that a PCEM program for the Project would be conducted wherein the condition of disturbed portions of wetlands will be compared with any undisturbed portions of the same wetlands. The wetlands will be assessed for grade, substrate composition, surface water presence/absence, water quality and hydrophytic vegetation re-establishment. This comparison will be used to measure the effectiveness and efficiency of mitigation measures and to assist in the determination of "no net loss" of wetland function.

Environment and Climate Change Canada (ECCC)

ECCC noted that it provides expertise in support of implementing the Federal Policy on Wetland Conservation (FPWC), with the aim to maintain the functions and values derived from wetlands. Wetlands are a priority to ECCC because of their importance to the maintenance of migratory bird populations and for protection of species at risk for which ECCC has a responsibility under SARA

While ECCC acknowledged that much of the Project is located in an existing and disturbed pipeline ROW within Ontario's Greenbelt Plan area, it also noted that along with agricultural land, the Project traverses isolated woodlots, streams and remnant natural areas and provincially significant wetland complexes. ECCC therefore recommended that measures be taken to ensure ecological wetland functions are avoided, minimized and mitigated through project design including using HDD to avoid effects on wetlands and re-routes into non-sensitive habitats. ECCC further recommended that effects cannot be avoided or mitigated a compensation plant should be developed to meet the goal of no net loss of wetland functions as outlined in the FPWC. Additional information from ECCC on specific issues is provided in the appropriate subsections of Section 8.9.

Views of the Board

Regarding wetlands, the Board notes Enbridge's goal to work towards a "no net loss" of wetland function through a sequence of avoidance, minimization and compensation. The Board also notes that Enbridge designed the Project to meet the objectives of the Federal Policy on Wetland Conservation by selecting a route that avoids wetlands where feasible and where avoidance is not feasible, by implementing construction and reclamation mitigation measures. In addition, Enbridge incorporated the CAs' wetland policies and the

Provincial Policy Statement under Ontario's Planning Act in developing Project mitigation strategies.

The Board understands the importance of wetlands and wetland functionality and the need to identify and implement mitigation of wetland impacts. The Board also understands that not all wetland loss can be avoided, however, the goal of "no net loss" should venture to balance the loss of wetland function through rehabilitation or compensation. Through the PCEM program imposed in **Section 58 Condition 30**, the Board requires Enbridge to identify and describe the mitigation that was used during construction of the Project and identify any outstanding issues or corrective actions at were made or will be made with the goal of "no net loss" to wetlands.

With the addition of these conditions, the Board is of the view that serious harm to wetlands is not likely to occur, and adverse effects to the environment from construction and operation of the Replacement Line Pipeline on wetlands is not likely to be significant.

Evaluation of Significance of Residual Effects	Temporal Extent	Reversibility	Geographical Extent	Magnitude
	Multiple	Reversible	LSA	Moderate
	Adverse Effect			
	Not Likely to cause significant adverse environmental effects.			

8.9.2 Soil Productivity and Tile Drainage

Views of Enbridge

Enbridge stated that several standard mitigation measures would be implemented to protect soils from admixing, a factor which can potentially lower soil productivity. Enbridge committed to: altering the width of salvaging topsoil, using alternative soil handling techniques, and/or implementing contingency plans. Also, the ROW will be reduced in areas where the trench may be prone to sloughing and to protect site-specific features (e.g., rare plant locations, wildlife habitat features, farmsteads, granaries, residences and dugout or sheds) as outlined in the Criteria for Alternate Topsoil Salvage Width which is included in Enbridge's EPP.

Enbridge's mitigation measures to reduce soil admixing are based on past experience along Enbridge's mainline corridor, information collected as part of its PCEM programs for existing Enbridge pipeline systems and relevant land use plans. In addition, consultation with stakeholders including municipalities (e.g., the City of Hamilton), Aboriginal groups and landowners along the Replacement Line 10 Pipeline route assisted in identifying the potential effects of construction on soil and soil productivity. Enbridge noted that the results of PCEM for a previous Enbridge pipeline project show that issues related to topsoil/subsoil mixing can be resolved within 2 to 3 years.

In addition, due to some portions of the land being systematically tiled, Enbridge stated that the Project's impact on soil drainage concerns will be addressed by repairing or replacing the tiles or by installing the Replacement Line 10 Pipeline at a greater depth. Enbridge will append to the EPP, a Summary of Mitigation for Lands with Drain Tiles and Irrigated Lands. The mitigation measures include requirements for Enbridge to consult with landowners pre-construction and post-construction, and to obtain assistance from a drainage tile expert, if warranted, to ensure that permanent damage to the drainage does not result from damage to drainage tiles.

Enbridge stated that it would conduct the PCEM Program for five years following commissioning of the Project and that the Program would be initiated in year one in order to identify any issues. Beginning in year two, the PCEM would focus on those issues which remain unresolved. In addition, an Environmental Issues List would be created as part of the Environmental As-built Report. The PCEM program will identify locations of altered drainage patterns and remedial work will be conducted, as required.

Views of the Board

The Board recognizes Enbridge's commitment to mitigating soil productivity concerns. The mitigative measures described in its application and subsequent filings, its EPP, along with Enbridge's commitment to soil monitoring during the PCEM will effectively reduce the potential for residual impacts. In addition, Enbridge's proposed mitigation for tile drains is comprehensive; the Board expects that the Summary of Mitigation for Tile Drains, appended to the EPP, will be sufficient along with its commitment to repair or replace any damaged tile drains as stated in Enbridge's oral evidence.

The Board imposes **Section 58 Condition 8**, requiring Enbridge to file an updated, Project-specific EPP for approval, to ensure that any additional mitigation, as agreed to through consultation or as a result of permits issued by other agencies, is included in the EPP, and to communicate all environmental protection procedures and mitigation measures to employees, contractors and regulators.

The Board notes that Enbridge intends to conduct a formal PCEM program for five years following construction. The Board expects that the PCEM reports should be filed with the Board after the first, third and fifth years and that these filings should include an assessment of observed soils-related issues. To be satisfied that monitoring is thorough and effective, and that reports are prepared and submitted, the Board imposes a requirement for Enbridge to conduct a PCEM program as set out in **Section 58 Condition 30**.

With the addition of these conditions, the Board is of the view that potential impacts to soil and soil productivity from construction and operation of the Replacement Line 10 Pipeline are not likely to occur, and adverse effects to the environment from construction and operation of the pipeline are not likely to be significant.

Evaluation of Significance of Residual Effects	Temporal Extent	Reversibility	Geographical Extent	Magnitude
	Multiple	Reversible	LSA	Moderate
	Adverse Effect			
	Not Likely to cause significant adverse environmental effects.			

8.9.3 Watercourse Crossings

Views of Enbridge

To mitigate the effects of the Project on water quality and quantity, and on fish and fish habitat, Enbridge will follow the standard mitigation outlined in its Application and its EPP, and will follow provincial Codes of Practice, and applicable DFO Canada's Measures to Avoid Causing Harm to Fish and Fish Habitat.

The Project will include approximately 64 watercourse crossings though most are ephemeral and intermittent watercourses. The majority of the pipeline watercourse crossings would therefore be constructed using an open cut method (if dry or frozen) or an isolated method (if flowing water is present).

The use of a trenchless pipeline crossing method (i.e., HDD) is proposed at two locations:

- the Tributary to Big Creek and the Copetown Woods Golf Club along the ETCR (approximately 750 m); and
- the Sheffield-Rockton Complex PSW (Westover Wetland) (approximately 572 m)

Enbridge stated that the preferred contingency plan for an unsuccessful HDD is to recover the initial bore, then complete a second bore. If the second HDD is unsuccessful, another construction technique such as open cut would be implemented. Should a contingency watercourse crossing be necessary Enbridge will adhere to the Project requirements including safety and construction specifications, the EPP, and to the landowner and crossing agreements.

In addition, Enbridge proposes the following mitigative measures as determined from several industry, provincial and federal regulatory requirements and/or guidelines including Canadian Association of Petroleum Producers (CAPP) (2004), CAPP et al. (2012), the Canadian Pipeline Environment Committee (2009) and DFO

- Implement standard mitigation to mitigate potential impacts that may result at watercourse crossings, including from trenchless and isolated crossing construction, temporary equipment crossings, clearing, and restoration of riparian habitat, bank stabilization, and sedimentation;

- Obtain applicable permits from the MNRF and following conditions of any permits;
- Implement applicable DFO *Measures*. HDD's are one of the applicable DFO *Measures to Avoid Causing Harm to Fish and Fish Habitat*;
- Monitor for sediment events during HDD activities; and
- Undertake post-construction inspection and monitoring at watercourse crossings.

Enbridge stated that the Environmental Inspector or Enbridge designate would approve watercourse crossing plans prior to the commencement of watercourse crossing construction which includes: the planned equipment to be used; isolation dam materials to be used; pump/generator sizes and quantities; discharge and bypass locations, grey water control/management measures; spoil containment locations and materials; a description of the excavation procedure; and the anticipated duration of instream activity.

The Environmental Inspector or Enbridge designate will also monitor the implementation of the EPP mitigation during all critical phases (clearing/mowing, topsoil salvage and replacement, grading, drainage and wetland crossings, and clean-up) of construction. Enbridge will undertake post-construction inspection and monitoring at watercourse crossings. The riparian area, banks and approach slopes at watercourse crossings will be inspected for stability, erosion, vegetation establishment and presence of invasive species.

Views of the Board

Pursuant to the Memorandum of Understanding between the Board and DFO, the Board reviews Project activities and refers to the DFO any works that will likely result in serious harm to fish or fish habitat, and therefore require authorization under paragraph 35(2)(b) of the *Fisheries Act*. Enbridge used DFO's Self-Assessment Process and determined that all watercourse crossings would avoid serious harm, and authorizations under the *Fisheries Act* would not be required.

In the event that there are any changes to the proposed crossing sites, site-specific crossing methods or timing, and to ensure that mitigation measures are appropriate for each site, the Board imposes **Section 58 Condition 7** requiring Enbridge to finalize watercourse crossing site-specific information prior to construction.

Where Enbridge would employ a contingency crossing method instead of its proposed primary method, the Board imposes **Section 58 Condition 9**, requiring Enbridge to file additional information with the Board prior to commencing construction of the contingency crossing. Where applicable DFO *Measures* will not be implemented, the Board will assess the need for a *Fisheries Act* authorization.

Included in **Section 58 Condition 10** is a statement requiring Enbridge to file a copy of any Authorizations issued by DFO under paragraph 35(2)(b) of the *Fisheries Act*. The Board notes that, where a *Fisheries Act* authorization is required, Enbridge will be required to offset serious harm.

With the addition of these conditions, the Board is of the view that serious harm to fish and fish habitat is not likely to occur, and adverse effects to watercourses from construction and operation of the Replacement Line 10 Pipeline crossings are not likely to be significant.

