



Keeyask Generation Project

PRELIMINARY DRAFT

Socio-Economic Monitoring Plan



April 2013

**KEYYASK GENERATION PROJECT
SOCIO-ECONOMIC MONITORING PLAN**

PRELIMINARY DRAFT

Prepared by

Keeyask Hydropower Limited Partnership
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PREFACE

KEYYASK ENVIRONMENTAL PROTECTION PROGRAM

An Environmental Protection Program (the Program) has been developed to mitigate, manage and monitor potential environmental effects described in the *Keeyask Generation Project: Response to EIS Guidelines* during the construction and operation phases of the Keeyask Generation Project (the Project) shown on Map 1 (*Drafters Note: general location map to be inserted*). The Program includes a collection of plans grouped in the following categories: Environmental Protection Plans, Environmental Management Plans, and Environmental Monitoring Plans.

Figure 1 lists all of the plans included in the Program. It also demonstrates how the Program will be managed. The Keeyask Hydropower Limited Partnership (the Partnership) has delegated authority to Manitoba Hydro to manage construction and operation of the Project including implementation of the Program. The organizational structure of the Partnership for this aspect of the Project includes a Monitoring Advisory Committee (MAC), which includes participants from each of the Keeyask Cree Nations (KCNs) and Manitoba Hydro. Manitoba Hydro will be guided on the implementation of the Program by the MAC, the Partnership Board of Directors and ongoing discussion with Regulators.

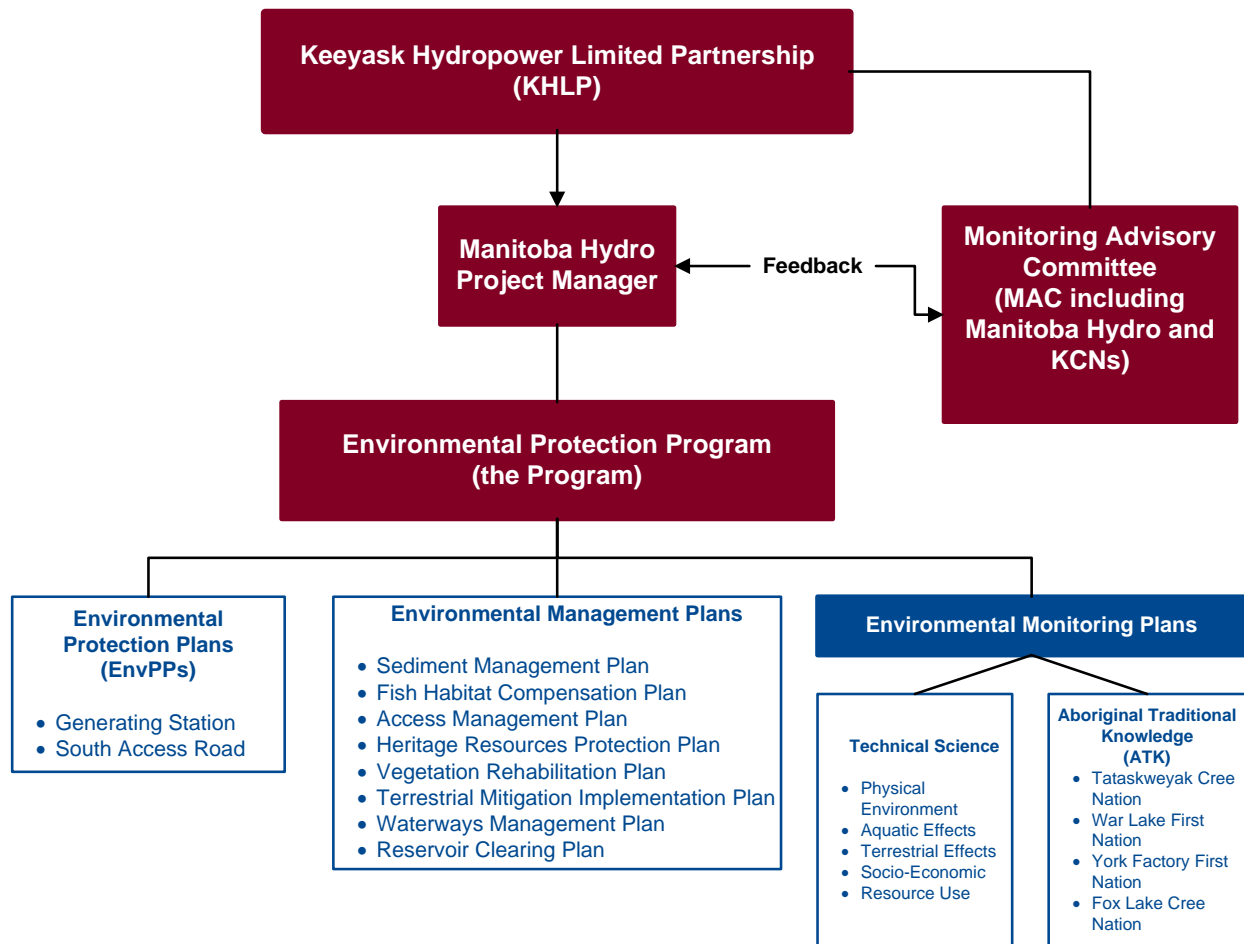


Figure 1: Environmental Protection Program

The Environmental Protection Plans (EnvPPs) provide detailed, site-specific environmental protection measures to be implemented by the contractors and construction staff to minimize environmental effects from construction of the generating station and south access road. They are designed for use as reference documents providing the best management practices to meet or exceed regulatory requirements. EnvPPs are organized by construction activity, highlighting measures to reduce the impact of a specific work activity (e.g., tree clearing or material placement in water). Contractors' compliance with the EnvPPs is a contractual obligation. Under Manitoba Hydro's construction site management, a Site Environmental Officer will be responsible for monitoring compliance and determining when corrective actions are required.

The Environmental Management Plans focus on minimizing effects on specific environmental parameters. They outline specific actions that must be taken during construction and in some cases into the operational phase to mitigate Project effects. The management plans include monitoring to determine success of the actions taken and to determine other actions that need to be undertaken (adaptive management). Implementation of these plans will involve Manitoba Hydro's staff, the KCNs, specialized consultants and contractors under the direction of the Project Manager.

The Environmental Monitoring Plans are designed to measure the actual effects of the Project, test predictions or identify unanticipated effects. During the course of the environmental assessment, numerous requirements for monitoring were identified. There will be both technical science monitoring and Aboriginal

Traditional Knowledge (ATK) monitoring undertaken. The technical science monitoring will be conducted by Manitoba Hydro and specialized consultants contracted by Manitoba Hydro, who will in turn hire members of the KCNs to work with them to fulfil the monitoring activities. Manitoba Hydro will also have contracts with each of the KCNs to undertake ATK monitoring of the project.

The activities that occur and the results generated from the Environmental Protection Program will be discussed at MAC meetings. The MAC is an advisory committee to the Partnership Board of Directors and will review outcomes of the programs and, if appropriate provide advice and recommendations to the Partnership on additional monitoring or alternative mitigation measures that may be required. The MAC will provide a forum for collaboration among all partners. On behalf of the Partnership, the MAC will also ensure that the outcomes of the Environmental Protection Program are communicated more broadly on an annual basis to Members of the KCNs, regulators and the general public.

