REGIONAL CUMULATIVE EFFECTS ASSESSMENT
FOR HYDROELECTRIC DEVELOPMENTS ON THE CHURCHILL,
BURNTWOOD AND NELSON RIVER SYSTEMS: PHASE I REPORT
PREAMBLE

The Clean Environment Commission (CEC) Bipole III Report (2013) included a list of licensing and non-licensing recommendations to be carried out by Manitoba Hydro and/or Manitoba. On behalf of the government, the Minister of Conservation and Water Stewardship committed to implementing these recommendations.

The CEC report stated that:

“...it became apparent that past hydroelectric developments in northern Manitoba have had a profound impact on communities in the area of these projects, as well as on the environment upstream and downstream.”

The CEC made a similar statement in their 2004 report on the Wuskwatim Generation Project.

In response, the CEC made non-licensing Recommendation 13.2 in the Bipole III Report (2013) that stated:

“Manitoba Hydro, in cooperation with the Manitoba Government, conduct a Regional Cumulative Effects Assessment for all Manitoba Hydro projects and associated infrastructure in the Nelson River subwatershed, and that this be undertaken prior to the licensing of any additional projects in the Nelson River subwatershed after the Bipole III project.”

To address this non-licensing recommendation, a Terms of Reference (Appendix 1A) has been jointly agreed to between Manitoba and Manitoba Hydro that has increased the scope of the Regional Cumulative Effects Assessment (RCEA) to include the Nelson, Burntwood, and Churchill River systems — an area referred to in this report as the “Region of Interest” (see Map 1-1).

Manitoba Hydro has a lengthy history in this region and a vast amount of work has been completed to understand and address the effects of past hydroelectric developments. The final RCEA report will be based on a review and synthesis of these past and ongoing studies and monitoring programs, and will include both scientific information and Aboriginal Traditional Knowledge to the extent that each is available.

The Terms of Reference describe a two phase approach to the assessment:

- **Phase I:** This initial report provides the proposed scope of the study including the time span covered (temporal scope), the geographic area covered (spatial scope), and the methods to be employed for the assessment; a description of the history of hydroelectric development; and an initial summary of available information that will be used to determine the cumulative environmental effects of northern hydroelectric development within the Region of Interest. These information sources are extensive and will be further expanded upon as the analysis proceeds in Phase II.

- **Phase II:** The Phase II report will use the best assessment methodology available to quantify (where possible) or qualitatively describe the cumulative effects of hydroelectric development on the people, the water, and the land in the Region of Interest. The assessment will describe, to the extent possible, the overall health of the ecosystem. The Phase II report will conclude with a description of ongoing
and future monitoring initiatives that will provide information to the public on the Region of Interest.

At the start of Phase II, Manitoba and Manitoba Hydro will describe the process for public engagement with Aboriginal and other communities in the Region of Interest, as well as other interested parties.

This document is the Phase I report. It was prepared within a reasonably short time frame and, given the volume of information available and reviewed for the Region of Interest, may contain some errors or omissions. It has been developed as an interim product to provide an early indication of the approach and documentation being employed to undertake the RCEA. The final Phase II report will present a more complete discussion of the history of hydroelectric development in the Region of Interest and associated environmental changes.
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<th>Term/Unit</th>
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<tr>
<td>ATK</td>
<td>Aboriginal Traditional Knowledge</td>
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<tr>
<td>CAMP</td>
<td>Coordinated Aquatic Monitoring Program</td>
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<tr>
<td>CEC</td>
<td>Clean Environment Commission</td>
</tr>
<tr>
<td>CRD</td>
<td>Churchill River Diversion</td>
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<tr>
<td>CWS</td>
<td>Conservation and Water Stewardship</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental assessment</td>
</tr>
<tr>
<td>FEMP</td>
<td>Federal Ecological Monitoring Program</td>
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<tr>
<td>GS</td>
<td>Generating Station</td>
</tr>
<tr>
<td>HVdc</td>
<td>High Voltage Direct Current</td>
</tr>
<tr>
<td>ISD</td>
<td>In-service date</td>
</tr>
<tr>
<td>kV</td>
<td>kilovolt</td>
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<td>LWR</td>
<td>Lake Winnipeg Regulation</td>
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<td>MEMP</td>
<td>Manitoba Ecological Monitoring Program</td>
</tr>
<tr>
<td>MH</td>
<td>Manitoba Hydro</td>
</tr>
<tr>
<td>MW</td>
<td>megawatt</td>
</tr>
<tr>
<td>NFA</td>
<td>Northern Flood Agreement</td>
</tr>
<tr>
<td>RCEA</td>
<td>Regional Cumulative Effects Assessment</td>
</tr>
<tr>
<td>RMA</td>
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<td>RSC</td>
<td>Regional Study Component</td>
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<tr>
<td>TBD</td>
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</tr>
<tr>
<td>SSEA</td>
<td>Site Selection and Environmental Assessment</td>
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1.0 INTRODUCTION AND APPROACH

1.1 INTRODUCTION AND BACKGROUND

The Clean Environment Commission’s (CEC) Bipole III Report on Hearing (2013) included a list of licensing and non-licensing recommendations to be carried out by Manitoba Hydro (MH) and/or Manitoba. On behalf of government, the Minister of Conservation and Water Stewardship (CWS) committed to implementing these recommendations.

This document is intended to address CEC non-licensing Recommendation 13.2 from that report, which states:

“Manitoba Hydro, in cooperation with the Manitoba Government, conduct a Regional Cumulative Effects Assessment for all Manitoba Hydro projects and associated infrastructure in the Nelson River subwatershed, and that this be undertaken prior to the licensing of any additional projects in the Nelson River subwatershed after the Bipole III project.”

The CEC report describes the rationale for this recommendation. In short, during the Bipole III hearings, some communities expressed concerns regarding the effects that they have experienced, and continue to experience, as a result of existing MH projects. The CEC noted that:

“...it became apparent that past hydroelectric developments in northern Manitoba have had a profound impact on communities in the area of these projects, as well as on the environment upstream and downstream”

The CEC made a similar statement in their 2004 report on the Wuskwatim Generation Project.

Manitoba and MH have developed an agreed to Terms of Reference (see Appendix 2A) that outlines a joint approach for MH and the province to undertake a Regional Cumulative Effects Assessment (RCEA) of hydroelectric developments in a manner that addresses CEC Recommendation 13.2. Through this Terms of Reference, the scope of the RCEA has been expanded to include the Churchill, Burntwood, and Nelson River systems, an area referred to as the “Region of Interest” and shown in Map 1-1.

The Terms of Reference provide for a two-phase approach to undertaking the RCEA, and outline the scope of the RCEA, the approach to the study, end products, a process for collaboration between CWS and MH, and a project schedule. The Terms of Reference also note that opportunities for public engagement with Aboriginal and other communities in the Region of Interest, as well as other interested parties, will be determined and implemented as part of the second phase of the RCEA.

This report meets the requirements of the Terms of Reference for the first phase of the project.
1.2 RCEA: OVERVIEW

The RCEA will assess (quantitatively and/or qualitatively) environmental change over time as a result of previous hydroelectric developments in the Region of Interest. It will include a discussion of effects, mitigation and remedial works that have been put in place to reduce effects, compensation provided for effects that could not be mitigated, community issues and concerns, and the current state of the environment (where possible).

The proposed Region of Interest is greater than that identified in the CEC report and is shown in Map 1-1 above; the primary facilities to be included in the study are identified in Figure 1-1 and shown in Map 1-2 (main generation facilities) and Map 1-3 (main transmission facilities).

The final Phase II RCEA report will be retrospective in nature and will:

- Identify, describe, and acknowledge the cumulative effects of past Hydro developments in the Region of Interest;
- Describe the current state of the environment in areas affected by Manitoba Hydro’s developments within the Region of Interest; and
- Describe a process for continued monitoring of and reporting on the state of the environment into the future.

The RCEA report will be based on a review and synthesis of past and ongoing studies and monitoring programs, and will include both scientific information and Aboriginal Traditional Knowledge to the extent that each is available.

In accordance with the Terms of Reference, the RCEA will be undertaken based on a two-phase approach. This document represents the Phase I report. The Phase II report will be completed in late fall, 2015.
Figure 1-1: Hydroelectric Development in the RCEA Region of Interest and Key Environmental Legislation Over Time

Note: See Table 1-1 for more details
Hydroelectric Development in the RCEA Region of Interest:
Generation Components

Legend
- RCEA Region of Interest
- Generating Station (Existing)
- Converter Station
- Diversions
- Control Structure
- Resource Management Area (RMA)
- Highways
- Rail
- Aboriginal Lands
- Registered Trapline (RTL)
1.2.1 Phase I

This report constitutes the Phase I report identified in the Terms of Reference. It is an interim product, developed to demonstrate progress towards the overall RCEA and to provide an early identification of the studies and information being gathered to undertake the final RCEA.

This Phase I Report has been divided into the following five parts:

**PART I: Introduction and Approach** – this section provides: 1) a description of the requirement for the RCEA and the Terms of Reference for Phase I and Phase II of the RCEA; 2) an overview of the RCEA and a general outline of the Phase I and II Reports; and 3) the spatial and temporal scope of the RCEA and the general methodology for the assessment.

**PART II: History of Hydroelectric Development in the Region of Interest** – a brief history of hydroelectric development in the Region of Interest including initial planning studies, and the development of generation and transmission facilities.

**PART III: People** – summarizes at a high level Manitoba Hydro’s understanding of the types of socio-economic effects experienced to varying degrees throughout the Region of Interest by type of development (generating stations and transmission facilities) and based on a variety of sources including past environmental impact assessments, past settlement negotiations, perspectives shared by communities and resource user groups, and various community led studies and histories that have been shared with the Corporation. For this Phase I report, socio-economic effects are summarized across all projects and communities. This section also summarizes the mitigation, remediation and compensation measures adopted to address socio-economic effects, including a brief summary of the history of settlement agreements associated with the Projects.

**PART IV: Physical Environment** – describes key changes to the physical environment resulting from hydroelectric development, including changes to the water regime, ice regime, erosion and sedimentation, and the area flooded. This section also summarizes the available datasets and studies conducted regarding the effects of hydroelectric development on the water regime, ice regime, and erosion and sedimentation in the Region of Interest.

**PART V: Water and Land** – provides a summary of studies conducted (both pre-and post-hydroelectric development) on the effects to water and land associated with hydroelectric development in the Region of Interest, along with maps showing the locations of these studies. This section also describes the rationale used to select a preliminary list of the key aquatic (water) and terrestrial (land) Regional Study Components (RSCs) that will be assessed. For “water” these include: water quality, fish populations, Lake Sturgeon, fish quality (including mercury and taste, texture and palatability), and marine mammals (whales, seals, and polar bears). For “land” these include: terrestrial habitat, intactness, colonial waterbirds, forest birds, waterfowl, aquatic furbearers, terrestrial furbearers, moose, and caribou.
1.2.2 Phase II

The scope of the Phase II report (including spatial scope, temporal scope, facilities included, and the topics addressed) will be revised based on input received on the Phase I report. A draft of the Phase II Report will be complete by late fall, 2015.

In particular, the final report submitted at the end of Phase II will expand upon the People, Physical Environment, and Water and Land information provided during Phase I and will include more detailed information and analysis as follows:

**People:** Phase II will add to the Phase I document by summarizing the views, perspectives, and experiences communities have expressed to Manitoba Hydro in various forms, including but not limited to:

- The NFA Arbitration Claims process;
- Other claims and settlement negotiation processes;
- Aboriginal Traditional Knowledge reports;
- Available post-project evaluations and studies of socio-economic effects, including various and numerous community led studies;
- Environmental Assessments (EAs) and Site Selection and Environmental Assessments (SSEAs) that were conducted for projects in the Region of Interest; and
- Documentation from historic and current (and sometimes ongoing) community engagement processes.

In Phase II, this information will be organized by community. The Phase II report will present mitigation, remediation, and compensation measures undertaken on a community-by-community basis, as well as a description of various historical and ongoing engagement processes. Phase II will also present, to the extent possible, analyses of demographic indicators for the Region of Interest over time, acknowledging both the range of other influencing factors, in addition to hydroelectric development, that have affected these indicators and the difficulty attributing causality among these factors.

**Physical Environment:** Phase II will expand upon the description of physical change provided in Phase I with more detailed descriptions of Manitoba Hydro’s operations, including short-term operations like plant cycling, and detailed mapping of all flooded areas associated with hydroelectric development. Phase II will also include a more in depth analysis of available data along with hydrological conditions to better understand the impact of hydroelectric development. In some cases this may include simulating water levels and flows that would have occurred without hydroelectric development. The description of physical changes to the land resulting from hydroelectric development will be undertaken as part of the Phase II analysis.

**Water and Land:** The Water and Land sections of the Final Phase II Report will provide more detailed discussion on environmental outcomes and will include:
Pathways of effects diagrams to provide a visual presentation of the possible linkages between hydroelectric development, impacts to the physical environment, and the subsequent direct and indirect effects to water and land;

An assessment of the environmental effects of existing hydroelectric developments on the RSCs based on a comparison of pre-hydroelectric development information (where available) and post-hydroelectric development information;

An assessment of any trends that may be found when comparing data over an extended time-frame (e.g., are Lake Sturgeon populations increasing or decreasing);

To the extent that they are available, the condition of the RSC will be discussed in the context of appropriate benchmarks and/or thresholds, including any metrics to be identified by Manitoba following the completion of Phase I;

A description, to the extent possible, of the overall health of the ecosystem; and

The identification of data gaps in information and, if the data gap can be filled, a process for addressing the data gap will be described.

A detailed description of the scope and methodology for RCEA is provided in Section 1.3.

1.2.3 Public Engagement Process

Early in Phase II, Manitoba and Manitoba Hydro will work to determine an appropriate public engagement process for the RCEA. This process will include opportunities for Aboriginal and other communities in the Region of Interest, as well as other interested parties, to provide their perspectives on the cumulative effects of hydroelectric development in the Region of Interest.
1.3 RCEA SCOPE AND METHODOLOGY

The following describes in greater detail the spatial and temporal scope of the RCEA, and the methodology being used to undertake the RCEA. Notably, the RCEA will use and incorporate, to the extent possible, attributes of contemporary environmental effects assessment and post-project assessment methodology.

There are, however, challenges to undertaking the RCEA and these have influenced the process and methods being employed. Manitoba Hydro development in the Region of Interest has spanned six decades. As noted explicitly in the Terms of Reference, Manitoba Hydro’s major northern developments in the Region of Interest were assessed, designed, and constructed to meet the environmental assessment (EA) requirements and societal expectations of the time. Regulatory requirements and societal expectations for environmental assessment in Manitoba have evolved from being nearly absent in the early 1970s (mostly economic considerations), to policy-based project reviews in the late 1970s (Manitoba Environmental Assessment Review Agency), to legislated project reviews in the late 1980s (e.g., Environment Act), to assessments with a valued environmental component-based approach for developments assessed in the 2000s (see Figure 1-1 above).

These changes have brought greater requirements related to the types and quantity of data collected. For many of the early developments, the data available would be deemed inadequate by today’s standards. As a result, quantitative pre-development information is not always available and/or, if available, has sometimes been collected using different methodologies that preclude the ability to compare pre- and post-development periods. In some cases, where pre-development data are not available, the current environment can be compared to other on-system and off-system areas (recognizing that no two areas are identical) using information from ongoing monitoring programs, such as the Manitoba and Manitoba Hydro Coordinated Aquatic Monitoring Program (CAMP), to provide a comparative assessment of the status of the environment.

Today’s planning processes also involve more comprehensive public engagement processes. Manitoba Hydro has moved from a planning process that involved little if any public involvement, to the engagement of local communities in the development of new generation projects and in the routing and assessment of new transmission lines. This, too, has improved the nature and extent of available information and considerably improved understanding about the effects of hydroelectric developments at the local and regional level.

1.3.1 SPATIAL SCOPE/REGION OF INTEREST

The Region of Interest for the RCEA includes the Churchill, Burntwood and Nelson River systems as shown in Map 1-1 above. This area is broader than that initially identified in Recommendation 13.2 of the CEC’s Bipole III report (2013) and has been selected because it encompasses the main areas directly affected by Manitoba Hydro developments associated with the Lake Winnipeg Regulation (LWR), Churchill River Diversion (CRD) and associated transmission projects. As discussed below, some aspects studied as part of the RCEA will be assessed on a scale smaller than the Region of Interest (e.g., aquatic...
components are limited to waterways) while others extend beyond the Region of Interest (e.g., migratory terrestrial species that utilize a broad land base).

1.3.2 **Temporal Scope**

The RCEA will use pre-hydroelectric development information, to the extent that it is available, to describe the conditions prior to development, and the changes that have occurred due to the construction and operation of hydroelectric facilities in the Region of Interest. The key dates for major hydro developments in the Region of Interest, along with the key dates for environmental legislation/policy events in Manitoba since the 1950s are provided in Figure 1-1 above. Additional information is provided in Section 1.3.2.1 below and in Part II.

To the extent that the effects of other non-hydroelectric projects and activities provide important context, additional information that is relevant to understanding the current state of the environment (e.g., effects of provincial highways on measures of terrestrial intactness), or cannot be separated in measures of current condition (e.g., water quality), these projects and activities will also be included. These projects vary for each of the components studied in the assessment.

There are also some hydroelectric developments currently under construction in the Region of Interest—the Bipole III Project, the Keewatinoo Converter Station and the Keeyask Infrastructure Project—and, if approved, the Keeyask Generation and Transmission Projects will begin construction during 2014. The anticipated contributions of these projects to the findings of the Regional Cumulative Effects Assessment will be documented in Phase II based on available monitoring results and predictions provided in each Project’s environmental impact statement. The cumulative effects of future hydroelectric developments (e.g., Conawapa) will be addressed separately, and outside of the RCEA, during the regulatory review process for those developments.

1.3.2.1 **Hydroelectric Facilities Included**

The main hydroelectric facilities included within the Region of Interest, along with their capacity and construction dates (start date and in-service date), are provided in Table 1-1 below. It should be noted that Transmission in-service dates (ISD) are often earlier than a Generating Station’s ISD date as power may be made available as each unit is commissioned. The Generating Station’s ISD is the date of the last unit to go into service. There may be some construction activities past the ISD date, such as decommissioning of the work camp and restoration of the site.
Table 1-1: Primary Hydroelectric Development within the Nelson River and Churchill River Watersheds

**Generation and Water Regulation**

<table>
<thead>
<tr>
<th>Project</th>
<th>Capacity&lt;sup&gt;2&lt;/sup&gt; (MW)</th>
<th>Start of Construction</th>
<th>ISD</th>
<th>Notes</th>
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<tr>
<td>Kettle GS</td>
<td>1220</td>
<td>1968</td>
<td>1974</td>
<td></td>
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<td>Churchill River Diversion</td>
<td>n/a</td>
<td>1970</td>
<td>1976</td>
<td></td>
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<td>Lake Winnipeg Regulation</td>
<td>n/a</td>
<td>1970</td>
<td>1976</td>
<td></td>
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<tr>
<td>Jenpeg GS</td>
<td>125</td>
<td>1972</td>
<td>1979</td>
<td></td>
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<td>Long Spruce GS</td>
<td>980</td>
<td>1973</td>
<td>1979</td>
<td></td>
</tr>
<tr>
<td>Limestone GS</td>
<td>1350</td>
<td>1976</td>
<td>1992 (construction was halted in 1978 and resumed in 1985)</td>
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<tr>
<td>Manasan Falls Control Structure</td>
<td></td>
<td></td>
<td>1976</td>
<td></td>
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<tr>
<td>Wuskwatim GS</td>
<td>214</td>
<td>2006</td>
<td>2012</td>
<td></td>
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<tr>
<td>Cross Lake Weir</td>
<td>N/A</td>
<td></td>
<td>1991</td>
<td></td>
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<tr>
<td>Churchill Weir</td>
<td>N/A</td>
<td></td>
<td>1999</td>
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**Converter Stations**

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<th>Start of Construction</th>
<th>ISD</th>
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<tr>
<td>Radisson Converter Station and Associated Infrastructure</td>
<td>1967</td>
<td>1977</td>
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<tr>
<td>Henday Converter Station and Associated Infrastructure</td>
<td>1970</td>
<td>1985</td>
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**Transmission<sup>3</sup>**

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<tr>
<td>Kelsey to Thompson</td>
<td>2–138 kV</td>
<td>1960</td>
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<td>Kelsey to Thompson (upgrade of a 1–138 kV line to 230 kV)</td>
<td>230 kV</td>
<td>1972</td>
</tr>
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<td>Kelsey to Radisson</td>
<td>230 kV</td>
<td>1967</td>
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<tr>
<td>Kelsey to Radisson</td>
<td>138 kV</td>
<td>1973</td>
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### Table 1-1: Primary Hydroelectric Development within the Nelson River and Churchill River Watersheds

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<tr>
<th>Project</th>
<th>Capacity</th>
<th>ISD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radisson to Limestone 138 kV</td>
<td></td>
<td>1989</td>
</tr>
<tr>
<td>Bipole I and II lines(^4) +/- 463.5kV, +/- 500kV</td>
<td></td>
<td>1971</td>
</tr>
<tr>
<td>Long Spruce to Radisson 3-230kV</td>
<td></td>
<td>1977~1979(^5)</td>
</tr>
<tr>
<td>Long Spruce to Henday 3-230kV</td>
<td></td>
<td>1990</td>
</tr>
<tr>
<td>Bipole II line (Radisson to Henday Segment)</td>
<td>+/- 500kV</td>
<td>1977</td>
</tr>
<tr>
<td>Bipole II back-up line +/- 500kV</td>
<td></td>
<td>1992</td>
</tr>
<tr>
<td>Wuskwatim Transmission Project 3-230kV</td>
<td></td>
<td>2012</td>
</tr>
<tr>
<td>Thompson to Ponton 230kV</td>
<td>230kV</td>
<td>1965~1966(^5)</td>
</tr>
<tr>
<td>Herblet Lake to Ponton 230kV</td>
<td>230kV</td>
<td>1972~1996(^5)</td>
</tr>
<tr>
<td>Jenpeg to Ponton 230kV</td>
<td>230kV</td>
<td>1972</td>
</tr>
<tr>
<td>Herblet Lake to Ralls Island 230kV</td>
<td>230kV</td>
<td>2012</td>
</tr>
<tr>
<td>Ponton to Grand Rapids 230kV</td>
<td>230kV</td>
<td>1966</td>
</tr>
<tr>
<td>Kelsey to Oxford House 138kV</td>
<td>138kV</td>
<td>1993~1997(^5)</td>
</tr>
<tr>
<td>Kelsey to Split Lake 138kV</td>
<td>138kV</td>
<td>1993</td>
</tr>
<tr>
<td>Thompson to Laurie River 138kV</td>
<td>138kV</td>
<td>1970~1972(^5)</td>
</tr>
<tr>
<td>Radisson to Churchill 115kV</td>
<td>115kV</td>
<td>1987</td>
</tr>
<tr>
<td>Herblet Lake to Laurie River 115kV</td>
<td>115kV</td>
<td>1920</td>
</tr>
<tr>
<td>Herblet Lake to Laurie River line tap</td>
<td>115kV</td>
<td>1995</td>
</tr>
</tbody>
</table>

### Projects Under Development or Regulatory Review

<table>
<thead>
<tr>
<th>Project</th>
<th>Capacity</th>
<th>ISD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipole III +/- 500kV</td>
<td></td>
<td>2017</td>
</tr>
<tr>
<td>Keewatinoow Converter Station and Associated infrastructure</td>
<td></td>
<td>2017</td>
</tr>
<tr>
<td>Keeyask Infrastructure Project</td>
<td>N/A</td>
<td>2014</td>
</tr>
<tr>
<td>Keeyask Generation Project</td>
<td>695 MW</td>
<td>2020</td>
</tr>
<tr>
<td>Keeyask Transmission Project</td>
<td>138 kV</td>
<td>2019</td>
</tr>
</tbody>
</table>

1. Includes the generation outlet transmission lines associated with each GS.
2. Based on the 63rd Annual Report of the Manitoba Hydro-Electric Board.
3. Construction of transmission projects generally precedes ISD by 3-5 years.
4. Construction of Bipole I and II were initiated at the same time but Bipole II was completed in 1977 when it was extended to connect to the Radisson and Henday Converter Stations.
5. First date denotes a portion of the line being in service; second date denotes entire line being in service.
1.3.3 RCEA General Methodology

The RCEA will include an assessment of the effects of hydroelectric developments on the physical environment, including changes to the water regime, ice conditions, and shoreline erosion and sedimentation, and will indicate how these changes and other aspects of hydroelectric development (e.g., employment) are linked to direct and indirect effects on People, Land, and Water.