Evaluation of Significance of Residual Effects	Temporal Extent	Reversibility	Geographical Extent	Magnitude
	Multiple	Reversible	LSA	Moderate
	Adverse Effect			
	Not Likely to cause significant adverse environmental effects.			

8.9.4 Woodlands and Species at Risk – Eastern Whip-poor-will, Little Brown Myotis, Northern Myotis and Tri-colored bat

Views of Enbridge

The Replacement Line 10 Pipeline route crosses two proposed critical habitat units which contain areas of suitable nesting and/or foraging habitat for Eastern Whip-poor-will based on criteria outlined in ECCC's proposed recovery strategy for Eastern Whip-poor-will. Enbridge noted, however, that the habitat within these proposed critical habitat units is highly fragmented by agricultural activities and the small, isolated woodland areas, typically found in agricultural landscapes are generally not occupied by Eastern Whip-poor-will for nesting.

Updated information and general consultation with MNRF confirms that the remnant forest patches in the Project area are densely treed and do not contain the matrix of open and half-treed areas that generally characterize suitable breeding habitat for Eastern Whip-poor-will (MNRF, 2013) and there are no records of Eastern Whip-poor-will breeding in the LSA. After considering the updated information, Enbridge revised its original residual effect assessment and concluded that the Project will not interact with the Eastern Whip-poor-will.

With respect to other migratory birds, clearing and construction activities are scheduled outside of the migratory bird nesting period (April 4 to August 12), which will reduce the Project's potential effect on migratory birds. In the event that the construction schedule changes and ROW preparation, construction, reclamation and/or decommissioning activities occur during the bird nesting period, the Nest Sweep Protocol, as outlined by ECCC, will be implemented. Further, if migratory bird species at risk are encountered during construction, Enbridge will follow the Wildlife Species of Concern Discovery Contingency Plan.

With respect to bat species at risk, Enbridge indicated that bat snag surveys were conducted along the Replacement Line 10 Pipeline ROW in deciduous and/or mixed woodland areas that will require vegetation clearing. A total of 24 woodlands along the Replacement Line 10 Pipeline route were surveyed for bat habitat. Two Assumed Significant Bat Maternity Roosting Habitats - as defined by ECCC (i.e., snag density ≥10 snag/cavity trees per hectare) - were identified. Enbridge noted that critical bat habitat, as defined in ECCC's recovery strategy, consists of bat hibernacula but this type of habitat for bat hibernacula was not found on the Project footprint.

Enbridge stated that clearing for Project construction and operations would affect bat species at risk as a result of habitat loss or alteration and fragmentation. In addition, bats may also utilize anthropogenic structures as diurnal roosts, particularly in highly urbanized environments. Enbridge therefore committed to the following specific mitigation measures for SARA-listed bats:

- to conduct an additional snag survey during the leaf-off season, approved by both the MNRF and ECCC, to identify bat maternity roost habitat;
- to avoid vegetation clearing during the rearing period for bats (1 June –31 July) in areas of potential roosting habitat;
- to reduce the potential for sensory disturbance during the rearing period by limiting operation of heavy equipment between dusk and dawn in areas identified as potential significant maternity roosting habitat for bats;
- to install bat boxes to mitigate potential loss of rearing habitat; and
- to narrow down and limit the amount of clearing in the areas where bat habitat may be encountered.

Enbridge also noted that it re-aligned the route to avoid one of the woodlands from Kilometre-Post (KP) 11.7 to KP 12.1 which is also a provincially identified deer wintering area. In addition, Enbridge proposes mitigation for wildlife species at risk including using HDDs through the PSW Sheffield-Rockton Complex and working with provincial authorities and Conservation Authorities with regards to permitting requirements.

Views of Participants

ECCC submitted that the mitigation proposed by Enbridge for species at risk is sufficient. ECCC recommended that Enbridge continue to engage with the MNRF to minimize the effects of the Project on species at risk and that Enbridge confirm that no suitable bat maternity roost habitats or hibernation sites will be impacted by construction of Line 10. If suitable habitat is found, Enbridge should avoid construction between 15 May and 31 July. ECCC is of the opinion that the Project will not result in significant adverse effects on migratory birds though additional mitigation would be necessary if construction is re-scheduled to the migratory bird breeding season (4 May and 18 July). If vegetation clearing does occur during this period, Enbridge should retain a Wildlife Resource Specialist to determine if active nests will be disturbed.

Views of the Board

The Board notes that residual effects to Eastern Whip-poor-will or its habitat are not likely to occur. There are no records of Eastern Whip-poor-will breeding in the LSA and the Project will not interact with this species.

The Board further notes that critical bat habitat, as described in ECCC's recovery strategy (e.g., hibernacula), does not occur in the Project area. However, habitat loss or alteration and fragmentation will result from clearing 13.64 ha of woodlands. Therefore, the Board requires Enbridge to include in Enbridge's updated EPP and on the Project alignment sheets all Project-specific mitigation for woodlands as presented in the Application, responses to

IRs, reply evidence and as committed to in the Hearing. Enbridge must also include in the EPP any additional mitigation for species at risk-as determined through ongoing consultation with ECCC as well as any permit conditions as determined by the MNRF and the Conservation Authorities for working in wetlands and woodlands. The EPP condition (**Section 58 Condition 8**) contains wording that reflects these additional requirements.

With the addition of **Section 58 Condition 8**, the Board is of the view that, should the Project interact with bat habitat, any impacts will be reduced to the greatest extent feasible. The Board also notes that the majority of the ROW is on agricultural lands and reminds Enbridge that pursuant to section 21 of the OPR, Enbridge is required to restore the ROW and temporary work areas to a condition similar to the surrounding environment and consistent with the current land use and land capability.

Evaluation of Significance of Residual Effects	Temporal Extent	Reversibility	Geographical Extent	Magnitude
	Short-term	Reversible	LSA	Low
	Adverse Effect			
	Not Likely to cause significant adverse environmental effects.			

8.9.5 Amphibian Species at Risk – Western Chorus Frog and Jefferson Salamander

Views of Enbridge

Enbridge indicated that during the site investigations, Turtle Overwintering Area, Turtle Nesting Area, Waterfowl Nesting Area as well as Marsh Breeding Bird Habitat were identified within the Project LSA and are associated with the Sheffield-Rockton PSW Complex. Further, several potential Amphibian Woodland Breeding Habitats located throughout the LSA were also identified.

The Replacement Line 10 Pipeline route crosses 13 wetland ecosystems (approximately 3.0 ha in total). However, Enbridge's field surveys did not find habitat for either Jefferson Salamander (Endangered on SARA schedule 1) or Western Chorus Frog (Threatened on SARA Schedule 1), where access was possible; it is, however, assumed that suitable habitat for Jefferson Salamander exists where access was restricted. Western Chorus Frog individuals are vulnerable at breeding and hibernation sites; breeding sites should be avoided between 15 March and 30 July and hibernation sites should be avoided between 1 September to 15 March. Individual frogs may, however, be present within suitable habitat year-round.

Potential effects to Jefferson Salamander and Western Chorus Frog include:

- loss or alteration of available habitat as a result of vegetation clearing (direct impacts) and habitat avoidance or reduced effectiveness due to sensory disturbance (indirect impacts); and

- decreased abundance and distribution, as a result of direct mortality due to site clearing activities, vehicles and heavy equipment use; or as a result of reduced survival and reproductive success due to sensory disturbance.

Enbridge has routed the pipeline to avoid and minimize potential interactions with wetlands. In addition, potential adverse effects on amphibian habitat will be avoided in all areas of the pipeline route where HDD trenchless construction methods will be employed. HDD will be used to install two sections of the Replacement Line 10 Pipeline through potential amphibian habitat: the Westover Wetland (572 m) and at the Copetown Woods Golf Club (750 m).

Additional pre-construction field surveys are proposed to confirm habitat for Jefferson Salamander where land access was not previously obtained. In the event that confirmed habitat for Jefferson Salamander is affected by the Project, Enbridge will continue to consult with the MNRF regarding mitigation. Further, Enbridge agreed in its reply evidence to ECCC, that prior to conducting future amphibian breeding surveys, Enbridge would consult with ECCC to discuss methods and survey locations.

For areas where the pipeline cannot avoid potential amphibian habitat, Enbridge proposed the following specific mitigation measures:

- construction and clean-up activities in amphibian habitat will occur outside of the breeding period for amphibian species;
- if individuals are encountered during construction, the Wildlife Species of Concern Discovery Contingency Plan will be implemented; and
- Enbridge will continue to engage with the conservation authorities regarding approvals.

Enbridge also stated that if trenched construction method is necessary, mitigation outlined in the EPP would reduce the residual effects on these species' habitat and movement and would avoid Project-related mortality risk. This includes protecting riparian areas by: limiting brushing in the vicinity of watercourse and wetland crossings to the removal of trees and shrubs along the trench line and workside area; keeping the low-lying understory vegetation; and reducing disturbance of soil adjacent to wetlands.

In addition, wetlands encountered along the ROW are anticipated to be reclaimed as soon as practical to restore pre-disturbance conditions and that post-construction environmental monitoring will be conducted and additional mitigation may be implemented, if needed.

Views of Participants

Environment and Climate Change Canada (ECCC)

ECCC's final Recovery Strategy for Jefferson Salamander, partially delineates critical habitat (i.e., habitat that is necessary for the survival or recovery of the species) within the Project footprint.

Critical habitat for the Western Chorus Frog (Great Lakes/St. Lawrence – Canadian Shield population), has not, however, been identified by ECCC within the Project footprint, although, according to the Ontario Herpetofaunal Atlas and ECCC data, the region in which the project is located is known to support this species.

ECCC provided that although Western Chorus Frog were not found during field surveys, it is possible that this species are present in the Project area. ECCC is in the process of finalizing a new survey protocol specific to Western Chorus Frog which ECCC recommends Enbridge use, should any future monitoring surveys be conducted.

In addition, the MNRF requested to meet with Enbridge to further discuss specific watercourse crossing methodologies and mitigation measures for species at risk. The MNRF also indicated that any additional mitigation measures developed should be documented in the Enbridge's EPP and referred to in the subsequent post-construction environmental monitoring reports. ECCC stated that the mitigation proposed by the MNRF is adequate and appropriate.

Ms. Louisette Lanteigne

Ms. Lanteigne observed that the Jefferson Salamander is listed as Endangered on the SARA Schedule 1 and noted that critical habitat mapping had not yet been completed for the entire Project.

Views of the Board

The Board notes that Enbridge has developed wetland mitigation measures in consultation with the Hamilton, the Grand River, and the Niagara Peninsula CAs. Further, ECCC indicated that the mitigation proposed by the MNRF, including constructing during frozen conditions and using HDD trenchless construction technique, is adequate and appropriate.