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1.0 INTRODUCTION

This document describes the Socio-Economic Monitoring Plan (SEMP) for the Keeyask Generation Project (the Project) on the Nelson River at Gull Rapids in northern Manitoba. *The Keeyask Generation Project Response to EIS Guidelines* (“the EIS”), completed in June 2012, provides a summary of predicted effects and planned mitigation for the Project. Technical supporting information for the socio-economic environment, including a description of the existing environment, effects and mitigation, and a summary of proposed monitoring and follow-up programs is provided in the *Socio-Economic Environment, Resource Use and Heritage Resources Supporting Volume* (SE SV). The SEMP is a commitment made in Chapter 8 of the EIS.

The environmental assessment for the Project used both technical science and Aboriginal traditional knowledge (ATK). Mitigation measures were carefully planned and designed to prevent or reduce (to the extent practical), adverse effects from the Project. However, there are uncertainties associated with predicted effects and the effectiveness of planned mitigation measures. To address these uncertainties, many of the predictions and mitigation measures are supported by monitoring to enable testing of the predictions and timely response when actual results differ from the predictions. Adaptive management related to monitoring outcomes may be necessary in some circumstances – this is noted at the end of the SEMP.

Monitoring activities focus on primary effects to key components of the environment rather than addressing all potential changes to the socio-economic environment as described in the SE SV. The SEMP addresses the following socio-economic components:

- Employment and training opportunities (VEC) (Section 2.1);
- Business opportunities (VEC) (Section 2.2);
- Income (VEC) (Section 2.3);
- Population (Section 3.1);
- Housing (VEC) (Section 3.2);
- Infrastructure and Services (VEC) (Section 3.3);
- Transportation Infrastructure (VEC) (Section 3.4);
- Public Safety and Worker Interaction (VEC) (Section 4.1);
- Travel, Access and Safety (VEC) (Section 4.2);
- Culture and Spirituality (VEC) (Section 4.3); and
- Mercury and Human Health (VEC) (Section 4.4).

This SEMP is part of an integrated and coordinated Environmental Protection Program (the Program) that has been developed to facilitate an effective transition from planning and assessment to implementation of all aspects of the Project.

1.1 OVERVIEW OF PROJECT AND SOCIO-ECONOMIC EFFECTS

The Project, which will be constructed by the Keeyask Hydropower Limited Partnership¹ (the Partnership), is a 695 megawatt (MW) hydroelectric generating station at Gull Rapids on the lower Nelson River, immediately upstream of Stephens Lake. It consists of four principal structures: a powerhouse complex; a spillway; dams; and dykes. A reservoir will be created upstream of the principal structures. Supporting infrastructure consists of temporary facilities required to construct the principal structures and permanent facilities required to construct and operate the Project. Temporary infrastructure consists of roads, borrow sources, a camp and work areas, cofferdams, rock groins and an ice boom. Permanent supporting infrastructure consists of north and south access roads, a transmission tower spur, communications tower, some borrow areas, excavated-material placement areas, boat launches and a portage to enable river traffic to bypass the dam.

Construction of the Project is expected to occur over an approximate eight-and-a-half year period. It will begin producing power about two and a half years before construction is completed when the reservoir will be impounded to full supply level (FSL). Management of the river will occur in two stages: during Stage I construction, cofferdams will block the north and middle channels of the Nelson River allowing construction of the powerhouse, central dam and spillway; and during Stage II construction, flows will be diverted through the spillway while the south dam is constructed across the south channel.

During the construction phase of the Project, notable effects will relate to employment and business opportunities, travel safety and access changes and potential worker interaction issues, particularly in Gillam. During the operation phase, socio-economic effects will include effects related to Gillam, and possibly Split Lake, population growth, mercury and health and travel. In-vicinity communities are concerned about health effects from the impoundment of the reservoir and subsequent flooding which is expected to increase methylmercury concentrations in fish in Gull Lake and, to a lesser extent, Stephens Lake. Fish, particularly lake whitefish, pickerel and jackfish are country food staples for the KCNs, as well as being sources of food for recreational users of Gull and Stephens lakes.

¹ The Keeyask Hydropower Limited Partnership is comprised of four limited partners and one general partner. The limited partners are Manitoba Hydro, Cree Nation Partners Limited Partnership (CNP, controlled by TCN and WLFN), York Factory First Nation Limited Partnership (controlled by YFFN), and Fox Lake Cree Nation Keeyask Investments Inc. (controlled by FLCN). The four communities together are referred to as the Keeyask Cree Nations (KCNs). The general partner is 5900345 Manitoba Ltd., a corporation wholly owned by Manitoba Hydro.

1.2 OBJECTIVES, APPROACH AND SCHEDULE

1.2.1 Objectives and Approach

The SEMP is intended to document changes over time for certain Valued Environmental Components (VECs) in order to:

- Test predicted effects in the EIS;
- Identify unanticipated effects related to the Project;
- Monitor the effectiveness of mitigation measures;
- Determine if adaptive management is required in order to reduce unanticipated adverse effects; and
- Confirm compliance with regulatory requirements, including terms and conditions in Project approvals.

The SEMP focuses on the primary effects to the socio-economic VECs and supporting topics identified in the EIS as meriting monitoring – these include employment and training opportunities, business opportunities, income, population, housing, infrastructure and services, transportation infrastructure, public safety and worker interaction, travel, access and safety, culture and spirituality, and mercury and human health. The Plan defines what will be measured and how frequently it will be measured. Results will be reviewed by Project personnel (including the Monitoring Advisory Committee (MAC)) and used as a basis for determining if new or modified mitigative measures are needed.

1.2.2 Monitoring Schedule

The socio-economic monitoring program¹ will be more extensive during construction of the Project, i.e., from 2014 to 2022, but will also occur during the operation phase, (i.e., after 2022) as follows:

- Construction Phase – Monitoring during construction is related to employment and training opportunities, business opportunities, income, population changes (and related effects on housing, infrastructure and services), worker interaction, travel, access and safety and culture and spirituality.²
- Operation Phase – Monitoring during operation is more limited, primarily focused on population change in Gillam during the first five years of operation; water levels at Split Lake (re: travel safety) and monitoring related to mercury and human health. Operation-phase monitoring will allow for an

¹ Monitoring in this plan is described in terms of “year” of construction (eight-and-a-half years in total) and “year” of operation. The ice boom, main camp (phase II), south access road and Stage 1 cofferdams will be built in years 1 and 2, with major works construction and installation occurring over years 3 through 7.

² Note that monitoring information pertaining to worker interaction and culture and spirituality are primarily intended to be communicated and discussed internally for management of Project effects and it is not anticipated that these topics would be included in regulatory and public reporting.

evaluation of the safe consumption recommendations for mercury and effectiveness of the associated communication products through a country food consumption survey every five years starting in 2022 (in addition to an updated Human Health Risk Assessment every five years).

Further details regarding the scheduling of the components of this SEMP are provided by topic area below.

1.3 SEMP COMPONENTS AND RELATED PROGRAMS

1.3.1 SEMP Components

The SEMP covers the following aspects of the socio-economic environment, which are outlined in Sections 2.0-4.0:

- Economy;
- Population, Infrastructure and Services; and
- Personal, Family and Community Life.

1.3.2 Summary of Other Monitoring Information Relevant to the SEMP

Some aspects of the Aquatic and Terrestrial monitoring programs will provide inputs for the SEMP, as described below:

- Monitoring of mercury concentrations in fish muscle, under the Aquatic Effects Monitoring Plan, will provide inputs into the updated Human Health Risk Assessments to be undertaken every five years after peak mercury levels have been reached.
- Periodic volunteer sampling of wild game, waterfowl and wild plants (as submitted by local resource harvesters) will provide inputs into the updated Human Health Risk Assessments, noted above.
- Water quality monitoring in Gull Lake and Stephens Lake will provide input to the Human Health Risk Assessment pertaining to mercury.