As noted above, the RCEA (Phase II) will be based on a review, synthesis, and analysis of the numerous environmental and socio-economic studies, post-project environmental reviews, environmental impact assessments for proposed developments, and monitoring programs that have been conducted by Manitoba Hydro, Manitoba, Canada, the affected First Nations and others over the last 50 years. These include but are not limited to:

- Pre-hydroelectric development environmental and socio-economic studies conducted for resource management, scientific, or other purposes;
- Post-hydroelectric development studies and datasets completed for resource management, scientific, or other purposes;
- Environmental and socio-economic impact assessment studies conducted for LWR and CRD;
- Post-project monitoring programs to assess and manage impacts of existing facilities including long-term fish population and water quality monitoring studies;
- Environmental assessment studies for all major developments including the Wuskwatim Generation, Wuskwatim Transmission, Bipole III and proposed Keeyask and Conawapa Generation projects (2000 to present);
- Long-term component specific monitoring programs such as water quality monitoring, fish population monitoring, and the monitoring of mercury levels in fish;
- System-wide on-going monitoring programs such as the Coordinated Aquatic Monitoring Program (CAMP);
- Pre- and post-project monitoring programs for the physical environment including the collection of hydrometric data;
- Site-specific studies to address specific issues and concerns expressed by the affected First Nations and communities;
- Studies to determine project effects to quantify losses under the Northern Flood Agreement (NFA) claims process. It should be noted that studies conducted by or for individuals, First Nations, communities or organizations are considered confidential and will not be used in the RCEA without the express permission of the party for whom the studies were conducted;
- Research into specific topics, including methylmercury, Lake Sturgeon, and reservoir greenhouse gases; and
Community-led Aboriginal Traditional Knowledge studies and other community-based studies that are in the public domain.

Most of the early studies in the late 1970s and early 1980s were focused on specific issues that were identified by affected First Nations and communities. Studies from the mid-1980s to the early 1990s, such as the Federal Ecological Monitoring Program (FEMP) and the Manitoba Ecological Monitoring Program (MEMP) responded to an NFA Claim and were conducted on a more regional scale.

More recently, initiatives like the Manitoba and Manitoba Hydro CAMP (2008 to present) have taken a system-wide, ecosystem-based approach to monitoring aquatic ecosystem health; and the environmental assessment baseline studies for the Wuskwatim Generation, Wuskwatim Transmission, Bipole III, and proposed Keeyask and Conawapa projects (2000 to present) have provided comprehensive information for key topics in the regions where these projects are located.

1.3.3.1 RCEA APPROACH TO PEOPLE

The RCEA will document Manitoba Hydro and Manitoba’s current understanding of the socio-economic effects of past hydroelectric developments, as well as the perspectives, views and experiences communities have shared through various forums since the time of development.

Manitoba Hydro has a long history of interaction with the people and communities living in-proximity to and/ or affected by the Lake Winnipeg Regulation (LWR) and Churchill River Diversion (CRD), and associated hydroelectric developments (“the Projects”). Manitoba Hydro’s approach to development, and related approach to community engagement, has evolved over time and along with changing societal understandings, values and attitudes regarding the environment, Aboriginal rights and interests, and socio-economic impacts generally.

There exists a wealth of information from various sources related to the socio-economic effects of the Projects. There are many cases where communities have documented their experiences with historic hydroelectric development in their own voices. This would include materials prepared in support of settlement agreement processes, materials prepared more recently in support of current environmental assessment documentation for the Wuskwatim and Keeyask projects, and materials developed for other purposes. Community perspectives on the effects of the Projects have also been shared through oral testimony at recent hearings, including for the Wuskwatim, Keeyask, and Bipole III Projects, and through related public engagement processes. Communities have also shared their perspectives and concerns with Manitoba Hydro through previous and/ or ongoing engagement processes, including, for example, through interactions related to ongoing programming such as the Waterways Management Program.

There also exists substantial documentation regarding the processes through which impacts on people and communities have been addressed through mitigation and remedial works, as well as through negotiated settlements with Manitoba Hydro, Manitoba, and, in some cases, Canada. Since many of these

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1 A listing of the Projects is provided in Section 1.3.2.1.
studies were undertaken in the context of negotiated settlement agreements or claims arbitration they are often confidential.

In light of the various mitigation measures and settlement agreements that have been concluded since construction on the Projects began in the late 1950s, this study seeks through Phase I and Phase II to document Manitoba Hydro’s current understanding of socio-economic effects, including the perspectives, views and experiences communities have shared through various forums since the time of development. Both phases of the study will look at impacts in terms of generation (“the Generation Projects”) and transmission facilities (“the Transmission Projects”), the latter of which includes converter stations, sub-stations, collector lines, High Voltage Direct Current (HVdc) lines, and lower voltage transmission lines used to provide power to communities. Effects and related mitigation measures will be considered separately for generation and transmission projects because the effects of these types of development are different.

The review and discussion of socio-economic effects will be based on key themes that have emerged through the course of past settlement agreements, past and ongoing community engagement processes, community-based studies, and other processes. These key themes include, but are not limited to:

- Culture, Way of Life, and Heritage Resources;
- Home Relocation;
- Worker Interaction;
- Resource Use;
- Land Use;
- Aesthetics;
- Navigation, Transportation, and Safety;
- Health Concerns;
- Personal Property Loss and Damage; and
- Infrastructure and Services.

Additional themes may be added to the discussion during Phase II based on further review of the available documentation and review of the Phase I document.

1.3.3.2 RCEA Approach to the Physical Environment

The physical environment has been altered by past hydroelectric development within the RCEA Region of Interest. The RCEA will document current understandings about the effects of past hydroelectric developments on the physical environment. This includes changes to the water and ice regimes and the associated changes to shoreline erosion (both mineral soil and peatland) and sedimentation. It will also include physical changes to the land resulting from development of the principal structures, supporting infrastructure, and transmission line rights-of-ways associated with hydroelectric development.
Phase I includes a general description of Manitoba Hydro’s hydraulic operations and associated effects on water and ice regimes, as well as an estimate of the flooded area associated with each generation facility in the Region of Interest. The Phase I water regime description is based on data records that contain sufficient water level and flow data for both pre- and post-hydroelectric development. Past studies and previous documentation are also referenced, where appropriate. For the ice regime, and in cases where data are more limited, the effects of hydroelectric development are described where possible, but are more qualitative in nature. Erosion and sedimentation is also discussed in Phase I based on a review and synthesis of available information and existing studies for the Region of Interest.

The availability of long-term data varies for the different physical parameters. For the topics of water and ice regime, there has been long-term monitoring of hydrometric data within the Region of Interest that has facilitated the analysis of water level and flow data within distinct hydraulic zones. Similarly, there have been historical studies of shoreline erosion that support the description of physical changes over time relating to hydroelectric development. For physical changes to the land resulting from permanent generation and transmission infrastructure, there has been considerably less work done to monitor and assess these changes in a cumulative manner within the Region of Interest. For this reason, the description of physical changes to the land will be undertaken as part of the Phase II analysis.

Phase II of the RCEA will include a more detailed description of Manitoba Hydro’s operations, including short-term operations such as plant cycling. The level of additional analysis in Phase II will vary across the Region of Interest based on the complexity of the hydraulic zone and the availability of data to conduct detailed analyses of change over time. Phase II will include a more in depth analysis of hydrological conditions to better understand the impact of hydroelectric development and, in some cases, this may include simulating water levels and flows that would have occurred without hydroelectric development. Phase II will also include detailed mapping of the flooded areas and other permanent infrastructure associated with hydroelectric development. For shoreline erosion and sedimentation, Phase II will involve further analysis and a summary and synthesis of the findings on the impacts associated with hydroelectric development.

1.3.3.3 RCEA Approach to Water and Land

The Water and Land sections document current understandings about effects of past hydroelectric developments to aquatic and terrestrial environments. Phase I is a comprehensive synthesis of available studies associated with hydro development in the Region of Interest. Phase II will include an assessment of the environmental effects of hydroelectric development based on all available existing information.

For this section, topics that reflect key ecological and social concerns, or are of key importance to the people living in the area, have been selected to focus the assessment and to represent the overall effects of hydro developments within the Region of Interest. The preliminary list of RSCs is provided in Table 1-2 below, along with the rationale for their selection. The list will be reviewed following input received from the review of the Phase I report. Selection of RSCs was based on one or more of the following:

- Overall importance/value to people as identified by residents in the Region of Interest through various forums (eg, CEC Hearings, ATK reports from the First Nations, NFA Claims);
• Umbrella indicator for groups of species, selected ecosystem components, or ecosystems at one or more spatial scales;

• Importance/value to overall ecosystem function; and

• Known to be susceptible to the direct or indirect effects from hydroelectric developments.

Table 1-2: List of Regional Study Components for Water and Land

<table>
<thead>
<tr>
<th>Major Ecosystem</th>
<th>Regional Study Component</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Water Quality</td>
<td>Water quality affects the ability of the aquatic environment to support aquatic life. It is also important to the people who live in the area as a source for drinking water, transportation, recreation, and aesthetics.</td>
</tr>
<tr>
<td>Fish Community</td>
<td>Fish communities were selected due to their ecological importance, as an indicator of aquatic habitat changes, and their importance to the commercial and domestic fisheries in northern communities.</td>
<td></td>
</tr>
<tr>
<td>Lake Sturgeon</td>
<td>Lake Sturgeon was selected as they are culturally important to First Nation members, are a favoured domestic food item in many communities, are a species of conservation concern, and are particularly sensitive to many human activities including hydroelectric development.</td>
<td></td>
</tr>
<tr>
<td>Fish Quality</td>
<td>Mercury in fish flesh was selected due to the importance of fish to the commercial and domestic fisheries in the impacted communities and the effect of mercury on the suitability of fish for consumption (due to the risk to human health).</td>
<td></td>
</tr>
<tr>
<td>Marine Mammals</td>
<td>Marine mammals were selected due to their importance to a variety of stakeholders, including commercial tourism operators and all Manitobans. Polar bear and beluga are also species of conservation concern.</td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>Terrestrial Habitat</td>
<td>Terrestrial habitat was selected because some habitat types are especially important for social and ecological reasons and because human induced changes to terrestrial habitat are a key pathway for effects on the entire terrestrial ecosystem</td>
</tr>
<tr>
<td>Intactness</td>
<td>Intactness was selected because it is often used as an overall indicator of cumulative effects on ecosystems at multiple spatial scales and on wildlife habitat in environmental assessment and monitoring.</td>
<td></td>
</tr>
<tr>
<td>Major Ecosystem</td>
<td>Regional Study Component</td>
<td>Rationale</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Birds (waterfowl, colonial waterbirds, boreal forest birds)</td>
<td>Waterfowl: were selected due to their importance to resource harvesters, their link to the health of wetland habitats and lower food chain levels, and they can be substantially affected by hydroelectric development. Waterfowl are affected by hydroelectric developments in several ways with the flooding of habitat and water level fluctuations often being the primary pathways to the effects as well as the potential for line strikes. Colonial waterbirds: were selected for several reasons. Some species use some rare or uncommon environmental features for breeding. Colonial birds have been recognized as good indicators of aquatic ecosystem health. Some species are of conservation concern. Flooding and water level fluctuations can result in population and habitat effects. Some species may be particularly vulnerable to collisions with man-made structures (e.g., line strikes). Forest Birds: were also selected for several reasons. Forest birds are culturally significant to local First Nations and Aboriginal peoples. Many species of boreal forest birds are undergoing long-term population declines throughout Canada. Some species are of conservation concern. Hydro developments can directly affect forest birds.</td>
<td></td>
</tr>
<tr>
<td>Furbearers (aquatic and terrestrial)</td>
<td>Aquatic: Aquatic furbearers are important to the people who live in the area as a source of income and food. They are negatively affected by the water impacts of hydro development (e.g., flooding and water level fluctuations). Terrestrial: Terrestrial furbearers were selected due to their economic importance to local people, they are at the top of the food chain and they can be affected by roads, transmission lines, borrow areas, and other land impacts associated with hydro development.</td>
<td></td>
</tr>
<tr>
<td>Caribou</td>
<td>Caribou are an important symbol of Canadian wilderness and can be sensitive to disturbance of the landscape. Their specialized habitat needs may not be well captured by other land RSCs. They are a species of conservation concern.</td>
<td></td>
</tr>
<tr>
<td>Moose</td>
<td>Moose were selected primarily because of their importance to First Nations peoples and sensitivity to habitat fragmentation and increased access for predators and hunters.</td>
<td></td>
</tr>
</tbody>
</table>
Although the Region of Interest provides a boundary for defining which hydroelectric developments are considered in the assessment and the primary region of direct Project effects, the area of interest for each RSC, will be defined by what is ecologically meaningful for that component (e.g., population ranges for wildlife species), and will be presented with associated rationale in the Phase II report. Where required, the areas of interest will extend beyond the Region of Interest to provide context for a specific topic. The assessment areas selected will be large enough to capture the cumulative effects of hydro development, but not so large as to mask the effects on a given component (by making the effects appear unreasonably small as a percentage of the total area considered).

For the purposes of documenting and assessing changes to the Land and Water RSCs, the Region of Interest has been organized into the following four geographic areas:

- Area 1: Warren Landing to the inlet of Split Lake;
- Area 2: Split Lake to the Nelson River estuary;
- Area 3: Opachuanau Lake to Split Lake Inlet (including Southern Indian Lake); and
- Area 4: the Missi Falls Control Structure to the Churchill River estuary (see Map 1-4).

The inland portions of Areas 1 to 4 generally coincide with the boundaries for resource management areas (RMAs), Registered Trapline Districts, ecodistricts and/ or watersheds.

Areas 1 to 4 are similar to those used in two major study programs—namely, the Lake Winnipeg, Churchill and Nelson Rivers Study Board (1971-1975) and Manitoba and Manitoba Hydro’s CAMP (2007 to present). The exception is Area 3, which combines Southern Indian Lake and the diversion route, which were dealt with separately in the aforementioned studies.

It should be noted that the Phase II analysis undertaken for RSCs may combine areas where appropriate (e.g., for components like intactness) to provide a more complete analysis of the cumulative effects of hydroelectric developments over a broader geographic area.

There is an extensive body of information available for the Water and Land components; however, the utility of the information in quantifying the cumulative effects of hydro developments is limited for some RSCs by the following:

- There is often a lack of pre-development scientific data which precludes the ability to conduct a quantitative assessment of post-development changes for some RSCs. Comparisons of pre- and post-project data are also hindered by analytical or equipment changes that occur over time (e.g., changes in soil or water quality detection limits);
- Differences in the “types” of studies conducted can make comparisons difficult (e.g., resource management studies often target key fish species to monitor their abundance at specific locations over time while impact assessment studies set nets randomly to determine habitat use by the broader fish community); and
- There is often insufficient data to quantify effects on a number of RSCs, particularly RSCs that do not have a direct commercial value (e.g., forest birds).
As a result, establishing a pre-development condition from which to evaluate cumulative effects is challenging and not always possible.

The assessment of the cumulative effects of hydro development on some RSCs will also hampered by the following:

- The ability to quantify the effect of hydroelectric developments on some RSCs may be masked by the effects of other projects and activities (e.g., the loss of land due to clearing for hydro developments in an area where large scale forestry operations are located). Similarly, some RSCs have a broad home range and may be affected more by developments outside rather than inside the Region of Interest (e.g., many songbirds migrate from the Region of Interest to areas in Central and South America); and

- Quantifying the effects of hydro developments on RSCs that are harvested either commercially (e.g., aquatic furbearers) or domestically or for sport (e.g., moose) is difficult as populations will reflect the level of harvest and this is often linked to economics (e.g., fur prices) or resource management decisions (e.g., changes in harvest quotas).

Despite these limitations, which are common in assessments spanning a long timeframe, Manitoba Hydro and Manitoba will provide the best information available and will use the best contemporary methodologies for environmental assessments and post-project environmental reviews to meet the objectives of the Terms of Reference.

In particular, following the conclusion of the Phase I report, Manitoba will work to develop metrics, where feasible, of ecosystem health to enhance the assessment of information and data during Phase II. These metrics, where available, will be used as a basis for assessing the health of the current state of the environment.
1.4 LITERATURE CITED


2014 05 27

Environmental Assessment & Licensing Branch
Manitoba Conservation and Water Stewardship
Suite 160 - 123 Main Street
Winnipeg MB R3C 1A3

Attention: Ms. Tracey Braun

Dear Ms. Braun:

Re: Letter of Confirmation for Regional Cumulative Effects Assessment

By way of this letter, both Manitoba and Manitoba Hydro confirm that they are in agreement with the attached final Terms of Reference to conduct a Regional Cumulative Effects Assessment (RCEA) of hydro-electric developments that includes the Nelson, Burntwood, and Churchill River systems, as defined below and in the Terms of Reference.

The RCEA is being conducted in two phases and is designed to address Recommendation 13.2 of the Clean Environment Commission Report on Public Hearing for the Bipole III Project. In his letter of August 14, 2013, the Minister of Conservation and Water Stewardship specifically committed to implementing this recommendation, which states:

"Manitoba Hydro, in cooperation with the Manitoba Government, conduct a Regional Cumulative Effects Assessment for all Manitoba Hydro projects and associated infrastructure in the Nelson River sub-watershed; and that this be undertaken prior to the licensing of any additional projects in the Nelson River sub-watershed after the Bipole III project."

It is planned that the final RCEA report will be available in late fall 2015. It will be retrospective in nature and will:

- identify, describe and acknowledge the cumulative effects of past Hydro developments;
- describe the current state of the environment in areas affected by Manitoba Hydro’s system; and,
- describe a process for continued monitoring of and reporting on the state of the environment into the future.

The final RCEA report will be based on a review and synthesis of past and ongoing studies and monitoring programs, and will include both technical science and Aboriginal Traditional Knowledge to the extent that each is available.
Ms. T. Braun  
Page 2

It is intended that an interim product will be available in late May 2014 to demonstrate progress towards the overall RCEA and to provide an early identification of the studies and information being gathered to undertake the final RCEA, and the methods to be employed for the assessment.

Manitoba and Manitoba Hydro are further committed to implementing an appropriate public engagement process. This engagement process will be determined following submission of the interim report and will include opportunities for Aboriginal and other communities in the Region of Interest, as well as other interested parties, to provide their perspectives on the cumulative effects of hydroelectric development in the Region of Interest.

Confirmed this  
day of May, 2014:

[Signature]

Manitoba Hydro  
Per: William Brown  
Manager, Environmental Licensing and Protection

Confirmed this 27  
day of May, 2014:

[Signature]

Government of Manitoba  
Per: Director  
Environmental Approval  
Conservation and Water Stewardship
Terms of Reference
Joint Approach to Undertaking a Regional Cumulative Effects Assessment for Hydro Developments as per Recommendation 13.2 of the Clean Environment Commission (CEC) Bipole III Report
Manitoba Conservation and Water Stewardship and Manitoba Hydro

Background

The 2013 Clean Environment Commission (CEC) Bipole III Report included a list of non-licensing recommendations to be carried out jointly by Manitoba Hydro (MH) and the provincial government. On behalf of government, the Minister of Conservation and Water Stewardship (CWS) committed to implementing these recommendations.

