BIPOLE III TRANSMISSION PROJECT

Socio-economic monitoring program for construction

October 2016 to September 2017

Manitoba Hydro

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Bipole III Transmission Project

Socio-economic monitoring program for construction

Prepared by Manitoba Hydro

For the period October 2016 to September 2017

Document Owner
Transmission & Distribution Environment and Engagement
Project Management Division
Asset Planning & Delivery

Manitoba Hydro Version – 2017 Final 2.0

List of revisions

Nature of revision	Section(s)	Revised by	Date
Added abbreviations and updated document accordingly	Abbreviations	MH	07/06/2022
Updated Aboriginal to Indigenous	Throughout	MH	07/06/2022
Updated purpose of monitoring	1.0	MH	07/06/2022
Updated project description text	2.0	MH	07/06/2022
Added explanation that economic monitoring data is presented for the reporting year period (i.e., from the start of construction to September 30, 2014).	6	MH	07/06/2022
Added explanation that the EIS estimated the workforce for all Project components on a yearly basis and revised wording about part-time and/or seasonal workers.	6.1	MH	07/06/2022
Divided tables and replaced total with cumulative total. Changed table titles to explain that the data is from project commencement to September 2014	Table 1-9, 12-17	MH	07/06/2022
Added explanation that person years of employment, hires, employees, employment duration, type (job classification), direct project expenditures, labour income and taxes is from project commencement to September 2014	6.1.1, 6.1.2, 6.1.3, 6.1.4, 6.1.5, 6.2.1, 6.3.1	MH	07/06/2022

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Appendix A: Final Preferred Route

Abbreviations

AADT	Annual Average Daily Traffic
ATK	Aboriginal Traditional Knowledge
CHRPP	Cultural and Heritage Resources Protection Plan
DCS	Dorsey Converter Station
EIA	Economic Impact Assessment
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Fields
ESS	Environmentally Sensitive Sites
FLCN	Fox Lake Cree Nation
GPS	Global Positioning System
HRIA	Heritage Resources Impact Assessment
HVDC	High Voltage Direct Current
KCS	Keewatinohk Converter Station
km	Kilometer
kV	Kilovolt
m	Meter
MHTIS	Manitoba Highway Traffic Information System
MI	Manitoba Infrastructure
MPI	Manitoba Public Insurance
MVKT	million vehicle-kilometres of travel
OCN	Opaskwayak Cree Nation
PR	Provincial Road
PSA	Project Study Area
RCS	Riel Converter Station
ROW	Right-of-way
RTL	Registered Traplines
SE	Socio-Economic
SEMP	Socio-Economic Monitoring Program
VEC	Valued Environmental Component
VPD	Vehicles Per Day

WIS	Worker Interaction Subcommittee

1 Introduction

This document describes the construction Socio-Economic Monitoring Program (SEMP) results for the Bipole III Transmission Project (the Project) for the period October 2016 to September 2017. Monitoring Project socio-economic (SE) effects was a commitment identified in the Bipole III Environmental Impact Statement (EIS). Monitoring SE effects is also a condition of the Bipole III Environment Act Licence No. 3055. The monitoring program focuses on key components of the SE environment that may be affected, including both direct and indirect effects during the construction phase of the Project. Monitoring program results were used to document mitigation measure effectiveness and identify adaptive management measures, if warranted, for future monitoring. The results of the previous years of the monitoring program have added further information to evaluate long-term changes or trends. Monitoring results have been reviewed and, as additional data is collected, it will be used to develop appropriate responses consistent with an adaptive management approach to facilitate environmental protection throughout the implementation of the Project.

2 Project overview

The purpose of the Project is to provide enhanced reliability to Manitoba Hydro's electrical system, and to reduce the severity of the consequences of major outages.

Approximately 70% of Manitoba's hydroelectric generating capacity is delivered to southern Manitoba, where most of the demand for energy is, via the Bipole I and Bipole II high voltage direct current (HVDC) transmission lines. Bipoles I and II share the same transmission corridor through the Interlake region over much of their length from northern Manitoba to a common terminus at the Dorsey Converter Station (DCS), northwest of Winnipeg. The existing transmission system is vulnerable to the risk of catastrophic outage of either (or both) Bipoles I and II in the Interlake corridor and/or at the DCS due to unpredictable events, particularly severe weather. This vulnerability, combined with the significant consequences of prolonged, major outages, justifies a major initiative to reduce dependence on the DCS and the existing HVDC Interlake transmission corridor.

The Project includes:

- A new converter station, the Keewatinohk Converter Station (KCS);
- A northern ground electrode site connected by a low voltage feeder line to the KCS;
- New 230 kV transmission lines linking the KCS to the northern AC collector system at the existing 230 kV switchyards at the Henday Converter Station and Long Spruce Generating Station;
- Modifications to the 230 kV switchyards at the Henday Converter Station and the Long Spruce Generating Station to accommodate the new collector lines;
- The development of a new +/-500 kV HVDC transmission line, approximately 1,400 km in length, centered on a 66-meter right-of-way (ROW), originating at the KCS, following a westerly route to southern Manitoba and terminating at a new converter station, the Riel Converter Station (RCS), immediately east of Winnipeg;
- The completion of the RCS - development of the RCS site was completed pursuant to a separate licence from Bipole III; and
- A southern ground electrode site connected by a low voltage feeder line to the RCS.

3 Purpose and objectives

The purpose of the SEMP for the Project is to document conditions over time for Valued Environmental Components (VECs) and other environmental parameters. The objectives are to:

- Confirm impact predictions in the EIS;
- Identify unanticipated effects;
- Confirm adherence to EIS commitments regarding follow-up monitoring;
- Monitor the effectiveness of mitigation measures;
- Identify other mitigation or remedial actions that may be implemented;
- Confirm compliance with regulatory requirements including project approvals and environmental regulations; and
- Provide baseline data and development information and experience for other Manitoba Hydro projects.

The SEMP focuses on important effects to key components of the SE environment. The program builds on the assessment studies conducted for the EIS using established methods for data collection and analysis. Where quantitative information is not available, qualitative information is provided in the monitoring report.

A separate monitoring program has been undertaken in relation to physical, terrestrial and aquatic components.

4 Socio-economic monitoring geographic area

Monitoring activities occurred throughout the Project Study Area (PSA) in relation to the final preferred route (See Appendix A). The PSA defines the area used to provide spatial context and comparison to the Project components (with allowance for some SE topics that require a larger regional context such as northern Manitoba and communities just outside the study area such as Gillam). The majority of the SE monitoring activities occurred in the PSA.

5 Socio-economic topics

Monitoring activities linked to environmental components of the SE environment that were identified in the EIS include:

- Economy (employment/workforce, business, labour income and tax revenue)[1];
- Community services (community concerns, service/infrastructure-related matters, worker interaction)[2];
- Resource use (trapper education); and
- Personal and community well-being (public safety, worker interaction[2], transportation).

Monitoring activities focused on those effects that are potentially significant, effects where there is high uncertainty regarding the effects prediction, or effects that discipline specialists identified as requiring further monitoring. In addition to the SE environmental components identified above, this report includes the reporting on monitoring of cultural and heritage resources.

Monitoring activities occurred throughout the PSA and are presented by the three primary project components, KCS, Transmission Line Construction, and RCS.

5.1 Economy

Economic monitoring includes monitoring of employment and business activities associated with the Project. The objectives of economic monitoring for the Project are as follows:

- To track employment outcomes;
- To track construction business outcomes; and
- To track the effect on Project income levels, including labour income resulting from direct employment, as well as estimated taxes paid to the government.

[1] *The monitoring results for Economy includes activities described in the Keewatinohk Construction Camp Lagoon and Start-up Camp - Environment Proposal for which Environment Act Licence No. 3015 was issued. These activities occurred prior to the issuance of Environment Act Licence No. 3055 but the activities were part of the overall Bipole III Transmission Project and included in the EIS (Construction Schedule and Workforce Table for Keewatinohk Converter Station within the project description (figures 3.5-15 & 3.5-16 of the EIS).*

[2] *Manitoba Hydro established a Worker Interaction Subcommittee (WIS) as part of a corporate wide initiative intended to address anticipatedincreases in the Gillam area workforce resulting from the Bipole III Project and other Manitoba Hydro projects being constructed in an overlapping timeframe.*

For the subject report, economic monitoring data is presented in one of two forms, as either a cumulative total that builds upon the previous reporting year period (e.g., from the start of construction to September 30, 3017) or as data collected for an annual reporting period (i.e., October 1, 2016 to September 30, 2017). Data will be collected over a number of years until 2018 to assess the actual economic benefits from the Project. Multiple years of data will permit more meaningful comparison of actual benefits with the economic analysis presented in the Bipole III Transmission Project EIS. Similarly, an overall comparison will be conducted and presented in the overall "SE Monitoring Program for construction 2014 to 2018" report to compare results to the conclusions presented in the EIS.

5.1.1 Employment outcomes

The EIS estimated the workforce for all Project components on a yearly basis. Estimates vary by Project component and year depending on the activity. The majority of employment opportunities occur during the construction phase of the Project with fewer opportunities during the operations phase of the Project. Due to seasonality constraints for some aspects of the work, certain Project components have activities concentrated at specific times of the year (e.g., clearing and construction of the transmission line in the winter months for certain areas), while other Project construction components occur throughout the entire year (e.g., RCS and KCS).

During construction, employment data was collected on-site by contractors through an employee self-declaration form designed specifically for the Project ("Employee Report-Bipole III Transmission Project", "Employee Report–Bipole III Keewatinohk Converter Station Project", and "Employee Report–Bipole III Riel Converter Station Project"). All completed forms were provided by on-site contractors to Manitoba Hydro and stored in a central database for the Project. Contractors also provided information to Manitoba Hydro on hours worked and labour income to enable calculations for person years and income estimates during construction.