With the mitigation proposed by Enbridge, the Board's **Section 58 Conditions 3 (Environmental Protection)**, **8 (EPP)** and **30 (Post-Construction Environmental Monitoring Report)** as well as the oversight of the MNRF and ECCC, the Board is of the view that serious harm to Jefferson Salamander and Western Chorus Frog or their habitat is not likely to occur, and that any adverse effects are not likely to be significant.

Evaluation of Significance of Residual Effects	Temporal Extent	Reversibility	Geographical Extent	Magnitude
	Short-term	Reversible	LSA	Low
	Adverse Effect			
	Not Likely to cause significant adverse environmental effects.			

8.9.6 Heritage/Archaeological Resources

Views of Enbridge

The Project area is predominately privately-owned, developed land which is used for agricultural, residential or industrial purposes. Enbridge has completed a number of archaeological studies for the Project, all of which have followed provincial guidance and requirements. The archaeological potential within the Project area was assessed by Enbridge's contractor CH2M Engineering, and its subcontractor, Dillon Consulting, as well as the Toronto and Region Conservation Authority first through Stage 1 archaeological assessments and then through Stage 2 archaeological surveys. Enbridge stated that monitors from the MNCFN, Six Nations and HDI participated and continue to participate in archaeology assessment field work for the Project.

As of the close of record, archeological assessments are ongoing; however, 77 per cent of the Stage 2 area assessments, 90 per cent of Stage 3 assessments, and 27 per cent of Stage 4 assessments are complete.

Enbridge recognized the potential for previously unidentified archaeological as well as historical and palaeontological resources to be discovered during construction of the project. Enbridge submitted that the Heritage Resource Discovery Contingency Plan provides appropriate guidance in the unlikely event of a heritage resource discovery during construction. If new archaeological, palaeontological, historical or traditional land use sites or resources are discovered during construction, the sites will be assessed and appropriate mitigative measures will be determined through the measures in the Heritage Resource Discovery Contingency Plan.

On-site construction personnel will be provided an environmental orientation which includes discussion of heritage resources potential and the Heritage Resources Discovery Contingency Plan so that the construction personnel can recognize possible archaeological sites during construction. In addition, Enbridge's Environmental Inspectors that will be on-site during construction will have the training necessary to be able to identify potential archaeological sites and will be there to assist in the identification of potential archaeological resources.

Enbridge has been working with an independent, qualified archaeologist in accordance with provincial regulations, has followed archaeological recommendations, and has committed to continuing to do so in the future. The archaeological studies conducted in compliance with the MTCS standards and guidelines, in combination with Enbridge's Heritage Resource Discovery Contingency Plan, are reasonable and sufficient for identifying and protecting First Nation archaeological resources in Ontario.

Aboriginal monitors will continue to work on-site during archaeological surveying. Enbridge committed to having all archaeological assessments complete, as required through provincial regulation, before the start of construction.

Views of Participants

Six Nations expressed concerns that the Project's archaeological assessments were incomplete as of the close of record. Six Nations requested clarification on if and how it will have an opportunity to provide comment on outstanding surveys.

Six Nations also raised concerns about Enbridge's mitigation measures if an archaeological or heritage site is discovered during construction. Six Nations extended this concern to the pipeline's operation, stating that it is possible to cause damage during integrity digs or other maintenance to heritage resources that may not have been discovered through the archaeological surveys.

With regard to Enbridge's archaeological mitigation measures, Six Nations requested clarification on Enbridge's assertion that it will consider recommendations from Aboriginal groups related to heritage resources "to the extent possible". Six Nations further noted that it was unclear if Enbridge would consult with Six Nations if a heritage resource is identified during construction given that Enbridge stated it will provide notification only if a "significant" discovery is made. Six Nations questioned the definition of "significant" and asked that it be notified in a timely fashion if a discovery is made.

Six Nations requested that Enbridge meet directly with Six Nations archaeological expert. Specifically, Six Nations wished to meet with the individuals involved with the Stage 3 and 4 archaeological assessments and have the opportunity to raise concerns. Six Nations also requested clarification on how Enbridge would resolve concerns raised by Six Nations about discovery mitigation in the event of a disagreement between the two parties.

Six Nations also requested that First Nations monitors be present during the construction and operation of the pipeline. Six Nations further requested that monitoring not be restricted to only archaeological and heritage resources, but to all areas that may impact traditional activities. This is discussed further in Chapter 7.

Six Nations also requested that Enbridge serve filings on Six Nations, including a copy of the confirmation from the Ontario Ministry of Tourism, Culture and Sport that heritage resources clearance has been received.

Views of the Board

The Board is of the view that the Project is not likely to result in any significant adverse effects on heritage resources. This view is based on the archaeological studies conducted to date, the existing provincial approval process for heritage resources, the mitigation measures that Enbridge has committed to implementing if an archaeological site is identified during construction, and the conditions imposed by the Board, for example: **Section 58 Condition 12 (Construction Aboriginal Monitoring Plan)**, **8 (EPP)**, **17 (Heritage Resources)**. The Board also notes the participation of Aboriginal monitors from the Six Nations, HDI and MNCFN in the Stage 2 archaeological surveys.

The Board imposes **Section 58 Conditions 12** and **25**, requiring Enbridge to file with the Board a plan for Aboriginal groups to participate in construction and post-construction

monitoring, respectively. The condition relates to monitoring activities for archaeological resources, as well as items or areas related to traditional land uses.

The Board also requires Enbridge to provide an updated Heritage Resources Discovery Contingency Plan that reflects all heritage resources-related commitments made during the hearing process and any additional commitments made during ongoing engagement with Aboriginal groups. **Section 58 Condition 17** further requires Enbridge to provide confirmation that heritage resources clearance has been received from the Ontario Ministry of Tourism, Culture and Sport to Six Nations and other interested Aboriginal groups. The Board further notes Enbridge's commitment to provide filings during construction to Six Nations and encourages Enbridge to maintain information sharing throughout the Project's lifecycle.

The Board further notes Enbridge's commitment to continuing to engage with the identified Aboriginal groups regarding all aspects of the Project, including the Heritage Resource Discovery Contingency Plan. If ongoing consultation results in the need for further modifications to the Heritage Resource Discovery Contingency Plan, these changes will be included in the final EPP submitted to the Board prior to construction.

The Board notes Enbridge's commitments for training staff on heritage resources, archaeological potential and the Heritage Resources Contingency Discovery Plan. The Board expects that any Aboriginal monitors would also be offered an opportunity to receive this training. The Board expects a qualified archaeologist to participate in the development and delivery of this training. The Board also expects that all commitments, including those pertaining to archaeology, be included in the Commitment Tracking Table, as required by **Section 58 Condition 11**.

Evaluation of Significance of Residual Effects	Temporal Extent	Reversibility	Geographical Extent	Magnitude
	Short-term to Long-term	Reversible to Permanent	LSA	Low
	Adverse Effect			
	Not Likely to cause significant adverse environmental effects.			

8.10 Cumulative Effects Assessment

In addition to the assessment of environmental or socio-economic effects of the Project by itself, the assessment also considered the environmental effects of the Project in combination with those from other projects and activities that have been, or will be, carried out, and which may interact with the effects of the Project.

The assessment of cumulative effects considers the impact of the residual effects associated with the Project in combination with the residual effects from other projects and activities that have been or will be carried out, within the appropriate temporal and spatial boundaries and ecological

context. Since the Replacement Line 10 Pipeline is located entirely on privately-owned or fee simple lands, Traditional Land Resource Use was not considered in the cumulative effects assessment.

Enbridge considered existing, man-made disturbances and those projects and activities that are known and approved for the reasonably foreseeable future in its cumulative effects assessment, including development assumptions that support and are consistent with the long-term economic or financial assumptions, even if formal plans or applications have not yet been made.

Existing and foreseeable future developments that have the potential for spatial and temporal interaction of effects, and therefore potential for cumulative effects, include: agriculture, transportation corridors, transmission lines, oil and gas developments, recreation and tourism, settlement and urban developments.

The developments which occur within the various RSA's for the Replacement Line 10 Pipeline include the following business parks:

- Airport Business Park (1,340 ha) is located approximately one kilometre from the Project;
- Ancaster Business Park (230 ha) is approximately 300 m from the Project; and
- Red Hill Business Parks (801 ha) approximately 5.5 km from the Project

In addition, a number of reasonably foreseeable developments associated with water utilities have been identified in the Project RSAs, though timelines associated with these activities were unavailable at the time of the assessment:

- Ancaster Elevated Water Reservoir: a proposal for a new elevated water reservoir. The proposed reservoir will be constructed at a preferred location with a defined study area located approximately 300 m from the study area;
- Lynden Communal Water Supply: located approximately five kilometres from the Project, the additional water supply would provide backup for the existing well, and capacity for future demand of the servicing area;
- Carlisle Water Supply: a proposal to construct a new well and water storage facility in Carlisle, located approximately 11 km from the Project;
- Cormorant Road Extension: proposal to construct the Cormorant Road Extension (approximately 400 m from the Project) to provide reliable second road access to Ancaster Business Park;
- Mohawk Road Ramp: proposal to construct a westbound access ramp to Highway 403 in Ancaster, approximately eight kilometres from the Project (City of Hamilton 2015d); and
- Hamilton light rail transit : proposal to construct a $1 billion light rail transit system in Hamilton, approximately 12 km from the Project.

Based on this, incremental potential cumulative effects were identified for the following VCs:

- Physical VCs including soil and soil productivity, water quality and quantity, air emissions, acoustic environment;
- Biological VCs including fish and fish habitat, vegetation, wetlands, wildlife and wildlife habitat, species at risk; and
- Socio-economic VCs including Human Occupancy and Resource Use, social and cultural well-being, human health, and infrastructure and services.

In assessing the cumulative effects in this area and associated with this Project, it is important to consider the existing local and regional context and that the Project is located in an environment that is substantially altered by past and ongoing human developments and activities. The area in which the Project is located is referred to as the Golden Horseshoe and is a continuous network of communities around the western end of Lake Ontario in which over 50 per cent of Ontario's population lives.

In addition, approximately 27 km (78 per cent) of the Replacement Line 10 Pipeline is located on agricultural designated lands. Agriculture is the primary long-term land use in Rural Hamilton, but continues to be under threat from other development activities as populations increase and socio-economic conditions continue to change. Enbridge notes that pipeline ROWs on agricultural lands generally continue to be used for agricultural land uses.

Enbridge submitted that it considered a suite of mitigation options for reducing the effects associated with the proposed route on wetlands. Enbridge stated that the proposed construction during frozen conditions, and the primary mitigation option for wetlands is to use a HDD construction technique to minimize the disturbance of these environmentally sensitive areas.