These Terms of Reference provide a proposed approach to addressing one of the CEC’s non-licensing recommendations, specifically number 13.2, which states:

“Manitoba Hydro, in cooperation with the Manitoba Government, conduct a Regional Cumulative Effects Assessment for all Manitoba Hydro projects and associated infrastructure in the Nelson River sub-watershed; and that this be undertaken prior to the licensing of any additional projects in the Nelson River sub-watershed after the Bipole III project.”

The CEC report details the rationale for this recommendation. In short, during the Bipole III hearings, some communities expressed concerns regarding effects they have experienced, and continue to experience, as a result of existing MH projects. The CEC noted that “…it became apparent that past hydro-electric developments in northern Manitoba have had a profound impact on communities in the area of these projects, as well as on the environment upstream and downstream.” Similar concerns were identified in the CEC’s 2004 “Wuskwatim Generation and Transmission Projects” hearing report.

On October 17, 2013, the CEC heard motions from participants in the Keeyask CEC process who were requesting that the Keeyask Generation Project hearing be delayed until the recommended regional cumulative effects assessment is complete. As part of these motions hearing, the CEC noted the volume of study that has been completed to date by Manitoba Hydro in the Nelson River region and suggested that Recommendation 13.2 could readily be satisfied by pulling together and analyzing this information, rather than undertaking new field work or seeking new information.

Consistent with the Recommendation 13.2 and comments made by the CEC on October 17, 2013, these terms of reference will:

• identify the challenges ahead in making such an assessment decades after the developments have occurred;
• identify the scope of the study to address recommendation 13.2;
• describe the approach to be used to address the challenges while still meeting the intent of the recommendation;
• outline the work tasks to be done, who will have the accountability for each task and the timelines for completion;
• describe the desired end product; and,
• set out how the process will be managed between the Manitoba government and MH.

Challenges and Scope

Manitoba Hydro’s major northern developments include the Churchill River Diversion (1976), Lake Winnipeg Regulation (1976), Kelsey Generating Station (G.S.) (1961), Kettle G.S. (1974), Long Spruce G.S. (1979) Limestone G.S. (1992) and Bipole I and II (1971 and 1978). These developments were assessed, designed, and constructed to meet the environmental assessment (EA) requirements of the time. Over the many ensuing years, EA practices and assessment procedures have evolved to where they are today.

The key differences between past and current EA practices are: the analysis of whole ecosystems; cumulative effects/impacts assessment; and, the collection of pre-development data that would be used to provide the context from which to measure future environmental impacts. As a result, establishing a pre-development condition from which to evaluate cumulative impacts will be a challenge in addressing the CEC’s recommendation. This is not uncommon in cases where areas were developed many decades past.

In addition to assessing cumulative impacts over time, the CEC’s recommendation refers to assessing these impacts over space, i.e., regionally. Regional cumulative assessments are typically used as a government’s tool to facilitate broad, long-term planning decisions regarding a range of development options for a prescribed area or basin. In the case of the Nelson River sub-watershed, such planning decisions were made over forty (40) years ago and any impacts that may have resulted are largely irreversible at this point in time and/or the environment has now adapted.

Notwithstanding these challenges, the Manitoba government and MH will provide the best information possible to satisfy the objectives of the CEC’s Bipole III recommendation 13.2. Also in terms of scope, it is proposed to include areas beyond that identified in the CEC recommendation to include the Churchill, Burntwood and Nelson river systems.

Work Steps, Approach to the Study and Accountability

Given the above, Manitoba and Manitoba Hydro believe that the best option to address Recommendation 13.2 is the development of a plain language “Regional Cumulative Effects Assessment for Hydro Developments on the Churchill, Burntwood and Nelson River Systems” that describes environmental change over time as a result of previous hydro developments, including impacts, mitigation measures, community issues, compensation and the current quality of the environment. The report will be based on a review and synthesis of past and ongoing studies and monitoring programs. The proposed region of study is greater than that identified in the CEC report.
Specifically, the final report would:

- identify, describe and acknowledge the cumulative impacts of past Hydro developments;
- describe the current state of the environment in areas affected by Manitoba Hydro’s system; and,
- describe a process for continued monitoring of and reporting on the state of the environment into the future.

The report would use and incorporate, to the extent possible, attributes of contemporary environmental effects assessment and post-project assessment methodology. This type of assessment would be very similar to the approach taken from the documents currently being prepared by Manitoba Hydro at the CEC’s request for the review of the application for finalization of the Water Power Act licence for Lake Winnipeg Regulation.

**Phase One**

The first phase will be to develop a plain language report entitled “A Response to Recommendation 13.2 – Phase 1: A Summary of Environmental Results” that summarizes and describes what is known about the environment in areas affected by hydroelectric developments that are associated with the Lake Winnipeg Regulation and Churchill River Diversion areas. Using text and matrices, it would include:

- A description of all projects/facilities and key points such as area flooded, area of land affected, etc.
- A discussion of the history of Settlement Agreements.
- The preparation of a bibliography of all existing information on the environmental effects associated with hydro developments in the Nelson River basin area including effects associated with CRD, LWR, Kelsey, Kettle, Long Spruce, Limestone, Radisson, Henday, Bipole I and II and other transmission components, and all related infrastructure such as water control structures and roads.
- A compilation, synthesis and summary of this information in text format and in matrices. This will essentially provide an organized (by topic and region) summary of all available environmental effects from existing studies.
- A summary of current monitoring information collected since 2008 by Manitoba and Manitoba Hydro’s Coordinated Aquatic Monitoring Program (CAMP) and the long term monitoring program associated with Bipole III.
- Development of metrics, where feasible, of ecosystem health (by Manitoba) to enhance the assessment of information and data during Phase II and based on jointly agreed to regional study components.
- Preparation and submission of an interim report.
- Manitoba and Manitoba Hydro will work together to collect, summarize and document what has been learned through past and current consultation and Aboriginal Traditional Knowledge processes.
The consolidation, organization and synthesis of the vast amount of information and data that have been collected over the last several decades will provide the foundation for assessing the current quality of the environment in areas affected by hydroelectric developments associated with the Lake Winnipeg Regulation and Churchill River Diversion areas—primarily the Churchill, Burntwood and Nelson River systems.

To the extent possible, attributes of contemporary environmental effects assessment and post-project assessment methodology will be used which will be consistent with the approach currently being requested by the CE C for the review of the application for the finalization of the Water Power Act Licence for the Lake Winnipeg Regulation.

Accountability for the preparation of the Phase I report will be with MH; but Manitoba will participate jointly in collecting, summarizing and documenting what has been learned through past and current consultation and Aboriginal Traditional Knowledge processes. The Phase I “Summary of Knowledge Acquired: Phase I of a Regional Cumulative Effects Assessment for Hydro Developments on the Churchill, Burntwood and Nelson River Systems” will be completed by May 31, 2014 and submitted to the Minister of CWS on behalf of the Manitoba government. The initial Phase I report will provide the basis for the Phase II work.

Upon receipt of the Phase I report from MH, CWS will facilitate an internal review by departmental experts who will be expected to provide technical expertise and recommendations for the assessment. It is expected that Manitoba government will provide input where appropriate to be considered for the enhancement of the Phase II report and will communicate this to MH in a consultative and collaborative manner throughout the summer and fall of 2014.

**Phase II**

Phase II would include an assessment of the environmental effects of hydro development based on all available existing information, and utilizing to the degree possible the attributes of methodologies for environmental effects assessment and post-project assessment. This assessment would be undertaken by MH and would include:

- Pathways-of-effects diagrams to provide a visual representation of the possible linkages between the projects and the environment.
- An assessment (to the extent possible) of the environmental and socio-economic effects to identified regional study components of previous hydro development (based on available information and, wherever possible, based on pre-hydro development information);
- A determination of the current quality of the environment in areas affected by hydro development based on more current monitoring and assessment data and in consideration of available thresholds and benchmarks, as well as conditions in off-system areas, where applicable;
- The identification of gaps in information; and,
- Preparation of an Environmental Assessment and State of Knowledge Report.
The report prepared at the end of Phase II by Manitoba Hydro entitled “Regional Cumulative Effects Assessment for Hydro Developments on the Churchill, Burntwood and Nelson River Systems: Final Report” is to be provided to Manitoba in October, 2015, and submitted to the Minister of CWS on behalf of the Manitoba government. Upon receipt of the Phase II report from MH, as with the Phase I report, CWS will facilitate an internal review by departmental experts who will be expected to provide technical expertise and recommendations prior to finalizing the report.

Early in Phase II, Manitoba and Manitoba Hydro will also determine the exact nature and design of any appropriate public engagement processes. Once determined, Manitoba Hydro will provide the funding required to undertake the agreed to public engagement process.

Beyond Phase 2

CWS and MH will continue long term monitoring efforts managed under the Coordinated Aquatic Monitoring Program (CAMP) and the Bipole III monitoring and reporting programs to ensure that the environment is sustainably managed and protected well into the future.

Desired End Product

The desired end product will be a final report that addresses the intent of the CEC’s Bipole III hearing report Recommendation 13.2, but that also provides a consolidated, vast, and comprehensive collection of environmental, cultural, and community knowledge about the region. It is fully intended that the report will be a resource for government and all Manitobans on the state of the environment in this resource and heritage-rich part of the province.

Process for Collaboration

The CEC recommended that the assessment be done in cooperation between MH and the Manitoba government. Although the major portion of report preparation will be the responsibility of MH, CWS, on behalf of the Manitoba government, will facilitate regular and ongoing input from internal experts as needed throughout each phase of the study (e.g., wildlife, fisheries, heritage resources, forestry, etc.) and will contribute available information from its records to complete the study.

It is anticipated that a small project management team consisting of representation of both MH and CWS will be established and will meet on a regular basis to check milestones, schedules, and to discuss/resolve issues that may arise. The management team will be co-chaired by MH and CWS.

The management team, through their CWS members, shall request issue-specific technical meetings be held as needed with representatives from the relevant program areas to discuss findings, review technical options, interpret monitoring data, and discuss analyses and recommendations and seek government support/direction as necessary. As mentioned above, CWS will formally facilitate an internal review of both the Phase I and Phase II reports.
**Timeline**

The total length of the study is anticipated to be from January 2014 through October 2015. Work going beyond the submission of the final Phase II report can be determined outside of these Terms of Reference. An estimated summary of the timelines is provided below. It is possible that these dates may change based on the outcomes of Phase I and implementation experience during the course of Phase 2.

<table>
<thead>
<tr>
<th>TASK</th>
<th>ACCOUNTABILITY</th>
<th>BY WHEN</th>
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<tbody>
<tr>
<td>Finalize Terms of Reference</td>
<td>MH and CWS</td>
<td>Jan. 24, 2014</td>
</tr>
<tr>
<td>Submit Phase I report to CWS</td>
<td>MH</td>
<td>May 31, 2014</td>
</tr>
<tr>
<td>Facilitate TAC review of Phase I report</td>
<td>CWS</td>
<td>Jul. 31, 2014</td>
</tr>
<tr>
<td>Project progress/management meetings</td>
<td>CWS and MH</td>
<td>Ongoing (monthly)</td>
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<tr>
<td>TAC meetings</td>
<td>CWS and MH</td>
<td>As needed</td>
</tr>
<tr>
<td>Public Engagement</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Submit Phase II report to CWS</td>
<td>MH</td>
<td>Oct. 31, 2015</td>
</tr>
<tr>
<td>Facilitate TAC review of Phase II report</td>
<td>CWS</td>
<td>Nov. 30, 2015</td>
</tr>
<tr>
<td>Finalize Phase II report</td>
<td></td>
<td>Dec. 31, 2015</td>
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**May 2014**
PART II: HISTORY OF HYDROELECTRIC DEVELOPMENT IN THE REGION OF INTEREST
REGIONAL CUMULATIVE EFFECTS ASSESSMENT
PART II
HISTORY OF HYDROELECTRIC DEVELOPMENT IN THE REGION OF INTEREST
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# ACRONYMS, ABBREVIATIONS AND UNITS

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<thead>
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<th>Acronym / Abbreviation</th>
<th>Term/ Unit</th>
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<tr>
<td>AC</td>
<td>Alternating current</td>
</tr>
<tr>
<td>AECL</td>
<td>Atomic Energy of Canada Limited</td>
</tr>
<tr>
<td>AFP</td>
<td>Augmented Flow Program</td>
</tr>
<tr>
<td>CN</td>
<td>Canadian National</td>
</tr>
<tr>
<td>CRD</td>
<td>Churchill River Diversion</td>
</tr>
<tr>
<td>DC</td>
<td>Direct current</td>
</tr>
<tr>
<td>ft</td>
<td>feet</td>
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<tr>
<td>GS</td>
<td>Generating Station</td>
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<tr>
<td>HVdc</td>
<td>High Voltage Direct Current</td>
</tr>
<tr>
<td>INCO</td>
<td>International Nickel Company</td>
</tr>
<tr>
<td>km</td>
<td>kilometre</td>
</tr>
<tr>
<td>kV</td>
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<tr>
<td>LWR</td>
<td>Lake Winnipeg Regulation</td>
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<tr>
<td>MW</td>
<td>megawatt</td>
</tr>
<tr>
<td>NCN</td>
<td>Nisichawayasihk Cree Nation</td>
</tr>
<tr>
<td>NRPB</td>
<td>Nelson River Programming Board</td>
</tr>
<tr>
<td>RCEA</td>
<td>Regional Cumulative Effects Assessment</td>
</tr>
<tr>
<td>SIL</td>
<td>Southern Indian Lake</td>
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</tbody>
</table>
2.0 HISTORY OF HYDROELECTRIC DEVELOPMENT IN THE REGION OF INTEREST

The key dates for all major hydroelectric developments in the Region of Interest, along with the key dates for environmental and socio-economic events in Manitoba since the 1950s are illustrated in Figure 1-1. To provide context for the RCEA, the following gives a high-level overview of the history of hydroelectric development in the Region of Interest.

2.1 PLANNING

Manitoba Hydro has been a key part of Manitoba’s economy since the Manitoba Power Commission was established in 1916. Since then, Manitoba Hydro has grown through the construction of new facilities and the purchase of existing facilities as discussed below (see Table 1-1).

The potential for hydroelectric development in the Region of Interest was identified by Manitoba and Canada early in the last century. In 1913, the Department of Mines (Canada) conducted a comprehensive geological survey of the drainage basins of the Churchill and Nelson rivers to determine the power potential of Manitoba’s northern rivers. At the time, the key challenge for developing this power was a lack of available technology for transmitting energy over long distances. However, the report (McInnes 1913) formed the basis for further studies that ultimately led to the development of Manitoba’s northern water power resources.

A substantial amount of planning regarding potential ways to meet the Province’s future power needs was conducted by Manitoba during the 1940s and 1950s. In 1947, Manitoba Water Resources Branch initiated surveys of the upper reaches of the Nelson River and concluded that approximately 160 MW of potential power was available between Warren Landing and Cross Lake. In the 1950s, studies were also conducted at several locations by Manitoba Department of Mines and Natural Resources including Long Spruce to Limestone Rapids (Verner 1955), Devils Rapids to Birthday Rapids (Verner 1955), Birthday Rapids to Butnau River (Verner 1956), and the Churchill River and Burntwood River systems (Gould 1958) as well as several other areas.

In 1958, Canada and Manitoba jointly funded the Lakes Winnipeg and Manitoba Board to determine if the regulation of Lake Winnipeg could be used to reduce flooding around Lake Winnipeg. The study found that although regulation could provide flood control, that the benefits from flood control by itself could not be justified from an economic perspective. However, the Board concluded that Lake Winnipeg Regulation (LWR) would be valuable for hydroelectric development if the total capacity of the Nelson River hydroelectric plants reached several hundred megawatts.

In the early 1960s, Manitoba needed to increase its energy production to meet growing provincial demand either through thermal or hydroelectric production. During this timeframe, advances were made in the field of High Voltage Direct Current (HVdc) power transmission which would allow power to be
transferred more efficiently from the north. Subsequently, Manitoba and Canada formed the Nelson River Programming Board (NRPB) in 1963, which “investigated the power potential of the Nelson River and considered the merits of diverting a substantial portion of the flows from the Churchill River via the Rat and Burntwood rivers into the lower Nelson River to augment the power potential of sites at Kettle Rapids and downstream areas. A follow-up program was conducted in 1964 and, in December 1965, the NRPB recommended that the Government consider a Phase I plan of hydroelectric generation” (Tritschler 1979). The Phase I plan consisted of the following:

- The regulation of Lake Winnipeg (now known as Lake Winnipeg Regulation or LWR);
- The diversion of flows from the Churchill River (via the Rat and Burntwood rivers) into the Nelson River (now known as the Churchill River Diversion or CRD);
- A generating station at Kettle Rapids on the lower Nelson River (now known as the Kettle GS); and
- The construction of converter stations and an HVdc transmission line from the Kettle GS to southern Manitoba (now known as Bipole I).

The NRPB indicated the Phase I plan was the lowest cost option that would be economically feasible for hydroelectric development in northern Manitoba and would be fully compatible with, and would facilitate, the development of hydroelectric power in the north. The NRPB stated that the storage capacity in Lake Winnipeg and Southern Indian Lake (SIL) would be required to maximize the financial benefits of the developments. At SIL, both a high level and a low level diversion were being considered: both options would cause substantial flooding on SIL but the high level CRD would require the entire community of South Indian Lake to be moved and would cause adverse environmental impacts as far upstream as Granville Lake. As discussed in Section 2.2 below, the high level diversion was not approved by the government of Manitoba but the low level diversion was subsequently authorized.

As discussed below, all four of the recommended projects were constructed between 1966 and 1976: Bipole I (completed in 1971); Kettle Rapids GS (1966 to 1974); Lake Winnipeg Regulation (1970 to 1976), and the Churchill River Diversion (1973 to 1976). It should be noted that construction of Bipole II was initiated at the same time as Bipole I as it was more efficient to build them at the same time. Bipole II was then extended to connect to the Radisson and Henday Converter Stations which was completed in 1977. These large projects required supporting infrastructure to be able to convert and distribute power to end users and to access and maintain the facilities.
2.2 HYDROELECTRIC DEVELOPMENT 1950 TO 1976

The Kelsey GS was the first generating station constructed on the Nelson River. Construction of the station and associated infrastructure occurred between 1958 and 1961. Associated infrastructure included an airstrip and a 23 km long rail spur line linked to the CN Bayline, to provide access to the construction site. Initially, the Kelsey GS consisted of a five-unit 160 MW development with the sole purpose to provide power to International Nickel Company's (INCO) mining and smelting operations in the Moak Lake and Mystery Lake areas and to Thompson. A sixth unit was installed in 1969 and a seventh unit in 1972. All 7 units were re-runnered between 2006 and 2013 and the current capacity of the Kelsey GS is 292 MW. To deliver the power to Thompson, two-138 kV transmission lines were constructed and in-service by 1960. One of the 138 kV transmission lines was upgraded to 230 kV in 1972. A 129 km long 230 kV transmission line was constructed in 1967 from the Kelsey GS to the future site of the Radisson Converter Station. An additional 138 kV transmission line between the Kelsey GS and the Radisson Converter Station became operational in 1973 and was completed in 1977. The lines increased the capacity and reliability of power to Thompson and to INCO’s operations. A transmission line was also constructed to provide construction power for the future Kettle GS and to supply power to Gillam, which was rapidly expanding as the centre for hydroelectric development in the north.

Manitoba Hydro applied for an interim licence to develop the high level CRD in April 1968. There was strong opposition from the public and the following year, the Manitoba government stated that the high level CRD would not be approved. Manitoba subsequently commissioned a study of the Lake Winnipeg Regulation project (G.E. Crippen and Associates Ltd. 1970). Concurrently, Manitoba Hydro commissioned a study of an alternative low level CRD (Underwood McLellan and Associates Ltd. 1970). The LWR project was reviewed again and approved in 1970 and was operational by 1976 (installation of the generating units at Jenpeg GS was completed in 1979). The Project consists of the following:

- The 125 MW Jenpeg GS and Control Structure which regulates the Nelson River West Channel portion of Lake Winnipeg’s outflow;
- A series of diversion channels (Two-Mile, Eight-Mile, and Ominawin Bypass) that increase the outflow capacity from Lake Winnipeg into the Nelson River; and
- The Kiskitto Dam and Inlet Control Structure which separate Kiskitto Lake from the backwater effects of LWR (which would result in flooding) and provides a regulated inflow.

In December 1972, an interim licence to proceed with the low-level CRD was issued to Manitoba Hydro by the Water Resources Branch of the Manitoba Department of Mines, Resources and Environmental Management. In May 1973, Manitoba granted Manitoba Hydro an “Interim License for the Diversion of Water from the Churchill River to the Nelson River, and the Impoundment of Water on the Rat River and Southern Indian Lake.” Construction contracts were awarded in 1973, and the diversion was in operation in 1976.
The water diverted from the Churchill River was to be used at four potential generating stations along the Burntwood River (totalling more than 700 MW) and at seven existing and potential sites on the lower Nelson River adding nearly 2,000 MW of dependable capacity.

The CRD has three main components:

- A control dam at Missi Falls (the natural outlet of SIL), which raises the lake’s level by 9 ft. (3m) and controls the outflow to the lower Churchill River;
- An excavated channel from South Bay of SIL to Issett Lake, which creates a new outlet that allows water to flow from the Churchill River into the Rat River-Burntwood River-Nelson River systems; and
- A control structure on the Rat River at the outlet of Notigi Lake which regulates the flow into the Burntwood River-Nelson River systems.

By 1979, Manitoba Hydro had determined that the CRD could convey higher flows than stipulated in the Interim License without exceeding the water level constraints in the Interim License. The conditions set in the licence provide safeguards for communities affected by the Churchill River Diversion. The licence conditions limiting Notigi outflows were set based on anticipated downstream inundation levels at certain flows. After construction was completed, initial operations revealed that impacts downstream of Notigi in open water were about as expected and ice impacts were much less than expected. This led to a decision to explore higher diversion flows. An initial winter flow test was approved and conducted in 1979. In subsequent years, further “Test Programs”, were requested and approved and took place primarily during the winter, but also during the summer of 1981. This permitted the exploration of the physical capabilities of the diversion channel and the lower Churchill River.