Employment data was provided in the categories outlined below:

- Person years – For work that involves part-time and/or seasonal workers, it is useful to standardize the hires in terms of person years of employment. Person years of employment are defined as the amount of work that one worker could complete during twelve months of full-time employment (presented on a

cumulative basis from the start of the Project). For economic planning purposes and to compare to the Economic Impact Assessment (EIA), the number of hours worked per year is approximately 2,000 hours per year (assuming 40-44 regular hours weekly) in most trade categories. For construction comparison purposes, the number of hours worked per year is approximately 3,000 hours per year (assuming 60 regular hours weekly). As this report can be used for various types of comparisons, the data has been presented in terms of 2,000 and 3,000 hours per year.

- Hires - Refers to the number of people hired on the Project site for any duration (presented on a cumulative basis from the start of the Project).
- Employees - Refers to the number of individuals hired (presented on a cumulative basis from the start of the Project). The variance between Hires and Employees can be attributed to an individual being hired to the Project more than once.
- Average duration – Refers to the average duration of work on the Project (presented on a cumulative basis from the start of the Project).
- Type – Refers to job classifications of work available from the Project (presented on a cumulative basis from the start of the Project).

5.1.2 Person years of employment

Over the duration of the project construction, direct Project employment for on-site Manitoba Hydro and contractor employees was estimated at 5,194 person-years in the EIS[33]. During construction, the actual hours of direct employment data was collected by contractors and Manitoba Hydro. From the outset of the Project to the reporting period ending in September 2017, Bipole III construction generated 3,764 cumulative person-years of direct Project employment in terms of a 2,000 hour per year basis (2,509 person-years in terms of a 3,000 hour per year basis). This number (3,764) represents approximately seventy-two percent of the estimated total person years of employment for the entire construction phase of the Project (5,194). Of the 3,764 person-years of direct employment generated, eighty percent was derived from within the province of Manitoba. See Tables 1-3 for a further breakdown of person years of employment by project component up to

[3] *Bipole III Transmission Project, Economic Impact Assessment Technical Report Manitoba Bureau of Statistics - November 2011: Table 1, Economic Impact on Manitoba - Construction Phase [Transmission Line 3,181; Converter Facilities 2,013]*

September 2017.

Table 1 Person years of employment – Project Commencement to September 2017: Northern Manitoba Indigenous and Northern Manitoba Non-Indigenous

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Person years 2,000[4] (3,000[5])	% of total Bipole III Project Total hours	Person years 2,000 (3,000)	% of total Bipole III Project Total hours	Person years 2,000 (3,000)	% of total Bipole III Project Total hours	Person years 2,000 (3,000)	% of total Bipole III Project Total hours
Northern Manitoba Indigenous[6]	362 (241)	10%	187 (125)	5%	6 (4)	0.20%	556 (370)	15%
Northern Manitoba Non-Indigenous[7]	52 (34)	1%	15 (10)	0.40%	1 (1)	0.03%	67 (45)	2%
Sum of Northern Manitoba Indigenous and Non-Indigenous	414 (275)	11%	202 (135)	5%	7 (5)	0.23%	623 (415)	17%

Table 2 Person years of employment – Project Commencement to September 2017: Indigenous and Non-Indigenous

[4] *This parameter is used for economic comparison purposes.*

[5] *This parameter is used to construction planning purposes and to compare to estimates in the EA report.*

[6] *Northern Manitoba Indigenous is a subset of Indigenous*

[7] *Northern Manitoba Non-Indigenous is a subset of Non-Indigenous*

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Person years 2,000[4] (3,000[5])	% of total Bipole III Total hours	Person years 2,000 (3,000)	% of total Bipole III Total hours	Person years 2,000 (3,000)	% of total Bipole III Total hours	Person years 2,000 (3,000)	% of total Bipole III Project Total hours
Indigenous	587 (391)	16%	520 (347)	14%	104 (69)	3%	1210 (807)	32%
Non-Indigenous	1214 (810)	32%	702 (468)	19%	637 (425)	17%	2553 (1702)	68%
Cumulative Total	1801 (1201)	48%	1222 (814)	32%	741 (494)	20%	3764 (2509)	100%

Table 3 Person years of employment – Project Commencement to September 2017: Manitoba and Non-Manitoba

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Person years 2,000[8] (3,000[9])	% of total Bipole III Project Total hours	Person years 2,000 (3,000)	% of total Bipole III Project Total hours	Person years 2,000 (3,000)	% of total Bipole III Project Total hours	Person years 2,000 (3,000)	% of total Bipole III Project Total hours
Manitoba	1363 (908)	36%	994 (663)	26%	657 (438)	17%	3014 (2009)	80%
Non-Manitoba	438 (292)	12%	228 (152)	6%	84 (56)	2%	750 (500)	20%
Cumulative Total	1801 (1201)	48%	1222 (814)	32%	741 (494)	20%	3764 (2509)	100%

5.1.3 Hires

Hires was not a parameter used in the EIS but it is tracked by Manitoba Hydro for its projects. Hires refer to the number of people hired on the Project site for any duration. Since the beginning of the Project to September 30, 2017, there were 12,666 hires on the Bipole III Transmission Project. Thirty-nine per cent of the total hires were for construction of the

[8] *This parameter is used for economic comparison purposes.*

[9] *This parameter is used for construction planning purposes and to compare to the estimates in the EA Report.*

KCS, twenty-three percent of the hires were for the RCS and thirty-eight percent of the hires were for transmission line construction. See Tables 4-6 for a further breakdown of total hires up to September 2017.

Table 4 Total hires – Project Commencement to September 2017: Northern Manitoba Indigenous and Northern Manitoba Non-Indigenous

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires
Northern Manitoba Indigenous	1145	9%	1055	8%	23	0%	2223	18%
Northern Manitoba Non-Indigenous	105	1%	81	1%	4	0%	190	2%
Cumulative Total	1250	10%	1136	9%	27	0%	2413	19%

Table 5 Total hires – Project Commencement to September 2017: Indigenous and Non-Indigenous

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires
Indigenous	1921	15%	2393	19%	458	4%	4772	38%
Non-Indigenous	3015	24%	2480	20%	2399	19%	7894	62%
Cumulative Total	4936	39%	4873	38%	2857	23%	12666	100%

Table 6 Total hires – Project Commencement to September 2017: Manitoba and Non-Manitoba

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires
Manitoba	3935	31%	3585	28%	2554	20%	10074	80%
Non-Manitoba	1001	8%	1288	10%	303	2%	2592	20%
Cumulative Total	4936	39%	4873	38%	2857	23%	12666	100%

5.1.4 Employees

The cumulative total number of employees is less than the cumulative total number of hires because the same individual may have been hired more than once. For example, an individual may have moved to work on a different contract or moved to a different job classification to improve their position. Since the beginning of the Project to September 30, 2017, a total of 8,451 employees were hired on the Bipole III Transmission Project. A total of seventy-six percent of the total employees to date reside in Manitoba. See Tables 7-9 for the breakdown of total employees up to September 2017.

Table 7 Total employees – Project Commencement to September 2017: Northern Manitoba Indigenous and Northern Manitoba Non- Indigenous

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees
Northern Manitoba Indigenous	574	7%	683	8%	18	0%	1188	14%
Northern Manitoba Non-	73	1%	59	1%	4	0%	132	2%

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees
Indigenous								
Cumulative Total	647	8%	742	9%	22	0%	1320	16%

Note: Figures above are not additive. Some employees may work across multiple Project components.

Table 8 Total employees – Project Commencement to September 2017: Indigenous and Non-Indigenous

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees
Indigenous	1016	12%	1531	18%	397	5%	2768	33%
Non-Indigenous	2086	25%	1810	21%	2152	25%	5683	67%
Cumulative Total	3102	37%	3341	40%	2549	30%	8451	100%

Note: Figures above are not additive. Some employees may work across multiple Project components.

Table 9 Total employees – Project Commencement to September 2017: Manitoba & Non-Manitoba

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees	Employees	% of Total Bipole III Project Employees
Manitoba	2355	28%	2318	27%	2270	27%	6448	76%
Non-Manitoba	747	9%	1023	12%	279	3%	2003	24%
Cumulative Total	3102	37%	3341	40%	2549	30%	8451	100%

Note: Figures above are not additive. Some employees may work across multiple Project components.

The number of employees from the beginning of the Project to date does not reflect the number of employees on-site at a given time. The number of employees on-site at any given time varies depending on the work in progress and the time of year. The actual number of employees on-site over the course of the year ultimately depends upon the work plans and schedules of the contractors for the various Project components. Between Project commencement and September 2017, the Project has employed 545 persons who have worked on multiple components of the Project.

5.1.5 Employment duration

From the onset of the Project to the reporting period ending in September 2017, the average employment duration was 2.9 months. Data for the calculation includes both separated and active hires (hires that were still working on September 30, 2017). As of September 30, 2017, 3,022 hires were active. See Table 10 for a breakdown of employment duration.

Table 10 Breakdown of employment duration – Project Commencement to September 2017

Measure	Average Employment Duration (Months)			
	Keewatinohk Converter Station	Transmission Line Construction	Riel Converter Station	Bipole III Transmission Project Total
Indigenous	8.1	4.2	6.6	6.2

Measure	Average Employment Duration (Months)			
	Keewatinohk Converter Station	Transmission Line Construction	Riel Converter Station	Bipole III Transmission Project Total
Non-Indigenous	7.8	3.8	7.1	6.8
Northern Manitoba Indigenous	8.3	3.8	5.9	6.3
Northern Manitoba Non-Indigenous	7.0	3.6	4.2	5.6
Manitoba	7.8	4.2	7.2	6.9
Non-Manitoba	8.3	3.6	5.5	5.7
Cumulative Total	7.9	4.0	7.0	6.6

Note: Figures above are not additive.

5.1.6 Type (job classifications) of work available

Total hires by job classification are provided in Table 11 below. In total there were 29 job categories in which 12,666 workers were hired over the span of Project onset to September 2017. The top three combined categories as a percentage of total hires were labourers (20%), equipment operators (17%) and "other" (16%).