Views of the Board

The Project will largely take place in an agricultural setting and mostly adjacent to an Existing Line 10 Pipeline corridor. In addition, the Board notes that the Project is located in an environment that is substantially altered by past and ongoing human developments and activities. The Board is of the view that Enbridge's planned mitigation is considered effective to limit the potential Project effects in the Project footprint. The Board recognizes that due to the current land use and activity in the region, VCs such as vegetation, wetlands, wildlife and wildlife habitat, traditional land and resource use, and species at risk are experiencing, and will likely continue to experience, adverse cumulative effects.

With this in mind, the Board finds that for most VCs, Project related cumulative effects would be minor in nature and limited to the construction period, or otherwise unlikely to be significant given the environmental context. Notwithstanding this, the Board recognizes that certain components can be all the more valuable when their occurrences may be few in a predominantly developed environment. Among these, the Board notes the issues of invasive plants, wetlands, woodlands, and species at risk.

Regarding wetlands, the Board notes that disturbance to wetlands will be limited and temporary given the use of HDD to construct the pipeline. Enbridge anticipates no net loss of wetland function, which the Board expects to be demonstrated through Enbridge's post-construction monitoring of wetlands and subsequent reporting through the PCEM Program.

With respect to the potential loss of woodlands, the Board has determined that with implementation of Enbridge's proposed mitigation for woodlands, including HDD construction through the PSW complex, that a minimal loss of woodland habitat within the Project footprint is anticipated. Therefore, the Project will not contribute to the total cumulative loss of woodland habitat in the region.

The Board notes that Enbridge predicted no residual effects for species at risk or species of special concern, and therefore did not conduct a cumulative effects assessment for species at risk. As discussed in Section 8.9, the Board is of the view that residual adverse effects to these species or their habitat would occur, but that these effects are not likely to be significant. The Board is also of the view that incremental adverse cumulative effects to these species may occur but that, with the standard and Project-specific mitigation committed to by Enbridge, implementation of the Board's conditions, and Enbridge's commitment to ongoing consultation with relevant agencies with respect to mitigation and post-construction remedial measures, cumulative effects to these species at risk are not likely to be significant.

Section 58 Condition 30 (Post Construction Environmental Monitoring Reports) requires Enbridge to monitor the effects of the Project on the environment in order to ensure the magnitude, duration and extent of any residual effects are minimized. In the event that monitoring identifies issues in recovery for any particular valued component, the Board recommends that Enbridge apply additional adaptive management measures to address any residual effects.

Given that the Project is located within a highly altered environment, the challenges associated with multiple planning and resource uses are substantial. The Board notes that Enbridge has indicated that it would continue to consult with the various planning documents and conservation authorities and recommends that Enbridge be required to honour its commitments to continue consulting with ECCC, MNRF and various Conservation Authorities to reduce the Project's effects.

The Board further notes that the Project-area has absorbed significant and permanent changes over the past centuries. The cumulative effects if these changes have given rise to the current area, including major urban centres, and agricultural and industrial development. As noted in Chapter 7 of this report, Six Nations shared that the Project area was originally pristine wilderness. Over time, the current landscape emerged and grew to what it is today.

As stated above, the Project's contribution to cumulative impacts in a highly developed area is insignificant. However, the Board notes the challenges with respect to managing cumulative impacts, particularly in areas where development has not occurred, is localized or is minimal. Over time, small, incremental changes have significant cumulative impacts. It is important to note this potential and for a coordinated effort between all levels of government, regulatory authorities and conservation authorities to occur with respect to development planning.

8.11 Environmental Assessment Conclusion

The Board is of the view that overall, with the implementation of Enbridge's environmental protection procedures and mitigation and the Board's conditions, the Project is not likely to cause significant adverse environmental effects.

Chapter 9

Infrastructure, Employment and Economy

For the reasons that follow, the Board finds that the measures planned by Enbridge will appropriately address the potential impacts of the Project to community infrastructure and services. The Board also finds that the Project will bring economic benefits, primarily during the construction phase.

The Board's expectations for an applicant regarding direct socio-economic impacts caused by the existence of the project are set out in the Board's Filing Manual. Applicants are expected to identify and consider the impacts a project may have on infrastructure, services, employment and economy. Applicants are also expected to provide mitigation of negative impacts and the enhancement of positive impacts of the project.

Potential socio-economic effects that are caused by changes to the environment are included in Chapter 8, Environment and Socio-Economic Matters. Other economic effects are addressed in Chapter 2, Economic Feasibility.

9.1 Infrastructure and Services

Views of Enbridge

Enbridge's ESA concluded that there would be no significant socio-economic effect on infrastructure services.

Traffic

Enbridge predicted an increase in traffic on highways and local roads used to access the Project ROW during construction. To address this potential impact, Enbridge will implement mitigation measures, including the implementation of a Traffic Control Plan, strictly enforcing speed limits on all roads, accesses and ROWs, using multi-passenger vehicles and directing construction personnel to obey traffic, road use and safety laws.

Enbridge also stated that excessive ground subsidence at transportation corridors (highways and railways) along the decommissioned pipeline could occur. However, Enbridge maintained that this effect is unlikely to impact transportation corridors due to the small size of the pipe.

Workforce

The construction of the Replacement Line 10 Pipeline would involve a workforce of approximately 300 workers with a peak workforce of approximately 250 workers. Decommissioning of the Existing Line 10 Pipeline would involve up to 30 to 50 workers and Project activities at the Westover Terminal and Nanticoke Junction Facility would use an

average workforce of 10 to 20 individuals. No new permanent jobs would result from the Project.

There may be a decrease in the availability of accommodation during construction. To mitigate this potential impact, Enbridge would liaise with hotel owners in advance of construction to secure the anticipated accommodation. However, Enbridge submitted that sufficient accommodation exists in the Project area and that the number of workers requiring short-term housing is expected to be readily accommodated in Hamilton.

Emergency and Protection Services

There would be an increased demand on existing emergency services during the construction phase of the Project. Enbridge stated that there are several contingency plans, management plans and systems in place or that would be in place to prevent accidents and reduce risk of injury to workers during construction (such as the ERP, Traffic Control Plan and Fire Contingency Plan). Additionally, the Project-specific ERP would be reviewed with all personnel and Enbridge would continue consultation with emergency responders throughout the life of the pipeline.

Enbridge's other mitigation measures to prevent incidents include:

- requiring all workers and visitors to the job site to successfully complete an environmental and safety orientation,
- discussing safety issues during daily meetings,
- ensuring adequate numbers of approved safety and medical personnel are present during construction, and
- implementing Enbridge's Construction Safety Manual.

Despite mitigation measures, it is possible for an incident to occur that require emergency services. Enbridge submitted that the Project is located near services that can respond to emergency situations in a timely manner. Accordingly, Enbridge anticipates that if an incident does occur, it is expected to be localized or of low relative intensity.

Waste

There would be a temporary increase in waste to regional landfill sites during construction. Enbridge would follow its Waste Management Plan, and would collect waste generated from the work site on a regular basis and dispose of it at approved facilities.

Views of Participants

The City of Hamilton

The City of Hamilton (City) made several recommendations concerning the Project about emergency response; impacts on the environment, including woodlands, wetlands and watercourses; maintenance of a ROW after decommissioning; and route selection. The City also requested that Enbridge obtain any applicable municipal or CA approvals required for the Project

and pay applicable fees. The City also asked the Board to include appropriate conditions to address these concerns.

Reply of Enbridge

Enbridge submitted an application to the City in June 2016 to acquire easement and crossing agreements for the land owned by the City. Enbridge anticipates having the appropriate approvals in-place prior to construction. In October 2016, Enbridge committed to providing the City with an update letter addressing how Enbridge has or will meet concerns raised. Enbridge stated that discussions on road crossing agreement with the City are ongoing as of October 2016.

Enbridge confirmed that it would continue to consult with stakeholders, which includes the City, throughout the Project's lifecycle. Enbridge with acquire all necessary permits and approvals prior to the commencement of Project construction.

Views of the Board

The Board recognizes the possibility of increased traffic, waste to regional landfill sites, and demand on emergency and protective services during the construction phase of the Project. However, considering these impacts would be temporary and low in magnitude, the Board finds them acceptable.

The Board notes Enbridge's ongoing consultation with local governments, communities and service providers. The Board also notes that Enbridge committed to implementing mitigation and management plans, including the Traffic Control Plan. The Board further notes Enbridge's mitigation measures to reduce the impact of the workforce, including making efforts to source the Project's workforce locally and making accommodation arrangements early.

The Board notes that as of October 2016, Enbridge is still in discussions with Parties, including the City on the crossing agreement for City-owned ROW as well as other concerns.

The Board is of the view that the measures planned by Enbridge would adequately address the potential impacts of the Project on community infrastructure and services.

9.2 Employment and Economy

Views of Enbridge

Enbridge anticipates construction of the Project would generate a demand for goods, services and workers, providing direct and indirect business, employment and income opportunities.

Direct government revenues expected to be generated by the Project including fees for agency permits, and any taxes associated with the pipeline easements. The Project would not create permanent full-time positions and the anticipated amount of tax revenue generated would be comparatively small.

Enbridge would encourage its contractors to hire locally where existing contracts permit.

Aboriginal Employment and Economic Benefits

Enbridge encourages employment opportunities for Aboriginal groups in proximity to the pipeline route according to its Aboriginal and Native American Policy. Where possible, these Aboriginal communities would be given an opportunity to provide labour, material, equipment and services to the Project.

Enbridge expects its successful contractor(s) to support its commitment that where possible, Aboriginal groups and businesses are provided full and fair opportunity to participate in the Project. Enbridge would encourage its contractors to hire qualified Aboriginal workers where existing contracts permit.

Enbridge clarified its expectation that contractors submit a Socio-Economic Plan with a Request for Proposal. The Socio-Economic Plans must include:

- what steps they would take to train and hire Indigenous employees;
- what work they would not self-perform; and
- with respect to work that would not be self-performed, which Indigenous businesses would be engaged for that work (competitive quote).

The Socio-Economic Plans are evaluated and weighed by Enbridge when deciding what bids to accept and, once awarded, form part of the contract. Enbridge also stated that the Enbridge Supply Chain Management Sustainability team has met several times with business representatives from both MNCFN and Six Nations. Through this engagement, Enbridge stated that two Six Nations-related businesses have been added to Enbridge's Indigenous Business Database.

Views of Participants

Six Nations of the Grand River

Six Nations questioned Enbridge's commitment to encourage its contractors to hire Aboriginal workers and specifically asked what Enbridge meant when it stated that it would "…encourage [its contractors] to hire locally and to hire qualified Aboriginal workers where existing contracts permit."

Views of the Board

The Board is of the view that the Project would benefit Aboriginal, local, regional and provincial economies. The Board notes that the economic benefits are predominantly restricted to the construction phase of the Project through both direct and indirect business opportunities, and fees for permits and taxes.

The Board notes Enbridge's Aboriginal and Native American Policy, its commitment to encouraging the hiring of local and Aboriginal workers and that Enbridge's Supply Chain Management Sustainability has met with Aboriginal groups. The Board encourages Enbridge to increase these demographics within its Project workforce.