The Waterways Management Program (see Schedule 11-2 of the JKDA) (Phase I for the pre-flooding period and Phase II for the post-flooding period) includes mitigation measures as well as monitoring activities that address Project-related effects on travel, access and safety. No additional socio-economic monitoring is planned.

1.4 STUDY AREA

1.4.1 Socio-Economic Local Study Area

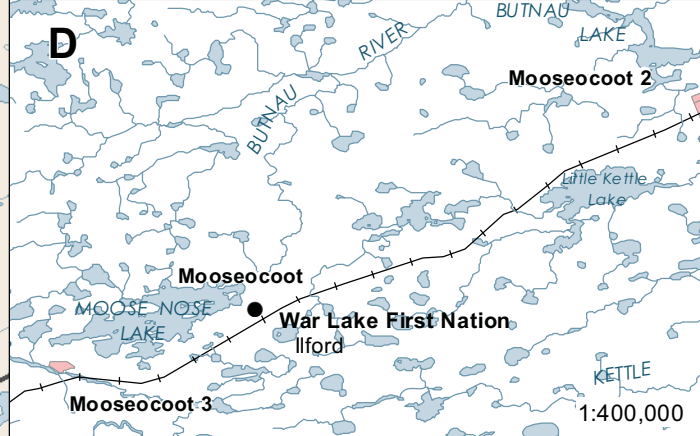
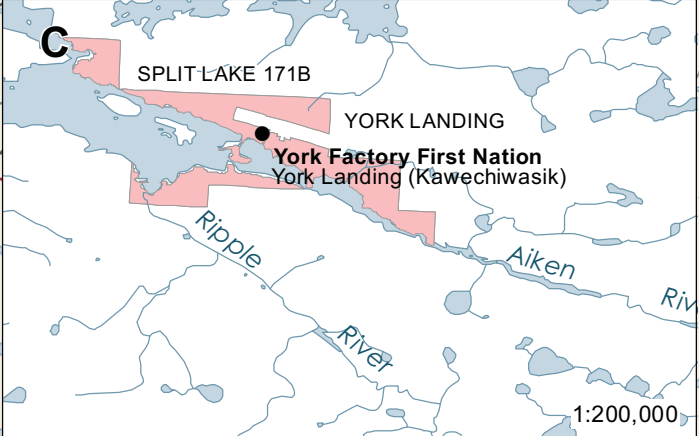
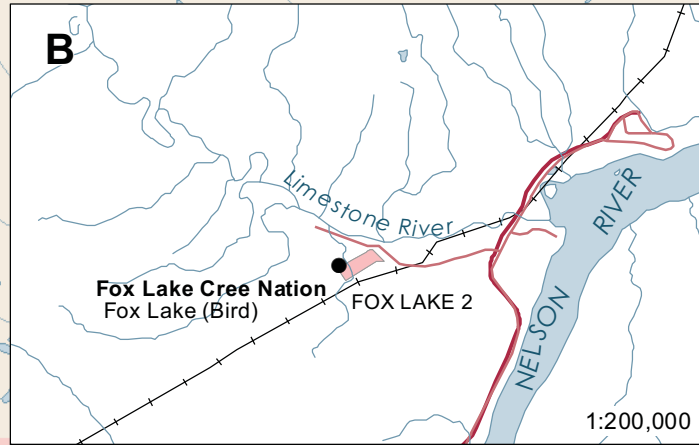
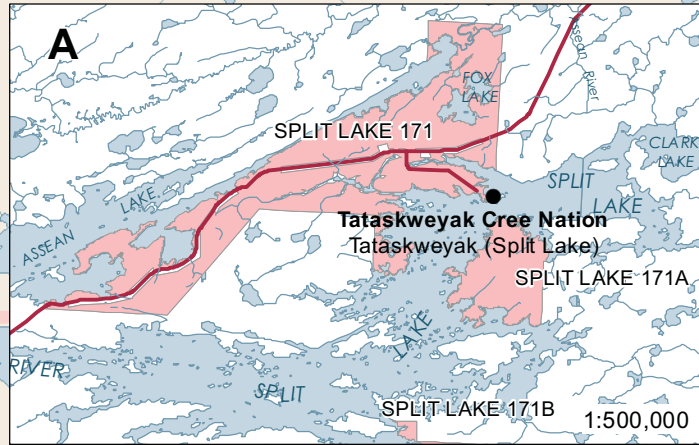
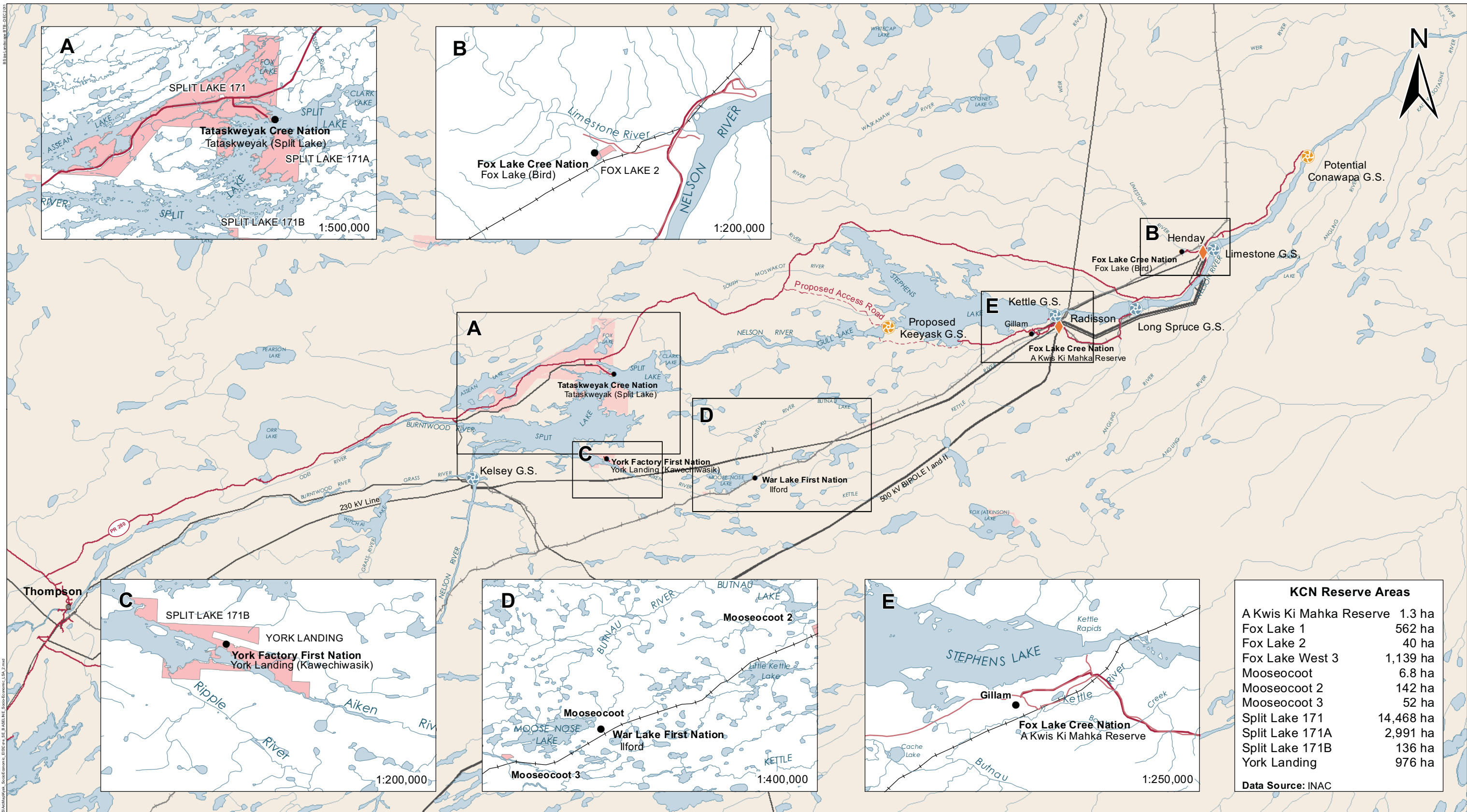
The Socio-Economic Local Study Area incorporates the Project site as defined and described in the Project Description Supporting Volume.