After this testing phase, approvals to deviate from the terms of the Interim Licence have been the same for each winter and summer period since 1986. This mode of operation has become known as the Augmented Flow Program (AFP). The AFP has operated as a component of CRD as granted by Manitoba, since 1982 as an annual deviation from the Interim Licence.

The 1,220 MW Kettle GS was the second station on the Nelson River and the first on the lower Nelson River. With an operating head of 30 m (98 ft.), Kettle GS became the largest hydroelectric station in Manitoba at the time. Construction of the station began in 1966 and was completed in 1974. The project included transmission facilities to move the power into the transmission system and the Radisson Converter Station which converted power from AC to DC. The converter station was constructed south of the Kettle GS and became operational in 1971 (all work was completed by 1977).

The 980 MW Long Spruce GS was fully operational in 1979 with the first of the station’s ten units coming into service in 1977. The station is operated as a run-of-the-river plant to pass the water that the Kettle GS releases. When the Long Spruce GS became operational, the Radisson Converter Station converted part of the power from the generating station to DC for transmission to southern Manitoba. However, only half of the power generated at Long Spruce GS could be converted at the Radisson Converter Station, so the Henday Converter Station was constructed 42 km northeast of Radisson. Constructing the Henday Converter Station also created additional conversion capacity for potential

PHASE I REPORT
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future stations. The Henday Converter Station was constructed between 1970 and 1985 and began transforming power from Long Spruce in 1978.

A second high voltage transmission line, Bipole II, was also developed during this time period to accommodate the additional power generated at Long Spruce GS. Bipoles I and II share the same right-of-way for much of their route. Bipole I, completed in 1971, begins at the Radisson Convertor Station and is 895 km in length; Bipole II, completed in 1977 (Radisson to Henday segment), begins at the Henday Converter Station and is 937 km in length. Under a 1966 agreement, development of these lines was undertaken as a federal-provincial initiative. The federal government was represented by AECL, which financed, designed and constructed the two HVdc transmission lines (Bipoles I and II) to connect the Radisson and Henday Converter Stations to the Dorsey Converter Station, located north of the City of Winnipeg near Rosser. The province was represented by Manitoba Hydro and the company agreed to pay back the initial financing for the lines over the next 50 years, but it repaid the full amount by 1992.

In addition to the above, two sets of three 230 kV transmission lines were constructed to further connect the Long Spruce GS to the Radisson and Henday Converter Stations and were completed in 1977 and 1990, respectively.
2.3 HYDROELECTRIC DEVELOPMENT 1976 TO 2014

Limestone Generating Station and Associated Infrastructure

In 1976, construction began on the Limestone GS, downstream from the Long Spruce GS on the Nelson River. The first stage cofferdam, the temporary town site at Sundance, a rail spur and road from Split Lake to the Long Spruce GS, and additions to the Henday Converter Station were being constructed when a decision was made in 1978 to postpone the construction due to decreased provincial load growth.

Construction of the Limestone GS (1,350 MW capacity) re-started in 1985 and construction was completed in 1992. In 1989, a 40 km extension of an existing 138 kV line from Radisson Converter Station to the Limestone GS was constructed to act as an emergency back-up for the station. A 9 km back-up for the Bipole II HVdc line, originating at the Henday Converter Station and extending across the Nelson River, was added in 1992.

Wuskwatim Generating Station and Associated Infrastructure

The most recently developed generating station in northern Manitoba, the 214 MW Wuskwatim GS, was commissioned in 2012 on the Burntwood River between Nelson House and Thompson. The Wuskwatim project was developed as a partnership agreement with Nisichawayasihk Cree Nation (NCN). The Wuskwatim GS is owned by the Wuskwatim Power Limited Partnership, a legal entity involving NCN and Manitoba Hydro. The partnership agreement represents a major shift in the way projects are developed in Manitoba. The first of its kind in Canada, the partnership with NCN demonstrates a movement towards collaborative development of projects. The participation of NCN in the entire process resulted in a project that included Aboriginal Traditional Knowledge in both the assessment and monitoring phases. The resulting project limited flooding to 0.5 square kilometres and minimized environmental effects to the maximum extent possible. This development is also the first generating station in Manitoba to have undergone both an Environment Act (Manitoba) and a Canadian Environmental Assessment Act (Canada) approval process.

The development of the Wuskwatim GS required new transmission lines and stations to deliver electricity into the existing transmission system. The points of connection are at Thompson (at a new station called Birchtree Station) and at Herblet Lake Station at Snow Lake. A 230 kV transmission line was also constructed from Herblet Lake Station to the existing Rall’s Island Station at The Pas (ISD of 2012), the majority of which is outside of the Region of Interest. One 45 km, 230 kV transmission line runs from Birchtree Station to Wuskwatim GS, while two single-circuit 230 kV lines (~137 km each) run from Wuskwatim GS to Herblet Lake Station on a shared right-of-way.
2.4 PROJECTS UNDER DEVELOPMENT OR REGULATORY REVIEW

Bipole III, Riel, Keewatinoo, and Associated Infrastructure

Manitoba Hydro is currently constructing the Bipole III Transmission Project which consists of a third HVdc transmission line, originating at the new Keewatinoo Converter Station, to be located near the planned Conawapa GS and terminating at a new Converter Station (Riel) located immediately east of the City of Winnipeg. The Riel Converter Station and the majority of the Bipole III line are outside the Region of Interest. Apart from the Bipole III line and new converter stations, the Project will require new 230 kV transmission lines linking the Keewatinoo Converter Station to the Henday Converter Station and to Long Spruce GS. The Bipole III Project underwent an Environment Act (Manitoba) review process.

The power transmitted by Bipole III will originate at existing generating stations on the lower Nelson River (Kettle GS, Long Spruce GS, and Limestone GS). As described above, the existing generating stations are linked to Bipoles I and II via the transmission lines to the Radisson and Henday Converter Stations. The Keewatinoo Converter Station and associated transmission lines will add flexibility and reliability, ensuring that the power generated is transmitted into the transmission system. The connections include five 230 kV transmission lines. One 230 kV transmission line will extend from Long Spruce GS to the Keewatinoo Converter Station. Four 230 kV transmission lines will extend from Henday to the Keewatinoo Converter Station.

Keeyask Infrastructure Project

The Keeyask Infrastructure Project began in early 2012 and involves access road construction and camp development for the Keeyask Generation Project. It is being undertaken by the Keeyask Hydropower Limited Partnership, which consists of Manitoba Hydro and investment entities representing the four First Nations in the vicinity of the project – Tataskweyak Cree Nation and War Lake First Nation (working together as the Cree Nation Partners), York Factory First Nation, and Fox Lake Cree Nation.

The Keeyask Infrastructure Project will provide for timely and efficient construction of the Keeyask Generation Project, should it receive all necessary regulatory approvals. It was undertaken as a separate project, in advance of the Keeyask Generation Project, to achieve the following objectives:

- To provide early business opportunities for the Keeyask Cree Nations;
- To provide early and more employment opportunities for First Nation members, northern Aboriginal people and other northern and Manitoba workers;
- To provide more time for Cree Nation businesses to develop their management capabilities; and
- To accelerate investment to support the promotion of sustainable growth in the Province of Manitoba.

Keeyask Generation and Transmission Projects
The Keeyask Generation Project is a potential future development which is located upstream of the Kettle GS and downstream of the community of Split Lake. The proposed project, which has undergone review by federal and provincial regulators, including a hearing conducted by the Clean Environment Commission, would be developed by the Keeyask Hydropower Limited Partnership. The project consists of a 695 MW Generating Station, transmission facilities, access roads, and supporting infrastructure. Technical science and Aboriginal Traditional Knowledge were used in the planning stage, the impact assessment phase, and, if the project proceeds, will be used in the environmental monitoring phase. The current first unit in-service date for the project is 2019, with all units online by 2020. Construction is scheduled to begin in the summer of 2014.

The Keeyask Transmission Project is being undertaken by Manitoba Hydro and will provide construction power and generation outlet transmission capacity for the proposed Keeyask Generation Project.

A decision on whether to include the Keeyask Generation and Transmission Projects in the final RCEA will be determined once the project has received the required licences or authorizations to undertake construction and operation.
2.5 OTHER TRANSMISSION DEVELOPMENTS IN THE RCEA REGION OF INTEREST

In addition to the above, there are other transmission projects within the Region of Interest that supply power to communities and developments in the area. Some of the developments were constructed by other companies prior to the development on the Nelson River. For example, the Hudson Bay Mining and Smelting Company Ltd. initially supplied power to support mining operations and communities in the immediate area, including Snow Lake. In 1973, Manitoba Hydro took over their power operations at Snow Lake, and assumed full responsibility for all transmission and distribution in the Region of Interest.

Apart from the generating stations and converter stations described above, other lower voltage stations are required to operate the transmission system, and transform power to lower voltages to supply power to communities. Major sub-stations include the Thompson Birchtree Station, which was constructed as part of the Wuskwatim Generation and Transmission Projects, Ponton Station and Herblet Lake Station.

Other lower voltage sub-stations, which can convert power to lower voltages for use in the communities, are located in Churchill, Gillam, Ilford, Thompson (Thompson Burntwood, Thompson INCO, Thompson Mystery Lake), Nelson House, Leaf Rapids, South Indian Lake, Split Lake, Cross Lake, Norway House, Snow Lake, Stall Lake, and Chisel Lake. All of the communities in the Region of Interest are now connected to the transmission system.

A 270 km long 138 kV transmission line from Gillam (Radisson) to the community of Churchill was completed in 1987. In 1993, a 138 kV transmission line from the Kelsey GS to Split Lake was also completed. Service to South Indian Lake is provided from a lower voltage sub-transmission line from the Leaf Rapids Station.

The Ponton Station, located south of Thompson, is an important node in the 230 kV transmission network. A 230 kV transmission line completed in 1965/1966 runs from Thompson Mystery Lake Station to Ponton Station. Ponton Station is also linked to the Jenpeg GS by a 230 kV transmission line, as well as to Herblet Lake Station, north of the community of Snow Lake, by another 230 kV transmission line. The Herblet Lake Station is also an important node in the 230 kV transmission network. Apart from the line to Ponton Station, Herblet Lake Station is linked to Flin Flon via a 115 kV and a 230 kV transmission line, both of which are primarily outside of the RCEA Region of Interest. The station also connects the two 230 kV transmission lines from Wuskwatim GS to Rall’s Island Station (part of Wuskwatim Transmission Project) in The Pas, which is outside of the RCEA Region of Interest.
2.6 LITERATURE CITED


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<th>Term/ Unit</th>
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<tr>
<td>AEA</td>
<td>Adverse Effects Agreement</td>
</tr>
<tr>
<td>AIP</td>
<td>Agreement-in-Principle</td>
</tr>
<tr>
<td>AMP</td>
<td>Access Management Plan</td>
</tr>
<tr>
<td>ATEC</td>
<td>Atoskiwin Training Consortium</td>
</tr>
<tr>
<td>ATK</td>
<td>Aboriginal Traditional Knowledge</td>
</tr>
<tr>
<td>CASIL</td>
<td>Community Association of South Indian Lake</td>
</tr>
<tr>
<td>CDI</td>
<td>Community Development Initiative</td>
</tr>
<tr>
<td>CIA</td>
<td>Comprehensive Implementation Agreement</td>
</tr>
<tr>
<td>CLFN</td>
<td>Cross Lake First Nation</td>
</tr>
<tr>
<td>CRD</td>
<td>Churchill River Diversion</td>
</tr>
<tr>
<td>dBA</td>
<td>decibel</td>
</tr>
<tr>
<td>DFO</td>
<td>Department of Fisheries &amp; Oceans Canada</td>
</tr>
<tr>
<td>DMP</td>
<td>Debris Management Program</td>
</tr>
<tr>
<td>DNC</td>
<td>Direct Negotiated Contract</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>EMFs</td>
<td>Electric and Magnetic Fields</td>
</tr>
<tr>
<td>ft</td>
<td>feet</td>
</tr>
<tr>
<td>FEMP</td>
<td>Federal Ecological Monitoring Program</td>
</tr>
<tr>
<td>FLCN</td>
<td>Fox Lake Cree Nation</td>
</tr>
<tr>
<td>GS</td>
<td>Generating Station</td>
</tr>
<tr>
<td>HNTEI</td>
<td>Hydro Northern Training &amp; Employment Initiative</td>
</tr>
<tr>
<td>HRB</td>
<td>Historic Resources Branch</td>
</tr>
<tr>
<td>HRPP</td>
<td>Heritage Resources Protection Plan</td>
</tr>
<tr>
<td>HVdc</td>
<td>High Voltage Direct Current</td>
</tr>
<tr>
<td>KCN</td>
<td>Keeyask Cree Nations</td>
</tr>
<tr>
<td>km</td>
<td>kilometer</td>
</tr>
<tr>
<td>LNRSSC</td>
<td>Lower Nelson River Sturgeon Stewardship Committee</td>
</tr>
<tr>
<td>Acronym/ Abbreviation</td>
<td>Term/ Unit</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>LWR</td>
<td>Lake Winnipeg Regulation</td>
</tr>
<tr>
<td>m</td>
<td>meter</td>
</tr>
<tr>
<td>MIA</td>
<td>Master Implementation Agreement</td>
</tr>
<tr>
<td>NAC</td>
<td>Northern Affairs Community</td>
</tr>
<tr>
<td>NCN</td>
<td>Nisichawayasihk Cree Nation</td>
</tr>
<tr>
<td>NFA</td>
<td>Northern Flood Agreement</td>
</tr>
<tr>
<td>NFC</td>
<td>Northern Flood Committee</td>
</tr>
<tr>
<td>NHN</td>
<td>Norway House Cree Nation</td>
</tr>
<tr>
<td>OPCN</td>
<td>O-Pipon Na Piwin</td>
</tr>
<tr>
<td>ppb</td>
<td>parts per billion</td>
</tr>
<tr>
<td>PDA</td>
<td>Project Development Agreement</td>
</tr>
<tr>
<td>PEP</td>
<td>Public Engagement Program</td>
</tr>
<tr>
<td>RCEA</td>
<td>Regional Cumulative Effects Assessment</td>
</tr>
<tr>
<td>RMA</td>
<td>Resource Management Area</td>
</tr>
<tr>
<td>RMN</td>
<td>Resource Management Board</td>
</tr>
<tr>
<td>RTD</td>
<td>Registered Trapline District</td>
</tr>
<tr>
<td>SIL</td>
<td>South Indian Lake</td>
</tr>
<tr>
<td>SSEA</td>
<td>Site Selection and Environmental Assessment</td>
</tr>
<tr>
<td>SWAP</td>
<td>System Wide Archaeological Program</td>
</tr>
<tr>
<td>TCN</td>
<td>Tataskweyak Cree Nation</td>
</tr>
<tr>
<td>TDF</td>
<td>Transmission Development Fund</td>
</tr>
<tr>
<td>TLA</td>
<td>Transmission Line Agreement</td>
</tr>
<tr>
<td>TLE</td>
<td>Treaty Land Entitlement</td>
</tr>
<tr>
<td>TSS</td>
<td>Total Suspended Solids</td>
</tr>
<tr>
<td>WKTC</td>
<td>Wuskwatim &amp; Keeyask Training Consortium</td>
</tr>
<tr>
<td>WLFN</td>
<td>War Lake First Nation</td>
</tr>
<tr>
<td>WMP</td>
<td>Waterways Management Program</td>
</tr>
<tr>
<td>YFFN</td>
<td>York Factory First Nation</td>
</tr>
</tbody>
</table>
3.0 PEOPLE

3.1 STUDY APPROACH

Manitoba Hydro has a long history of interaction with the people and communities living in-proximity to and/or affected by the Lake Winnipeg Regulation (LWR) and Churchill River Diversion (CRD), and associated hydroelectric developments (“the Projects”). Manitoba Hydro’s approach to development, and related approach to community engagement, has evolved over time and along with changing societal understandings, values and attitudes regarding the environment, Aboriginal rights and interests and socio-economic impacts generally.

There exists a wealth of information from various sources related to the socio-economic effects of the Projects. There are many cases where communities have documented their experiences with historic hydroelectric development in their own voices. This would include materials prepared in support of settlement agreement processes, materials prepared more recently in support of current environmental assessment documentation for the Wuskwatim and Keeyask Projects, and materials developed for other purposes. Community perspectives on the effects of the Projects have also been shared through oral testimony at recent hearings, including for the Wuskwatim, Keeyask and Bipole III Projects. Communities have also shared their perspectives and concerns with Manitoba Hydro through previous and/or ongoing engagement processes, including, for example, through interactions related to ongoing programming such as the Waterways Management Program (WMP) (discussed below in Section 3.4.2.7.1).

There also exists substantial documentation regarding the processes through which impacts on people and communities have been addressed through mitigation and remedial works, as well as through negotiated settlements with Manitoba Hydro, Manitoba and, in some cases, Canada. Since many of these studies were undertaken in the context of negotiated settlement agreements or claims arbitration they are confidential. In other cases, studies cannot be used without the permission of the community in question.

In light of the various mitigation measures and settlement agreements that have been concluded since construction on the Projects began in the late 1950s, this study seeks through a Phase I and Phase II approach to document Manitoba Hydro’s current understanding of socio-economic effects, including the perspectives, views and experiences communities have shared through various forums since the time of development. Both phases of the study will look at impacts in terms of generation (“the Generation Projects”) and transmission facilities (“the Transmission Projects”), the latter of which includes converter stations, sub-stations, collector lines, High Voltage Direct Current (HVdc) lines, and lower voltage transmission lines used to provide power to communities.

The sections below provide a more detailed description of the Phase I and Phase II.

1 A listing and description of the Projects included in the scope of the RCEA are defined in Section 1.3.2.1.
3.1.1 PHASE I

This Phase I document outlines the communities identified as being in the Region of Interest. This document also summarizes at a very high level Manitoba Hydro’s understanding of the types of socio-economic effects experienced to varying degrees by communities affected by the Projects. As noted above, this understanding comes from various sources including past environmental impact assessments, past settlement negotiations, perspectives shared by communities and resource user groups, and various community led studies and histories that have been shared with the Corporation. Given the timeframe available to complete Phase I, this document is primarily intended to introduce the types of effects that will be discussed in greater detail in Phase II. Socio-economic effects are not presented by community with a few unique exceptions (e.g., household relocation) but rather are summarized across the Projects and across all communities. This document also introduces the mitigation, remediation and compensation measures adopted to address socio-economic effects, including a brief summary of the history of settlement agreements associated with the Projects.

3.1.2 PHASE II

Phase II of this study is intended to document in a more thorough and meaningful way the views, perspectives and experiences communities have expressed to Manitoba Hydro and the Province of Manitoba in various forms, including but not limited to:

- The Northern Flood Agreement (NFA) Arbitration Claims process;
- Other claims and settlement negotiation processes;
- Available post-project evaluations and other studies of socio-economic effects, including community led studies;  
- Aboriginal Traditional Knowledge (ATK) studies;
- Environmental Assessments, and Site Selection and Environmental Assessments (SSEAs) that were conducted for the Projects and, in some cases, related public review processes; and
- Documentation from historic and current (and sometimes ongoing) community engagement processes.

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1 Examples of community studies that will be reviewed in Phase II include, but not be limited in any way to; Split Lake Cree Post Project Environmental Review (Manitoba Hydro - Split Lake Cree Joint Studies, Volumes One to Five, August 1996); Forgotten Nation in the Shadow of the Dams Grievance Statement (Fox Lake Cree Nation, April 1997); Post Project Assessment of Kelsey and Lake Winnipeg Regulation Impacts on Wabowden (October 31, 1990); Relocation and Rebuilding The Social Impacts of Hydro Projects on the Community of South Indian Lake (Universite du Quebec, 2009); Cross Lake Environmental Impact Assessment Study, Volume 1: Key Issues and Impacts and Volume 2: Evaluation of Mitigation Options (Nelson River Group, 1986); Towards Assessing the Effects of Lake Winnipeg Regulation and Churchill River Diversion on Resource Harvesting in Native Communities in Northern Manitoba (P.J. Usher and M.S. Weinstein, 1991).
Given the substantial history, number of communities involved and breadth of materials available on this topic it was not possible to present this information in a thorough way for Phase I of this study. In Phase II, all efforts will be made to present community perspectives and concerns in the spirit and manner in which they were shared.

In Phase II, information on socio-economic effects will be presented by community. This will include a summary of information and perspectives shared with Manitoba Hydro and Manitoba by community. The Phase II report will also present mitigation, remediation and compensation measures specific to each community, as well as a description of various historical and ongoing engagement processes. Phase II will also present, to the extent possible, analysis of demographic indicators for the communities over time, acknowledging the range of other influencing factors additional to hydroelectric development that have affected these indicators.

The information provided in Phase I is preliminary and will be expanded as part of Phase II. As such, as work progresses in Phase II additional effects may be identified and discussed.
3.2 COMMUNITIES IN THE REGION OF INTEREST

Map 3-1 highlights the location of communities\(^1\) located in the Region of Interest (see Map 1-1) as well as their Resource Management Areas (RMAs)\(^2\) and Registered Trapline Districts (RTDs)\(^3\). Communities in northern Manitoba fall into three distinct types – First Nation communities, Northern Affairs Communities (NACs), and industrial towns and cities. The vast majority of the population in the region live in these communities with only a very small portion living in remote areas.

As can be seen on the map, there are a total of eight First Nations, eight NACs, four towns and one city in the Region of Interest. These groupings are summarized in Table 3-1.