Chapter 10

Emergency Management

10.1 Enbridge's Emergency Preparedness and Response Planning

The NEB requires pipeline companies to operate in a systematic, comprehensive and proactive manner that anticipates and manages risks. The Board also expects that companies have fully-developed and implemented management systems and protection programs that provide for continuous improvement.

With respect to emergency response, the Board notes that Enbridge must fulfill sections 32 to 35 of OPR which require companies to have an emergency management program and Emergency Procedures Manuals, have continued liaison with agencies and persons that may be involved in an emergency response, and have the ongoing implementation of a Continuing Education Program for emergency response.

In order to fully comply with the OPR, and meet the Board's expectations, a complete emergency management program must include response plans, means of training personnel to execute those plans, means of conducting exercises to practice and test the implementation of those plans, means of evaluating the plans when carried out during training exercises or true incidents, and the identification, location, and maintenance of suitable equipment to carry out the plans. An emergency management program requires that all these elements be appropriate, and effective, throughout the lifecycle and operation of a project and the changing conditions both within and outside of a pipeline.

Specific to Line 10, the Board is satisfied that Enbridge has adequately addressed the OPR requirements for emergency preparedness, management and response and satisfies the Board's expectations for the reasons that follow.

Views of Enbridge

The Replacement Line 10 Pipeline would continue to be operated under Enbridge's Emergency Preparedness and Response program, which is well established and complies fully with the OPR and the eight major elements of an effective EPR program outlined in the NEB 2002 all-company letter. The new line segment would reflect Enbridge's emergency management system and any related operating procedures. Enbridge submitted that it would continue to implement its emergency management program which is consistent with the OPR and would govern all aspects of emergency preparedness and response.

When the Replacement Line 10 Pipeline commences operations, the company will use its emergency management system to manage emergency events associated with facilities. This system is addressed in Enbridge's Integrated Contingency Plans, Regional Emergency Response Directories, Terminal Tank Fire Plans, and any other applicable response manuals. Enbridge

provided a list of all documentation and manuals on file with the board and/or available to Enbridge staff or contactors.

Enbridge explained that its liaison program ensures first responders are regularly consulted and play an integral role in Enbridge's Emergency Response Program. Regional Emergency Response Directories are maintained and updated annually and third- party agreements are in place to ensure adequate response is available in event of an emergency. Enbridge supplied a list of first response agencies it engages with regarding this line and facilities.

Continuing Education, as well as consultation, is addressed through the Enbridge Public Awareness Program. Appropriate public groups are engaged in regular emergency response exercises. The goal of the Public Awareness Program is to keep those involved in emergency response (such as police, fire, ambulance, 911 dispatchers, emergency response agencies and municipalities) informed of the latest Enbridge emergency response information. Enbridge noted that at least one representative from each identified agency or municipal organization is met face-to-face annually along the ROW. The meetings are tracked and Enbridge updates contact information if there are any changes, delivers and discusses public awareness materials related to emergency response and pipelines safety, and to determine the organization's capabilities in assisting in the event of a pipeline emergency. The meetings discuss Enbridge operations and pipeline locations, their response plans, emergency phone numbers, product information, hazards at facilities, Incident Command System and HAZMAT training, evacuation and traffic control procedures, fire-fighting equipment and capabilities, Enbridge response manuals, leak recognition and response, emergency responder assistance requirements in event of emergencies, Enbridge's online Emergency Responder Education Program or 911 dispatcher module, and Enbridge's online public portal.

Enbridge's Operations and Maintenance Procedures Books 1, 2, and Integrated Contingency Plans detail and ensure that Emergency Response Training courses, as well as Emergency Response Exercises, are carried out regularly at established frequencies. Enbridge provided a full list of Emergency exercises taking place for 2016.

In addition to regional evaluation of emergency response exercises, overall incident response and evaluation is managed through the Enbridge Regulatory Compliance and Operations Management group with assistance from all pertinent and necessary stakeholders. Enbridge's Emergency Response Equipment needs and requirements are outlined in both Enbridge's Integrated Contingency Plans and Regional Emergency Response Directories.

Views of Participants

The City of Hamilton, in its 2 May 2016 letter of comment (with letter from Enbridge attached), noted a number of potential Project related emergency response concerns. Another Participant submitted concerns with respect to ground water and source water protection. An overview of these comments follows:

- *The Hamilton Fire Department (HFD) requested Enbridge provide a copy of the ERP specific to any construction and cutover activities.*

Enbridge submitted that a site-specific construction ERP would be developed closer to commencement of construction, which is currently scheduled for Q3 2017. Enbridge committed to sharing this plan with the HFD leadership and to maintaining a close working relationship.

- *The HFD requested Enbridge provide adequate access points / routes to the replacement section of the pipeline.*

Enbridge indicated that temporary roads would provide emergency access to replacement route areas during construction and permanent roads would be built and maintained by Enbridge to ensure emergency access to the two new valve locations. In addition, Enbridge added that its technical personnel would be pleased to meet with the HFD to review maps of existing emergency access points.

- *The HFD requested Enbridge consult with HFD on developing traffic plans.*

Enbridge submitted that the safety of the community is of paramount concern to Enbridge, before, during and after construction. Some measures include moving heavy equipment during off-peak hours, noise mitigation, dust suppression and proactive communication with the community. A Traffic Accommodation Plan would be developed for the project, with input from Hamilton first response organizations, including the Fire Department and Police.

- *The HFD requested Enbridge ensure that the levels of emergency response equipment stored at the Westover site are maintained and or increased at adequate levels.*

Enbridge noted that it owns a large cache of emergency response equipment in the Westover area and regular training by the Field Response Teams ensures users are proficient in equipment deployment. In addition, Enbridge has significant third-party resources at its disposal in the region. Also, Enbridge is an active participant in the HFD's Community Safety and Emergency Planning initiative and works with first responders to ensure they have the knowledge to augment their own level of response capacity in relation to a pipeline release. Enbridge added that it works continuously to enhance its processes, training and capabilities to respond to any incident in a rapid and effective manner. First responders are included in Enbridge's Emergency response exercises to ensure they have the knowledge to augment their own level of response capacity in relation to a pipeline release.

- *Hamilton Water requested that Enbridge consider drinking water source protection, including appropriate design standards, monitoring and maintenance practices that when implemented will prevent a pipeline from becoming a drinking water threat.*
- *Ms. Louisette Lanteigne's letter of comment notes that portions of Line 10 and the Westover Terminal are located in areas identified as Highly Vulnerable Aquifers by the Source Water Protection Act. Her letter expresses concerns about the potential for ground water migration of spill contaminates into Lake Ontario and the possibility that a spill could travel and reach water intakes for communities along the lake.*

Enbridge submitted that with respect to water source protection during ongoing pipeline operation, preventative maintenance and technology make incidents, particularly large events,

highly unlikely. However, in the unlikely event of a release, Enbridge submitted that it would immediately activate internal and external emergency response resources to minimize environmental impacts, including impacts to public and private water supplies. Enbridge said that each incident is situation specific, and remediation methods depend on many factors such as the volume and type of product released, the location of the release, and climatic conditions at the time of the incident. Enbridge said that it would work with the NEB and applicable regulators to implement a remedial plan based on the NEB Remediation Process Guide to assess and remediate impacts to drinking water.

Enbridge submitted that it identifies the location of water wells/intakes used for human consumption which includes both groundwater sources (e.g., Class I/II or karst aquifer) and intakes from surface water (e.g., municipal intake from a lake, river, stream) If drinking water sources are impacted in the unlikely event of a release, Enbridge said that it would work with the water utility and municipality to provide alternative arrangements for water and take steps to restore drinking water supplies as soon as practicable.

Enbridge submitted that in the event of a spill, groundwater wells can be installed and used to monitor groundwater quality at the site of a spill and in areas along the perimeter. Based on groundwater monitoring conducted on past oil spills, groundwater quality can be returned to natural conditions or acceptable thresholds for drinking water quality (depending on the location and water use) with appropriate monitoring and remediation. Enbridge said that in the unlikely event of a leak, Enbridge has robust emergency capabilities to ensure a quick and effective response and the company would work hand-in-hand with local communities and their emergency responders to ensure Enbridge's plans are understood and local needs are met.

Views of the Board

The Board finds that that the measures proposed by Enbridge to address emergency preparedness and response are appropriate. As an NEB-regulated company, Enbridge must meet the requirements of the OPR described above. By meeting these requirements, Enbridge would be able to effectively respond to an incident, helping to minimize impacts. The Board notes that, sections 32 to 35 of the OPR address emergency management liaison, continuing education and consultation requirements with affected and potentially impacted parties. The Board requires Enbridge to consult with the appropriate parties, including the HFD, and make available to them the relevant information that is consistent with that specified in the emergency procedures manual. The Board is satisfied with Enbridge's commitment to continue its discussions on emergency response matters with the City of Hamilton and expects Enbridge's consultation and communication with impacted parties, such as Hamilton Fire Department and Hamilton Water, to be ongoing.

The Board has included Emergency Management related conditions for the Project.

The OPR requires companies to develop, review and update emergency procedures manuals, and submit manuals and updates to the Board. **Section 58 Condition 6** requires Enbridge to submit the construction ERPs in advance of construction to ensure that regulatory requirements are met and that potential emergencies during construction are addressed. The

Board reminds Enbridge that it must submit annual updates to the Emergency Procedures Manual related to the operation of the Project.

Section 58 Condition 29 requires Enbridge to conduct a table top exercise and an equipment deployment exercise for the Project. The Board recognizes the importance of, and expects Enbridge to ensure effective emergency management, including planning, training, communication and coordination with first responders, stakeholders and Aboriginal groups. Engagement of stakeholders in the planning process will better ensure an efficient and effective response if an incident should occur. The Board is satisfied that Enbridge is committed to collaborating and building relationships, and better understanding of municipal emergency response programs through emergency response exercise and consultation. The Board saw an example of this collaboration and relationship building in Enbridge's responses and commitments made to the City of Hamilton with respect to the HFD's emergency response concerns.

The Board has a comprehensive regulatory regime in place related to pipeline design, safety, spill prevention and spill preparedness and response. Enbridge would be subject to this regime.

Appendix I – List of Issues

The Board has identified, but is not obliged to limit itself to, the following issues for consideration in the hearing with respect to the proposed Enbridge Line 10 Westover Segment Replacement (Project).