The Socio-Economic Local Study Area (see Map 1-1) for the SEMP includes the KCNs communities of TCN at Split Lake, WLFN at Ilford, YFFN at York Landing and FLCN at Fox Lake/Gillam, which are affected by the Project through the following main pathways of effect:

- Physical/biophysical changes to the way the landscape looks;
- Physical/biophysical effects on resource use/traditional use areas and heritage resources;
- Employment and business opportunities;
- Construction traffic;
- Interaction with non-local construction worker within the partners' home communities, especially Gillam and possibly Split Lake; and
- Investment income.

In addition to these partner communities, the Town of Gillam and the City of Thompson are included in the Socio-Economic Local Study Area for the following reasons:

- The Town of Gillam is Manitoba Hydro's northern operations base and operational staff for the Project will be located in Gillam. Gillam is also home to FLCN Members living on reserve and both FLCN and TCN Members living off-reserve;
- Some of the Project's workforce are likely to visit Gillam and Thompson, and possibly Split Lake, during their leisure time;
- Transportation/traffic for construction equipment, materials and people will flow primarily through Thompson, and some also via Gillam; and
- The City of Thompson is the regional centre for the Project and as such, can be expected to experience increased expenditures on retail goods and services due to re-spending of wages by the Project construction workforce. Some commercial and industrial services in Thompson could see increased demand, (e.g., air and freight travel through Thompson). As well, Thompson could receive additional pressure on regional health and social services.



KCN Reserve Areas	
A Kwis Ki Mahka Reserve	1.3 ha
Fox Lake 1	562 ha
Fox Lake 2	40 ha
Fox Lake West 3	1,139 ha
Moosecoot	6.8 ha
Moosecoot 2	142 ha
Moosecoot 3	52 ha
Split Lake 171	14,468 ha
Split Lake 171A	2,991 ha
Split Lake 171B	136 ha
York Landing	976 ha

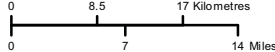
Data Source: INAC



DATA SOURCE:
Manitoba Hydro, NTS, Stantec Consulting Ltd.

CREATED BY:
Stantec Consulting Ltd.

COORDINATE SYSTEM:
UTM NAD 1983 Z15N



DATE CREATED:
16-DEC-10

VERSION NO:
1.0

REVISION DATE:
07-JUN-12

QA/QC:
APPROVED

Legend

- Generating Station (Planned)
- Generating Station (Existing)
- Converter Station
- First Nation Community
- Town/City
- Highway
- Proposed Access Road
- Rail
- Existing Transmission Line
- First Nation Reserve
- Waterbody

Communities depicted on the map are included in the Socio-Economic Local Study Area

Socio-Economic Local Study Area

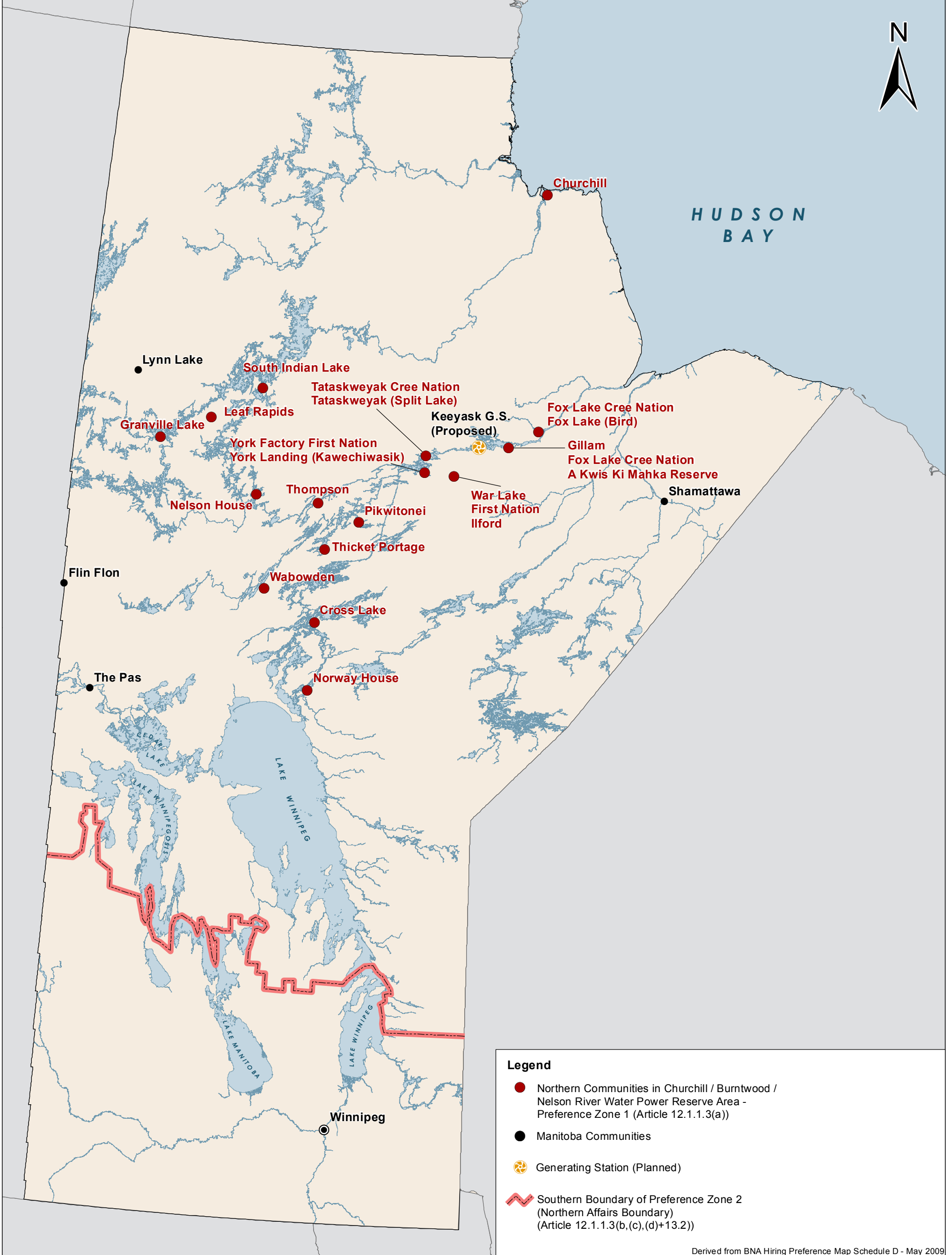
1.4.2 Socio-Economic Regional Study Area

Certain Project effects, in particular preferential hiring of northern Aboriginal and other northern workers for construction employment, will extend beyond the Socio-Economic Local Study Area to all of northern Manitoba. For this reason, the Socio-Economic Regional Study Area has been defined using the boundary identified under Schedule D of the Burntwood Nelson Agreement (BNA) (see Map 1-2) as the area pertaining to northern preference. For the purposes of statistical data collection from Statistics Canada, this region encompasses Census Divisions 19, 21, 22 and 23.