Table 3-1: Communities in the Region of Interest

<table>
<thead>
<tr>
<th>First Nations</th>
<th>Northern Affairs Communities</th>
<th>Towns</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nisichawayasihk Cree Nation (NCN)</td>
<td>Nelson House</td>
<td>Town of Gillam</td>
<td>City of Thompson</td>
</tr>
<tr>
<td>Tataskweyak Cree Nation (TCN)</td>
<td>Pikwitonei</td>
<td>Town of Churchill</td>
<td></td>
</tr>
<tr>
<td>York Factory First Nation (YFFN)</td>
<td>Wabowden</td>
<td>Town of Snow Lake</td>
<td></td>
</tr>
<tr>
<td>Fox Lake Cree Nation (FLCN)</td>
<td>Thicket Portage</td>
<td>Town of Leaf Rapids</td>
<td></td>
</tr>
<tr>
<td>War Lake First Nation (WLFN)</td>
<td>Ilford</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norway House Cree Nation (NHCN)</td>
<td>Norway House</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-Pipon-Na-Piwin (OPCN)</td>
<td>Herb Lake Landing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Lake First Nation (CLFN)</td>
<td>Cross Lake</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) For the purpose of this study a community refers to specific commonly recognized geographic locations where people live together.

\(^2\) A RMA is a mutually agreed geographical area, usually the RTD, that includes both Crown and/or Reserve and/or community lands. In the RMAs, Resource Management Boards (RMBs) make recommendations on land and resource uses to Manitoba on Provincial Crown land and to the First Nation or community on Reserve or community lands. Objectives of the Boards include land use and natural resource management planning and the facilitation of consultation, communication and the exchange of information through the joint review of provincial natural resource allocations and dispositions. Provisions for RMAs are set out in various settlement agreements. (Government of Manitoba, April 2014. http://www.gov.mb.ca/ana/interest/agreements.html.)

\(^3\) A RTD means an area designated as a registered trapline district by the regulations set out under The Wildlife Act 1987, Government of Manitoba 2013.
3.2.1 **OTHER COMMUNITIES**

In addition to the communities identified above, Manitoba Hydro has a settlement agreement (2006) with the Pickerel Narrows Community Association that includes CRD and LWR (as well as other projects) in the definition of Project used to define effects addressed by the agreement. Pickerel Narrows is excluded from this study because it is located outside the Region of Interest, is not affected by LWR and is only minimally and infrequently affected by the CRD. The average post-CRD levels on Granville Lake are comparable to pre-CRD levels, with the exception of higher-flow events on the upper Churchill River which are not affected by CRD.¹

The Shamattawa First Nation has raised concerns with Manitoba Hydro regarding the effects of hydroelectric development on resources within the community's RTD. These concerns are not related to direct effects on water levels and flows, but rather potential indirect effects on migratory species (such as caribou and fish) that move from affected waterways into the Shamattawa RTD. Manitoba Hydro remains open to discussing these concerns and has agreed to review any further information that would assist in better understanding the community's concerns. The extent to which there are indirect effects on aquatic and terrestrial resources within the Shamattawa RTD (e.g., for migratory species like caribou), will be explored in the water and land components of Phase II of this study. The community has also raised concerns with what they view as an infringement on their traditional territory via the establishment by Manitoba of the YFFN Resource Management Area through the settlement agreement process between Manitoba, Canada, Manitoba Hydro and the YFFN.

3.2.2 **THE MÉTIS**

There are Métis people who reside in communities in the Region of Interest. Adverse effects experienced by Métis residing in the Region of Interest have been addressed through the various community and resource user group settlement agreements (discussed below in Section 3.4), as well as by various mitigation measures (discussed below in Section 3.4). Information gleaned from more recent studies undertaken by the Manitoba Métis Federation, including through Traditional Knowledge studies completed for the Wuskwatim, Keeyask and Bipole III projects, will be presented in Phase II of this study.

¹ The maximum post-CRD backwater effect at the outlet of Granville Lake (downstream of Pickerel Narrows) is 0.23 m (0.8 ft). The backwater effects diminish as you move upstream of the outlet of Granville Lake and are largest during low flow conditions on the upper Churchill River along with high Southern Indian Lake levels which occur infrequently (a backwater effect greater than 0.1 m (0.3 ft) has occurred less than 10 percent of the time. The backwater effect diminishes as Upper Churchill River flows increase and Southern Indian Lake levels decrease.
3.3 Historic Context of Development

Aboriginal peoples have a strong cultural and spiritual connection to the land and water, and possess constitutionally protected rights. Manitoba Hydro has large investments in areas where Aboriginal peoples live and harvest resources, practice their culture and traditional way of life, and exercise their rights. The development of the Manitoba Hydro system has affected the environment used by Aboriginal peoples and communities in northern Manitoba. While some northern communities have benefited from access to a reliable, low cost and convenient energy source, many have also experienced substantial negative effects on their traditional way of life and, as communities have indicated, a sense of powerlessness and marginalization in decision-making processes affecting their lives.

Most of the Projects were evaluated, debated and constructed during a time when the social, political and legal environment was quite different than today. Decisions about LWR, CRD, Kelsey Generating Station (GS), Kettle GS, Long Spruce GS and Limestone GS occurred in an era when there was much less understanding of the effects of developments on people and the environment, and when there was, for the most part, a marked absence of environmental regulations and legislation. Notably, approval of these Projects predated the Constitution Act (1982), The Environment Act (Manitoba) [1987], the Canadian Environmental Assessment Act (1992), and The Sustainable Development Act (Manitoba) [1997]. These developments also occurred at a time when economic, development and other interests (i.e., flood and drought reduction on Lake Winnipeg) of predominantly southern society took precedent over the interests of potentially affected northern populations.

As a result, Manitoba Hydro’s approach to development during this time period was very different than today. While in line with then practices of the day and consistent with government requirements, past projects involved much less engagement and consultation than would be considered acceptable today and considerably less upfront planning with respect to minimizing environmental impacts. Avoidance, mitigation and enhancement measures were not always identified in advance of project construction or included in capital cost estimates.

During the 1970s and 1980s, public environmental awareness and media attention about the environment began to increase dramatically. Scientific research confirmed that people and the environment were being affected by industrial development in more ways than previously thought. Globally, there was increased pressure on governments and corporations to protect the environment. Respect for and appreciation of Aboriginal peoples and their experience with the development process was also growing. Affected communities were asserting their rights and seeking restitution for the adverse effects they experienced as a result of development. The Constitution Act, which was passed in 1982, provided constitutional protection of Aboriginal and treaty rights for Aboriginal peoples in Canada.

As societal understandings and appreciations developed, Manitoba Hydro increasingly became involved in environmental initiatives and in efforts to understand and address Aboriginal grievances and claims over past projects. The Corporation has established a range of mitigation, remediation and compensation measures to address past effects. Today, Manitoba Hydro is working towards long-term relationships with Aboriginal peoples founded on trust and shared interests. This includes implementation of policies, programs and activities aimed at increasing Aboriginal participation in corporate activities such as
employment, business and partnership opportunities in new developments, maintaining regular contact with communities, managing community specific issues, including supporting and promoting the safety of people using affected waterways.

Manitoba Hydro acknowledges that some of the changes brought about by our projects are irreversible and that, as would be expected, some members of various communities may not feel that established mitigation and compensation measures are sufficient to address losses that were experienced.

**3.3.1 The History of the Settlement Agreements**

The sections below summarize the various collective settlement processes Manitoba Hydro has participated in as part of its efforts to resolve historic grievances over time. Information is provided that is relevant to the Projects under consideration in this study, including the Northern Flood Agreement (NFA), Comprehensive Implementation Agreements (CIAs), ongoing NFA implementation at Cross Lake First Nation (CLFN), and other settlement agreements. In addition to these collective settlement arrangements, individual settlements for personal property loss and damage have been entered into. These arrangements are described in later sections.

**3.3.1.1 Northern Flood Agreement**

As planning for the LWR and CRD Projects proceeded in the early 1970s, the potential impacts on northern Aboriginal communities came to the forefront of interest, concern and discussion. At the same time, the Lake Winnipeg, Churchill and Nelson Rivers Study Board was commissioned by Canada and Manitoba to undertake consultation on and an environmental review of the two projects, including potential impacts on northern Aboriginal communities. The Study Board Report was published in April 1975.

As construction on the two Projects got underway, five affected First Nations formed the Northern Flood Committee (NFC) to undertake joint discussions with Manitoba Hydro and the federal and provincial governments about the Projects. The five communities represented by the NFC were the Split Lake (now Tataskweyak Cree Nation [TCN]), Nelson House (now Nisichawayasihk Cree Nation [NCN]), York Factory, Norway House and Cross Lake Bands. Cross Lake First Nation (CLFN) takes the position that its rights under the NFA are properly the rights of Pimicikamak and the proper representative is the traditional government Pimicikamak Okimawin. Canada and Manitoba view the CLFN as the signatory to the agreement. The NFC, funded by the Federal Government, negotiated the NFA in 1977. The signatories to the agreement included Canada, the Province of Manitoba, Manitoba Hydro and the NFC as representative of the First Nations noted above.

The NFA was intended to be a comprehensive framework agreement among the Governments of Canada and Manitoba, Manitoba Hydro and the NFC (on behalf of the five NFA First Nations) establishing principles, processes and obligations among the parties. It was designed to address effects on First Nation lands, pursuits, activities and lifestyles arising from the construction and operation of the Project which was defined to include CRD, LWR and all existing and planned generating stations on the Nelson and Burntwood Rivers.
The NFA established a process by which easements could be granted to Manitoba Hydro over reserve land in order to facilitate the construction and ongoing operation of the components of the Project. As part of the easement process, First Nations would be entitled to select replacement land on the basis of four acres for every acre of land taken up by the easement and pending selection. Hold areas were established for each First Nation which prevented land within the area from being developed or otherwise granted for a five year period. Other NFA articles provided for the establishment of committees, priority for First Nation members in the allocation of resources, programming to provide for and encourage ongoing traditional land use, trapping and fishing programs, cultural preservation, and a range of remedial and compensatory measures, including water regime management, erosion, travel safety, cemeteries and other cultural and heritage issues. The NFA introduced the concept of resource areas and community planning processes. The resource areas included the registered trap lines, which were adjacent to and generally utilized by members of each First Nation, and the rivers and lakes traditionally used.

Notwithstanding the significant amount of work carried out by the Lake Winnipeg, Churchill and Nelson River Study Board, not all of the effects of CRD and LWR were known at the time the NFA was negotiated and signed. This uncertainty resulted in the creation of an arbitration process as a forum to resolve unsettled claims. The NFA provided for the costs of such processes to be borne by the governments and Manitoba Hydro, and established a reverse onus requiring Manitoba Hydro to prove that the effects or damage alleged had not been caused by the Project.

Implementation of the NFA proved challenging. As written, the NFA left much room for interpretation by all parties. This resulted in disagreement on the spirit and intent of various agreement clauses. The implementation process was very costly and with the exception of resolving most issues of quantifiable losses, resulted in minimal issue resolution, mistrust and adversarial working relationships. In the wake of an initial limitation period, the NFA resulted in the filing of a large number of claims in the early 1980s.

The NFA claims process did result in a significant number of retroactive and interim compensation arrangements and/ or settlement agreements, as well as related programming. These arrangements and agreements addressed claims from the communities related to commercial and domestic trapping, commercial and domestic fishing, personal property loss and damage, recreational impacts, cultural impacts, and impacts on navigation and transportation. For NCN, YFFN, TCN and Norway House Cree Nation (NHCN), these agreements as well as any outstanding claims were, subject to certain specific exceptions, fully and finally resolved through the negotiation of Comprehensive Implementation Agreements (CIAs). As discussed below, CLFN has chosen to pursue ongoing implementation of the NFA.

### 3.3.1.2 Comprehensive Implementation Agreements

In 1986, the NFC recommended that CIAs or settlements be developed with each First Nation, thereby resolving all then outstanding claims under the NFA. The NFC proposed Global Negotiations. The Global Negotiations resulted in the Proposed Basis of Settlement. The Proposed Basis of Settlement did not proceed. At that point, Split Lake (now TCN) suggested that the Band was prepared to proceed alone with a comprehensive agreement to resolve the NFA consistent with the approach in the Proposed Basis
of Settlement. This led to the 1992 Split Lake Settlement Agreement. Subsequently, negotiations resulted in the signing of agreements with three of the other four NFA communities: YFFN in 1995, NCN in 1996 and NHCN 1997 (the agreement with NHCN is known as a Master Implementation Agreement [MIA]).

While each CIA/MIA is unique, they all include common elements relating back to the NFA. The agreements resolved each community’s outstanding NFA claims as a whole rather than on a claim-by-claim basis. The CIAs also put decision making and resources into the hands of the First Nations who assumed responsibility for managing compensation monies and program implementation within their communities. The agreements all include compensation (including funding and processes for economic development), trust indentures for the protection of funds, land exchange (of significantly greater magnitude than under the NFA), the establishment of RMAs, consultation processes for any proposed future developments and environmental monitoring.

3.3.1.3 ONGOING IMPLEMENTATION OF THE NFA AT CROSS LAKE

From 1994 to 1997, Canada, Manitoba and Manitoba Hydro engaged in negotiations with Cross Lake to reach a CIA. In 1997, CLFN indicated that it did not wish to enter into a CIA and rather decided to proceed with implementation of the specific terms of the NFA. Manitoba Hydro continues to work with CLFN, Manitoba and Canada to implement the NFA.

Obligations to the CLFN outlined in the agreement have been addressed through a range of measures including various cash settlements, the construction of remediation or mitigation works at Cross Lake, and ongoing programming. Examples include shoreline maintenance, dock installation, maintenance of dog sled trails, an elders fuel wood program, emergency response and safety patrols, safe water and ice travel programs, safe portage initiative, personal property damage claims, archaeology assistance, resource harvesting agreements, gardening and alternative foods program, school hot lunch program, establishment of a community information centre and various recreational initiatives such as an indoor skating arena.

In addition, under the NFA, CLFN and its members can make claims to be compensated for adverse effects if they are not otherwise resolved.

3.3.1.4 OTHER SETTLEMENT AGREEMENTS

Around the same time Manitoba Hydro was negotiating the CIAs with the NFA communities, efforts also got underway to resolve grievances over project impacts with other communities throughout northern Manitoba. Agreements have been negotiated between Manitoba Hydro and the Province of Manitoba with the Community Association of South Indian Lake (CASIL) [1992], South Indian Lake Housing Association (1992), Fox Lake Cree Nation (FLCN) [2004] and War Lake First Nation (WLFN) [2005], as well as the NACs of Cross Lake (1990 and 2010), Nelson House (2006) and Wabowden (1992). Agreements were also reached with the Town of Churchill (1997) and the City of Thompson (1976 and 1982). Manitoba Hydro is continuing to work with the Mayor and Councils from Thicket Portage and Pikwitonei to resolve outstanding grievances. As well, an Agreement-in-Principle (AIP) was signed with
the Norway House NAC (2003) setting out principles and understandings to guide settlement negotiations which are ongoing.

Manitoba Hydro has also entered into agreements with various resource user groups, and individual resource users. As noted above, a number, but not all, of these were completed in the context of NFA arbitration claims. These agreements are discussed further in Section 3.3, and will be discussed in greater detail during Phase II of this study.

In addition, Manitoba Hydro has entered into subsequent agreements with the CIA communities and the CLFN regarding other issues.

### 3.3.2 Manitoba Hydro’s Approach to New Developments

As noted above, the planning and development processes for today’s projects are very different. The project planning process involves early and extensive engagement with people and communities in the vicinity of proposed projects, particularly Aboriginal peoples, and there is a concerted effort to prevent and reduce, as much as possible, potential impacts through improved project design, and the implementation of project mitigation and community based programming.

With regards to new generation projects, efforts are made to enhance project benefits as much as possible, especially for local communities, through measures like income opportunities and training, employment and business opportunities. These opportunities are sought at all stages of the Project. The costs for all of these activities are estimated and incorporated into long-term capital cost estimates so that the financial implications of a project are understood as well as its environmental and social implications.

As well, efforts are made to negotiate Adverse Effects Agreements (AEAs) in advance with each potentially affected Aboriginal community. AEAs include mitigation measures, community based programming and cash compensation to avoid, offset or compensate for anticipated project effects.

The Wuskwatim and Keeyask Generation Projects are examples of this new approach. In June 2006, NCN signed the Wuskwatim Project Development Agreement (PDA). In May 2009, all four of the Keeyask Cree Nations (KCN) – TCN, WLFN, YFFN, FLCN – signed the Joint Keeyask Development Agreement. The terms of these agreements provide communities with a range of benefits including an income opportunity through part ownership of the project, pre-project training, business opportunities and employment opportunities, joint management of environmental processes, AEAs, and ongoing community involvement opportunities. A community ratification process, including referenda, was held prior to the signing of both agreements.

With regard to new transmission projects, Manitoba Hydro employs a Site Selection and Environmental Assessment (SSEA) process to route and site transmission facilities to minimize project effects on people and the environment. Through the SSEA process, Manitoba Hydro attempts to balance route and site

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1 This has included, but is not limited to, the amendment of pre-determined compensation clauses, which govern the amount of compensation paid during times of deviation from established water regime parameters, to address unusually high water events and the full range of Manitoba Hydro’s operating regime.
selection for transmission projects from biophysical, socio-economic and technical (engineering and cost) perspectives. The Corporation seeks to avoid negative environmental impacts and enhance benefits whenever possible and practical. Where impacts cannot be avoided, routes that best lend themselves to mitigation and to limiting potential negative effects are selected. The process provides impact avoidance and management opportunities at every stage in the process from pre-licensing through post-construction. The SSEA process refines and systematically reduces a study area for a proposed project to the best single balanced choice of a route/site with input from an on-going Public Engagement Program (PEP).

As with Generation Projects, Manitoba Hydro also tries to enhance benefits associated with Transmission Projects through various measures including employment and business opportunities. This can include contracting opportunities and the purchase of local goods and services. In addition, Manitoba Hydro uses local community members as environmental monitors and community liaisons during construction. For the Wuskwatim Transmission Project, Manitoba Hydro developed a Transmission Development Fund (TDF) to provide enduring annual benefits for community development purposes to Aboriginal and small or remote communities in the vicinity of the Project. TDF monies have been used for a variety of community related initiatives such as repairing community facilities, supporting youth programs in the communities and investing monies for future projects. Manitoba Hydro also developed the Community Development Initiative (CDI) for the Bipole III Project to provide direct benefits to communities in the vicinity of the project. CDI funds are to be used to support community development projects that benefit a broad segment of the community.
Development of the Projects has resulted in positive and negative effects on individuals and communities. While communities and Manitobans gained from new access to reliable and low cost power as well as economic development opportunities (training, employment and business opportunities), people in the region have also experienced negative or adverse effects arising from environmental changes, the influx of workers and related experiences of abuse and discrimination, an increased rate of modernization, and marginal participation in decision-making. Other effects include the following:

- The use of lands for hydroelectric purposes;
- Damage and loss of personal property;
- Loss of recreational opportunities (including natural beaches);
- Loss of or damage to cultural and spiritual sites;
- Exacerbated exposure and damage to grave sites;
- Lost income from commercial fishing and trapping;
- A loss of historical and spiritual connection to the land;
- Debris and navigational hazards;
- Interference with the exercise of traditions, practices and customs integral to cultural identity, including the transmission of knowledge and traditional teachings; and
- Concerns about heightened mercury concentrations in fish.

The nature, magnitude and duration of effects experienced is quite different for the Generation Projects than the Transmission Projects.

With regard to effects associated with the Generation Projects, a number of community led studies and histories have expressed the profound changes construction and operation activities have brought for local residents. Effects have also been well documented in various environmental assessment and post project assessment documents, as well as in various materials related to adverse effects negotiations. Publicly available studies and materials will be documented and reviewed in Phase II of this study.

Compared to today, there is not as much documentation regarding historic transmission developments. As it continues to evolve, the SSEA process has incorporated increasing opportunities to avoid impacts through careful routing, and for potentially affected parties to share information and concerns regarding both local issues and routing opportunities. One of the goals of the SSEA process is to avoid, wherever
possible, environmentally, socially and culturally sensitive land uses\(^1\). As such, transmission effects are largely addressed through avoidance of sensitive land uses to the extent possible during the SSEA process.

In the socio-economic context, construction related effects from Transmission Projects are generally temporary and short-term in duration. Operational effects include the physical presence of the facility, as well as other issues such as increased access along the right-of-way and public concerns related to the perceived effects of Electric and Magnetic Fields (EMFs) on health, all of which can be of concern particularly to people in the vicinity of the project.

### 3.4.1 Pathways of Effects

To understand the effects of a generation or transmission project on the socio-economic environment, a number of things that play a part in the well-being of people, families and communities are considered. Changes in the physical environment can directly affect the health and well-being of people. For example, changes in water levels and flows can affect the safety of water and ice conditions for travel. This in turn can affect the ability of people to access resources that are used to sustain people and communities and that support a unique culture and way of life. Physical changes can also affect heritage resources that are important to people and communities. Changes to the habitat for plants, animals and fish can affect the land and resources that are used by people for sustenance, as well as to support their overall way of life. Effects on people and communities can also occur through construction activities and expenditures from a project, including through short term employment, business opportunities and the in-migration of workers. Figure 3-1 highlights the different pathways of effects relating to the socio-economic environment.

The effects of a project will vary depending on location (undeveloped lands versus more intensely developed lands) and the stage of development (pre-construction, construction, operations and maintenance, and decommissioning).

The socio-economic environment in the Region of Interest has also been affected by non-hydroelectric development activities including commercial and domestic resource use, industrial development (i.e., mining and forestry) and the development of infrastructure such as roads, railways and airstrips. As well, government policies and programs (i.e., the residential school system, the welfare system and Registered Trapline System) have had significant impact on the communities, families and individuals living in the region. Looking retrospectively, it is not always possible to separate the impacts of these other developments, events and policies from hydroelectric development.