1. The need for the Project.
2. The economic feasibility of the Project.
3. The potential commercial impacts of the Project, including supply and market issues.
4. The potential environmental and socio-economic effects of the Project, as required to be considered by the NEB's Filing Manual, including:
    - soil handling and drainage, invasive species management, watercourse crossings, fish and fish habitat, wetlands, construction noise, social and cultural well-being, and municipal infrastructure and services; and
    - any cumulative environmental and socio-economic effects that are likely to result from the Project.
5. The appropriateness of the general route and land requirements for the Project, including:
    - the proposed rerouting around golf courses and residential areas, and requirements for the right of way and temporary workspace.
6. The engineering design and integrity of the Project, including:
    - the pipeline's specifications, horizontal drilling for wetland and road crossings, placement of remote sectionalizing valves, and
    - decommissioning of the existing pipeline segment, including the proposed technical plan, potential safety and environmental issues, consultation, and long-term monitoring activities.
7. Potential impacts of the Project on Indigenous interests.
8. Potential impacts of the Project on directly affected landowners and their land use, including:
    - soil drainage and potential for erosion, disruption of the watershed, and proximity of the water well(s) in relation to the right of way.
9. Contingency planning for spills, accidents or malfunctions, during construction and operation of the Project.
10. The terms and conditions to be included in any approval the Board may issue for the Project.

Appendix II - Rulings and Directives:

- Board Ruling No. 1 issued on 14 April 2016 established the List of Parties (comprised of Enbridge and Intervenors) and the List of Commenters for the proceeding. The Board denied standing to Ms. Louisette Lanteigne who requested to participate as an Intervenor.
- Board Ruling No. 2 issued 25 April 2016 granted Ms. Lanteigne Commenter status. The Board reconsidered her request to participate after she provided more information in support of her ATP.
- Board Rulings Nos. 3 and 4 issued 25 April 2016 granted, respectively, Intervenor status to Fisheries and Oceans Canada and Commenter status to the Roman Catholic Episcopal Corporation of the Diocese of Hamilton in response to their late Applications to Participate.
- Board Procedural Directive No. 2 issued 16 May 2016 provided information about the Community Meeting which was later held in the afternoon of 28 June 2016 in Hamilton, Ontario. One Intervenor presented Oral Traditional Evidence at the Community Meeting.
- Board Ruling No. 5 issued 16 June 2016 granted Copetown Landowners Group's request to extend the deadline to file written evidence.
- Rulings No. 6, No. 7, No. 8 and No. 10 issued, respectively, on 4 July, 29 July and 16 August 2016 directed Enbridge to provide further information in response to some, but not all, of the IRs posed by Mr. Farquhar and Copetown Landowners Group.
- Board Ruling No. 9 issued 2 August 2016 denied Ms. Lanteigne's request to submit IRs to Enbridge, and to submit them late, by changing the participation methods attached to Commenter status.
- Board Ruling No. 11 issued 16 August 2016 granted Environment and Climate Change Canada a three week extension to file its letter of comment and Enbridge a two week extension to file its reply evidence.
- Board Ruling No. 12 issued 5 October 2016 allowed Six Nations to provide late evidence and Enbridge late reply evidence in mid-October with respect to Six Nations' evidence.
- Board Procedural Directives No. 3 and No. 4 issued, respectively, 31 August and 6 October 2016, provided information about the oral hearing.

Appendix III – Exemption Order Conditions

Section 58 Order Conditions

Several terms used in this appendix have been defined in the Glossary at the beginning of this Decision. Additional terms and expressions, listed below (in bold), are also used in this appendix and have the following meaning:

Commencing construction – the clearing of vegetation, ground-breaking and other forms of right-of-way (ROW) preparation that may have an impact on the environment (activities associated with normal surveying do not constitute commencing construction).

For approval – When a condition requires a filing for NEB approval, Enbridge must not commence the indicated activity until the Board issues its written approval of that filing.

Including – Use of this term, or any variant of it, is not intended to limit the elements to just those listed. Rather, it implies minimum requirements with the potential for augmentation, as appropriate.

General Conditions

1. Condition Compliance

Enbridge must comply with all of the conditions contained in this Order, unless the Board otherwise directs.

2. Section 58 Facilities Design, Location, Construction, and Operation

Enbridge must cause the Section 58 Facilities to be designed, located, constructed, installed, and operated in accordance with the specifications, standards and other information referred to in its Application or as otherwise agreed to during the hearing or in its related submissions.

3. Environmental Protection

Enbridge must implement or cause to be implemented all of the policies, practices, programs, mitigation measures, recommendations and procedures for the protection of the environment included in or referred to in its Application or as otherwise agreed to during the hearing or in its related submissions.

4. Condition Compliance by the Accountable Officer

Within 30 days after the date that the construction of the Section 58 Facilities is completed, Enbridge must file with the Board a confirmation that the Section 58 Facilities were completed and constructed in compliance with all applicable conditions in this Order. If compliance with any of these conditions cannot be confirmed, Enbridge must file with the Board details as to why compliance cannot be confirmed. The filing required by this condition must include a statement

confirming that the signatory to the filing is the accountable officer of Enbridge, appointed as Accountable Officer pursuant to section 6.2 of the *National Energy Board Onshore Pipeline Regulations*.

5. Order Expiration (Sunset Clause)

Unless the Board otherwise directs prior to 26 January 2018, this Order expires on 26 January 2018, unless construction in respect of the Section 58 Facilities has commenced by that date.

Prior to Construction Conditions

6. Emergency Response Plans for Construction

Enbridge must file with the Board, at least 60 days prior to commencing construction, an Emergency Response Plan that is specific to the Section 58 Facilities and that will be implemented during the construction phase of the Section 58 Facilities. The plan must include spill contingency measures that Enbridge will employ in response to accidental spills attributable to construction activities, 24-hour medical evacuation, fire response, and security.

7. Finalized Watercourse Crossing Inventory and Design

Enbridge must file with the Board, at least 60 days prior to commencing any watercourse crossing construction, the following:

a) an updated inventory of all watercourses to be crossed, including, for each crossing:
    i) the name of the watercourse being crossed and an identifier for the crossing;
    ii) the location of the crossing;
    iii) the primary and contingency crossing methods;
    iv) planned construction timing;
    v) information on the presence of fish and fish habitat;
    vi) the restricted activity period;
    vii) an indication of whether any of Fisheries and Oceans Canada's applicable "Measures to Avoid Causing Harm to Fish and Fish Habitat" cannot be implemented;
b) detailed generic design drawings of trenchless, dry open-cut, frozen open-cut, and isolation crossings of various watercourse types;
c) site-specific information for each watercourse crossing where any of Fisheries and Oceans Canada's applicable "Measures to Avoid Causing Harm to Fish and Fish Habitat" cannot be implemented for the primary watercourse construction method, including:
    i) detailed crossing-specific engineered design drawings;
    ii) photographs upstream, downstream, and at the crossing location;

iii) a description of the fish species and habitat that is present at the crossing location, and if fish spawning is likely to occur within the immediate area;

iv) a description of the composition of the riparian habitat at the crossing location and an indication if the riparian habitat has a limiting effect on the productive capacity of the watercourse, and if its removal or disturbance represents a potential influence on fish communities;

v) the site-specific mitigation and habitat enhancement measures to be used to minimize impacts;

vi) any potential residual effects;

vii) proposed reclamation measures; and

viii) a discussion of the potential impacts to local fisheries resources within the immediate area as a result of the crossing's construction.

8. Environmental Protection Plan (EPP)

Enbridge must file with the Board for approval, at least 45 days prior to commencing construction, a final and updated project-specific EPP. The EPP must describe all environmental protection procedures, and mitigation and monitoring commitments, as set out in the application or as otherwise agreed to during the hearing or in its related submissions. The EPP must include:

a) any environmental mitigation or monitoring committed to under conditions of permits issued by or agreements made with the Ontario Ministry of Natural Resources and Forestry, the Municipality of Hamilton and the following Conservation Authorities: Grand River, Hamilton, and the Niagara Peninsula;

b) site-specific mitigation for migratory birds;

c) site-specific mitigation for provincially and federally listed species at risk;

d) site-specific mitigation for wetlands;

e) site-specific mitigation for lands with drainage tiles and irrigated lands in order to maintain the integrity of the tile drains;

f) updated Environmental Alignment Sheets; and

g) current drawings of typical construction practices.

9. Contingency Watercourse Crossings

Enbridge must file with the Board a notification that it proposes to employ a contingency watercourse crossing method at any watercourse crossing instead of its proposed primary crossing method.

a) Enbridge must file the notification with the Board at least 15 days prior to commencing a contingency watercourse crossing method, if Enbridge will implement all of Fisheries and Oceans Canada's applicable "Measures to Avoid Causing Harm to Fish and Fish Habitat". The notification must include the following information for the crossing location:

i) an explanation as to why the contingency watercourse crossing method is being employed; and

ii) a summary of the differences between the primary and contingency watercourse crossing methods for that crossing location.

b) Enbridge must file the notification with the Board, at least 30 days prior to commencing construction of a contingency watercourse crossing method, if Enbridge cannot implement all of Fisheries and Oceans Canada's applicable "Measures to Avoid Causing Harm to Fish and Fish Habitat". The notification must include the following information:

i) confirmation of the contingency watercourse crossing method that will be employed, the rationale for employing that method, and a summary of the differences between the primary and contingency watercourse crossing methods; and

ii) the following site-specific information:

i. detailed crossing-specific engineered design drawings;

ii. photographs upstream, downstream, and at the crossing location;

iii. a description of the fish species and habitat that is present at the crossing location, and if fish spawning is likely to occur within the immediate area;

iv. a description the composition of the riparian habitat at the crossing location and an indication if the riparian habitat has a limiting effect on the productive capacity of the watercourse, and if its removal or disturbance represents a potential influence on fish communities;

v. the site-specific mitigation and habitat enhancement measures to be used to minimize impacts;

vi. any potential residual effects;

vii. proposed reclamation measures; and

viii. a discussion of the potential impacts to local fisheries resources within the immediate area as a result of the crossing's construction.

c) Enbridge must file with the Board, within 30 days after commencing operations, confirmation that:

i) any contingency watercourse crossing(s) identified to the Board pursuant to paragraph a) and b) were the only contingency watercourse crossing(s) implemented for the construction of the pipeline; or

ii) no contingency crossings were implemented during construction of the pipeline.

10. Fisheries Act Authorizations

For any instream activities that will require Authorization under paragraph 35(2)(b) of the *Fisheries Act*, Enbridge must:

a) file with the Board, at least 10 days prior to commencing the respective instream activities, a copy of the Authorization; and

b) confirm, within 30 days after commencing operations, that any required *Fisheries Act* Authorizations were obtained from Fisheries and Oceans Canada and filed with the NEB pursuant to paragraph a), or notify the Board if no Authorizations were required.

11. Commitments Tracking Table

a) Enbridge must file with the Board, at least 30 days prior to commencing construction, a Commitments Tracking Table that lists all commitments made by Enbridge in the Application or in its related submissions, or during the OH-001-2016 proceeding in relation to the Section 58 Facilities, including reference to:

   i) the documentation in which reference to the commitment is made (for example: the Application and subsequent filings; response to information requests; the transcript reference; any permit, authorization or approval requirements; condition filings);

   ii) the accountability for implementing each commitment; and

   iii) the timelines associated with the fulfillment of each commitment.

b) Enbridge must update the status of the commitments in paragraph a) on its project website. If the status of any commitment changes, Enbridge must advise the Board in writing of such updates as follows:

   i) on a monthly basis until the commencement of operation; and

   ii) on a quarterly basis until such time that all commitments have been fulfilled.