According to the 2006 Census of Canada, the population for the Socio-Economic Regional Study Area was 84,295. Of this population, about 72 % or 61,000 people, self-identified as being of Aboriginal descent (Statistics Canada 2007a).

The Socio-Economic Regional Study Area includes the Churchill-Burntwood-Nelson (CBN) communities identified in the 2009 BNA as part of hiring preference Zone 1.

Construction employment is the main pathway of effect requiring monitoring in the Socio-Economic Regional Study Area.



Legend

- Northern Communities in Churchill / Burntwood / Nelson River Water Power Reserve Area - Preference Zone 1 (Article 12.1.1.3(a))
- Manitoba Communities
- ⊙ Generating Station (Planned)
- - - Southern Boundary of Preference Zone 2 (Northern Affairs Boundary) (Article 12.1.1.3(b),(c),(d)+13.2))

Derived from BNA Hiring Preference Map Schedule D - May 2009



DATA SOURCE: Manitoba Hydro, NTS, Stantec Consulting Ltd., Government of Canada		
CREATED BY: Stantec Consulting Ltd.		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 18-JAN-12	REVISION DATE: 18-MAY-12
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0 30 60 Miles		

Socio-Economic Regional Study Area

2.0 ECONOMY

Economic monitoring will include monitoring of employment and training, business and income outcomes associated with the Project. To allow comparison across projects, the monitoring method will be consistent with that used for the Wuskwatim Generation Project.

2.1 EMPLOYMENT AND TRAINING OPPORTUNITIES

2.1.1 Background

The Keeyask Generation Project EIS provided estimates regarding Aboriginal and northern resident participation in employment opportunities associated with the construction phase of the Project. Analysis indicated that employment would vary by year depending upon the specific construction activities being undertaken, with peak quarterly workforce requirements being the highest in the middle years of construction. The estimates would also vary seasonally, with the majority of activity occurring during the summer (Q2 and Q3) construction months.

Analysis for the construction phase provided high and low employment estimates for the KCNs, the Aboriginal workforce in the Churchill-Burntwood-Nelson area and the Aboriginal workforce in the Socio-Economic Regional Study Area as a whole (see SE SV Section 3.4.1). The EIS also predicted that there would be northern participation in the 46 operating jobs required to operate the facility.

Monitoring of employment and training opportunities will be undertaken:

- To determine the overall employment outcomes of Project construction with particular emphasis on Aboriginal and northern resident participation in employment.

If concerns with respect to employment are raised, they will be reviewed by the Advisory Group on Employment (AGE) and, if required, internally by the Partnership, to determine whether and what form of adaptive management measures are appropriate. As noted in the JKDA, the AGE shall be established by Manitoba Hydro as the Project Manager upon the first day the Main Camp buildings are installed on their piles for the installation of the Main Camp Phase I. The AGE will have voting representation from the four Keeyask Cree Nations (one representative from each of TCN, WLFN, YFFN and FLCN), Manitoba Hydro, the Province of Manitoba, the Hydro Project Management Association and the Allied Hydro Council. Non-voting representation includes representatives appointed by each contractor and the Allied Hydro Council's Aboriginal union representative for the Project.

2.1.2 Methodology and Schedule

2.1.2.1 Construction

As noted previously, the majority of available Project employment will occur during the construction period. Monitoring will include the following:

- Track total construction opportunities available, including the amount (e.g., total person years) and type (e.g., job/occupational classification) of work available, the total number of hires and total number of employees. Data will be broken down by CBN region, Aboriginal, non-Aboriginal, northern, and Manitoban.
 - Track both on-site construction employment and direct Project-related community based employment (e.g., for community based job referral employment).
- Collect trainee status of employees, trainee designation and apprenticeship level at the point of hire and at the point of separation.
- Collect data about factors associated with availability of workers and job qualification in a manner similar to construction of the Wuskwatim Generation Project.

Employment information will be collected throughout each year of construction, summarized at the end of each fiscal year and form part of the annual reporting process.

2.1.2.2 Operation

No monitoring is anticipated within the SEMP.

2.2 BUSINESS OPPORTUNITIES

2.2.1 Background

Project construction will present direct business opportunities locally, regionally and across the province as a whole. Manitoba Hydro's Northern Purchasing Policy promotes the participation of northern Aboriginal and northern Manitoba businesses through the following:

- Information exchange;
- Scope initiatives;
- Negotiation or restricted tendering;
- Recognition of Aboriginal joint ventures; and
- Aboriginal content provisions.

Application of this policy will enable northern Aboriginal and northern Manitoba businesses to have the opportunity to participate in economic activity resulting from Project construction.

As part of the JKDA, Manitoba Hydro and the KCNs negotiated a series of Direct Negotiated Contracts (DNCs) with one or more of the KCNs or KCNs businesses designated by them.

In addition to direct business opportunities, it is anticipated that certain businesses in Gillam and Thompson will benefit from Project construction by providing services to construction contractors and to workers on their days off (e.g., entertainment and recreation services including restaurants and lounges).

Monitoring of business outcomes will provide data about the success and effectiveness of efforts to enhance local and Aboriginal business participation, as well as an indication of the general economic impact of the Project on Manitoba.

Monitoring will track construction business outcomes, with a particular focus on the KCNs, other Aboriginal and northern business participation, and indirect business opportunities generated as a result of Project-related expenditures in Gillam, Thompson and the KCNs communities.

Monitoring will also try to understand the role of KCNs businesses in implementing the DNCs and how the DNCs contribute to building KCNs business capacity.

2.2.2 Methodology and Schedule

2.2.2.1 Construction

Direct purchasing data will be collected annually through Manitoba Hydro's existing accounting and tracking systems. Data will be collected on the total number and value of purchases made, as well as the breakdown of those purchases between Aboriginal, northern and other businesses. At the peak of the General Civil Contract, Key Person Interviews (KPIs) will be undertaken in Thompson, Gillam and each of the KCNs communities to ascertain any indirect business opportunities that may be generated as a result of the Project.

In addition, a KPI program of key participants involved in management of the DNCs will also be undertaken to understand the role of KCNs businesses in implementing the DNCs and how the DNCs contribute to building KCNs business capacity.

2.3 INCOME

2.3.1 Background

Labour income is an important indicator of the direct economic impact of a particular project. Monitoring employment income levels will provide a good indication of the direct economic impact of the Project, as well as the potential magnitude of indirect and induced economic impacts. In addition, income level affects the general standard of living of individuals and families in that it is a determinant of access to basic human needs such as housing, food and clothing.

2.3.2 Methodology and Schedule

2.3.2.1 Construction

Monitoring will provide an estimate of the total labour income generated by the Project based on total person-years of employment generated by the Project and applicable wage rates from the BNA. Labour income will be broken down by the KCNs, CBN region, Aboriginal, non-Aboriginal, northern, and Manitoban employees.

An assessment of labour income will be prepared annually at the end of each year's construction season.

3.0 POPULATION, INFRASTRUCTURE AND SERVICES

3.1 POPULATION

3.1.1 Background

Population changes have implications for community housing, infrastructure and services. In many communities in the Regional Study Area, and particularly in First Nation and Northern Affairs communities, limited financial resources often hamper the provision of housing, infrastructure and services. In many cases, this is coupled with population growth higher than the provincial average. The provision of adequate housing is of key concern to the KCNs communities, where demand frequently exceeds the available supply of quality homes; and many community residents and families live in crowded conditions. As a result, there is limited capacity in most communities to handle population growth, including the ability to accommodate community Members who may wish to return to their home reserve after living elsewhere.