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\(^1\) These would include, but not be limited to such sites such as cultural sites, heritage resources, cemeteries and burial sites, Reserve Lands, communities, residences, cabins, recreational sites, Treaty Land Entitlements (TLE) and infrastructure such as airports and float plane bases.
EFFECTS ON PEOPLE

- Economy
- Population, Infrastructure & Services
- Personal, Family & Community Life

Figure 3-1: Pathways of Effect in the Socio-economic Environment
3.4.2 **SUMMARY OF SOCIO-ECONOMIC EFFECTS, MITIGATION AND COMPENSATION IN THE REGION OF INTEREST**

This section summarizes Manitoba Hydro’s understanding of the types of socio-economic effects, by theme, experienced by communities in the Region of Interest. As noted above, these understandings have been informed not only by our own studies but also the perspectives and experiences of affected individuals, groups and communities which have been shared in a variety of forums. While it is acknowledged that the nature and scope of generation and transmission effects are quite different, the two are discussed together by topic. Where impacts could not be avoided, the materials summarize the general mitigation, remediation and compensation measures taken to address specific effects.

Information is presented for the affected communities as a whole across the region. The impacts described below vary in nature and magnitude by community, and by proximity to and type of development. As well, not all communities in the Region of Interest experienced all of the described effects. As noted above, information on project effects will be provided on a community-by-community basis for Phase II of this study. The information provided is preliminary and will be expanded as part of Phase II. Given the breadth of existing materials that will be reviewed during Phase II, additional effects may be identified and discussed.

The Cross Lake and Churchill Weirs were important mitigation efforts undertaken to address a number of socio-economic effects. These measures are discussed in sections 4.2 and 4.2.2.4.

### 3.4.2.1 CULTURE, WAY OF LIFE AND HERITAGE RESOURCES

#### 3.4.2.1.1 GENERATION PROJECTS

Hydroelectric development can result in the physical loss or destruction of cultural resources, the loss of culturally important places (such as buildings or places of cultural, spiritual or religious meaning) and general changes to the landscape (physical and aesthetic) that affect one’s ability to exercise customs, practices and traditions and attachments to the land that have been forged over generations. Because of their inherent link to place, cultural practices and pursuits are not always replaceable or transferable to alternative locations and, as such, related effects cannot always be mitigated.

Water regime changes and related flooding and exacerbated shoreline erosion have negatively affected culture, ways of life, and heritage and archeological resources for people living along and using waterways affected by the Generation Projects. This has resulted in the reduction of traditional, cultural, social and recreational opportunities, and related infrastructure that relied on unregulated waterways and shorelines, including losses of traditional spiritual sites, burial grounds (and exposure of human remains), meeting places, beaches and seasonal family campgrounds.

**ADDRESSING EFFECTS ON CULTURE, WAY OF LIFE AND HERITAGE RESOURCES**

**Settlement Agreements**

Various settlement agreements contain specific provisions addressing impacts on culture, way of life and heritage resources. This includes related impacts on resource use and recreation. Specific related claims
were submitted through the NFA arbitration process, and settled either via settlement agreements or through the negotiated CIAs. These arrangements will be discussed in further detail as part of Phase II.

With respect to more recent projects such as the Wuskwatim and Keeyask Generation Projects, in-vicinity communities have been involved far earlier in the planning process in an effort to resolve issues at the planning and design stage. AEAs have been negotiated in advance of development. In the case of Keeyask, for example, agreements with the four First Nations are intended to provide appropriate replacements, substitutions or opportunities to offset anticipated project induced adverse effects on practices and traditions integral to cultural identity. The agreements include programming intended to promote healing and well-being, provide opportunities for traditional lifestyles and healthy food consumption, and strengthen cultural identity.

**Cultural Ceremonies**

Also in relation to the Wuskwatim and Keeyask Generation Projects, cultural and site ceremonies have been held at key planning and construction milestones to help mitigate the effects of the projects on culture and heritage and to demonstrate respect for the land and water.

**Archaeological Programming**

Since development of both the CRD and LWR Projects in the early 1970s, Manitoba Hydro has been conducting or participating in a variety of archaeological programs to address impacts from past development and to prepare for future developments. Agreements are also in place committing additional resources for the future. As well, communities have negotiated agreements directly with government regarding heritage resources of importance to them.

The identification and protection of potentially at-risk heritage resources and found human remains are a requirement of Provincial legislation and Article 7 of the NFA. Manitoba Hydro has worked closely with Aboriginal communities and the Provincial Historic Resources Branch (HRB), which enforces the *Heritage Resources Act* (1986). In addition to the *Heritage Resources Act*, Manitoba Hydro’s projects adhere to the provincial *Policy Concerning the Reporting, Exhumation and Reburial of Found Human Remains* (1987).

Archaeological activities being funded by Manitoba Hydro in relation to the Generation Projects include:

- Archaeological mitigation efforts are underway for the Hunting River Burial Site (Nelson River) in collaboration with the Province, Pikwitonei Community Council, and CLFN;

- CRD Archaeological Program, which is a cooperative venture, involving the HRB in partnership with Manitoba Hydro, NCN, O-Pipon Na Piwin (OPCN), the Manitoba Museum, the University of Winnipeg, and Manitoba Aboriginal and Northern Affairs Department. Since 1990, the partnership has identified, studied, preserved, and protected archaeological sites and human remains in support of the management of Cree cultural heritage resources affected by the CRD in northern Manitoba. It is the longest running archaeological project in Canada;

- The Sipiwesk Lake Archaeological Program, which is funded by Manitoba Hydro through the Cross Lake Action Plan and delivered by the HRB. Sipiwesk Lake comprises a large area, has upwards of 3,200 km (1,988 mi) of shoreline and is virtually unknown archaeologically. The program is a
cooperative venture that also includes the participation of the Manitoba Museum, and Manitoba Department of Aboriginal and Northern Affairs. The objective of this program is to identify the locations of archaeological sites on Sipiwesk Lake and to provide a preliminary assessment of the cultural resources on a site by site basis to be integrated into a plan for the management of the area’s heritage resources;

- A System Wide Archaeological Project (SWAP) being conducted by the Province’s HRB for areas not covered by the above programs. This 10-year $950,000 agreement was signed in 2006. The purpose of this program is to assist Manitoba Hydro in managing the impact to heritage resources within specific areas of Manitoba affected by past hydroelectric development not already managed under other established Manitoba Hydro supported archaeological programs. The SWAP encompasses the Winnipeg River in the southeast, the Laurie River in the northwest, portions of the Nelson River in the northeast and the Saskatchewan River-Cedar Lake area in central-western Manitoba;

- Shoreline protection initiatives for a number of at-risk sites along developed waterways, such as cemeteries, burial sites and other culturally important sites; and

- Work has been undertaken at the Chipiy Naya site and cemetery around the Anglican Church on TCN Reserve Land, to protect human remains threatened by erosion. This work was undertaken in partnership with the community.

In addition to the above, there are specific measures in certain settlement agreements to restore, maintain, and protect culturally important sites. For example, as part of the Wuskwatim AEA with NCN, provisions were included for a process and funding to develop and implement a plan to relocate Wesahkechak’s (a Cree and Ojibwa cultural hero) Footprints to their original home. Located in the Nelson House RMA, the site included two depressions resembling human footprints or moccasin prints which are located near a related cultural site called Wesahkechak’s Chair (Linklater, 1994). The CRD flooded the original site of the Footprints and Chair. Prior to the flooding, the rock containing the Footprints was removed from its original location (NCN Implementation Newsletter, December 2011). In 2011, the Footprints were relocated in a vertical outcrop overlooking Footprint Lake near their original location (NCN Implementation Newsletter, December 2011). Further information on measures to protect important cultural and spiritual sites will be provided in Phase II.

With regards to new projects, including the Wuskwatim and Keeyask Generation Projects, Heritage Resources Protection Plans (HRPPs) are and will be in place to address found, discovered or disturbed human remains and heritage objects during construction, operation and decommissioning activities. HRPPs include details on the process in place if heritage objects or human remains are discovered, including halting work until appropriate actions have been taken. Further to the HRPP is a protocol agreement between the Province of Manitoba, NCN and the Wuskwatim Power Limited Partnership, whereby “…the custody, control and management of heritage objects of an aboriginal origin and aboriginal human remains that are not required for forensic purposes will be managed by and between NCN and Manitoba…” (Agreement for a Protocol for the Protection of Heritage Resources and Aboriginal Human Remains Related to the Wuskwatim Generating Station, dated August 11, 2006). During the operation phase of Keeyask Project, if approved, the protection and preservation of heritage resources are commitments under the Joint
Keeyask Development Agreement. Tangible artifacts recovered during the years of Keeyask archaeological field studies will be repatriated to TCN and displayed and interpreted in a museum to be developed through their Keeyask AEA.

3.4.2.1.2 Transmission Projects

Construction of transmission facilities can cause changes to the physical environment which can affect culture. Activities such as clearing of a right-of-way and the excavation of soils for tower foundations can result in changes to the cultural landscape by inhibiting activities in areas that sustain culture, desecrating sites and areas of cultural and spiritual value, and destroying features that sustain cultural expression and thought. In addition, construction can result in direct and indirect effects on culturally sensitive sites and areas. The latter can include loss of the ability to conduct traditional activities, disturbance to areas where domestic resource use activities such as gathering of plants occurs and inadvertent damage to unknown heritage resources of importance to a community. Operations of transmission facilities can cause ongoing and/or inadvertent disturbance to cultural processes and the cultural landscape. This can occur through loss of areas used for traditional activities, such as the gathering of medicinal plants and berries, as some view transmission lines and EMFs as negatively affecting the power of the plant. It can also occur through the inadvertent damage to unknown heritage resources and by increased access by outsiders to areas and sites of cultural importance.

Addressing Effects on Culture, Way of Life and Heritage Resources

Similar to Generation Projects, all heritage resources are protected by the Heritage Resources Act (1986), as well as Manitoba’s Policy Respecting the Reporting, Exhumation and Reburial of Found Human Remains (1987). Through the SSEA process, Manitoba Hydro tries to avoid sites and areas of importance to people. The latter includes avoiding known heritage resources and sites of importance to local people. Manitoba Hydro prepares project specific Environmental Protection Plans (EnvPPs) which are intended to minimize effects on people and the environment. EnvPPs contain measures to protect known and unknown heritage resources, as well as sites of importance to local people. In addition, for more recent projects such as the Wuskwatim Transmission Project and the Bipole III Project, HRPPs are being prepared in advance of construction. Also for the Wuskwatim Transmission Project, cultural and site ceremonies have been held at key planning and construction milestones to help mitigate the effects of the Project on culture and heritage and to demonstrate respect for the land. For Bipole III a ceremony has been held with FLCN. Similar discussions are underway with other communities.

Manitoba Hydro also employs people from local communities to assist in monitoring and act as community liaisons during construction of its transmission facilities.

3.4.2.2 Home Relocation

3.4.2.2.1 Generation Projects

Relocation of communities or a portion of households within a community is a substantial socio-economic effect. Relocation can result in long term effects on the cultural, spiritual, social, economic and political aspects of people’s lives (Royal Commission Report on Aboriginal Peoples, October 1996). There are two examples where the relocation of some community households resulted from the
development process: at SIL and at Gillam. This had a major impact on the individuals and communities involved. High level background on these relocations is provided below. Further information, including community perspectives on the experience will be provided in Phase II.

**SOUTH INDIAN LAKE**

Pre-CRD, the community of SIL was situated on both sides of a narrows between South Bay in the south and Southern Indian Lake to the north. The site was ideal for habitation as it provided good wind protection and rapid freezing to accommodate both winter and summer movement over water.

Based on file correspondence, pre-CRD, the existing school, nursing station, Bay store and about 40% of the population were located on the west side of the narrows; 60% on the east side. As a result of CRD, the SIL community was to experience: 1. flooding of its lakeshore, including a small number lower lying homes near the shoreline, and 2. effects to ice conditions and open water sites on the lake surrounding the community resulting from fluctuating water levels during the winter period. The geographical layout of the community, on both sides of the narrows, required residents to cross the ice in the course of normal daily activity.

Solutions considered to address these challenges included:

- Construction of a dam to keep the water level constant on the lakeshore surrounding the community;
- Construction of a bridge from one side of the narrows to the other allowing inhabitants free access across in the winter; and
- Construction of a new town site on the east side of the Lake and relocation of west side residents.

Cost and logistical considerations, as well as general community development planning, led Manitoba and Manitoba Hydro to pursue a partial relocation program. The relocation approach was to move, replace or pay for all homes on the west side of the channel at the Old Post community on SIL, and relocate all people who wanted to move to the new SIL community on the east side of the channel. Approximately 96 lots were developed for replacement homes.

Based on file correspondence, in response to community concerns a local relocation committee was elected in June 1968 to represent the community in upcoming meetings regarding the Project. Specific discussions regarding a new community town site on the east side of the channel were occurring by 1971 and a community plan to be developed by Manitoba Department of Northern Affairs was initiated at that time. The development of a community plan included, among other things, community consultation, siting and scheduling of a new town site and house construction. The community plan was completed and documentation indicates that new house and community construction started near the end of the 1973/74 fiscal year. By the end of December 1974, there were no homes left to relocate from the west side of the narrows. Over time the community has expressed ongoing concerns regarding the impact of this relocation and subsequent social changes experienced.

This issue will be further explored in Phase II of this study.
**GILLAM**

The FLCN, then as part of the York Factory Band, is a signatory to the 1910 Adhesion to Treaty #5. By the mid 1920s, FLCN Members were living in and around Gillam, which had been established during the construction of the “Bay Line” railway. In 1947, the FLCN was recognized by Canada as a separate Band. Historic documentation indicates that following settlement at Gillam, the FLCN began pursuing a Reserve at that location for the use and enjoyment of its Members.

Beginning in the 1960s, Manitoba Hydro redeveloped Gillam as the Corporation’s key operations and service centre in northern Manitoba for the purpose of administering and operating the Nelson River Projects. At this time, FLCN families residing in Gillam were purportedly labeled by government as “squatters” despite their long-standing residence in the area. Homes lived in by FLCN Members were demolished or moved, and residents were relocated. Many members moved to surrounding areas. Approximately 51 FLCN families remained in Gillam when Manitoba Hydro redeveloped the community.

The community of Bird was established as a Reserve in 1985 and, in 2010, a small urban reserve was legally recognized at Kettle Crescent in Gillam. The community continues to pursue Reserve Land in and around Gillam for the use and benefit of its members.

This issue will be further explored in Phase II of this study.

### 3.4.2.3 WORKER INTERACTION

In the absence of mitigation measures, a sudden influx of large non-local and temporary workforces into or near to remote and often small and traditional communities has been associated with social, economic, cultural and health impacts for the host community. These same effects are associated with the creation of more permanent town sites housing outside workers on a more permanent basis.

The influx of both transient and more permanent non-local workforces can be associated with inappropriate spending on alcohol and drugs, incidences of racism, increased incidents of violence and exploitation, increased demand and strain on local services and infrastructure and increased traffic on roads.

In relation to the Projects, worker interaction concerns have largely been associated with the Generation Projects and converter stations, and related to larger construction camps and more permanent settlements. Phase II of this study will review community specific concerns and experiences with worker interaction issues in relation to the Projects.
3.4.2.3.1 ADDRESSING WORKER INTERACTION EFFECTS

In terms of newer developments, and starting with Keeyask, a concerted effort is being made to address potential negative worker interactions in the Gillam area through a Worker Interaction Sub-Committee. In addition to this, Manitoba Hydro is working with the FLCN through a Harmonized Gillam Development process to address ongoing issues of mutual interest, while working to build “a community where all residents live, work, play, and prosper together.” The Harmonized Gillam Development process recognizes that Fox Lake must preserve and enhance its identity in Gillam, which requires an ongoing effort and long-term commitment from Manitoba Hydro and the FLCN, as well as from the Town of Gillam.

3.4.2.4 RESOURCE USE

Hydroelectric development can affect resource use in a number of ways. Examples include enhancement or reduction of access to resources, loss of harvesting and gathering areas through flooding or construction of a right-of-way, and reduced wildlife or plant populations. The sections below describe the types of resource use effects associated with the Projects.

3.4.2.4.1 GENERATION PROJECTS

Development of the Generation Projects has resulted in negative effects on domestic and commercial resource harvesting including fishing, hunting, trapping, gathering of medicinal and other plants/berries and fuel wood. Effects on resource harvesting have resulted in negative effects on the connection of communities to the land, patterns of traditional food consumption and food security, and the ability of communities to practice their customs and traditions and transmit traditional teachings to younger generations.

Effects on resource use are among the most commonly raised concerns by communities and resource user groups. This is reflected in the negotiation of a large number of related settlement agreements (both through the NFA arbitration process and other settlements with other communities and resource use groups). It is also reflected in the significant number of studies that have been completed on resource use. Appendix 3A provides a listing of resource use studies that are publicly available at the current time.

Phase II of this study will summarize the specific resource use effects experienced by each community, as well as related settlements. The sections below describe at a high level effects on domestic and commercial fisheries, trapping and hunting, and gathering of medicinal and other plants/berries.

DOMESTIC AND COMMERCIAL FISHERIES

Impacts on fish populations are one of the most studied effects of northern hydroelectric development, from both an environmental and a socio-economic perspective. The volume of study on this topic reflects the importance of the resource to local communities as well as the extent of community concerns that have been voiced. Domestic and commercial fishing are vital to the people of northern Manitoba. Commercial harvesting data and fish population research have been extensively analyzed in response to claims launched against Manitoba Hydro – which have generally been resolved.
Fish communities in areas affected by the Generation Projects have responded differently to hydroelectric depending on the effects to the water regime. As a result, related project effects on associated domestic and commercial fisheries varied as well. A listing of the studies on fish populations that will be considered as part of Phase II is provided in Part V, Water and Land. A listing of the community specific studies on resource harvesting, including domestic and commercial fisheries, that will be considered as part of Phase II is provided as Appendix 3A.

In addition to concerns about the fisheries, communities affected by the Generation Projects have expressed concerns regarding the taste, texture and quality of fish caught for domestic consumption. Manitoba Hydro has worked with communities to understand these concerns and has engaged outside assistance (the University of Manitoba and in one study Department of Fisheries & Oceans Canada [DFO]) to test the fish in several communities (for additional information see Fish Quality, Section 5.2.4).

### Addressing Effects on Fish Populations and the Fisheries (Domestic and Commercial)

#### Settlement Agreements

Manitoba Hydro has entered into several settlement agreements that specifically address effects on commercial and domestic fishing activities. These arrangements will be reviewed by community as part of Phase II. Implementation of the NFA resulted in a significant number of retroactive and interim compensation arrangements and/or settlement agreements addressing fishery impacts. For NCN, YFFN, TCN and NHCN, these agreements as well as any related outstanding claims were fully and finally resolved through the negotiation of CIAs. The CIAs include provisions regarding resource use impacts, including impacts on fishery activities. At Cross Lake, ongoing implementation of the NFA includes implementation of a summer and winter domestic fishing program that pays domestic fishers to fish on Cross Lake and some off-system lakes and to bring the fish back into the community where it is available for members.

Settlement agreements with other groups related to the fisheries have been negotiated as well. This includes, for example, agreements with the Sipiwek Lake Commercial Fishermen’s Association, South Indian Lake Fishermen’s Association and the Ilford Community Council.

As well, the Keeyask AEAs with TCN, WLFN, FLCN and YFFN provide for a suite of offsetting programs to provide appropriate replacements, substitutions or opportunities to offset Project effects on practices, customs and traditions integral to the First Nations’ distinctive cultural identity. This includes programming to provide members with substitute opportunities to hunt, fish and trap for food.

#### Ongoing Process with the South Indian Lake Community (O-Pipon-Na-Piwin Cree Nation)

SIL has expressed substantial concern regarding the health of the local fishery, including regarding population declines observed in recent years. Since 2003, in response to concerns from the SIL Fisherman’s Association regarding the health of the commercial fishery, Manitoba Hydro has been working with SIL groups (including OPCN) and Manitoba Water Stewardship to implement an ongoing environmental monitoring program for the Lake. At one time, Manitoba Hydro also provided funding to improve the utilization of the SIL region by local residents for traditional and commercial resource harvesting activities. Environmental monitoring programming is still occurring with the intent of gaining a better understanding of the current state of the Southern Indian Lake environment.
Lake Sturgeon Stewardship and Enhancement Program

Manitoba Hydro has implemented the Lake Sturgeon Stewardship & Enhancement Program as a commitment to maintain and enhance Lake Sturgeon populations in areas affected by the Corporation’s operations, now and in the future. Program activities include:

- Determining the status of Lake Sturgeon populations throughout areas affected by the Corporation’s operations and identifying factors that may be limiting populations;
- Funding and conducting research relating to Lake Sturgeon in Manitoba and hydroelectric facilities;
- Minimizing the effects of new and existing facilities on Lake Sturgeon populations;
- Participating in the management and recovery of existing stocks by promoting education and community participation through sturgeon management boards; and
- Educating the public and raising awareness.

Nelson River Sturgeon Board

The Nelson River Sturgeon Board was established in 1993 for a 10-year term to fulfill a sturgeon-related claim under the NFA. Community representatives from the Board reside at Norway House, Cross Lake, Split Lake, York Landing, Wabowden, Thicket Portage and Pikwitonei. Now that the original term is complete, the program relies on funding from Manitoba Hydro and the Province of Manitoba that is not based on claims. The work of the Board covers the reach of the Nelson River between Cross Lake and the Kelsey GS.

The mandate of the Board is to provide for the subsistence and cultural needs of the communities and to provide for the preservation of declining Lake Sturgeon stock. As part of a five-year review of the initiative, programming with respect to education in both schools and the communities will be expanded. In addition, cultural and traditional ties to sturgeon will be expanded. Through education, the goal is to curtail harvesting by increasing awareness about the Nelson River Lake Sturgeon population.