12. Construction Aboriginal Monitoring Plan

a) Enbridge must file with the Board, at least 30 days prior to commencing construction, a plan describing participation by Aboriginal groups in monitoring activities during construction for archaeological resources and items or areas related to traditional land uses. The plan must include:

   i) a summary of engagement activities undertaken with Aboriginal groups to determine opportunities for their participation in monitoring activities;

   ii) a list of potentially affected Aboriginal groups, including Six Nations, that have reached agreement with Enbridge to participate in monitoring activities;

   iii) the scope, methodology, and justification for monitoring activities to be undertaken by Enbridge and each participating Aboriginal group identified in paragraph ii), including those elements of construction and geographic locations that will involve Aboriginal monitor(s);

iv) a description of how Enbridge will use the information gathered through the participation of Aboriginal monitor(s); and

v) a description of how Enbridge will provide the information gathered through the participation of Aboriginal monitor(s) to the participating Aboriginal group.

b) Enbridge must provide a copy of the plan to Six Nations and to those Aboriginal groups identified in paragraph (a)(ii) no later than three days after filing the plan with the Board. Enbridge must file with the Board, prior to commencing construction, confirmation that it did so.

13. Field Geotechnical Program – Detailed Assessments and Specifications

Enbridge must file with the Board at least 30 days prior to commencing construction, the results of its Detailed Feasibility Assessments, as committed to in Enbridge's evidence, for each crossing where Enbridge intends to employ Horizontal Directional Drill (HDD) or Horizontal Directional Bore (HDB) methods. The results must include, but not be limited to the following:

a) the selected primary crossing method and its rationale;

b) detailed crossing-specific design drawings; and

c) pipe specifications.

14. Pipeline Construction Parallel to Overhead Power Lines - Corrosion Control Studies

Enbridge must file with the Board at least 30 days prior to commencing construction, the results of the additional studies required due to the pipeline's parallel construction along overhead power lines, in accordance with CSA Z662-15 *Oil and gas pipeline systems*, CAN/CSA-C22.3 /No.6 L3 *Principles and practices of electrical coordination between pipelines and electric supply lines*, and Enbridge Response to Hydro One Networks Inc. information request No 1.

The results must include, but not be limited to the following:

a) a description of the detailed engineering and survey deliverables for the Section 58 Facilities to determine necessary offsets between power lines and the pipeline segment, taking into account the safety of people and the integrity of both the pipeline and the power line system;

b) the details and mitigation measures for situations where recommended minimum separation cannot be maintained between the pipeline and power lines;

c) any other selected measures to mitigate potential negative impacts of these overhead power lines on the pipeline segment's corrosion control system; and

d) the details of the program that Enbridge will implement to monitor potential long-term effects of the power lines on the pipeline segment's overall integrity.

15. Construction Schedule

Enbridge must file with the Board, at least 14 days prior to commencing construction, a detailed construction schedule that identifies major construction activities. Enbridge must notify the Board of any modifications to the schedule(s) as modifications occur.

16. Manuals and Programs

Enbridge must file with the Board, within the time specified for each manual, plan and program, the following:

a) Construction Safety Manual – 14 days prior to commencing construction; and

b) confirmation that a Security Management Plan for the construction of the Section 58 Facilities, pursuant to the OPR and CSA Z246.1 has been developed – 14 days prior to commencing construction.

17. Heritage Resources

a) Enbridge must file with the Board, at least seven days prior to commencing construction:

   i) confirmation that Enbridge has obtained all of the required archaeological and heritage resource clearances and authorizations from the Ontario Ministry of Tourism, Culture and Sport;

   ii) a description of how Enbridge will meet conditions and respond to comments and recommendations contained in the clearances and authorizations referred to in i); and

   iii) a description of how Enbridge has incorporated additional mitigation measures as applicable, into its Environmental Protection Plans as a result of conditions or recommendations referred to in paragraph b).

b) Enbridge must provide a copy of the information filed under paragraph a) to Six Nations and to those Aboriginal groups identified in paragraph 12 (a)(ii) no later than three days after filing the information with the Board. Enbridge must file with the Board, prior to commencing construction, confirmation that it did so.

<u>During Construction Conditions</u>

18. Issues Tracking

Enbridge must create and maintain records that chronologically track complaints by Aboriginal groups and landowners (including municipal and regional governments) relating to the Project, beginning with the commencement of construction and continuing for five years after the commencement of operations. The records must be retained for five years after the commencement of operations. The complaint tracking records must include:

a) the date the complaint was received;

b) the form in which the complaint was received (for example, telephone, mail, email, or other communication methods that may evolve over time);

c) the date and summary of all subsequent telephone calls, visits, correspondence, site monitoring/inspections, follow-up reports and other related documentation;

d) updated contact information for all persons involved in the complaint;

e) a detailed description of the complaint; and

f) any further actions to be taken or an explanation why no further action is required.

19. Technical Specifications Update

Enbridge must file with the Board, as part of the leave to open application, all technical specification updates (i.e., as-built information) for the Section 58 Facilities. These updates must include, but not be limited to: pipeline length, diameter, pipe material grade, sectionalizing valves and locations, coating, seam weld type, main point-specific maximum operating pressures with their locations and wall thicknesses.

20. Construction Progress Reports

Enbridge must file construction progress reports with the Board, on a monthly basis during construction. The reports must include, but not be limited to, information on:

a) the activities carried out during the reporting period;

b) the summary of any environmental, socio-economic, safety and security issues and non-compliance; and

c) the measures undertaken for the resolution of each issue and non-compliance.

21. Leak Detection System Manual

Enbridge must file with the Board, at least 60 days prior to applying for leave to open, the Leak Detection System (LDS) manual for the Section 58 Facilities. The LDS manual must include, but not be limited to, the following:

a) senior management policy and commitment to leak detection;

b) the roles, responsibilities, and authorities of personnel in the event of a suspected leak;

c) the theory and rationale for each LDS (i.e., each independent leak detection method) design and application. Enbridge's LDS design must meet or exceed the expectation of Annex E of the CSA Standard Z662-15 Oil and Gas Pipeline Systems in regard to all class location designations along the Section 58 Facilities pipeline;

d) the methodology and instrument requirements;

e) performance indicators such as the accuracy, reliability, and sensitivity of the LDS;

f) leak alarms and diagnostic messaging as well as related procedures;

g) any information to be provided by the LDS to assist in operating the LDS and responding to any potential leak;

h) the estimated maximum amount of product released before a leak is detected;

i) the process to be followed with respect to the continuous improvement, non-conformity, audits and corrective protocols;

j) the procedures for training;

k) the procedures for LDS record keeping;

l) the procedures for LDS performance evaluation; and

m) the plan for maintenance, testing methods (i.e., simulated signal, fluid withdrawal, etc.), and frequency of testing.

22. Pressure Testing Program

Enbridge must file with the Board its hydrostatic pressure testing program, pursuant to section 23 of the OPR, at least 30 days prior to the commencement of hydrostatic pressure testing.

23. Joining Program

Enbridge must file with the Board its joining program, pursuant to section 16 of the OPR, at least 30 days prior to the commencement of pipes and components joining.

24. Horizontal Directional Drill and Horizontal Directional Bore Contingency Plans

a) For any unsuccessful Horizontal Directional Drill (HDD) or Horizontal Directional Bore (HDB) crossing where Enbridge will employ a contingency construction instead of its proposed primary plan, Enbridge must file with the Board at least 10 days prior to commencing the contingency construction:

   i) confirmation of the HDD or HDB contingency installation plan that will be employed, the rationale for employing that plan, and a summary of the differences between the primary and contingency plans;

   ii) the updated detailed crossing-specific design drawings and the new pipe specifications (if changed); and

   iii) the detailed measures that Enbridge will implement to mitigate potential safety and environmental issues related to any abandoned drilling holes resulting from unsuccessful HDDs or HBDs.

b) Enbridge must file the results of its Detailed Feasibility Assessments for any previously unplanned HDDs or HDBs that may be decided during construction activities, based on field conditions, at least 10 days prior to commencing construction.

<u>Post-Construction and Operation Conditions</u>

25. Post-Construction Aboriginal Monitoring Plan

a) Within 90 days after the date that the last order is issued for leave to open, Enbridge must file with the Board a plan describing participation by Aboriginal groups in monitoring activities during the operation of the pipeline. The plan must include:

i) a summary of engagement activities undertaken with Aboriginal groups to determine opportunities for their participation in monitoring activities;

ii) a list of potentially affected Aboriginal groups, including Six Nations, that have reached agreement with Enbridge to participate in monitoring activities;

iii) the scope, methodology, and justification for monitoring activities to be undertaken by Enbridge and each participating Aboriginal group identified in ii), including those elements of construction and geographic locations that will involve Aboriginal monitor(s);

iv) a description of how Enbridge will use the information gathered through the participation of Aboriginal monitor(s); and

v) a description of how Enbridge will provide the information gathered through the participation of Aboriginal monitor(s) to the participating Aboriginal group.

b) Enbridge must provide a copy of the plan to Six Nations and to those Aboriginal groups identified in paragraph (a)(ii) no later than three days after filing the plan with the Board. Enbridge must file with the Board, within one week after providing the copies, confirmation that it did so.

26. Leak Detection System (LDS) Test Results

Enbridge must file with the Board the following information within six months after commencing operations:

a) the results of its detailed engineering of the Line 10 LDSs; and

b) the results of associated studies to validate the actual sensitivity, accuracy and reliability performance of each of Line 10 LDS computational pipeline monitoring systems (i.e., Material Balance System, Automated Volume Balance, Scheduled Line Balance Calculations, Rupture Detection and Automated Pressure Deviation) under normal, abnormal, or degraded operating conditions.

27. Pressure Surge and Overpressure Protection

Enbridge must conduct a hydraulic analysis of the Section 58 Facilities and file with the Board the following information within six months after commencing operations:

a) the pressure control and overpressure protection systems (including the design and operation of equipment, devices, and system components) that Enbridge implemented for the Section 58 Facilities in accordance with Clause 4.18 of CSA Z662-15;

b) an actual surge pressure test (i.e., field test under operating conditions) report that considers all potential surge pressure scenarios (including, but not limited to, overpressure entering the line, and closure or malfunction of sectionalizing and pressure safety and control valves) for the proposed operating conditions;

c) for each scenario identified in the report requested in paragraph b), specify each location along the pipeline and equipment where the surge pressure exceeds the MOP by more than 10 per cent or 35 kPa, whichever is greater; and

d) the corrective measures that Enbridge would implement to prevent any potential overpressures identified in paragraph c) above.