In-migration of workers and their families to the KCNs communities has the potential to affect housing, infrastructure and services in communities, particularly where existing amenities and services are at capacity. Some out-migration may also occur if new income facilitates such a move for some individuals or families. Net in-migration associated with Project construction is expected to be quite small, although the KCNs have expressed the concern that any in-migration would stress services that are already at capacity.

Accurately estimating the precise levels of in- and out-migration is difficult. Monitoring will focus on the extent of population change during the construction phase and estimate the level of Project-induced in-migration or out-migration in the KCNs communities and Gillam as part of that population change.

The Project is expected to create 46 operation jobs based in Gillam. Project effects on population and migration in Gillam will depend on whether the operation staff are hired from within the community or are relocated to the community from elsewhere, and how many are single or have families. The added population associated with operation phase workers and their families is likely to create additional demand for housing, facilities and services in Gillam.

3.1.2 Methodology and Schedule

3.1.2.1 Construction

Monitoring will track overall trends in the population of Gillam and the KCNs communities, including in- and out-migration. Population-change monitoring will occur annually at the end of each year's construction season. If construction-related in-migration is greater than anticipated, KPIs will be undertaken (on an as-needed basis) to understand the influence of the Project on population.

3.1.2.2 Operation

For internal purposes, population change in Gillam will be monitored annually over the first five years of the operation phase to enable service providers and the Land Use Planning process to plan and respond to anticipated change.

3.2 HOUSING

3.2.1 Background

The EIS predicts limited new Project-related population in the KCNs communities and Gillam during the construction period, therefore resulting in little new demand for housing. Monitoring efforts are therefore focused on testing the prediction of minimal demand on housing in KCNs communities and Gillam due to the Project.

3.2.2 Methodology and Schedule

3.2.2.1 Construction

As noted in Section 3.1 Population, monitoring will track overall trends in the population of Gillam and the KCNs communities, including in- and out-migration. If construction related in-migration is greater than anticipated, KPIs will be undertaken to understand the influence of the Project on population.

In addition to population monitoring, a one-time program of KPIs will be undertaken with representatives of the Housing Authorities in each of the KCNs communities to identify any apparent Project effects on housing. Exact timing will be determined through discussion at the Monitoring Advisory Committee (MAC).

In Gillam, the demand for housing is considered as part of the Gillam Land Use Planning process already in place; tracking of population changes in Gillam will be an input to the Land Use Planning process. No additional SEMP monitoring is anticipated.

3.2.2.2 Operation

During the operation period, demand for housing will be considered a part of the Gillam Land Use Planning process already in place. Tracking of population change in Gillam will provide an indication of the implications for housing and will enable service providers and the Land Use Planning process to plan and respond to anticipated change. No SEMP monitoring is anticipated.

3.3 INFRASTRUCTURE AND SERVICES

3.3.1 Background

As with housing, population change resulting from the Project is one of the drivers of change to infrastructure and services. Other Project effects on infrastructure and services may result from needs associated with the workforce (*e.g.*, emergency services that cannot be handled at the work site or recreation services for workers at the south side camp near Gillam). The extent to which these sources of change affect any given community will vary.

The EIS predicts limited new Project-related population in the KCNs communities during the construction period, therefore resulting in little new demand for infrastructure and services due to the Project. Monitoring efforts will be focused on testing the prediction of minimal demand on infrastructure and services in KCNs communities due to the Project.

Gillam is the urban centre in closest proximity to construction activities and is especially close to construction activities associated with the south access road, south dykes and related construction camp on the south side of the Nelson River. As such, Gillam, FLCN and TCN Members who reside in Gillam and FLCN Members in Fox Lake (Bird) are likely to experience effects on infrastructure and services associated with short-term influxes of construction workers. TCN has expressed concern that given Split Lake's close proximity to the Project site, TCN Members residing in Split Lake may experience effects on infrastructure and services due to the short-term influxes of construction workers.

It is difficult to predict the exact effect the short-term influx of people may have on a community, since the total number of visitors at any one time is unknown. Potential effects of short-term influxes of construction workers can include increased pressure on emergency services, community facilities and services.

In Gillam, monitoring will be undertaken to understand the effects from an influx of non-local construction workers on demand for infrastructure and services.

3.3.2 Methodology and Schedule

3.3.2.1 Construction

A one-time set of KPIs with contractors and service providers in the KCNs communities will be undertaken to test the EIS predictions. The KPIs will be conducted during the 2nd or 3rd year of the construction period, when the size of workforce will be at its highest.

For Gillam, monitoring is expected to be incorporated into the coordinated effort among Manitoba Hydro, the Town of Gillam and FLCN to track any influx of workers and assess related effects. This is expected to be part of a corporate-wide initiative addressing the Project and other projects which are anticipated to be constructed in an overlapping timeframe (*e.g.*, Keeyask Transmission Project, Keewatinoow Converter Station, northern portion of the Bipole III Transmission Line and the Conawapa Generation Project). The coordination is expected to be in place by Years 1 and 2 of the

Keeyask construction phase, in order that Gillam is prepared for peak construction periods and the presence of the south-side camp.

3.3.2.2 Operation

As indicated in Section 3.1, population change in Gillam over the first five years of the operation phase will be monitored annually to enable service providers and the Gillam Land Use Planning process to plan and respond to anticipated change.

3.4 TRANSPORTATION INFRASTRUCTURE

3.4.1 Background

Project effects on transportation infrastructure and services in the Local Study Area will include increased use of rail, air and road networks related to the transport of people, equipment and materials to the Project site during the construction period. A Construction Access Management Plan has been developed by Manitoba Hydro and the KCNs to manage access to the Project site; the Construction Access Management Plan includes a section on monitoring and follow-up related to use of the access roads.

Manitoba Industry and Transportation (MIT) is responsible for upgrades to the existing provincial highway system, including upgrading of PR 280. It is anticipated that regular upgrades and maintenance will be sufficient to handle increased travel by road. MIT undertakes its own monitoring biannually. There is existing capacity to handle any increases in rail and air traffic. No further monitoring by the Partnership is required, but it is anticipated that MIT monitoring results for PR 280 will be obtained to test predictions.

During the operation period, MIT will re-route PR 280 to include the north access road, the generating station facility over the Nelson River and the south access road to Gillam. MIT is the responsible authority for regular maintenance of the highway system; no further monitoring is required.

The operation of the Project is not expected to affect the water level on Clark Lake or Split Lake during open-water conditions. However, TCN and YFFN have expressed concerns about the predicted effects on open-water levels at Split Lake that could affect ferry service, landing sites and the winter road.

In terms of winter travel, the operation of the Project may affect peak winter water levels of Split Lake by 0.2 m (9 inches) under infrequent low-flow conditions.

3.4.2 Methodology and Schedule

3.4.2.1 Construction

No monitoring (beyond what is contained in the Construction Access Management Plan) is necessary during the construction phase.

3.4.2.2 Operation

Manitoba Hydro will continue to monitor water levels at Split Lake on an annual basis and will inform TCN and YFFN of the results.

4.0 PERSONAL, FAMILY AND COMMUNITY LIFE

4.1 PUBLIC SAFETY AND WORKER INTERACTION

4.1.1 Background

Construction of the Project may result in the potential for adverse interactions between non-local construction workers and TCN and FLCN Members and Gillam residents. The principle sources of concern for potential adverse effects relate to Project construction workers who travel to communities in the Socio-Economic Local Study Area during their leisure hours to socialize at the bar, restaurants, community events or in residents' homes. The potential for these interactions may lead to broad concerns about adverse effects on general public safety in the communities.