The Lower Nelson River Sturgeon Stewardship Committee (LNRSSC) is a committee of interested stakeholders committed to implementing measures to protect and enhance sturgeon populations in the Lower Nelson River from the Kelsey GS to Hudson Bay, as well as the Hayes, Gods and Echoing Rivers and tributaries along the Nelson River that are important to these populations. The LNRSSC was established in May 2013 under the Lower Nelson River Sturgeon Stewardship Agreement. It includes representation from the lower Nelson First Nations of FLCN, YFFN, TCN, WLFN and the Shamattawa First Nation, along with Manitoba Hydro and the Keeyask Hydro Limited Partnership. Manitoba Conservation and Water Stewardship also participate as a non-voting member. Committee activities will take into consideration the Lake Sturgeon Management Strategy for Manitoba being developed by Manitoba Conservation and Water Stewardship.
**Hunting, Trapping and Gathering**

Potential effects on resource use activities such as hunting, trapping and gathering of medicinal plants/berries from Generation Projects are caused by changes to habitat and disruption/loss of plant species of importance, and changes to the number and location of species. Project construction and operations also can increase access which can result in loss of resources through pressure on the resource by non-community members. Effects can also occur as a result of navigational challenges created for hunters, trappers and gatherers (e.g., caused by fluctuating water levels and related shoreline erosion, debris and other navigational hazards along affected waterways). These pathways have reduced opportunities and increased costs and time for trappers and hunters to undertake this traditional pursuit.

**Addressing Effects on Hunting, Trapping and Gathering**

Manitoba Hydro has entered into several settlement agreements that specifically address impacts on commercial and domestic hunting and trapping activities, and impacts on community traplines. In some cases these agreements stem from claims under the NFA, and include related programming and support measures.

In addition, the NFA and CIAs deal with impacts on wildlife in several ways. Article 10 of the NFA indicates that Manitoba will have regard to minimizing any destruction of wildlife by controlling water levels and flows on project-influenced waterways to the extent that is practical. Article 15 of the NFA gave priority over wildlife harvesting to the NFA First Nations within areas most commonly used by them for those purposes, or alternate areas, and includes provisions to support the continued opportunity to hunt, fish and trap. As well, RMBs were established under the CIAs to consider broader resource management issues specific to each First Nation’s resource area and to develop resource management plans.

Schedule D of the NFA established the Registered Trapline Program to provide for, over a certain time period, the relocation of traplines where necessary, compensation for the loss of fur production resulting from development and to encourage efficient use of existing fur resources. The program also provided for, and where appropriate, improvements to portages and establishment of additional access routes should the remaining or new trapline area substantially increase the travelling distance required. A Committee was established to administer the program and included representatives from Manitoba Hydro, a Conservation Officer, the President of the Local Fur Council and a representative from the Manitoba Department of Northern Affairs.

As part of a settlement of a specific claim under the NFA (Claim 22) the Province and Manitoba Hydro continue to fund, manage and deliver programming to encourage and support trapping in the Cross Lake RTD (to September 30, 2025). Programming includes the following components:

- Aquatic Fur and Incremental Effort Subsidy;
- Grubstake Loan;
- Registered Trapline Improvement Funding;
- Trapline Rehabilitation and Habitat Enhancement;
Settlement agreements with other groups related to trapping have been negotiated as well. This includes, for example, agreements with the Pikwitonei Community Council, the South Indian Lake Trapper’s Association, and trappers from Thicket Portage and Wabowden.

Both the Keeyask and Wuskwatim Generation Projects provide for compensation arrangements to be made directly with affected commercial trappers. As noted above, under the Keeyask AEAs each of the four Nations (TCN, WLFN, FLCN and YFFN) has Offsetting Programs that allows them to provide appropriate replacements, substitutions or opportunities to offset Project effects on practices, customs and traditions integral to the First Nations’ distinctive cultural identity. This includes programming to provide members with substitute opportunities to hunt, fish and trap for food.

As noted in Section 3.4.2.7.1, the WMP is undertaken to enhance safety and accessibility along affected waterways for downstream communities.

### 3.4.2.4.2 Transmission Projects

Development of transmission facilities can impact domestic and commercial resource harvesting including fishing, hunting, trapping, gathering of medicinal and other plants/berries and fuel wood, wild rice harvesting, outfitting, mining, forestry, recreation and tourism by Aboriginal people and others. Disturbance can arise from a direct impact on a resource as a result of noise and other disturbances, as well as through physical changes to the land such as a loss of habitat and plants. It can also occur through undesired access to the resource from others. Positive and negative effects can occur if access to a resource is improved for area users. Manitoba Hydro uses existing highways, roads, trails and man-made features to access a right-of-way during construction and operations where possible. Access is required along transmission line rights-of-way and is generally restricted to rights-of-way to the extent possible.

The SSEA process seeks to minimize effects on all forms of resource use, including trapping and domestic resource use, recreation and tourism developments/activities, and mining and forestry operations. Trapping and domestic resource use are discussed in detail further below.

### Trapping

During construction of a transmission project, activities can temporarily displace wildlife from the area in proximity to the facilities because of sensory disturbances. After construction of a transmission line, some trappers may benefit from improved access to their traplines, although trappers have also expressed concerns that increased access can lead to harvesting from outsiders. In 2010, as part of the Wuskwatim Transmission Project, Manitoba Hydro initiated a two year pilot project on assessing the effects of transmission line construction and operations on furbearers and trapline harvest. The results of this pilot project will be reviewed as part of Phase II of this study.

### Domestic Resource Use

Construction of Transmission Projects and, in particular transmission lines, can disrupt domestic resource use (e.g., hunting, trapping, fishing, plant and berry harvesting) in areas in proximity to the
facility. As noted above, negative effects can arise through direct impacts on the resource as a result of construction or through undesired access by others. In terms of domestic hunting, wildlife species sensitive to disturbance may temporarily move away from the area resulting in short term decreases in domestic harvesting levels. In terms of domestic fishing and hunting, other concerns that have been raised are increased access to hunting and fishing areas by outsiders, and the negative effects on desired wildlife and fish species. Other concerns related to increased access are increased risk of theft and vandalism. In some instances, increased access can be a benefit to resource area users.

Potential effects from transmission lines may also occur because of disruption or loss of plant species and populations important to Aboriginal and other people. As with hunting and fishing, construction has the potential to increase access which can result in loss of important plant species and communities through pressure on the resource by non-community members.

Operation of transmission lines can also result in increased access in areas used for domestic resource use activities. Some resource users benefit from improved access to resource use areas during the project operations phase. However, improved access can also result in increased pressure on the resource base if more people frequent the area. This could result in increased disturbance to wildlife along a right-of-way and potentially have a negative effect on hunting.

In addition, operations of transmission lines (and related right-of-way maintenance) can negatively affect plants valued by Aboriginal people (e.g., medicinal plants and berries). Effects include loss of plant species and communities as a result of the use of maintenance equipment outside of winter months, as well as the use of herbicides to control undesirable species. As a result of plant loss, Aboriginal people may have to travel further to find plants for food and medicine.

**Addressing the Effects of Transmission Facilities on Resource Use**

As noted above, in the 1980s, Manitoba Hydro introduced a Trapline Compensation Policy to reimburse registered trapline holders for disturbance during construction of transmission facilities. In 2002, Manitoba Hydro’s Trapline Compensation Policy was revised to include a notification component. The policy, called the Trapper Notification/Compensation Policy, compensates registered trapline holders affected by construction of new transmission facilities 115 kV and greater based on a 10 km (6.2 mi) disturbance zone. As part of the notification program, registered trapline holders in the vicinity of a potential new transmission facility are notified during the SSEA process. Manitoba Hydro also contacts registered trapline holders during the regulatory review of a new project to review project plans, record additional information, discuss employment and business opportunities, and the timing of project activities on the trapline, and to begin discussing settlement (if eligible). Prior to construction, a compensation amount is determined with eligible holders of registered traplines for the disturbance during the period of construction, and agreements are entered into by Manitoba Hydro and the registered trapline holder(s). Compensation may include trapline improvements, employment opportunities, equipment replacement and a monetary settlement. It is also paid for any damage to equipment, buildings and trapping trails during construction. Trapline holders are requested to remove trapping equipment if required.
In terms of domestic hunting and fishing, species may move away from the area during construction due to noise. Construction of transmission lines in northern Manitoba typically occurs during the winter months which is during the off season for hunting.

Following construction and operations of a transmission line, opportunities for increased access along the right-of-way may exist in some areas. Based on past experience, some resource harvesters felt that transmission lines may lead to increased risk of theft, vandalism and reduction of harvest due to others accessing the area. Others felt that increased access to resource use areas can be a benefit. To address concerns regarding new access, Manitoba Hydro began preparing Access Management Plans (AMPs) prior to construction beginning with the Wuskwatim Transmission Project.

In northern Manitoba, right-of-way use is generally more intensive in the winter months when people may use a right-of-way for recreational purposes. Increased access is generally less in the spring, summer and fall when the ground is not frozen and access is more difficult. In addition, as maintenance activities in northern Manitoba are generally conducted in the winter when the ground is frozen, effects on domestic resource use are minimized.

It should be noted that Aboriginal peoples have expressed concerns about the effects of transmission lines on medicinal plants and berries. Although winter construction and operations may prevent destruction of plants and berries, many Aboriginal people view plants and berries under a transmission line as being not safe to consume. For Bipole III, the location of traditional plants and berry harvesting important to communities and individuals has been identified through community engagement processes, as well as through ATK studies, and incorporated into the SSEA process.

3.4.2.5 Land Use

Hydroelectric development can affect land use through the taking of land for flooding or right-of-way purposes. Effects on land use are related to and can overlap with effects on recreational activities and sites, resource use activities and sites and cultural and heritage activities and sites. As these are described above, the sections below attempt to avoid duplication.

3.4.2.5.1 Generation Projects

Loss of Reserve Land

Inundation of Reserve Land due to flooding, and the potential future loss of land due to erosion, has been addressed through the granting of an easement over land below a severance line (i.e., easement boundary line) in accordance with provisions set out in the NFA, CIAs and other settlement agreements. Reserves were created generally with the title right to the water's edge. Severance line in the NFA/CIA context is defined as the boundary of the easement area granted to Manitoba Hydro by Canada for inundation and storage of water. The easement area is based on geotechnical criteria of 100 year water level, wind and wave events and shoreline composition which determines erodibility.

Under the NFA, any Reserve Land taken was to be compensated by replacement land at 4:1. Under the CIAs the ratio of replacement land to taken land was substantially higher. As well, if any of the compensation land was subject to easement that acreage did not count against the total.
Addressing Effects on Reserve Land

Manitoba Hydro monitors shoreline erosion and installs shoreline protection along affected Reserve Lands, cemeteries, and identified burial sites. Other remedial works undertaken have included, for example, replacement recreation opportunities, causeways and beach restoration.

Should a portion of a new Generation Project affect a Treaty Land Entitlement (TLE) selection, discussions are undertaken with the affected First Nation and the Provincial government regarding a transfer arrangement to provide Manitoba Hydro with permanent right to access, use and maintain its facilities and rights-of-way.

3.4.2.5.2 Transmission Projects

Based on experience with SSEA studies, concerns related to land use typically cover a broad spectrum. Some relate to specific project effects, while others reflect the perception of land use conflicts and enjoyment of land and property. Site-specific land uses such as sites of cultural significance, recreational sites, Reserve Lands, communities, residences and cabins are generally avoided, wherever possible, through the SSEA process. Concerns also arise regarding the routing of a line on Crown Lands where Aboriginal peoples have a history of traditional land and resource use, TLE selections, or RMAs.

Addressing Effects on Land Use

As noted above, the SSEA process is used to avoid these types of impacts during the planning stages and prior to development. Should a portion of a transmission line route affect a TLE selection, discussions are undertaken with the affected First Nation and the Provincial government regarding a transfer arrangement to provide Manitoba Hydro with permanent right to access, use and maintain its facilities and rights-of-way. Off reserve, Crown lands typically fall within the jurisdiction of the Provincial government.

3.4.2.6 The Way the Landscape Looks (Aesthetics)

The Projects have resulted in physical and visual alterations to the landscape, including the water and waterways. The presence of generation infrastructure or a transmission line can influence the visual landscape particularly in sensitive settings. The way the landscape looks (aesthetics) does, to a certain extent, differ according to a person’s values and perspectives. An individual’s response to visual changes on the landscape and the magnitude of the concern related to a particular viewscape is a function of the types of views involved, the distance, perspective and duration of view. The way the landscape looks will depend on:

- The physical relationship of the viewer and the Project (distance and line of sight);
- The activity of the viewer (e.g., living in the area, driving through, sightseeing); and
- The contrast between the Project and the surrounding environment.

Manitoba Hydro has heard concerns from a number of communities regarding changes to the way the land and water look. This has included, for example, concerns that the water is no longer clear (or is muddy), that sandy beaches and islands have been lost, and regarding the disruption caused by physical
infrastructure in the water. Visual impacts are strongly related to impacts on culture, spirituality and way-of-life.

3.4.2.6.1 **ADDRESSING THE EFFECTS OF GENERATION FACILITIES ON THE WAY THE LANDSCAPE LOOK (AESTHETICS)**

Changes to the landscape from Generation Projects that affect the way the landscape looks include the development of construction sites (e.g., dykes) and excavation/development of borrow areas. Construction effects to the way the landscape looks are limited in duration and more recently, to the extent feasible, Manitoba Hydro strives to return disturbed areas to their previous state through decommissioning (e.g., rehabilitation of borrow areas using native plant types to the extent feasible).

Following construction of the Wuskwatim GS, extensive tree planting was conducted in areas in the vicinity of the GS not required for operations. Work areas and borrow pits were rehabilitated once construction of the generating station was completed. In addition, an area of one of the borrow pits required for construction has been set aside for growing and harvesting berries by resource harvesters.

With respect to the Keeyask Project, measures have been adopted to address changes to the way the landscape looks and the loss of the rapids. These measures include construction of a park/rest area with boat launches at the construction site and a video of the rapids taken before construction will be available at the GS once the station is in operation.

3.4.2.6.2 **ADDRESSING THE EFFECTS OF TRANSMISSION FACILITIES ON THE WAY THE LANDSCAPE LOOK (AESTHETICS)**

The SSEA process seeks to avoid to the extent possible site-specific issues of concerns such as the aesthetic quality associated with communities, recreational sites and parks. Although transmission facilities are considered essentially permanent features on the landscape, routing and mitigation measures can minimize aesthetic effects. The latter includes vegetative screens and buffers, and structure placement.

3.4.2.7 **NAVIGATION, TRANSPORTATION AND PUBLIC SAFETY**

Development of the Projects has resulted in substantial adverse effects to navigation, transportation and public safety. As a result, significant effort has been made to establish related mitigation measures to ensure ongoing and safe use of affected waterways and areas. Maintaining public safety is paramount to Manitoba Hydro.

3.4.2.7.1 **GENERATION PROJECTS**

Changes to water levels and flows caused by the Generation Projects have had a direct effect on navigation, transportation and public safety. Changes to water levels and flows have resulted in shoreline erosion (which makes accessing the shoreline difficult in certain locations), debris accumulation and navigation dangers (e.g., floating debris). While these natural processes occur in all waterways, hydroelectric development can increase erosion and debris accumulation rates. Woody debris resulting from hydroelectric development and water regime changes has inhibited access to shorelines and bays and created navigational hazards in the water. In some locations, debris has clogged or inhibited access to
portages required by community members, fishers and trappers following traditional or current lifestyles. Additionally, debris has impeded access and use of traditional gathering areas, beaches or other shorelines having special value to local communities.

Changes in natural rates of water flow and water levels in Project affected waterways has altered the quality and timing of ice cover which can adversely affect winter travel for resource harvesting and recreation. Shorter periods of ice cover, slush ice and ice jams have caused hazards for travelers and for wildlife in some areas. Winter travel for trapping, subsistence and commercial fishing, hunting and general recreation is important to northern communities as a traditional and current lifestyle.

**ADDRESSING IMPACTS ON NAVIGATION, TRANSPORTATION AND PUBLIC SAFETY**

**Settlement Agreements**

Various settlement agreements contain specific provisions addressing water regime, predetermined compensation and, in some cases, transportation safety measures and environmental monitoring.

**Waterways Management Program**

Manitoba Hydro has a Waterways Management Program (WMP) in place to support and promote the safety of people travelling on waterways affected by Hydro's operations. This program was initiated to address issues as a result of development of hydroelectric generating stations on the Saskatchewan and Nelson River systems including waterways affected by LWR and the CRD. The Program includes boat patrols, debris management, and safe ice trails. The Program extends beyond the communities affected by LWR and the CRD.

In the early stages of the WMP, there were a number of community requests for access to safe harbors as a safety refuge during severe storm events. Marking of these sites and clearing of debris to allow safe, unencumbered access provides boaters with a safe alternative in these severe conditions. Removal of debris provides safe unhindered access to facilitate travel within traditional resource use areas. Efforts to create safe harbors and access to important shorelines and portages are generally debris removal initiatives that improve safe travel within affected waterways.

**Boat Patrols**

The purpose of the boat patrol program is to patrol affected waterways to reduce floating debris making waterways safer for users. The patrols work during the open water season until just prior to freeze-up, usually from June to October. Boat patrols map and record daily routes, mark deadheads and reefs, identify debris work areas, place hazard markers identifying safe travel routes for resource users, and gather floating debris, deadheads and old nets relocating them to safe areas.

Each boat patrol consists of two workers. Boat patrol workers are seasonal Manitoba Hydro or contract employees hired from northern Aboriginal communities. In 2012, a total of 19 patrols were deployed under the Program (extending beyond the communities affected by the Projects). Thirty-five seasonal Manitoba Hydro employees and five contract employees were hired in 2012. In addition to regular patrols and debris removal, Boat Patrol Crews provide assistance to waterway users in emergency situations.
Debris Management

Following construction of LWR and CRD, Manitoba Hydro undertook a number of initiatives designed to respond to the individual concerns and needs of affected communities regarding debris management and clearing.

In 1998, Manitoba Hydro formalized debris clearing efforts into a single Debris Management Program (DMP). The program establishes priorities for debris clearing activities and includes a range of activities to enhance safety on impacted waterways. The guidelines for the program were developed through discussions with the province and affected Aboriginal communities.

The DMP includes identifying debris work locations, and collecting and burning debris. The program only deals with debris on shore. Mobile debris is collected by the boat patrol crews. All debris collected is piled above the high water mark to prevent it from going back into the water. Debris piles accumulated throughout the summer are burned late in season, typically after the first snowfall to minimize the risk of fire. The burning piles are monitored and water pumps are on stand-by. Burning permits are obtained from Manitoba Conservation and Water Stewardship.

Safe Ice Trails

Manitoba Hydro works with northern communities to develop and maintain a Safe Ice Travel Program. Safe ice trails are installed by seasonal contract workers, typically experienced resource users hired from northern Aboriginal communities. Trails are then monitored by local Manitoba Hydro employees who map the trails, test for ice thickness, clear obstructions, and routinely monitor and patrol the trails. The safe ice trails provide a safe alternative to traveling on unchecked routes. Safe cabins that can be used in emergency situations have been built into the trail network. The trails may vary slightly from year to year because of water levels, weather, and the quality of ice. Safe ice trails are generally monitored twice a week.

Water Level Forecast Notice Program

Manitoba Hydro has a Water Level Forecast Notice Program in place to inform people living next to waterways affected by Manitoba Hydro’s operations of projected water level and flow conditions. Public safety is always the main consideration in any notification decision. The program began in the late 1970s as a result of NFA obligations to provide water level forecast notices to the five NFA First Nations. Since then, and through various negotiated settlement agreements with communities, the process has grown to include an increasing number of forecast notice sites, recipients, and copy requests. Notices are issued in both Cree and English. The frequency of notifications is increased in the event of rapidly changing conditions. These forecasts have been publically available on the Manitoba Hydro website since the late 1990s.

3.4.2.7.2 Transmission Projects

Transmission lines do not cause flooding or affect water regimes, and hence do not affect travel along waterways. As well, transmission lines do not affect navigation along waterways as Manitoba Hydro follows or exceeds Canadian Design Standards so as not to impede navigation. Although Manitoba Hydro does not encourage travel along its rights-of-way, it can be expected that some travel for varying
purposes does occur which can lead to concerns about public safety. Effects from Transmission Projects on Public Safety are discussed below.

**Addressing the Effects of Transmission Facilities on Public Safety**

Protection measures that Manitoba Hydro uses to ensure public safety include posting signs regarding the dangers of high voltage transmission lines. A formal application and approval from user groups including industries is required for secondary use of a Manitoba Hydro right-of-way. The application form includes information on the applicant, purpose for use and identification of equipment to be used in the right-of-way. Manitoba Hydro can deny secondary uses of its rights-of-way.

**3.4.2.8 Health Issues and Concerns**

Hydroelectric development can result in both positive and negative effects on human health. Positive effects can result from an improved standard of living generated by project training, employment and business opportunities. Health can also improve as a result of improved regional infrastructure resulting from direct and indirect government investments (investments can result from increased government spending associated with project induced tax revenues). Negative health effects can flow from biophysical pathways such as potential increased mercury exposure, potential changes in water quality, changes to patterns of traditional food consumption, food security and stress and anxiety brought about by social change. The sections below summarize health effects documented in relation to the Projects.

**3.4.2.8.1 Generation Projects**

Human health issues considered in the context of the Generation Projects during Phase I include water quality and potable water, and mercury. Issues associated with patterns of traditional food consumption and food security have been discussed earlier in the Resource Use section (Section 3.4.2.4). During Phase II, additional perspectives on potential health effects that have been shared with Manitoba Hydro will be summarized.

**Water Quality and Potable Water**

Water quality affects the ability of the aquatic environment to support aquatic life. Changes to water quality can have a direct impact on the people and communities that rely on the affected waterway for drinking water, transportation, recreation, and a variety of other uses.