Table 11 Total hires by job classification – Project Commencement to September 2017

Classification	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires
Labourers	758	6%	1249	10%	466	4%	2473	20%
Equipment Operators (includes HD Mechanics)	725	6%	1205	10%	224	2%	2154	17%

Classification	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires
Linemen and Associated Collector Line Trades	27	0%	1197	9%	63	0%	1287	10%
Electrical Workers	493	4%	34	0%	517	4%	1044	8%
Teamsters, Chauffeurs, Warehousemen and Helpers	268	2%	233	2%	163	1%	664	5%
Carpenters	323	3%	32	0%	224	2%	579	5%
Catering and Janitorial Staff	321	3%	169	1%	13	0%	503	4%
Iron Workers	213	2%	1	0%	124	1%	338	3%
Office and Professional Employees	162	1%	101	1%	35	0%	298	2%
Plumbers and Pipefitters	120	1%	3	0%	94	1%	217	2%
Crane Operators	35	0%	109	1%	58	0%	202	2%
Rodmen	127	1%	0	0%	35	0%	162	1%
Insulator Workers	88	1%	0	0%	40	0%	128	1%
Sheet Metal Workers	49	0%	0	0%	60	0%	109	1%
Lathing and Drywall Workers	28	0%	0	0%	54	0%	82	1%
Roofers	48	0%	0	0%	30	0%	78	1%
Painters	28	0%	0	0%	32	0%	60	0%
Security Guards	58	0%	1	0%	0	0%	59	0%
Cement Masons	35	0%	0	0%	12	0%	47	0%
Sprinkler System	16	0%	0	0%	23	0%	39	0%

Classification	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires	Hires	% of Total Bipole III Project Hires
Installers								
Millwrights	0	0%	0	0%	37	0%	37	0%
Bricklayers and Allied Craftsmen	15	0%	0	0%	21	0%	36	0%
Sheeters, Deckers and Cladders	23	0%	0	0%	9	0%	32	0%
Floor Covering Installers	17	0%	0	0%	13	0%	30	0%
Glass Workers	6	0%	0	0%	4	0%	10	0%
Boilermakers	10	0%	0	0%	0	0%	10	0%
Refrigeration Workers	2	0%	0	0%	7	0%	9	0%
Elevator Constructors	1	0%	0	0%	2	0%	3	0%
Other[10]	940	7%	539	4%	497	4%	1976	16%
Cumulative Total Hires	4936	39%	4873	38%	2857	23%	12666	100%

5.1.7 Business outcomes

Construction of the Project has resulted in business opportunities locally, regionally and throughout the province and Canada. Manitoba Hydro has policies in place to promote local business opportunities on its projects. For example, Manitoba Hydro's Northern Purchasing Policy's objective is to guide actions with the aim of promoting business, contract and employment opportunities for northern Indigenous people and northern Manitoba businesses on work within the Province of Manitoba's Northern Affairs Boundary. The goal is to enhance business relationships with communities and assist them in building

[10] *The "Other" category refers to hires in job classifications not covered by the BNA, i.e. "out of scope" positions. This would include managerial and supervisory staff (both Contractor and Manitoba Hydro), other Manitoba Hydro on-site staff and certain technical staff (engineers and technicians).*

capacity and competitiveness of their businesses through involvement in Manitoba Hydro contracts. Application of this policy ensures northern Indigenous and northern Manitoba businesses have the opportunity to participate in economic activities resulting from project construction. Manitoba Hydro has also entered into Direct Negotiated Contracts with Indigenous communities.

Monitoring both direct and indirect business effects provides data on the success and effectiveness of efforts to enhance local business participation, as well as an indication of the general economic impact of the Project in 1communities. Business outcomes for the subject report are measured in terms of data on the direct expenditures of the Project for goods and services with a focus on Indigenous and northern spending and are reported on a cumulative basis. Indirect business effects will be examined and reported on in the overall final report on SE Monitoring Program for Construction 2014-2018.

5.1.8 Direct project expenditures

There was $2,880.3 million spent on goods and services for the Project, from its' inception to September 2017. The total construction phase expenditures reported in the EIS were estimated to be approximately $2,115.2[11] million. The subject reporting period represents approximately 136% of the total expenditures made during the construction phase of the Project. Tables 12-14 summarizes the breakdown of total Project purchases to September 2017.

Table 12 Direct purchases to September 2017: Northern Manitoba Indigenous and Northern Manitoba Non- Indigenous

Measure	Keewatinohk Converter Station		Riel Converter Station		Transmission Line Construction		Bipole III Project Total	
	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project
Northern Manitoba Indigenous	$ 56.7	2%	$-	0%	$171.7	6%	$ 228.4	8%

[11] *Bipole III Transmission Project, Economic Impact Assessment Technical Report Manitoba Bureau of Statistics- November 2011.*

Measure	Keewatinohk Converter Station		Riel Converter Station		Transmission Line Construction		Bipole III Project Total	
	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project
Northern Manitoba Non-Indigenous	$ 10.4	0%	$-	0%	$ 5.7	0%	$ 16.1	1%
Cumulative Total	$ 67.1	2%	$-	0%	$177.4	6%	$ 244.5	8%

Table 13 Direct purchases to September 2017: Indigenous and Non-Indigenous

Measure	Keewatinohk Converter Station		Riel Converter Station		Transmission Line Construction		Bipole III Project Total	
	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project
Indigenous	$ 72.1	3%	$ 0.0	0%	$233	8%	$ 305	11%
Non-Indigenous	$ 974.2	34%	$672.7	23%	$928	32%	$2,575	89%
Cumulative Total	$1,046	36%	$672.7	23%	$1,161	40%	$2,880	100%

Table 14 Direct purchases to September 2017: Manitoba and Non-Manitoba

Measure	Keewatinohk Converter Station		Riel Converter Station		Transmission Line Construction		Bipole III Project Total	
	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project
Manitoba	$ 653.5	23%	$378.8	13%	$386.7	13%	$1,419	49%

Measure	Keewatinohk Converter Station		Riel Converter Station		Transmission Line Construction		Bipole III Project Total	
	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project	$ (Millions)	% of Total Bipole III Project
Non-Manitoba	$ 392.7	14%	$293.9	10%	$774.7	27%	$1,461	51%
Cumulative Total	$1,046	36%	$672.7	23%	$1,161	40%	$2,880	100%

5.1.9 Labour income and tax revenue

Labour income is an important indicator of the direct economic impact of a project. Income levels affect the general standard of living of individuals and families by influencing the acquisition of basic human needs including housing, food and clothing. Consequently, monitoring income levels can provide a general indication of a project's contribution to overall standard of living. The estimate of labour income reflects the direct income of wages and salaries associated with direct person-years of employment.

Regarding taxation, direct taxes paid reflect incremental revenue sources generated for governments as a result of a project. The incremental revenues, in turn, contribute to societal programs and general well-being. The following parameters were monitored during the construction phase:

- Labour income – direct income earned by workers from employment on the Project
- Taxes paid
    - Provincial sales tax
    - Payroll tax
    - Corporate capital tax
    - Fuel tax

The EIS estimated the entire project construction expenditure would contribute $482.3 million in labour income and $352.4 million in tax revenue to Manitoba, and $721.3 million

in labour income and $489.1 million in tax revenue to all of Canada.

5.1.9 Labour income

The estimate of labour income reflects the direct income earned by workers from employment on the Project. It is the sum of wages and salaries associated with direct person years of employment[12] Total cumulative labour income earned was approximately $345.6 million up to September 2017. Tables 15-17 list the breakdown of cumulative labour income earned on the Project.

Table 15 Labour income to September 2017: Northern Manitoba Indigenous and Northern Manitoba Non- Indigenous

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Labour Income (Millions)	% of Total Bipole III Project	Labour Income (Millions)	% of Total Bipole III Project	Labour Income (Millions)	% of Total Bipole III Project	Labour Income (Millions)	% of Total Bipole III Project
Northern Manitoba Indigenous	24.6	7%	4.5	1%	0.7	0.2%	29.8	9%
Northern Manitoba Non-Indigenous	3.8	1.1%	0.5	0.2%	0.1	0.03%	4.4	1.3%
Cumulative Total	28.4	8%	5.0	1%	0.8	0%	34.2	10%

Table 16 Labour income to September 2017: Indigenous and Non-Indigenous

[12] *Labour income is calculated based on information provided by contractors and collected by Manitoba Hydro.*

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Labour Income (Millions)	% of Total Bipole III Project	Labour Income (Millions)	% of Total Bipole III Project	Labour Income (Millions)	% of Total Bipole III Project	Labour Income (Millions)	% of Total Bipole III Project
Indigenous	44.7	13%	39.7	11%	9.8	3%	94.2	27%
Non-Indigenous	124.7	36%	62.4	18%	64.3	19%	251.4	73%
Cumulative Total	169.4	49%	102.1	30%	74.2	21%	345.6	100%

Table 17 Labour income to September 2017: Manitoba and Non-Manitoba

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Labour Income (Millions)	% of Total Bipole III Project	Labour Income (Millions)	% of Total Bipole III Project	Labour Income (Millions)	% of Total Bipole III Project	Labour Income (Millions)	% of Total Bipole III Project
Manitoba	122.6	35%	78.5	23%	62.7	18%	263.8	76%
Non-Manitoba	46.8	14%	23.5	7%	11.5	3%	81.8	24%
Cumulative Total	169.4	49%	102.1	30%	74.2	21%	345.6	100%

5.1.10 Taxes

The Project also contributed to federal and provincial government revenues, including payroll tax, personal income tax, capital tax, fuel tax and provincial sales tax. Not all of these taxes are payable by the Project; however, they are generated as a result of the work undertaken. The estimate provided here does not include taxes received by the local or municipal government or taxes associated with indirect or induced employment.