28. Geographic Information System (GIS)

Enbridge must file with the Board, within one year after commencing operations, GIS data in the form of an Esri® shape file that contains pipeline segment centre lines, where each segment has a unique outside diameter, wall thickness, maximum operating pressure (MOP), external coating, field-applied girth weld coating, and pipe manufacturing specification. If the above values of the pipeline change at any point along the length of the pipeline, the pipeline must be segmented at that point. The datum must be NAD83 and projection must be geographic (latitudes and longitudes).

29. Emergency Response Exercises

Within 18 months after commencing operations, Enbridge must:

a) conduct one tabletop emergency response exercise and one equipment deployment exercise along the Section 58 Facilities. The objective of the emergency response exercise must be to test the effectiveness and adequacy of the following:
    i) Emergency Procedures Manual;
    ii) training of company personnel;
    iii) communications systems;
    iv) coordination of emergency response activities with responders, mutual aid partners and other agencies;
    v) response equipment;
    vi) safety procedures; and
    vii) exercise debrief process.
b) notify the Board in writing, at least 45 days prior to the date of each emergency response exercise referred to in paragraph a), of the following:
    i) location of the exercise;
    ii) exercise coordinator;
    iii) date of the exercise;
    iv) duration of the exercise;
    v) the name and organization of each individual invited to participate in the exercise;
    vi) type of exercise (that is, tabletop, or equipment deployment); and
    vii) goals (for example, focus of exercise, scope, scale, extent of play, format, evaluation method), and how success is measured.

c) file with the Board, within 90 days after completion of each emergency response exercise referred to in paragraph (a), a report that documents the results of the exercise including:

i) how the exercise achieved the stated objectives;

ii) Participant feedback and areas for improvement; and

iii) a corrective action plan to address the findings from the exercise.

30. Post-Construction Environmental Monitoring Reports

Enbridge must file with the Board, on or before 31 January after each of the first, third and fifth complete growing seasons following completion of final cleanup of the Section 58 Facilities, a post-construction environmental monitoring report that:

a) describes the methodology used for monitoring, the criteria established for evaluating success and the results found;

b) identifies the issues to be monitored, including but not limited to unexpected issues that arose during construction, and their locations (for example, on a map or diagram, or in a table);

c) describes the current status of the issues (resolved or unresolved), any deviations from plans and corrective actions undertaken (for example, the status of wetland recovery);

d) assesses the effectiveness of the mitigation (planned and corrective) measures applied against the criteria for success;

e) provides proposed measures and the schedule that Enbridge would implement to address ongoing issues or concerns.

31. Leak Detection System (LDS) Methods

a) Enbridge must operate Line 10 using a LDS that meets or exceeds the minimum requirements set out in Annex E of the CSA Standard Z662-15 Oil and Gas Pipeline Systems (Annex E);

b) Enbridge must conduct the following actions:

i) shut down the operation of the pipeline anytime when Enbridge identifies that a component or method of the LDS might be degraded in a manner that potential leaks, within normal or published detection thresholds of the LDS, may no longer be detected in a timely manner; and

ii) during the first three years after commencing operations of the pipeline, report to the Board the details of any event as described in paragraph b) i), within 30 days after the event occurrence; and

c) Enbridge must not use alternative leak detection methods such as tank gauge measurement as primary leak detection means to mitigate any failure of its continuous computational pipeline monitoring systems, if these alternative methods cannot provide equivalent sensitivity and accuracy in complying with Annex E, Table E.1.

32. Valve placement

Enbridge must:

a) not operate the pipeline beyond the operating conditions and assumptions (including the pipeline maximum flow capacity, risk for high consequence areas, and pipe specifications) that were considered as bases of Enbridge's determination of the number and spacing of Remote Sectionalizing Valves along the Section 58 Facilities; and

b) continually monitor all the factors involved in its Intelligent Valve Placement program for the Section 58 Facilities, and evaluate the need for installing additional valves. Enbridge must apply for and obtain the Board's approval prior to operating the Section 58 Facilities beyond the operating conditions and assumptions that were the bases of Enbridge's determination as referred to in paragraph a) above.

Appendix IV – Decommissioning Order Conditions

Several terms used in this appendix have been defined in the Glossary at the beginning of this Decision. Additional terms and expressions, listed below (in bold), are also used in this appendix and have the following meaning:

For approval – when a condition requires a filing for NEB approval, Enbridge must not commence the indicated activity until the Board issues its written approval of that filing.

Including – use of this term, or any variant of it, is not intended to limit the elements to just those listed. Rather, it implies minimum requirements with the potential for augmentation, as appropriate.

General Decommissioning Conditions

1. Condition Compliance

Enbridge must comply with all of the conditions contained in this Order, unless the Board otherwise directs.

2. Engineering and Safety

Enbridge must decommission and maintain the Existing Line 10 Pipeline in accordance with the specifications, standards, and other information referred to in its Application or as otherwise agreed to during the hearing or in its related submissions.

3. Environmental Protection

Enbridge must implement or cause to be implemented all of the policies, practices, programs, mitigation measures, recommendations and procedures for the protection of the environment included in or referred to in its Application or as otherwise agreed to during the hearing or in its related submissions.

4. Conditions Compliance by the Accountable Officer

Within 30 days after the completion of Decommissioning Activities, Enbridge must file with the Board a confirmation that the Decommissioning Activities were completed and constructed in compliance with all applicable conditions in this Order. If compliance with any of these conditions cannot be confirmed, Enbridge must file with the Board details as to why compliance cannot be confirmed. The filing required by this condition must include a statement confirming that the signatory to the filing is the accountable officer of Enbridge, appointed as Accountable Officer pursuant to section 6.2 of the *National Energy Board Onshore Pipeline Regulations*.

5. Timing of Decommissioning Activities

Unless the Board otherwise directs, Enbridge must complete the Decommissioning Activities within two years after the date that the Section 58 Facilities commence operations.

6. Order Expiration (Sunset Clause)

Unless the Board otherwise directs prior to Enbridge commencing operations of the Section 58 Facilities, this Order expires one year after the date that the Section 58 Facilities commence operations, unless Decommissioning Activities have commenced by that date.

Prior to and During Decommissioning Conditions

7. Decommissioning Plans

Enbridge must file with the Board for approval at least 90 days prior to applying for leave to open for the Section 58 Facilities, a detailed Decommissioning Plan, in accordance with the specifications, standards, and other information referred to in Enbridge's Application or as otherwise agreed to during the hearing or in its related submissions. The Decommissioning Plan must include site-specific land use information and related mitigation measures.

8. Decommissioning Environmental Protection Plan

Enbridge must file with the Board for approval, at least 60 days prior to commencing the Decommissioning Activities, a project-specific Environmental Protection Plan (EPP).

The EPP must include environmental procedures including plans, criteria for implementation of those procedures, mitigation measures and parameters that will be monitored during the Decommissioned Period, including:

a) soil handling procedures;

b) weed management procedures;

c) water quality and quantity protection measures;

d) fish and fish habitat protection measures and riparian habitat management procedures;

e) erosion control measures;

f) any survey procedures for species at risk to be undertaken prior to the decommissioning;

g) contingency plans and mitigation should species at risk, rare plants or rare ecological communities be discovered prior to or during the activities;

h) waste and spill management plans; and

i) a reclamation plan for each land use type affected (for example, cultivated land, wetlands, riparian) including a description of the condition to which Enbridge intends to reclaim and maintain the right-of-way once the activities have been completed, and a description of the measurable goals for reclamation.

9. Decommissioning Commitments Tracking Table

a) Enbridge must file with the Board, at least 30 days prior to commencing the Decommissioning Activities, a Decommissioning Commitments Tracking Table that lists all commitments made by Enbridge in its Application, in its related submissions and during the OH-001-2016 proceeding in relation to the Decommissioning Activities, including reference to:

   i) the documentation in which reference to the commitment is made (for example: the Application and subsequent filings; response to information requests; the transcript reference; any permit, authorization or approval requirements; condition filings);

   ii) the accountability for implementing each commitment; and

   iii) the timelines associated with the fulfillment of each commitment.

b) Enbridge must update the status of the commitments in paragraph (a) on its Project website. If the status of any commitment changes, Enbridge must advise the Board in writing of such updates on a monthly basis until the end of the Decommissioning Activities.

10. Decommissioning Schedule

Enbridge must file with the Board, at least 30 days prior to commencing the Decommissioning Activities, a detailed construction schedule(s) that identifies major construction activities. Enbridge must notify the Board of any modifications to the schedule(s) as modifications occur.

11. Decommissioning Progress Reports

Enbridge must file with the Board decommissioning progress reports, on a monthly basis during Decommissioning Activities. The reports must include, but not be limited to, the following information:

a) the activities carried out during the reporting period;

b) any environmental, socio-economic, safety and security issues and issues of non-compliance; and

c) the measures undertaken for the resolution of each issue and non-compliance.

Post-Decommissioning Conditions

12. Decommissioning Work Results

Enbridge must file with the Board within 60 days after completing the Decommissioning Activities, the following information:

a) a list of the relevant activities of the Decommissioning Plan that were not conducted as planned (if any);

b) the results of Enbridge's field trials to evaluate the minimally invasive procedure to segment the pipeline, including installation of the containment bulkheads (plugs) by

uncovering small sections of the pipeline and drilling or cutting the pipe. Specify if there have been any unsuccessful work portions that were completed using conventional excavation, and cut and plate methods;

c) the results of Enbridge's ongoing Decommissioning Program field trials, the purposes of which are to establish and test an adequate pipeline cleaning criterion. Specify if these results, as applied to the Decommissioning Activities, have met Enbridge's expectations in comparison with traditional cleaning methods.

13. Issues Tracking

Enbridge must create and maintain records that chronologically track complaints by Aboriginal groups and landowners (including municipal and regional governments) relating to the Decommissioning Activities for five years following the completion of the Decommissioning Activities of the Existing Line 10 Pipeline. Enbridge must retain the records until Enbridge files its abandonment application. The complaint tracking records must include:

a) the date the complaint was received;

b) the form in which the complaint was received (for example, telephone, mail, email, or other communication methods that may evolve over time);

c) the date and summary of all subsequent telephone calls, visits, correspondence, site monitoring/inspections, follow-up reports and other related documentation;

d) updated contact information for all persons involve in the complaint;

e) a detailed description of the complaint; and

f) any further actions to be taken or an explanation why no further action is required.

14. Leave to Abandon

Enbridge shall file with the Board an application for leave to abandon the Existing Line 10 Pipeline or such part of it, as applicable:

a) if the Board notifies Enbridge that it must apply for leave to abandon; or

b) when future operating conditions or circumstances change (for example, the status of other pipelines in close proximity to the Existing Line 10 Pipeline; or the safety and environmental risks associated with removing or leaving the pipeline).