TCN has expressed concerns that non-local workers will visit Split Lake because it is the closest community to the north construction camp, is conveniently located on the road to Thompson and offers amenities such as a gas station, northern store and fast food outlet. FLCN Members have identified potential adverse effects of construction-worker interaction with community Members, in particular women and youth, as their greatest socio-economic concern associated with new major projects being developed close to home. YFFN has noted that many of their youth attend high school in Thompson and there is the potential for adverse interactions with construction workers when there. The communities' concerns are based on direct experience with the construction of previous hydroelectric generation projects, with FLCN's experience centred in the Gillam area and TCN's experience in Split Lake.

4.1.2 Methodology and Schedule

4.1.2.1 Construction

Due to the concerns of the KCNs about public safety and worker interaction, in particular for FLCN in relation to Gillam and TCN in relation to Split Lake, a suite of mitigation measures was developed (see Section 6.6.5.4 of the EIS). Mitigation includes preventative measures and a corporate mechanism for FLCN and TCN to address worker interaction issues; a Terms of Reference has been developed for a worker interaction committee in Gillam that includes community representatives and social service providers. This committee's mandate will be to establish an approach to monitoring and adaptive management of worker interaction issues and will include working closely with the Project Manager and RCMP in Gillam, Thompson and other KCNs communities.

4.1.2.2 Operation

No monitoring is necessary during the operation phase of the Project.

4.2 TRAVEL, ACCESS AND SAFETY

4.2.1 Background

The open-water regime (flows, velocities and levels) on the Nelson River have been modified by the Lake Winnipeg Regulation and Churchill River Diversion projects for over three decades. A similar situation exists for winter ice processes, which vary from year to year depending on the specific water flows and meteorological conditions.

In the Socio-Economic Local Study Area, construction and operation of the Project and related activities may affect the waterways, roadways and trails. These activities could impede travel along the Nelson River, could affect shoreline access and navigation safety on the river and could increase traffic levels and associated traffic accidents.

Water/Ice-based Travel:

KCNs Members are the predominant users of the waterways upstream and downstream of the Project. Metis, other Aboriginal and non-Aboriginal people may also use the waterways in the vicinity of the Project. Waterways are an important cultural and economic resource for Aboriginal people and have been an integral part of their traditional activities. For several decades, Manitoba Hydro and signatory First Nations to the Northern Flood Agreement have been implementing programs to facilitate safe travel under open-water and ice conditions on the Nelson River. Through these programs, much has been learned about what is required to support safe travel along the river.

During construction, the Project will affect accessibility and navigation in areas where and when construction is occurring. Implementation of the Keeyask Reservoir Clearing Plan and the Waterways Management Program (Schedules 11-1 and 11-2 of the JKDA respectively) will mitigate potential effects on water travel upstream, downstream and in vicinity of the Project. These plans, developed jointly between the KCNs and Manitoba Hydro, build on previous experience; and will help to accommodate existing users of the Nelson River and manage safety liabilities associated with the Project.

The operation of the Project is expected to alter the existing water and ice regimes within the Project's anticipated open-water hydraulic zone of influence which extends 41 km upstream from the Project site to about 3km downstream of the outlet of Clark Lake, and downstream about 3 km from the Project site. During open-water conditions, these changes are expected to result in safer boat travel due to more stable flows and levels along most of this reach of the river. Reservoir flooding is expected to create navigation hazards (e.g., floating debris, bogs etc.) and flooding of land-based trails. During winter conditions, the ice cover is expected to occur earlier in winter, creating a more stable ice cover for about 25 km upstream of the station.

While Manitoba Hydro has a high degree of confidence in the predicted open-water hydraulic zone of influence, CNP and YFFN Members have expressed concern that the effects of the Project will go beyond the predicted hydraulic zone of influence; and that travel safety related to ice and open-water travel across Split Lake will be affected.

Specific concerns have been expressed about travel safety related to ice and open-water travel across Split Lake for YFFN Members who will travel across Split Lake to access employment opportunities at the Project site.

Road-based Travel, Access and Safety:

During construction, effects on road-based travel will stem from increased vehicular traffic associated with delivery of materials, equipment, and construction personnel and travel by construction service providers on public roads in the Local Study Area. Increased traffic volume on public roads could affect the condition of the roads and traffic safety. A traffic analysis was undertaken to look at the percentage increases in traffic due to the Project. The analysis shows the percentage increase in Project-related traffic to be low and readily accommodated by the roadway design tolerances.

Local residents and regular haulers already travelling these routes are likely to notice the increase in the number of vehicles that they encounter. Despite a low percentage increase in Project-related traffic, TCN has expressed the concern there is the potential for a proportionally higher rate of accidents relative to traffic increases. KCNs Members and residents of the Socio-Economic Local Study Area have expressed concern about the added potential for accidents with regard to the safety and conditions of PR 280, in particular prior to the planned upgrades that MIT will have undertaken prior to Project construction. MIT may need to consider implementing increased signage during peak construction seasons (May through October) to advise motorists to expect increased traffic, particularly heavy trucks.

4.2.2 Methodology and Schedule

4.2.2.1 Construction

Water/Ice-based Travel:

No monitoring through the SEMP is required.

Road-based Travel, Access and Safety:

The Partnership will track statistics collected by MIT on traffic-related incidents on PR 280 on a biannual basis, when produced by MIT. If traffic incidents have increased considerably, the Partnership will communicate with MIT to determine if additional mitigation measures are appropriate.

4.2.2.2 Operation

Water/Ice-based Travel:

As indicated above, monitoring and related activities (e.g., maintaining trails, portages, safe landing sites, collecting floating debris etc.) from Split Lake to Stephens Lake are contained under the Waterways Management Program Phase II (post-flooding) (Sch. 11-2 of the JKDA).

No additional monitoring through the SEMP is required.

Road-based Travel, Access and Safety:

No monitoring related to road travel is necessary during the operation phase of the Project.

4.3 CULTURE AND SPIRITUALITY

4.3.1 Background

The Cree worldview indicates that everything is alive, is interconnected and needs to be respected. The Cree view themselves as being stewards of *Askiy* (land, water and living things). Through KCNs efforts and their desire to uphold this worldview, processes and measures have been put in place to address the potential effects of Project construction and operation on Cree culture and spirituality. These measures and processes, tailored to the specific circumstances and priorities for each of the KCNs, include being Partners in the Project, the Adverse Effects Agreements negotiated and signed by each of the KCNs, and the Employee Retention and Support Services direct negotiated contract that includes cultural training of construction workers and ceremonies to mark key milestones in the construction Project.

Being Partners in the Project provides the KCNs with involvement in Project decision-making and influence over how the Project has been planned, and how it will be constructed and operated. Through this mechanism, the KCNs are able to bring to bear the Cree worldview and implications for Cree culture and spirituality in Project decision-making and governance.

Adverse Effects Agreements have been negotiated with each of the KCNs to mitigate adverse effects of the Project, including interference with its traditional customs, practices and traditions. The Agreements provide for offsetting programs that address the potential adverse effects of the Project on culture and spirituality. Programs agreed upon in the AEAs (which vary by each KCN) deal with traditional lifestyles, Cree language, land/environmental stewardship, access programs for resource harvesting, wellness counselling and a cultural sustainability program that can assist in maintaining cultural success and lessening Project effects.

4.3.2 Methodology and Schedule

4.3.2.1 Construction

As noted above, community specific Adverse Effects Agreements have been negotiated with each of the KCNs, including interference with its traditional customs and practices. On an annual basis, each community will undertake its own internal evaluation of the AEA offsetting programs and determines whether they continue to address the adverse effects of the Project. If required, these agreements provide flexibility for the AEA offsetting programs to be modified to more adequately address Project effects, as they are experienced. The agreements also provide the opportunity for the communities and Manitoba Hydro to negotiate additional programming if unforeseen or unanticipated effects arise.