The estimated cumulative total tax impact to September 2017 is $234.7 million. The estimate includes $6.0 million in payroll taxes[13], $56.6 million in personal income taxes[14],

[13] *Health and Post-secondary Education Tax is calculated as 2.15 percent of the estimated labour income of $121.7 million.*

[14] *Personal income taxes are paid by individual employees to the federal and provincial governments. Each individual's personal*

$16.6 million in capital tax, $4.0 million in fuel tax[15] and $151.5 million in provincial sales tax[16].

5.2 Community services

Community-based services (e.g., emergency, health and social services) have the potential to be impacted in communities in close proximity to various components of the Project. Such effects are more likely to occur in proximity to the KCS than the Bipole III Transmission Line, given the differences in workforce magnitude and the use of mobile construction camps for the transmission line. Monitoring the extent of the Project's construction effects on community services in the Gillam area forms an important component of the Bipole III SEMP and provides opportunities to respond through adaptive management to adverse interactions.

Information related to Project impacts was sought, in part, through the Worker Interaction Subcommittee (WIS) that was established by Manitoba Hydro. The WIS is part of a corporate- wide initiative intended to address anticipated increases in the Gillam area workforce resulting from several Manitoba Hydro projects being constructed in the area in an overlapping timeframe, as well as from other Manitoba Hydro-related work in the area.

In the SE monitoring plan, the measurable parameters include identifying the demands on the Gillam Hospital and demands on policing services. Given privacy requirements in data collection, as well as the variety of developments currently taking place in the area, it was not always possible to link demands for services (e.g., health and policing services) over the period to specific projects. In addition, due to the sensitive nature of the topics addressed, data gathered by the WIS will remain confidential. Manitoba Hydro will continue to use the information provided by community and service providers' representatives on the WIS to assist in identifying areas where Manitoba Hydro may implement future adaptive measures to reduce Project impacts. A summary of the totality of WIS activities will be reported on in the final overall SE Monitoring Program for Construction 2014-2018 report.

WIS members during 2016-17 included Manitoba Hydro, Fox Lake Cree Nation (FLCN), the

tax situation (and therefore taxes payable) will vary. However, this estimate is based on a range of reasonable assumptions.

[15] *The fuel tax estimate is based on provincial taxes of 14 cents/litre for both diesel and gasoline and federal taxes of 4 cents/litre for diesel fuel and 10 cents/litre for gasoline.*

[16] *PST is based on estimates of taxes paid directly by the project and PST on materials provided by suppliers under real property contracts.*

Town of Gillam, the RCMP (Gillam Detachment), the Gillam Hospital, and the Gillam School. Other members may be identified by the WIS on an as needed basis.

From October 1, 2016 to September 30, 2017, the WIS met four times (January 19, 2017, April 6, 2017, June 29, 2017 and September 21, 2017). Through an ongoing reporting and tracking process, as well as WIS meetings and ongoing communications between members, the WIS discussed service and infrastructure-related matters in areas such as local road conditions (e.g., Provincial Road (PR) 280, PR 290) and Gillam facility use (e.g., the Gillam Hospital, the Gillam airport). In addition, the WIS continued to monitor updates provided by the Gillam Hospital related to demands for health services (e.g., "out of town" visits to the Gillam Hospital), and by the Gillam RCMP related to demands on policing (e.g., RCMP calls).

Based on discussions by the WIS, Manitoba Hydro provided a hospital services information sheet developed by the Gillam Hospital (regarding hospital facilities, doctor availability, and related hours) to all workers; instructed Keeyask and Keewatinohk buses/shuttles to park in a designated area away from the airport doors; implemented various transportation infrastructure-related measures (e.g., tracking and reporting traffic volume and speed data from newly installed traffic monitoring stations on PR 280 and PR 290); provided funding to Manitoba Infrastructure (MI) for implementation of an augmented PR 280/PR 290 maintenance program; and, provided funding for a provincial weigh scale near Thompson to provide increased enforcement of weight restrictions.

Additional information on the WIS is provided under Section 5.4.1 Public safety - worker interaction.

5.3 Resource use

5.3.1 Trapper education

The furbearer and trapline monitoring program[17] focuses on commercial trappers who are trapping on active registered traplines (RTL) set aside by Manitoba Sustainable Development as Community/Youth RTLs. The main purpose of the program is to help Manitoba Hydro and local communities better understand the impacts of transmission facilities on furbearer behaviour and trapper success. The socio-economic nature of the furbearer and trapline monitoring program includes a trapper education component to train

[17] *This program is based on the Wuskwatim Transmission Line Furbearer Pilot Project.*

youth on trapping so that they can qualify for certification and allow them to successfully trap on the community traplines to sell their fur. The socio-economic effects monitored for the subject report relate to traditional and general economic gains.

Initially six potential community RTLs were identified for the monitoring program (FLCN, Tataskweyak Cree Nation, Thicket Portage, Wabowden, Cormorant and Opaskwayak Cree Nation [OCN]). To date, Wabowden, OCN, Thicket Portage, FLCN, and Tataskweyak Cree Nation have participated in the trapping program. Monitoring of furbearers began in 2015 under the Biophysical Monitoring Plan with an assessment of pre-construction harvest data on fur harvest levels along the transmission line. Trapper success will be evaluated in the biophysical monitoring program and reported in the overall Post-construction Biophysical Monitoring and Mitigation Report.

The educational component of the furbearer and trapline monitoring program began in October 2014 consisting of trapper training workshops with the participating Community/Youth RTLs. Manitoba Hydro continues to support the program, involving both Elders and youth with deliverables including documentation of program meetings and other communications, trapper/ community involvement summaries, project mapping, trapper diaries, program results and reports.

Trapper education workshops were conducted in the communities of The Pas, Camperville, and Alonsa. In previous years, two trapper education courses were conducted, one at FLCN and one at Tataskweyak Cree Nation. The courses involved approximately ten youth from each participating community in a course conducted by the Manitoba Trappers Association. The participants learned about the different trap types, trapping regulations and fur preparation. In the evening, there was an opportunity for Elders from each community to educate the participants about traditional harvesting techniques. Each participant wrote the provincial exam and received a certificate allowing them to purchase a trappers licence.

During the 2016/2017 reporting period, in addition to Wabowden and OCN's continued participation in the trapping program, Thicket Portage began participating in the program. Eight students from the community of Thicket Portage were trained in furbearer harvesting by Manitoba Sustainable Development. The community of Wabowden had approximately 12 participants and OCN had approximately 16 participants respectively in the trapper education program. All community programs reported furbearers being harvested by

participants and a very positive experience had by all involved[18].

5.4 Personal and community well-being

Personal, family and community life can be affected by a variety of Project-related effects (e.g., physical changes to the land; concerns regarding electric and magnetic fields (EMF), noise and nuisance effects during construction). The experience of such effects will vary for individuals, families, and communities as a whole.

A potential Project-related issue identified in the EIS was related to public safety and the interaction of workers with community members in Gillam and the surrounding area.

During community open houses, Manitoba Hydro heard concerns regarding EMF. Manitoba Hydro is in the process of undertaking measurements at a Bipole III testing site near Dugald, MB to understand EMF. The measurements will allow for a comparison of EMF levels to those modeled for the EIS. Measurable parameters to be reported on include EMF, space charge, ion counts, and weather data. Identified potential changes from baseline conditions will be summarized in a separate final report. The monitoring at the Dugald site is expected to get underway in 2019 and is expected to be conducted for over a 1.5-year time period (with the possibility of extension).

5.4.1 Public safety - worker interaction

Construction of the KCS and associated facilities requires a sizeable workforce drawn from a wide geographic area. Neighboring communities have identified concerns regarding potential adverse effects associated with increased numbers of construction workers in the area.

The WIS, established by Manitoba Hydro, serves as a forum for information sharing and communication related to such effects. WIS communications are intended to provide for early identification of potential issues, prevention of issues to the extent possible, and identification of ways and means to work cooperatively to address issues as they arise.

The WIS met four times in 2016-17 to continue to discuss areas of community interest and potential project impacts. An ongoing reporting and tracking process for specific community concerns and incidents identified by or to its members was developed and

[18] *Trevor Barker, Environmental Specialist, Manitoba Hydro, pers. comm. April 2019.*

maintained throughout this period. Through this process, as well as WIS meetings and ongoing communications between members, the WIS considered members' concerns related to public safety, community services, and infrastructure. These concerns included local road conditions and traffic safety (e.g., traffic speed and oversized loads on PR 280 and PR 290); use of Gillam services and facilities (e.g., the Gillam Hospital, the Gillam airport and air service); the behaviour of non-local persons (e.g., at the Gillam airport and the Butnau Marina); and the presence of drugs in Gillam.

In addition, the WIS continued to monitor updates provided by the Gillam Hospital related to demands for health services (e.g., "out of town" visits to the Gillam hospital), and by the Gillam RCMP related to demands on policing (e.g., RCMP calls). Given privacy requirements in data collection, as well as the various developments taking place in the area over the period, it was not always possible to link concerns or demands for services to specific projects.

Activities undertaken during the 2016-17 period in relation to concerns and topics discussed at the WIS included:

- providing a hospital services information sheet developed by the Gillam Hospital (regarding hospital facilities, doctor availability, and related hours) to Keeyask and Keewatinohk workers;
- providing instructions to Keeyask and Keewatinohk buses/shuttles to park in a designated area away from the airport doors to reduce traffic congestion;
- communicating with contractors regarding concerns about workers' behaviour in public;
- communicating with groups responsible for implementing traffic and road safety measures; and;
- FLCN implementing cultural awareness training for short-term contractors.

The information provided by the WIS will continue to be used to assist in identifying potential adaptive measures to reduce the impacts of hydroelectric development in the region.

(Additional information on WIS membership, meeting dates, and monitoring activities is provided under Section 5.2 - Community services.)