Water quality has been affected along the CRD, LWR and lower Nelson waterways through the creation of reservoirs and water diversions. These Projects led to increased or decreased flows, flooding and changes in source water from the Churchill River system into the Nelson River. This is an issue of concern for its effects on fish habitat and other ecosystem elements, and a community concern for drinking water.

Concerns regarding potable water raised by the NFA communities pre-date development of the Generation Projects, and are acknowledged by the Government of Canada as their responsibility. Article 6 of the NFA reinforced the federal government’s responsibility and states that “Canada accepts responsibility to ensure the continuous availability of a potable water supply on each of the Reserves. The quality of the water shall meet the health and safety standards set by Canada to protect the public health”. It is important to note that, regardless of
location, direct drinking of surface water is not a recommended practice. Health Canada indicates that all untreated water should be boiled for one minute before consumption (Health Canada, 2008).

As noted in Section 5.2.1, water quality data have been collected by different agencies at several sites. The results of these studies and data will be presented in Phase II of this study.

**Addressing Impacts on Water Quality and Potable Water**

At the time the NFA was signed, it was expected that changes in water quality resulting from hydroelectric development could increase water treatment costs (e.g., to address increased Total Suspended Solids [TSS] levels). To address this, Article 6 of the NFA set out that “Canada shall be reimbursed by Hydro to the extent of 50% of its reasonable expenditures incurred in providing potable water to any Reserve to the extent that such expenditures are attributable to adverse effects of the Project, or to the risk of such adverse effects.” In other words, Manitoba Hydro would reimburse 50% of the incremental costs associated with the provision of potable water if additional expenditures were incurred because of hydroelectric impacts. Disputes between Canada and Manitoba about what this meant and the costs eligible for reimbursement were resolved and Manitoba Hydro has met and is meeting its reimbursement obligations to Canada.

Ongoing concerns raised by the communities regarding potable water are appropriately deferred to the federal government.

**Mercury**

Changes in mercury can negatively impact the commercial and domestic fisheries in affected communities, as well as the suitability of fish for consumption (due to the risk to human health). Concerns regarding elevated mercury levels in fish can be a source of stress and anxiety for local residents. If not addressed, such concerns can result in altered dietary habits as residents seek to avoid foods they believe to be contaminated with mercury. At the time of development, there was little understanding within the scientific community regarding the link between hydroelectric development and mercury. Mercury became a key issue in the late 1970s as understandings increased and research demonstrated the increased mercury levels flooding caused (particularly CRD-related). Although levels have generally declined since flooding and, in most cases, have reached pre-LWR/CRD levels, it remains an issue of concern in many communities.

**Addressing Community Concerns Regarding Mercury**

Mitigation options for mercury are limited, and focused on consumption recommendations. Guidelines regarding safe consumption levels were developed in the 1980s through the Federal Ecological Monitoring Program (FEMP) and communicated within affected communities.

In 1986, DFO began a joint five-year program (FEMP) of research and monitoring in northern Manitoba. FEMP was the result of Claim 18 (1981) under the NFA. Claim 18, which was filed by the five NFA First Nations and the NFC, alleged that the Government of Canada, the Province of Manitoba, and Manitoba Hydro had not met the responsibility of the NFA “to implement a long-term coordinated ecological monitoring and research program that would allow evaluation of impacts on communities”. One of the programs focused on mercury. FEMP was initiated to look at the effects of Manitoba Hydro projects including LWR, CRD and hydroelectric projects along the Nelson River.
The 1992 FEMP Final Report reported on mercury testing in First Nation communities across Canada done by Health Canada between 1976 and 1990 as part of a national program to test First Nations. Communities in northern Manitoba included Split Lake and York Landing, Nelson House, SIL, Norway House and Cross Lake. Health Canada tested First Nation communities until 1999. Following that, testing was conducted at the request of a community.

While the results of the FEMP will be reviewed in detail as part of Phase II, at a summary level results indicate that all of the communities had levels in the normal range. Split Lake, York Landing and Cross Lake showed that of the members tested, 98% had values in the normal range which is 0 - 19 ppb. Similarly, of those people tested in Norway House, 97% had values in the normal range. Eighty percent of the residents tested in SIL had values in the normal range, while 90% tested in Nelson House were in the normal range. Additional testing for mercury was conducted at the request of NCN between 2000 and 2001. No one tested was “at risk” as mercury levels of those above the normal range were well below levels that are considered to be of concern. The Health Canada Final Report did note limitations with respect to the data in terms of trends including that individuals couldn’t be followed from year to year in published records and changes in the number of community members tested annually. The percentage of members tested in the communities ranged from 15% to 52%. Another limitation to the data noted is that the annual reporting of test results obscured any seasonal patterns that may have occurred.

For the Keeyask Project, AEAs include programs which provide opportunities for Members to continue to fish and provide a supply of wholesome food fish to Members from alternative unaffected locations. These programs were developed recognizing both community concerns about the effects of methyl mercury on human health, and the desire to continue to fish and provide healthy fish to their Members. As well, the Keeyask Hydropower Limited Partnership has committed to fund and implement a Risk Management Plan to further manage the mercury effects of the Project on human health. The plan is intended for those who use wild food (primarily fish) from areas affected by the Project and includes relevant AEA programming described above, as well as an extensive mercury and human health communication strategy developed and delivered in collaboration with Manitoba Health, Health Canada and KCN community health care providers. This communication strategy will include outcomes of Project monitoring activities.

The Wuskwatim Generation Project EIS predicted no Project induced change in mercury levels. As part of operational phase monitoring, the Wuskwatim Power Limited Partnership is monitoring mercury in fish (as well as aquatic furbearers) to confirm the EIS prediction of no change. The results of this monitoring will be communicated to NCN through the Partnership Monitoring Advisory Committee.

3.4.2.8.2 TRANSMISSION PROJECTS

Human health issues that may arise during construction of transmission facilities include noise, vibration and dust, and consequences of accidental spills of hazardous materials such as fuel. In general, transmission line construction related effects are short-term in duration. Noise is temporary and intermittent in nature, and typically falls within provincial noise level guidelines.
Depending on where a transmission line right-of-way is located, concerns during operations can include perceived health effects from EMFs, audible noise and herbicide use. Audible noise refers to the noise generated by the line once in operation.

**EMFs**

EMFs are invisible lines of force surrounding any wire carrying electricity, and are produced by all electric tools and appliances, household wiring, and power lines. A transmission line produces an electric field, a magnetic field and corona. Corona and an electric field can cause electrical effects, the most common of which are radio interference, television interference, AN, and induction on nearby metallic objects.

**Addressing the Effects of EMF’s from Transmission Facilities**

Many studies on EMFs have been completed worldwide. The general consensus of the worldwide scientific community is that a public health risk from exposure to these fields has not been established. Position statements adopted by Federal and Provincial health agencies express the same view. A health and EMF expert’s consensus statement on human health effects of EMFs (Manitoba Clean Environment Commission, March 2001) suggests that “the weight of scientific evidence does not support the conclusion that extremely low frequency EMFs such as those produced by power lines are a cause of adverse effects on human health”. The consensus statement also notes “research to date has not confirmed any biophysical mechanisms that would link properties of power and frequency fields to the initiation or promotion of cancer or any other adverse effect on human health”. International studies including the World Health Organization (2007) have concluded that there is insufficient scientific evidence to show exposure to EMFs from transmission lines can cause adverse health effects such as cancer. Health Canada (2008) states that there is no conclusive evidence of any harm caused by exposures at levels normally found in Canadian living environments.

While Manitoba Hydro is sensitive to public concerns regarding potential health effects from EMFs, there is at present no scientific evidence to justify modification of existing practices respecting facilities for the generation, transmission and distribution of electricity. Manitoba Hydro recognizes that concerns regarding EMFs can be a source of stress and anxiety for communities and individuals, and continues to undertake the following actions regarding the issue:

- Monitoring of worldwide research programs on EMFs;
- Participation in and support of on-going health and safety research on the local, national and international levels; and
- Maintenance of active communications and provision of technical information to interested parties, including the public and agencies responsible for public and occupational health and the environment.

**Audible Noise**

Operation of a transmission line involves the production of corona discharges which can result in audible noise and low frequency electrical interference through radio noise. The level will vary with time, subject to the operating mode and loading conditions, as well as the final line design, conductor conditions and weather. With respect to audible noise, provincial guidelines in Manitoba specify maximum 1-hour
equivalent noise levels for residential and commercial areas of 55 dBA and 45 dBA, for daytime and night-time periods respectively.

**Addressing the Effects of Audible Noise from Transmission Facilities**

The audible noise level from a transmission line decreases by about 3 to 4 dBA for each doubling of distance from the line. Manitoba Hydro’s transmission lines comply with the provincial guidelines in terms of audible noise.

Although not directly related to health, during operations, transmission lines can create electric interference on radio and television equipment. Electrical interference is not normally a problem but if it is, the most common cause is loose electrical hardware in the transmission line. Individual sources of such interference can be eliminated by proper construction and maintenance methods (e.g., tightening of hardware components). Manitoba Hydro meets the requirements of the **RadioCommunications Act** (R.S., 1985, c. R-2 [as amended to 2007-07-09] and the Radio Communication Regulations (SOR/96-484, Registration 05 November 1996 [as amended to 2011-02-17]). Manitoba Hydro also meets the requirements of the Industry Canada’s Interference-Causing Equipment Standard – ICES-004 Issue 3, December, 2001 – Alternating Current High Voltage Power Systems. In the event that electrical interference issues are encountered in the vicinity of the transmission line, Manitoba Hydro will identify the interference source, assess and test the signal reception equipment, and will rectify any issues caused by the line through repair of the line.

**HERBICIDES**

Vegetation management is required to ensure that re-growth in the right-of-way and at the stations does not interfere with the operation of the transmission line. Herbicides are not used during construction. During operations, vegetation management can involve a variety of methods including hand cutting (e.g., utilizing chainsaws, brush saws, axes, or brush hooks), mechanical shear blading (using “V” or “KG” blades), brush mowing with rotary and drum cutters (typically rubber-tired equipment), and herbicide treatment. An integrated vegetation management and weed control approach is used within a right-of-way to control and reduce potential tree and weed problems. Herbicide treatments are formulated to target only broad-leafed plants (trees and weeds) leaving grasses unaffected.

**Addressing the Effects of Herbicides used for Transmission Facilities**

Permits for herbicides use are obtained on an annual basis by Manitoba Hydro. The process involves public notification as part of the formal permit application to Manitoba Conservation Pesticide Approvals Branch. All herbicide applications are completed and supervised by licensed applicators and in accordance with conditions specified in a Pesticide Use Permit. Herbicide application rates are established by Manitoba Hydro’s Chief Forester in accordance with product label instructions. Only herbicides which have been approved in the Pesticide Use Permit are used. Manitoba Hydro maintains a typical list of herbicide foliage treatments and has developed application guidelines that it adheres to for its activities.

Manitoba Hydro’s vegetation management procedures are well established with respect to herbicide application requirements and obtaining the Pesticide Use Permits. On provincial Crown lands, a work permit issued under **The Forest Act** is required and owners adjacent to a right-of-way are typically notified.
in advance. Manitoba Hydro’s Chief Forester coordinates the necessary approvals and is responsible for obtaining the necessary Pesticide Use Permits and submitting Post Seasonal Control Reports as per Manitoba Regulation 94-88R under The Environment Act.

In sensitive areas, such as areas of medicinal plant and berry collection, clearing of vegetation is generally limited to manual or other types of selective clearing methods.

3.4.2.9 PERSONAL PROPERTY LOSS AND DAMAGE

Development of the Projects has resulted in losses and damage of personal property.

3.4.2.9.1 GENERATION PROJECTS

Generation Project induced changes to the water regime, and resultant erosion and navigation hazards, have resulted in personal property loss and damage, and personal injury to individuals. Property damage includes, but is not limited to, damages to snowmobiles, outboard motors, nets and traps, boat loss or damage, and other personal items.

ADDRESSING PERSONAL PROPERTY LOSS AND DAMAGE

Under the NFA, members of the five signatory First Nations were eligible to make claims for losses associated with “the Project.” Under the agreement, Manitoba Hydro has to establish that “the Project” did not cause nor contribute to a negative effect where any claim is made either by the Band or by an individual because of an actual or perceived negative effect of “the Project.” The intent of the NFA was that no affected party would be left in a worse position than they would have been in the absence of the negative effect. While CLFN is the only remaining community covered under the NFA, these principles have been carried over into the CIAs, as well as other settlement agreements with communities and resource user groups. Unlike the NFA, however, responsibility for managing the claims process was devolved to the community level and funds were provided for the same. Addressing individual claims of personal property loss and damage includes compensation and/or repair or replacement of damaged equipment and property.

Both the Wuskwatim and Keeyask Generation AEAs provide for compensation for personal property loss and damage as well.

In addition to the claims process, the Water Level Forecast Notice Program and the WMP are also in place to reduce personal property loss and damage, and contribute to personal safety.

3.4.2.9.2 TRANSMISSION PROJECTS

Manitoba Hydro requires a right-of-way for its Transmission Projects. Land rights are typically secured through Crown Land Reservations for public lands and by easement on private lands. These arrangements allow Manitoba Hydro to acquire the right to construct, operate, maintain and repair the line within the right-of-way.

ADDRESSING PERSONAL PROPERTY DAMAGE

Lands within the proximity or affected by the Transmission Projects may be either public and/or private. For the granting of an easement on private lands for the right-of-way landowners will be compensated.
Manitoba Hydro has a Property Compensation Policy in place for private lands that allows private landowners to continue to use the land as long as the activities do not compromise safety or the integrity of the transmission line. In addition, if a private landowner suffers property damage during the construction period, or as a result of maintenance or repair work, Manitoba Hydro will investigate and repair any damage to a landowner’s property. As outlined in Section 3.4.2.4.2, Manitoba Hydro also compensates registered trapline holders through its Trapline Compensation Policy which includes compensation if equipment is damaged.

3.4.2.10 Infrastructure and Services

3.4.2.10.1 Generation Projects

Construction of the Generation Projects involved the development of related supporting infrastructure and projects to facilitate construction and, in some instances, operations of the projects. Apart from the Transmission Projects such as converter stations and transmission lines, which are also discussed in this section, some of the Generation Projects involved the development of rail spurrs, telecommunications towers and roads. For example, given that no road access was available when the Kelsey GS was being developed in the 1950s, a 23 km (14.3 mi) rail spur line was built to connect the site to the Canadian National Bayline. Other examples of supporting infrastructure include the road from Gillam to the site of the Long Spruce GS, and the road from Long Spruce to Sundance, the latter which was initially developed to house workers for the construction of the Limestone GS.

As noted above, in the 1960s Gillam was redeveloped into an industrial town to service and support Manitoba Hydro development on the Nelson River. The development of Gillam has brought with it a range of services available to the community and surrounding region including a local hospital, kindergarten to grade 12 school and recreational facility.

Supporting projects and infrastructure will be discussed in more detail in Phase II of this study.

Concerns related to the effects of a Generation Project on local existing infrastructure and services generally relate to increased use of that infrastructure (e.g., increased traffic on area roads) and demand for community based services such as emergency and health services during construction activities. Other concerns relate to the in-migration of construction workers into communities as a result of a project (e.g., worker interaction), described above.

Addressing Effects on Infrastructure and Services

Potential effects and mitigation measures for infrastructure are generally subject to Manitoba Hydro procedures for contact and discussion with responsible authorities. Manitoba Hydro works with local service providers to establish mitigation measures related to effects on infrastructure and services. These measures have varied by project and have included, for example, the creation of construction camps to house workers and the provision of recreational and other services at site to reduce off-site visits. Where appropriate, contribution arrangements have been made with local governments to address incremental costs associated with construction activities (e.g., highway upgrades in advance of development).
3.4.2.10.2 TRANSMISSION PROJECTS

Transmission lines can cross or be in proximity to existing infrastructure installations such as Provincial Trunk Highways, Provincial Roads, railways and airports. The nature and extent of impact, and routing measures required, relate to the type of infrastructure a project may cross or be in proximity to. Concerns relate to disruption, damage and interference.

Depending on the magnitude of the project, concerns related to the effects of a transmission project on services during construction can be similar to those associated with a generation project. For example, with the development of converter stations which can take several years to construct and involve large workforces, there can be concerns related to increased demand for community based services such as emergency and health services, as well as increased traffic on area roads.

During operations, effects to community infrastructure and services is generally limited given the limited extent of maintenance activities.

ADDRESSING THE EFFECTS OF TRANSMISSION FACILITIES ON INFRASTRUCTURE AND SERVICES

Potential effects and mitigation measures for infrastructure are generally subject to Manitoba Hydro procedures for contact and discussion with responsible authorities. Manitoba Hydro has design protocols and procedures in place to mitigate any potential effects. Potential effects on services from transmission development are dependent on factors such as proximity of the line to the community, hiring practices (extent of the non-local workforce), and workforce accommodations (mobile construction camps versus local accommodations).

3.4.2.11 EMPLOYMENT, TRAINING, BUSINESS AND INCOME OPPORTUNITIES

Development of the Projects has presented both short and long-term employment and business opportunities. With regards to the Generation Projects this has included construction employment, operational employment at the various generating stations, operational business opportunities (e.g., snow clearing), seasonal employment under the WMP, shorter term employment and business opportunities associated with construction of projects and various mitigations measures (e.g., Cross Lake Weir) and employment associated with the implementation of the NFA, CIAs and other settlement agreements.

Unlike the Generation Projects, the Transmission Projects have presented primarily short-term local employment opportunities during construction activities (primarily during the winter months), at varying skill levels. The Transmission Projects have in some cases occurred over long distances and because of this, the amount of training and employment in any one area has been limited. Economic benefits have also arisen through contracting and other business and employment opportunities and, indirectly, through the provision of goods and services to the construction workforce. During operations, workforce requirements generally involve Manitoba Hydro operations and maintenance personnel, and contractor staff as required. Maintenance activities can involve short-term contracts for brush clearing to maintain rights-of-way. Indirect effects can include the purchases of meals and fuel which may produce a small economic benefit to nearby communities.
3.4.2.11.1 ENHANCING EMPLOYMENT, TRAINING, BUSINESS AND INCOME OPPORTUNITIES

Manitoba Hydro has a range of programs and policies designed to encourage and enhance Aboriginal representation in our projects and operational work force, and to promote the participation of northern Aboriginal business in our construction and operations activities. These programs and policies have evolved over time, and recently include, for example:

- **The Hydro Northern Training and Employment Initiative (HNTEI):** Pre-project training, designed to train and prepare northern Aboriginal people for employment in a wide range of occupations during the construction of both the Wuskwatim and proposed Keeyask Projects, was offered through the Wuskwatim and Keeyask Training Consortium (WKTC). Pre-project training was offered through Atoskiwin Training and Employment Centre (ATEC) for NCN Citizens. Funded by Manitoba Hydro and the Provincial and Federal governments, WKTC facilitated HNTEI and provided Project based funding to five First Nations and two Aboriginal organizations, who in turn offered training to their citizens.

- **Pre-Placement Training Initiative:** Developed initially to prepare Aboriginal candidates to acquire minimum qualifications for entry into Manitoba Hydro’s Electrical, Mechanical, Station Operator and Power Line Training Programs, this initiative was later expanded to also include access to professional and technical job categories such as information technology, human resources, engineering, commerce, fleet services, linemen and technicians.

- **Northern Purchasing Policy:** Hydro’s Northern Purchasing Policy promotes the participation of northern and northern Aboriginal businesses through information exchange, scoping initiatives, restricted tendering or negotiation, and preferential prioritization of contract award.

- **Aboriginal Educational Funding Program:** Manitoba Hydro provides bursaries and scholarships specifically for Aboriginal students in a wide range of disciplines. Recipients of the Aboriginal Educational Funding Program receive priority consideration for summer employment opportunities.

- **New Generation Projects:** include significant efforts to maximize local employment, business and training opportunities. This includes local hiring preferences within the collective agreement governing construction activities (i.e., the Burntwood Nelson Agreement). For Keeyask and Wuskwatim Generation Projects, income opportunities have been made available to the partnering communities.

- **New Transmission Projects:** generally speaking, new transmission construction employment is governed by a collective labour agreement known as a Transmission Line Agreement (TLA), which dictates that all non-supervisory staff for a given project must be new hires for the project. Hiring preferences are put into each northern contract and vary depending upon the location of the project and resulting contract. For Northern Projects, first preference hiring would be Northern Aboriginals.

In addition to measures Manitoba Hydro has taken, the Federal and Provincial governments have also taken steps to encourage Aboriginal participation in historic hydroelectric development. This includes measures taken for the Limestone Project such as the Limestone Training and Employment Agency.
3.5 LITERATURE CITED


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Lienafa, K. 1990. Relocation and rebuilding: The social impacts of Hydro-projects on the community of South Indian Lake. Universite du Quebec, Quebec City, QC.


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APPENDIX 3A
RESOURCE USE STUDIES
The following provides a preliminary list of documents related to resource use in the Region of Interest. This list is not complete and will be expanded during the preparation of the Phase II Report. It should be noted that a large number of studies were conducted in response to specific claims filed against Manitoba, Manitoba Hydro, and/or Canada. The reports associated with these studies that were conducted by the claimants are not included in the bibliography and will not be used without the express permission of the First Nation, community, organization and/or individual that the study was conducted for.


Boothroyd, P. 1990. Effects of the Lake Winnipeg regulation project on waterfowl use of the outlet lakes area and on the Norway House Band. Canadian Wildlife Service, Winnipeg, MB.


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Welch, H.E., Stewart, K.S., and Barber Jr., Y.M. 1966. Possible changes in the natural resources of Southern Indian Lake as a result of the Churchill River diversion. [s.n.], Winnipeg, MB. 31 pp.


York Factory First Nation, the Manitoba Hydro-Electric Board, the Province of Manitoba, Indian Affairs and Northern Development. 1997. The agreement between Her Majesty the Queen in Right of Canada, Her Majesty the Queen in Right of the province of Manitoba, the York Factory First Nation, and the Manitoba Hydro-Electric Board.