There is some uncertainty about how the employment experience of KCNs workers during Project construction will affect the workers and their families. To address this uncertainty, during the third year of construction, the Partnership will conduct a worker and family survey of a sample of KCNs workers employed on Project construction and their families to assess their employment experience such as cross-

cultural awareness training, work and camp life, counselling, ceremonies, effects on family, community life and traditional life (see Preface on ATK monitoring). The KCNs will be involved in the design and implementation of the worker and family survey.

4.3.2.2 Operation

As noted previously under construction, the AEAs have been negotiated with each of the KCNs and include an annual evaluation and reporting. The AEAs also include the flexibility to modify the AEA offsetting programs to more adequately address Keeyask Generation Project effects as they are experienced; and the opportunity to negotiate additional programming if unforeseen or unanticipated effects arise (see Preface on ATK monitoring).

4.4 MERCURY AND HUMAN HEALTH

4.4.1 Background

The Project will result in flooding and the subsequent release of methylmercury into the Nelson River biological system (*i.e.*, the food chain). Methylmercury can bioaccumulate (*i.e.*, build up and become more concentrated at higher levels in the food chain). For people, the vast majority of exposure to methylmercury is through the consumption of fish. Fish with the highest methylmercury levels tend to be the large and long-lived predatory fish; however, most fish in the region contain some levels of mercury.

There are no anticipated effects of the Project during the construction phase in relation to methylmercury and human health; therefore, no monitoring is included.

After impoundment of the reservoir, flooding of soils is expected to release methylmercury into the environment and food chain. Increased methylmercury levels, especially in jackfish and pickerel in Gull Lake and to a lesser extent in Stephens Lake, are estimated to peak about 3 to 7 years after impoundment and then return to current levels over about 30 years.

In order to characterize the effects of impoundment on mercury¹ levels and subsequently human health, exposure to mercury under post-impoundment conditions was calculated in a Human Health Risk Assessment (HHRA). Concentrations of mercury were predicted for foods identified by KCNs community Members, including fish, wild game, waterfowl and surface water. The HHRA considered post-impoundment conditions for Gull and Stephens lakes because these are the waterbodies that will have increased levels of mercury, particularly Gull Lake where flooding of the reservoir will occur.

¹ From this point forward for ease of reading, reference to methylmercury is shortened to mercury, unless otherwise noted.

To address the predicted increased mercury levels in fish, the respective AEA's of the KCNs have offsetting programs to enable them to pursue continued use of country foods from areas unaffected by the Project and within their respective Resource Management Areas. For CNP, this includes programs specific to the harvesting and distribution of fish in their communities (i.e., TCN Healthy Food Fish Program and WLFN Community Fish Program).

4.4.2 Methodology and Schedule

4.4.2.1 Operation

Mercury monitoring of fish and wild game is included under the Aquatic and Terrestrial Effects Monitoring Plans.

In addition, starting in 2022, and every five years subsequent to that, a survey of country food consumption in KCNs communities will be undertaken (see Table 1 for monitoring and reporting schedule). This information will provide input to updated HHRAs undertaken every five years after peak mercury levels have been reached to determine if adjustments can be made to the consumption recommendations. The survey will also evaluate the effectiveness of the communication products available to the communities. Liaison on consumption restrictions with federal and provincial health authorities and Manitoba Conservation and Water Stewardship will also be undertaken through the MAC.

5.0 REPORTING AND FOLLOW-UP

5.1 CONSTRUCTION PHASE

Results of socio-economic monitoring will be presented in a report prepared annually (unless otherwise noted) and will include (see Table 1 for an illustration of schedule of monitoring and reporting):

- Construction employment and training outcomes;
- Construction business outcomes; in Year 3 or 4, results of a business survey (through KPIs in Thompson, Gillam and the KCNs communities re: indirect business opportunities generated by the Project);
- Labour income outcomes;
- Population changes in Gillam and KCNs communities, including results from KPIs if conducted;
- Once during the construction phase, results of a one-time set of KPIs with representatives of the KCNs' Housing Authorities re: any Project-related housing demand;
- In Year 2 or 3, results of KPIs with contractors and service providers in the KCNs communities re: effects on infrastructure and services;
- Traffic statistics on PR 280 (collected by MIT); and
- To the KCNs communities, report results of a worker-family survey of a sample of KCNs workers employed on the Project in Year 3 of construction re: employment experience in relation to effects on family and community life.

5.2 OPERATION PHASE

Results of monitoring during the operation phase will be presented in reports generated annually (unless otherwise noted) and will include (see Table 1):

- Updated HHRA's will be undertaken every five years after peak mercury levels have been reached¹. These results will be reviewed with the KCNs and with federal and provincial health authorities in order to establish consumption recommendations, which will then be provided to the KCNs

¹ Note that monitoring of mercury levels in fish in Gull and Stephens lakes, as well as other locations along the Nelson River and reference lakes is included under the Aquatic Environment Monitoring Plan. In addition, it is anticipated that monitoring of mercury levels in the catch associated with offset fishing programs will be undertaken. Results will be incorporated in the updated HHRA, consumption guidelines and associated communication products.

communities via communication products. Results will also be provided (*e.g.*, via signage) for other domestic resource harvesters and sport fishers.

- A food consumption survey will be undertaken in the KCNs communities every five years starting in 2022.
- Collection on a voluntary basis by KCNs community Members of samples of wild game, waterfowl and plants for mercury testing.

Table 1: Summary of socio-economic monitoring activities planned for the Keyask Socio-Economic Monitoring Plan.

Monitoring Program	Construction ¹									Operation									
	Year(s)																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18-25	26-35
Employment and training	•	•	•	•	•	•	•	•	•										
Business purchases	•	•	•	•	•	•	•	•	•										
Business KPIs (Thompson, Gillam and KCNs communities) in Yr 3 or 4			• or	•															
Business – KPIs with managers of DNCs				•				•											
Labour income	•	•	•	•	•	•	•	•	•										
Population trends (Gillam and KCNs communities)	•	•	•	•	•	•	•	•	•										
Population trends - Gillam										•	•	•	•	•					
Housing (one time set of KPIs in KCNs communities – exact timing to be discussed at MAC)				• or	•														
Infrastructure and services – KCNs communities (one time set of KPIs at peak workforce)		• or	•																
Road-based travel on PR 280		•		•		•		•											

Table 1: Summary of socio-economic monitoring activities planned for the Keeyask Socio-Economic Monitoring Plan.

Monitoring Program	Construction ¹									Operation									
	Year(s)																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18-25	26-35
Culture and spirituality (worker family survey of KCNs workers)			●																
Mercury and human health – country food survey and revised HHRA every 5 years after peak mercury levels reached (timing to be confirmed)								●					●				●		●
Mercury and human health – voluntary mammal, waterfowl and plant sampling ²								●	●	●	●	●	●	●	●	●	●	●	●

= Economic
 = Population, infrastructure and services
 = Personal, family and community life
 = Reporting product

¹ The construction phase is treated as the period that the access gates will be in-service up to the conversion of the access roads to the provincial highway system.

² Community-based voluntary sampling of waterfowl and plants is encouraged; samples will be tested for mercury at accredited labs in Winnipeg. Mammal testing will be undertaken under the Terrestrial Environment Monitoring Plan on an annual basis until peak mercury levels are reached and then every 3 years until mercury levels return to pre-impoundment conditions.

Note: Fish from Gull and Stephens lakes will be monitored under the Aquatic Environment Monitoring Plan and results will be incorporated into the updated HHRA reports and communication products.