5.4.2 Transportation

During construction, Project effects on road-based travel were anticipated to stem from increased vehicular traffic associated with the transport of people (construction personnel and service providers), equipment and materials on roads in the area, particularly PR 280 and PR 290. While the Bipole III EIS predicted that existing transportation networks and plans for PR 280 and PR 290 upgrades would be able to accommodate the changes in road use associated with Project construction, community concerns remained regarding traffic safety and road conditions as evidenced by feedback received from the WIS.

In the fall of 2014, the Province established the PR 280 Joint Advisory Committee. The committee comprised representatives from the Province of Manitoba, Manitoba Hydro, the Town of Gillam and the in-vicinity First Nations communities to involve the latter directly in the planning of upgrades to PR 280 and PR 290. Within the subject reporting period the PR 280 Joint Advisory Committee met in April and May of 2017.

Traffic safety and road conditions have been a subject of substantial concern expressed by in- vicinity First Nations in a number of forums, including the PR 280 Joint Advisory Committee. In particular, concerns have been expressed on an ongoing basis regarding speeding, truck weights, convoys, road surface conditions (making travel difficult), vehicle damage and dust. As a result of discussions among in-vicinity First Nations, Manitoba Hydro and the Province, a number of mitigation measures have been adopted to reduce the impact of project traffic on PR 280 and PR 290 including road reconstruction and increased maintenance efforts, operation of the Provincial Trunk Highway 6 weigh station near Thompson, and communicating driver expectations to contractors in an effort to promote appropriate driving behaviour on PR 280 and PR 290.

Manitoba Hydro developed a comprehensive transportation management plan in the fall of 2016 to reduce the impacts of project traffic on PR 280 and PR 290. The plan included the following strategies:

- Pre-hauling construction materials to site during the winter months;
- Night hauling of some materials when the weather is cold at night and warm in the daytime;
- Reductions in Manitoba Hydro truck traffic and reductions in truck weights during periods when the road has deteriorated significantly; and,

- Increased communications with staff, contractors, and other road users to provide an awareness of the initiatives Manitoba Hydro has undertaken to improve conditions and safety on PR 280 and PR 290.

MI is responsible for the existing provincial highway system, including the maintenance and upgrade of PR 280 and PR 290. The purpose of the transportation management plan was to help reduce wear and tear on the roads and allow MI to focus on areas requiring increased maintenance. Monitoring efforts have been undertaken in collaboration with MI, Manitoba Public Insurance (MPI), and the RCMP to assess mitigative efforts in relation to EIS predictions and respond to community concerns as presented below.

5.4.2.1 Road traffic

A commitment of the EIS was to conduct traffic monitoring in the vicinity of the Project to analyze the effect of construction activities on the existing road network, in particular PR 280 and PR 290. During the summer and fall of 2015, MI installed five in-pavement loop counters on PR 280 and PR 290. Figure 1 below shows a typical traffic monitoring station. Figure 2 shows the locations of the monitoring stations.

Figure 1 Traffic monitoring station

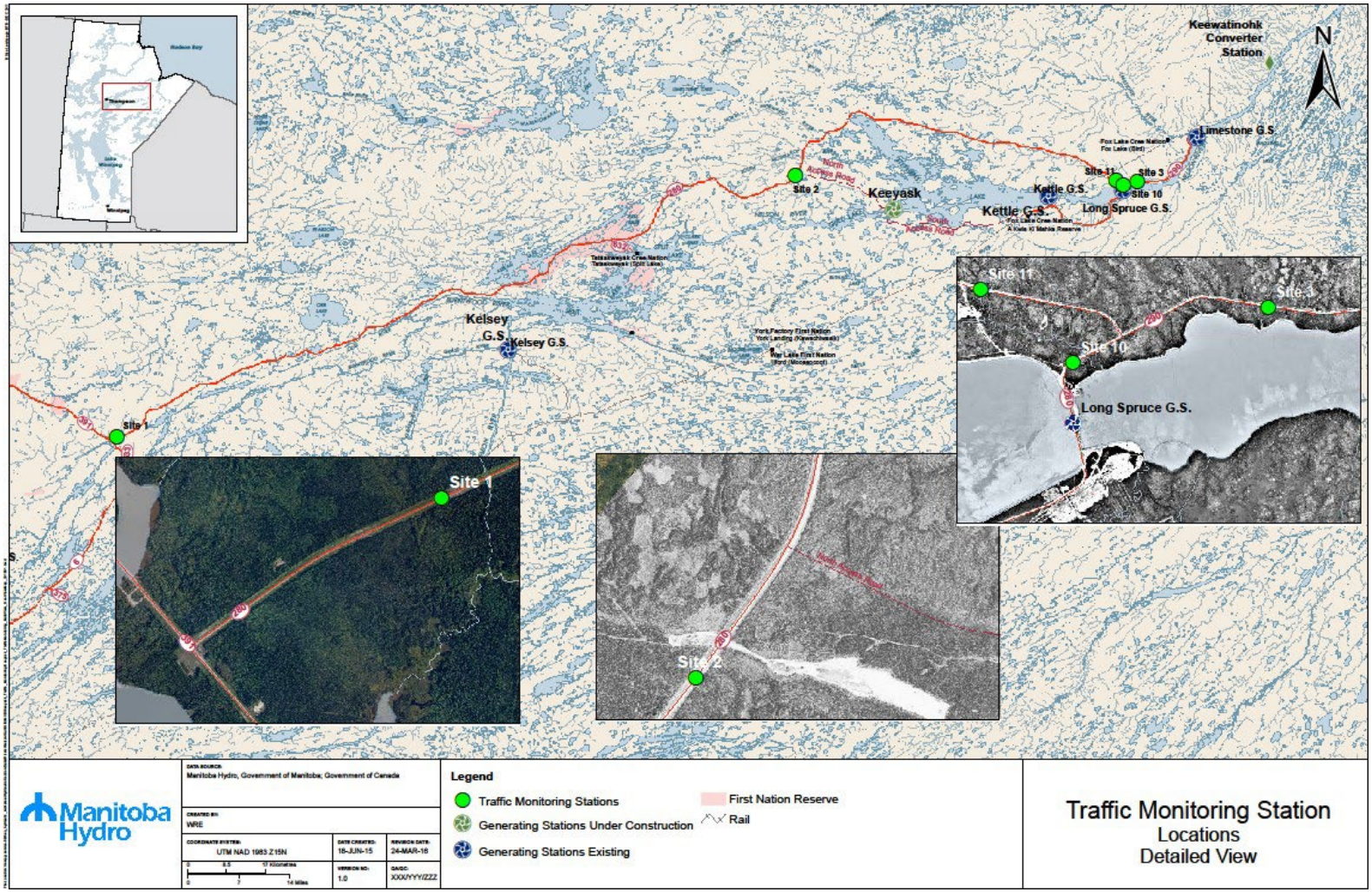


Figure 2 PR 280 traffic monitoring stations

Traffic volume information was obtained from the Manitoba Highway Traffic Information System (MHTIS) website for the years 2005, 2007, 2009, 2011, 2013 and 2015. This information is based on data collected by MI for PR 280 and PR 290 on a biennial basis and includes estimates of annual average daily traffic (AADT), which is the number of vehicles passing a point on an average day of the year.

Traffic data from the MHTIS for PR 280 and PR 290 is divided into five segments; PR 391 to Split Lake, Split Lake to the PR 280/PR 290 intersection, the PR 280/PR 290 intersection to Gillam, PR 290 east of the intersection and another section of PR 290 west of Sundance. A summary of the AADT for the segments relative to this report for past years is presented in Table 18 Summary of AADT for segments of PR 280 and PR 290 from 2003 to 2015 (combined for northbound and southbound traffic rounded to the nearest five). While there is some variation across years, use of PR 280 and PR 290 has steadily increased since 2003. A more substantial increase in use has been observed since the start of construction on the KCS, as anticipated. Traffic volumes have more than doubled over the past ten years.

Table 18 Summary of AADT for segments of PR 280 and PR 290 from 2003 to 2015

Traffic Volume Comparison												
						Actual Count						
Road	Count Station	Location	Peak Daily traffic volume (PCE) Projected	Background Traffic during Peak Year of construction (est)	Projected Cumulative Traffic Volumes	2003	2005	2007	2009	2011	2013	2015
PR 280	1	PR 391 to Split Lake	75	180	255	230	155	135	175	210	270	340
	2	Split Lake to PR 280/290	75	180	255	115	95	95	120	140	160	230
	10	PR 280/290 to Gillam	235	300	535	205	210	235	225	255	375	450
PR 290	3	East of PR 280	280	160	440	100	100	130	150	140	240	295
	11	West of Sundance		0	0	10	30	50	50	40	80	150

Based on data collected since October 2015, trends in traffic volumes appear to be cyclical with peaks occurring during the winter months from January to March. Traffic volumes tended to decrease later in the spring and then flatten out over the summer months. However, it should be noted that there was very little difference in truck traffic counts throughout the year as shown in Figure 3.

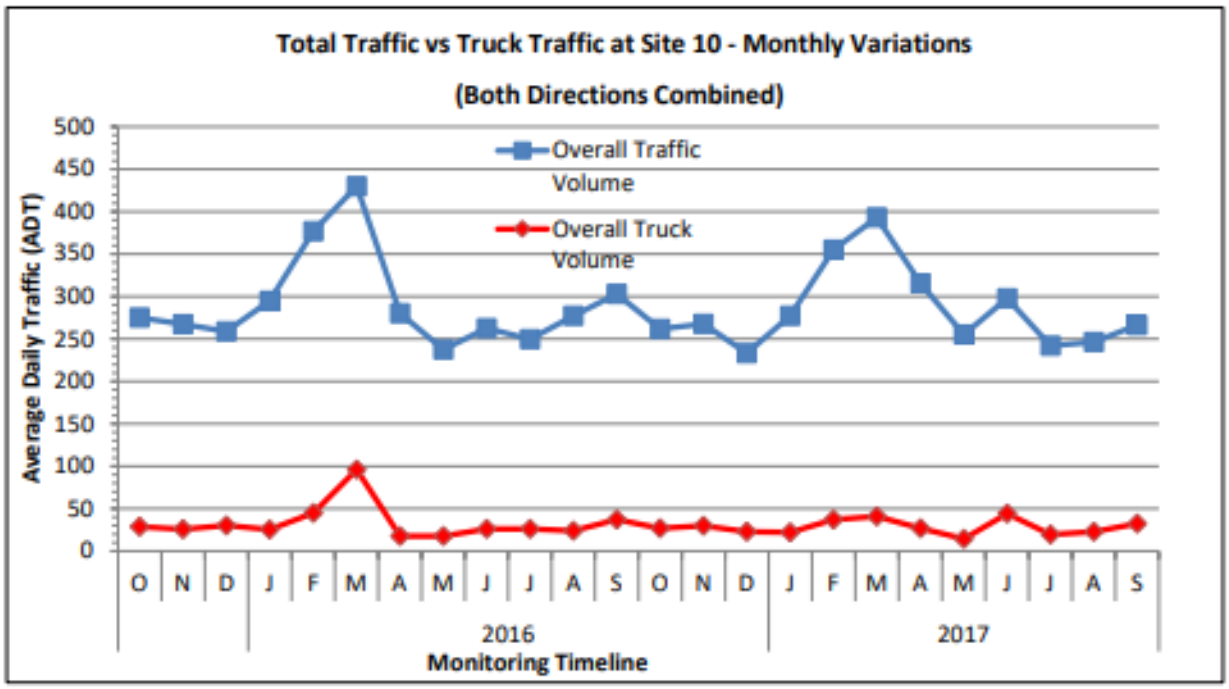


Figure 3 Total traffic vs truck traffic at site 10 – 2016-2017 monthly variations (both directions combined)

There is a slight increase in truck traffic during the winter months, but the main driver of the increase in traffic during winter is small vehicles (i.e., cars, pick-up trucks, vans). This increase may be attributed to a few factors, including an increase in the number of trips from communities while the winter road system is in operation, and traffic related to Bipole III Transmission Line construction which occurs mainly during the winter months. As Project construction winds down in 2018, it is expected that the traffic counts over the winter months will decrease.

Comparison between predicted traffic volumes and actual counts

The Transportation Technical Report prepared for the Bipole lll EIS provided projected traffic flows for key highway segments within the Keewatinohk Study Area. Table 18 shows the projected traffic volumes to allow comparison with actual counts for the road segments identified. MHTIS has not provided new information at this time.

The results of the comparison indicate that some roads are experiencing higher traffic flows than predicted and others are seeing lower traffic flow. In particular:

- PR 280 from PR 391 to Split Lake experienced a continuous increase in traffic from 2011 through 2013 and 2015. The 2015 count averages were 85 vehicles per day (vpd) higher than predicted and 110 vpd higher than preconstruction values.
- PR 280 from Split Lake to the PR 280/PR 290 intersection has experienced continuous growth from 2011 through 2013 and 2015. The 2015 count averages were 25 vpd lower than projected and 115 vpd higher than preconstruction values.
- PR 280 from PR 290/PR 290 to Gillam experienced a continuous increase in traffic from 2011 through 2013 and 2015. The 2015 count averages were 105 vpd lower than predicted and 240 vpd higher than preconstruction values.
- PR 290 from east of PR 280 experienced a continuous increase in traffic from 2011 through 2013 and 2015. The 2015 count averages were 85 vpd lower than predicted and 195 vpd higher than preconstruction values.
- PR 290 west of Sundance was not included in the projected traffic flow list, but traffic flows increased from 2011 through 2013 and 2015. The 2015 count averages were 100 vpd higher than preconstruction flows.

The traffic monitoring results apparently indicate that there is other activity happening between Thompson and Split Lake that is not related to the construction activity. It also indicates that the predicted construction related traffic is trending lower than predicted in certain road segments.

The instances where there was lower than predicted traffic flow may be attributable to several factors including, but not limited to, the following:

- Lower than anticipated workforce;
- More carpooling by workers;
- Less material delivery trips;
- More trips being taken by air to Gillam or other work sites; and
- Predictions were based on factors that did not materialize.

Predicting trip generation for construction projects is not an exact science, as there are numerous factors that influence the need to drive to the construction site, some of which are identified above. Anticipating the impact of higher traffic volumes facilitates the adoption of measures that can reduce the impact, resulting in a conscious effort to reduce unnecessary trips.

5.4.2.2 Collisions

An anticipated direct correlation exists between traffic levels and collision rates. In those instances where there was an increase in traffic, there would be a corresponding increase in reported collisions (property damage[19], injury or fatality). There was a total of 88 collisions on PR 280 in the years prior to construction of the KCS (2005 to 2013); an average of 10 collisions per year. From the start of construction on the KCS to the end of this report period (2014-2017) there have been a total of 138 collisions on PR 280; an average of 18 collisions per year.

Although the average number of collisions has increased, collision severity has decreased with fewer collisions resulting in injuries or fatalities over comparable time periods. In 2012, the responsibility for collection and reporting of collision data transferred from the RCMP to MPI and this change may have affected the number of collisions reported prior to and during construction. The collision rate at the Project site for 2015-2016 (1.20 incidents per million vehicle-kilometres of travel [MVKT]) remains below the industry standard threshold of 1.5 incidents per MVKT. MHTIS has not provided a new collision rate for 2017 but it is expected that it would still be below the industry threshold standard of 1.5 incidents per MVKT.

Collisions during the spring (March, April, May) and fall (September, October, November) months were most frequent, accounting for 58% of all collisions over the twelve-year period. Single vehicle collisions were most frequent, accounting for approximately 100% of all collisions during the analysis period.

5.4.2.3 Keewatinohk site access

The Conawapa Access Road connects PR 290 to the construction site. It is a private road with restricted access, which is controlled by means of a security gate. The gate

[19] *Property damage can be attributed to collisions with wildlife, running off the road into a fixed object, head on or side swipe collisions with other vehicles, overturned vehicles, damage to vehicles as a result of hitting potholes/ruts, etc. Property damagedoes not include cracked or chipped windshields.*

office is staffed 24 hours per day, seven days per week and security staff document all authorized vehicles entering and exiting the road. Monitoring of traffic volumes on the access road takes place through the gate's records and through security reports from patrols.

Traffic counts from the monitoring station located at Site 3 (closest station to the Conawapa Access Road) were compared with gate counts at the site in order to quantify construction related traffic to overall traffic on PR 290. Over the 2016-2017 year, these two sets of traffic counts indicate that Keewatinohk-related construction traffic accounts for approximately 34% of all traffic on PR 290.

Table 19 provides a summary of vehicle access to the KCS site from October 1, 2016 to September 30, 2017. On average, 161 vehicles per day used the road during the reporting period.

Table 19 Security gate counts at Keewatinohk Converter Station, October 1, 2016 to September 30, 2017

Period		Gate Count Total	Daily Average
Previous Reporting Periods*		**94,848**	**94**
2016	October	3,830	124
	November	3,714	124
	December	3,981	128
2017	January	4,732	153
	February	8,512	304
	March	9,624	310
	April	6,412	214
	May	5,869	189
	June	2,946	98
	July	3,284	109
	August	3,088	103
	September	2,397	80
	Total	58,389	161

Note: * Gate record keeping began January 6th, 2014

Source: Keewatinohk Converter Station Master Gate Log

5.5 Cultural and heritage monitoring

For the environmental assessment of cultural and heritage resources, Aboriginal Traditional Knowledge (ATK) played an important role in identifying areas of potential cultural and heritage concern for the Project. Various methods and sources of information identified areas of high heritage potential, known as heritage Environmentally Sensitive Sites (ESS). Locations included water crossings, level, well-drained terrain and proximity to known archaeological sites. As noted in the Effects Assessment in the EIS (Chapter 8), construction activities such as excavation and clearing could cause changes to the physical environment which could potentially indirectly affect culture.

ATK assisted in providing the cultural context to these heritage ESS locations, some of which were not able to be investigated prior to filing the EIS but were investigated subsequently during the monitoring of clearing and construction activities. Examples of areas of interest along the final preferred route for the Project identified by archaeological methods and ATK information are presented in the following section (see Bipole III – Culture and Heritage Resources – 8.3.6 of Bipole III Effects Assessment and Mitigation for further information). A brief description is provided below of the heritage ESS locations, monitoring that has taken place to date, and recommendations for future year's surveys.

5.5.1 Cultural and Heritage Resources Protection Plan

A Cultural and Heritage Resources Protection Plan (CHRPP) was developed for the Project. The role of the CHRPP in the Environmental Protection Program was to describe processes and protocols with communities to allow Manitoba Hydro to safeguard cultural and heritage resources and appropriately handle human remains or cultural and heritage resources discovered or disturbed during the construction of the Project. Recorded cultural and heritage resources and their protection measures were incorporated into the applicable Construction Environmental Protection Plans. The Operations and Maintenance Environmental Protection Plans will also include protection measures to be used for the ongoing protection of cultural and heritage resources during operations.

Heritage Resources training has occurred every year since 2014 to familiarize Environmental Monitors, Community Liaisons, Construction Supervisors, and Contractors with protocols related to the CHRPP. Examples of heritage or cultural resources are also presented, and illustrate examples of artifacts, features, or evidence

of cultural practices (e.g., prayer ribbons hanging in trees) that may be found in the project area. The training also provides an overview of governing legislation protecting heritage resources, as well as status and results of the ongoing heritage monitoring program.

The focus of the 2017 Heritage Monitoring program was to monitor for cultural or heritage resources during clearing and construction activities as part of the Project. Heritage monitoring activities were carried out at the Keewatinohk Converter Station for fibre optic cable installation and along section S1 of the transmission line ROW in the Rural Municipality (RM) of Westlake-Gladstone (see Appendix A for map of Project sections).

5.5.2 Keewatinohk Converter Station sites

The Heritage Resources Impact Assessment (HRIA) of the KCS footprint in 2010 resulted in the identification of two archaeological sites, HdKl-01 the "Oasis in the Marsh" and HdKl-02 "Keewatinohk Converter Station". The heritage value of these sites was identified based on the distance from potable water (approximately 1 km), high gravel ridges associated with the ancient Tyrrell Sea beach, and the paucity of characteristic environmental attributes. The initial archaeological investigation consisted of intensive shovel testing over a series of visits along with remote sensing. The outcome of the initial investigation was the discovery of a large number of lithic (stone) flakes associated with left over stone from tool manufacture at both sites and the discovery of a small number of tools. One particular flake demonstrated similarities to microblades from the Arctic Small Tool tradition (4500-2800 B.P.) which has rarely been documented in northern Manitoba. Other stone features that were identified include tent rings at HdKl-02 and potential burial stone features at HdKl-01.

5.5.2.1 Mitigation Measures

The mitigation measures undertaken for the KCS sites (HdKl-01 and HdKl-02) have been avoidance through modifying the footprint of the Converter Station and erecting a 7 ft chain-link fencing to enclose both sites to prevent disturbance (winter 2013/14).

5.5.2.2 Monitoring Activities

The monitoring activities that took place in April 2017 were in response to a video of a back- blading incident near HdKl-01 which was part of fiber optic cable installation at

1.5 m below surface, approximately 10 m from the perimeter fencing of the site. The video caused concerns from the FLCN environmental monitor regarding potential presence of cultural rock formations, including the possible presence of grandfather stones related to sweat lodge ceremonies. The April 2017 monitoring consisted of an archaeological survey of the excavation trench, where members of the archaeological team (including FLCN members and Manitoba Hydro personnel) examined the ground surface for exposed artifacts and heritage features, along with three test trenches (1 m x 3 m) that were excavated to a depth of 50 cm.

No evidence of cultural layers or artifacts were discovered.

A follow up site visit in June 2017 was conducted as part of a corrective action from the previously described incident near HdKl-01 as requested by FLCN. The exposed ground surface of the trench line was re-examined for artifacts, cultural layers, or any indication that the area may be been used or modified by human activity. Fencing in place extends past the actual boundary of the archaeological site by 20 m on each side that serves as a mitigative buffer. No further evidence of cultural layers or artifacts were discovered; therefore, it was determined that no additional buffer outside the fence would be required.

An ancillary concern expressed by FLCN at site HdKl-01 related to the potential disturbance within the perimeter fencing at the site associated with the presence of instrumentation and a portion of the fence being down. It was determined that the equipment had been in place since 2014 and that a small section of the fence was left down at FLCN's request to accommodate the passage of spirits.

No further concerns with these two archaeological sites remain as long as fencing is maintained during construction of the Project.

Should further ground-disturbance be planned to occur for this area, it would be prudent for Environmental Monitors to be present with documentation of subsequent monitoring in the 2017-18 report.

5.5.3 Section S1 Prayer Tree sites

A realignment of Section S1 in the RM of Westlake-Gladstone was required to divert around an existing NAV CANADA radar site. The realignment was approximately 20 km in length. On February 9, 2017 crews came upon a number of trees within the

transmission line ROW that had fabric cloths tied around their trunks. The trees were found in 16 separate locations concentrated in two main areas, along mile road 87N (22 trees), and along mile road 92N and 53W (13 trees). Prayer Trees are associated with an Indigenous traditional practice whereby offerings back to the earth represent prayers, hopes, or thanks. Swatches of colourful cloth are tied to trees usually following a ceremony conducted by an Indigenous group. The cloth is often tied due east of the ceremonial site to weather and disintegrate as the energy from the prayer is released.

5.5.3.1 Mitigation Measures

Immediate actions taken to mitigate impacts to the Prayer Trees located in Section S1 included immediately halting operations and notifying the construction supervisor. Ebb and Flow First Nation, Sandy Bay Ojibway First Nation, and landowners were contacted as per the CHRPP protocol for newly discovered cultural resources. Mitigation measures included a ceremony conducted on February 13, 2017 to remove the Prayer Trees that were within the ROW, followed by burning and handling of the removed trees under the guidance and instruction of the Elders from both First Nations.

5.5.3.2 Monitoring Activities

On-site monitoring of tower footing excavations at four locations occurred on February 22 and 23, 2017. The monitoring consisted of examining exposed soils within each of the tower footprints and excavating in 10-15 cm levels due to the nature of frozen ground to depths of 1.25 m. Evidence of cistern and modern debris associated with an abandoned farmyard was found near one tower location. Evidence of modern debris of no heritage significance littered the general area. No additional cultural or heritage resources were found at the tower footprints and construction proceeded.

It is further recommended that archaeological monitoring occur for those tower structures that are located within 100 m of a Prayer Tree.

5.5.4 Plant species important to Indigenous peoples

As noted in the Biophysical Monitoring and Mitigation Report (2014), during the environmental assessment and approval process for the Project, a number of plant species were identified for protection based on their importance to Indigenous people who gather them for food, medicinal and traditional purposes. The Cowan blueberry

site was the focus of monitoring in 2014, and again in 2015 as it was identified by many people as a highly valued local resource.

On July 5, 2016, community members from Pine Creek and Duck Bay joined Manitoba Hydro staff and the Vegetation team to revisit the Cowan site and other sites noted to support blueberries. Two species of blueberries were observed at this location (velvetleaf blueberry - Vaccinium myrtilloides and low sweet blueberry - Vaccinium angustifolium), and many plants supported ripe berries, ready to consume. Plot C1-ATK-400 was in close proximity and the group also visited this location. At these two plots, blueberries were plentiful and the local community members noted that the berry plants did really well and exceeded their expectations. It was also noted by a community member that increased sunlight (i.e., ROW clearing) is required for better plant growth and from what they observed in the field, this area will provide good blueberry picking. Overall, it was observed that cover conditions for blueberries had improved over the previous year. This site was revisited in 2017 with more blueberry plants being recorded on-site from the previous years.

5.6 Liaising with communities

Many mitigation measures relating to culture focused on continuous dialogue and involvement of local communities to so that matters relating to heritage and culture are addressed in an appropriate manner. Some of the activities that communities have been involved in since construction began are outlined below.

Wabowden

Wabowden community members participated in a medicinal plant project to harvest medicinal plants both on and off the Bipole III ROW.

Opaskwayak Cree Nation

OCN community members participated in an aquatics/mammal monitoring program that was conducted on OCN's Youth trapline.

Pine Creek and Duck Bay

As noted in the previous section, Pine Creek and Duck Bay community members participated in vegetation monitoring related to blueberry abundance in areas of importance to the communities. Survey plots on and off the ROW were investigated to determine blueberry abundance and the effect of ROW clearing.

Swan Lake First Nation

Members of Swan Lake First Nation participated in ground transect surveys during the winter of 2017.

Other Monitoring and Community Liaison Activity

In addition to the above activities, Manitoba Hydro is committed to engaging community-based expertise during the construction of the Project and has developed two positions for communities to ensure on-going dialogue and capacity building activities – Environmental Monitors and Community Liaisons. For the 2016/2017 construction season, Manitoba Hydro had 11 Environmental Monitors and 21 Community Liaisons hired from 21 different communities.

Primary activities for the Environmental Monitors include contributing to the design, implementation and reporting of the Environmental Monitoring Program, and contributing ATK to the Environmental Monitoring Program.

For the Community Liaisons, key activities and responsibilities include:

- Provide traditional knowledge of the area and bring Indigenous perspective and cultural awareness to the Project site;
- Participate in site safety meetings as required including daily tailboard / job planning meetings;
- Be familiar with, and adhere to, Manitoba Hydro's Life Saving Rules, Safe Work Procedures, and all other regulations, approved practices and procedures;
- Make regular reports to the community, Manitoba Hydro Construction Supervisor and Chief and Council regarding inspection and monitoring activities, construction schedules, community interests and concerns;
- Share Project information and community concerns with Environmental Monitors;
- Assist in making recommendations for improving mitigation measures; and
- Provide local knowledge about the project area to facilitate construction (e.g. identify creeks that freeze over, access trails, contact information, timing and type of use by resource users, and community values).

Examples of activities undertaken by some of the Community Liaisons and Environmental Monitors during construction to date are:

- Touring of the Keeyask Generating Station site and KCS site;
- Conducting school tours (i.e., Sandy Bay, Alonsa, Winnipegosis, Langruth, Pine Creek) and trapper education workshops (i.e., The Pas, Camperville, Alonsa);
- Reviewing sensitive Caribou areas with Natural Resource Officers;
- Observations of construction activities (e.g., clearing, tower and anchor installations);
- Wildlife observations;
- Participation in daily construction tailboard meetings;
- Flagging sensitive sites (including heritage and cultural sites of importance); and
- Reviewing buffer zones.

6 Mitigation

A number of measures were prescribed to mitigate SE effects and address local concerns as documented in the EIS and subsequently identified and initiated by Manitoba Hydro. Below are some examples of the prescribed mitigation measures implemented to limit effects:

- WIS meetings provided an opportunity to share information related to the increased workforce in the Gillam area as a result of Manitoba Hydro projects and activities, as well as to identify and work cooperatively to address related issues (e.g., traffic safety, non-local person behavior at facilities in and near the communities, and presence of drugs)
- Cultural awareness training was provided for workers;
- A regular air transportation charter service was implemented to accommodate the Keewatinohk workforce to ensure that scheduled flights were still available for local residents. There is also a shuttle service to transport workers to and from the airport;
- Prior to construction activities, registered trapline holders are notified as to the schedule for construction activities;
- Subject to detailed engineering analysis, tower location (i.e., tower spotting) is being used, where feasible, to reduce potential negative effects; and
- A comprehensive transportation management plan was developed to reduce the impacts of project traffic on PR 280 and PR 290, including pre-hauling in winter months, night hauling where possible, management of truck weights and increased communication.
- Upon the halt of construction activities, a ceremony was conducted to remove Prayer Trees identified within the ROW, followed by burning and handling of the removed trees under the guidance and instruction of the elders from Ebb and Flow and Sandy Bay Ojibway First Nations. Additional recommendation for future monitoring was made for archaeological monitoring at r tower structures that are located within 100 m of a Prayer Tree.
- To avoid disturbance to two sites (HdKl-01 and HdKl-02) near the KCS, the footprint of the Converter Station was reduced and a 7 ft chain- link fence was erected to protect the sites (winter 2013/14) from disturbance.

7 Summary

This report documents SEMP results for the Project from October of 2016 to September 30, 2017. Monitoring the Project SE effects meets the commitment identified in the Bipole III EIS as well as the Bipole III *Environment Act* Licence No. 3055.

The results of the monitoring program have added further information to evaluate long-term changes or trends. Monitoring results have been reviewed and, as additional data is collected, it will be used to develop appropriate responses consistent with an adaptive management approach to facilitate environmental protection throughout the implementation of the Project. Summaries of SE monitoring activities over the 2016/2017 period are presented below by monitoring topic area.

Economy:

The monitoring objective of tracking employment outcomes, construction business outcomes and the effect of Project income levels on government taxes is ongoing. In comparing estimated employment, it was noted that 80 % of direct project employment was derived within Manitoba, and that 33% of project employment was Indigenous. To date 72% of the predicted person years of direct employment on the Project construction has been realized. Approximately 66% of tax revenue predicted to be generated by the Project to date for the province of Manitoba has been realized, and 136% of the predicted direct project expenditures for the construction phase have been realized.

Community services:

Monitoring of the extent of Project effects on community-based services such as emergency, health and social services continued during the reporting period. The WIS addressed issues during the reporting period related to road conditions, hospital use and the Gillam airport. The WIS also monitored the demand for health services and policing. In turn, Manitoba Hydro took a number of actions related to matters considered including improved communication around parking at the airport, and improved monitoring of traffic on PR 280 and PR 290.

Resource use:

The SE component of the furbearer and trapline monitoring program focused on trapper education for potential commercial trappers on active RTL set aside by Manitoba Sustainable Development as Community/Youth RTLs during the reporting period. Manitoba Hydro sponsored three trapper education courses (conducted in

OCN, Wabowden, and Thicket Portage). SE effects monitored in this report are those associated with the trapper education program relating to traditional and general economic gains. All community programs reported that participants harvested furbearers resulting in a positive experience by all involved.

Personal and community well-being:

Monitoring of the extent of Project effects on personal and community well-being, including public safety – worker interaction and transportation (i.e., road traffic) continued during the reporting period. Public safety – worker interaction issues related to traffic safety (e.g., traffic speed and oversized loads), the behaviour of non-local persons at facilities in and near the communities (e.g., Gillam airport, Gillam Legion, and Butnau Marina); and community concerns regarding the presence of drugs in Gillam were identified.

Monitoring efforts undertaken during the 2016-17 period in relation to concerns identified and brought forward to the WIS include: provision of a hospital services information sheet developed by the Gillam Hospital (regarding hospital facilities, doctor availability, and related hours) to Keeyask and Keewatinohk workers; provision of instructions to Keeyask and Keewatinohk buses/shuttles to park in a designated area away from the airport doors to reduce traffic congestion; communication with contractors regarding concerns about workers' behavior in public; ongoing communications and collaborations with groups responsible for implementing traffic and road safety measures (e.g., MI, MPI, and the RCMP); and FLCN's implementation of cultural awareness training for short-term contractors.

There has been a total of 138 collisions on PR 280; an average of 18 collisions per year from the start of construction on the KCS to 2016. No new collision rate was provided for 2017 but is expected that it would be below the industry standard threshold (1.5 incidents per MVKT). Monitoring of traffic volumes on the Conawapa Access Road to the KCS continued in 2017. On average, 161 vehicles per day were logged at the security gate as using the road during the reporting period. Collisions during spring and fall accounted for 58% of all collisions; single vehicle collisions were most frequent account for 100% of all collisions.

Cultural and heritage monitoring:

Cultural and heritage monitoring during the 2016-17 period included monitoring a heritage ESS location identified by the HRIA of the KCS recorded as HdKl-02. The

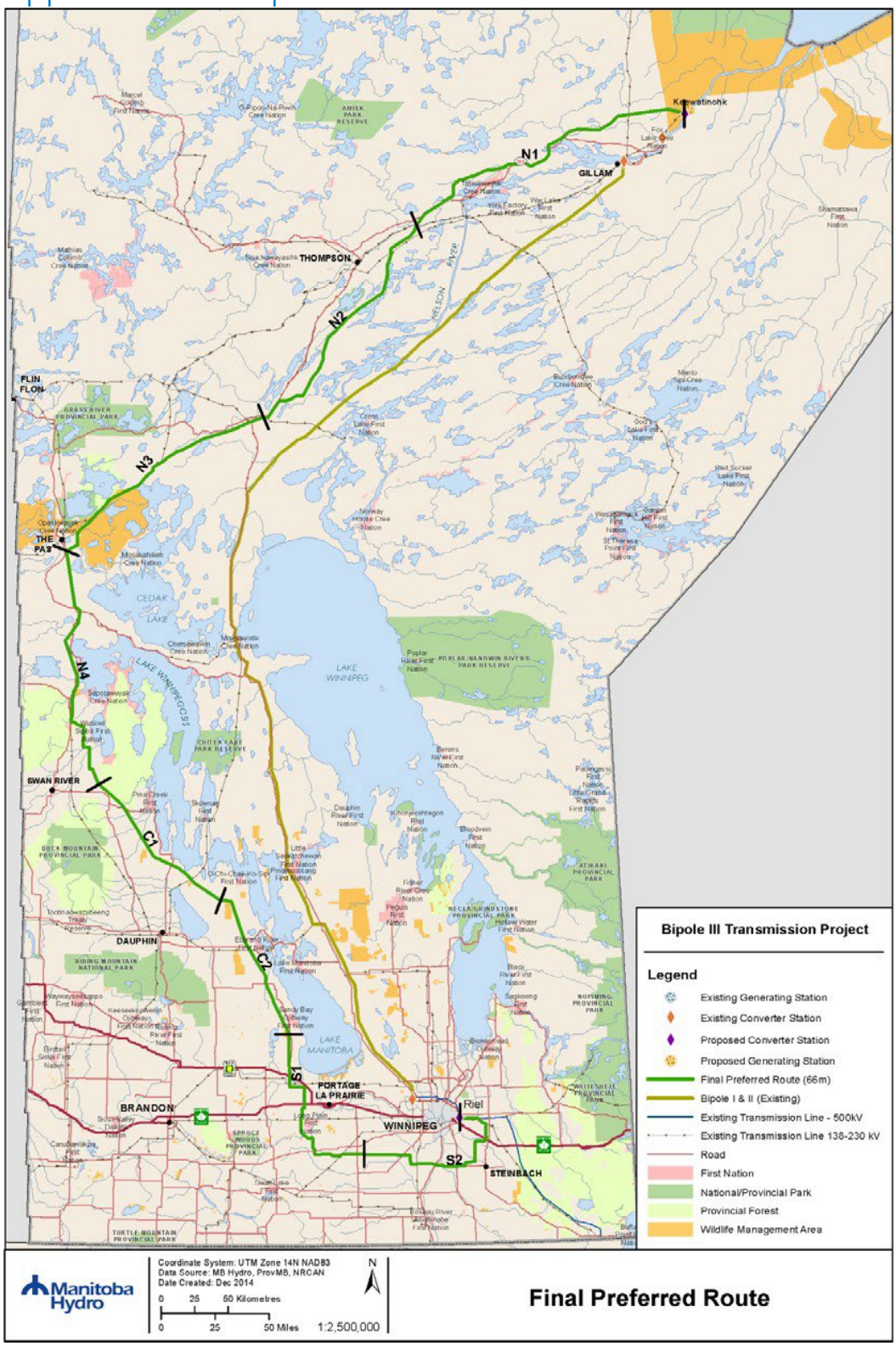
vicinity of the site was reportedly disturbed due to a back-blading incident. Monitoring consisted of an archaeological survey of the excavation trench. No evidence of cultural layers or artifacts were discovered. A follow up site visit in June 2017 was conducted as part of a corrective action for the incident. No further evidence of cultural layers or artifacts were discovered; and no additional mitigation measures were required.

Heritage monitoring was also conducted during the transmission line realignment of Section S1 in the RM of Westlake-Gladstone, where crews came upon a number of trees within the transmission line ROW that had fabric cloths tied around their trunks. Mitigation measures included immediately halting operations and notifying the construction supervisor, potentially affected First Nations, and landowners as per the CHRPP protocol for newly discovered cultural resources. Mitigation measures included a ceremony conducted to remove the Prayer Trees that were within the ROW, followed by burning and handling of the removed trees under the guidance and instruction of the elders from potentially affected First Nations.

The Cowan blueberry site was again the focus of monitoring by Community members in 2017. The site was revisited during this time period with more blueberry plants being identified.

Liaison with communities continued over the reporting period. Activities were undertaken with Wabowden, OCN, Pine Creek, Duck Bay, and Swan Lake First Nation related to ground transect surveys, camera deployment, access maintenance, traditional use survey, vegetation monitoring, and heritage resources monitoring. In addition, Manitoba Hydro continued to engage community-based expertise during the construction of the Project, in the form of Environmental Monitors and Community Liaisons to ensure on-going dialogue and capacity building activities with communities. For the 2016/2017 construction season, 11 Environmental Monitors and 21 Community Liaisons were hired from 21 different communities. Activities undertaken by some of the Community Liaisons and Environmental Monitors during construction included: reviewing sensitive Caribou areas; observing construction activities; observing wildlife; attending daily construction tailboard meetings; flagging sensitive sites (including heritage and cultural sites of importance); and reviewing buffer zones.

Appendix A: Final preferred route



Available in accessible formats upon request