Bipole III Transmission Project

Socio-economic monitoring program for construction

October 2015 to September 2016

Manitoba Hydro

Manitoba Hydro Bipole III Transmission Project

Socio-economic monitoring program for construction

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List of revisions

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Added abbreviations and updated text accordingly.	Abbreviations	MH	07/06/2022
Updated purpose of monitoring and description of time period for results	1.0	MH	07/06/2022
Updated project description text	2.0	MH	07/06/2022
Added explanation that economic monitoring data is presented as either cumulative or annual	5.1	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. Added that the data is presented on a cumulative basis from the start of the Project to describe person years, hires, employees, average duration and type.	5.11	MH	07/06/2022
Explained that the person years are cumulative	5.1.1.1	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 2016	Table 1-9, 12-17	MH	07/06/2022
Added explanation that hires, employees, employment duration, type (job classification), business outcomes, direct project expenditures labour income, and taxes is from project commencement to September 2016	5.1.1.2, 5.1.1.3, 5.1.1.4, 5.1.1.5, 5.1.2, 5.1.2.1, 5.1.3.1, 5.1.3.2	MH	07/06/2022

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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
ESS	Environmentally Sensitive Sites
GPS	Global Positioning System
HRIA	Heritage Resources Impact Assessment
HVDC	High Voltage Direct Current
KCS	Keewatinohk Converter Station
km	Kilometer
kV	Kilovolt
m	Meter
MI	Manitoba Infrastructure
MPI	Manitoba Public Insurance
MVKT	Million Vehicle-Kilometres of Travel
PR	Provincial Road
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 2015 to September 2016.

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 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, centred on a 66 metre right-of-way (ROW), originating at the KCS, following a westerly route to southern Manitoba and terminating at a new converter station, the 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 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 does not attempt to address all potential changes to the environment described in the EIS, but rather 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.

A separate monitoring program has been undertaken in relation to physical, terrestrial and aquatic components. Where quantitative information is not available, qualitative trends are described in the monitoring report to the extent feasible.

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). For routing, the relatively large study area allowed for an appropriate range of planning choices for consideration based on the collection of environmental information about its physical and biological characteristics (including vegetation, wildlife and aquatic resources), as well as SE and land use characteristics (including locations of communities, conservation areas, economic land uses [e.g., agriculture], archaeological and heritage resources). 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.

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 (i.e., from the start of construction to September 30, 2016) or as data collected for an annual reporting period (i.e.,

[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 anticipated increases in the Gillam area workforce resulting from the Bipole III Project and other Manitoba Hydro projects being constructed in an overlapping timeframe.*

October 1, 2015 to September 30, 2016). 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 byon-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).

5.1.1 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[3]. 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 September 2016, Project construction generated 1,949 cumulative person-years of direct Project employment in terms of a 2,000 hour per year basis (1,299 person- years in terms of a 3,000 hour per year basis). This number (1,949) represents approximately thirty-eight percent of the estimated total person years of employment for the entire construction phase of the Project (5,194). Of the 1,949 person-years of direct employment generated, eighty-one 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 September 2016.

Table 1 Person years of employment – Project commencement to September 2016: 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 Project**	**Person years 2,000 (3,000)]**	**% of Project**	**Person years 2,000 (3,000)**	**% of Project**	**Person years 2,000 (3,000)**	**% of Project**

[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]*

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

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

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Person years 2,000[4] (3,000)[5]	% of Project	Person years 2,000 (3,000)]	% of Project	Person years 2,000 (3,000)	% of Project	Person years 2,000 (3,000)	% of Project
Northern Manitoba Indigenous	261 (174)	13%	100 (66)	5%	3 (2)	0%	364 (243)	19%
Northern Manitoba Non-Indigenous	31 (21)	2%	12 (8)	0.6%	0 (0)	0%	43 (29)	2%
Cumulative Total	1136 (757)	58%	555 (70)	28%	258 (172)	13%	1949 (1299)	100%

Note: Figures above are rounded to the whole number and are not additive.

Table 2 Person years of employment – Project commencement to September 2016: Indigenous and 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 Project	Person years 2,000 (3,000)]	% of Project	Person years 2,000 (3,000)	% of Project	Person years 2,000 (3,000)	% of Project
Indigenous	405 (270)	21%	216 (144)	11%	40 (27)	2%	661 (441)	34%
Non-Indigenous	730 (487)	37%	339 (226)	17%	218 (145)	11%	1288 (858)	66%
Cumulative Total	1136 (757)	58%	555 (70)	28%	258 (172)	13%	1949 (1299)	100%

Note: Figures above are rounded to the whole number and are not additive.

Table 3 Person years of employment – Project commencement to September 2016: Manitoba and non-Manitoba

Measure	Keewatinohk Converter Station	Transmission Line Construction	Riel Converter Station	Bipole III Transmission Project Total

	Person years 2,000[4] (3,000)[5]	% of Project	Person years 2,000 (3,000)]	% of Project	Person years 2,000 (3,000)	% of Project	Person years 2,000 (3,000)	% of Project
Manitoba	865 (577)	44%	490 (327)	25%	225 (150)	12%	1580 (1054)	81%
Non-Manitoba	271 (181)	14%	64 (43)	3%	33 (22)	2%	368 (246)	19%
Cumulative Total	1136 (757)	58%	555 (70)	28%	258 (172)	13%	1949 (1299)	100%

Note: Figures above are rounded to the whole number and are not additive.

5.1.2 Hires

Hires were not a parameter used in the EIS but are tracked by Manitoba Hydro for its projects. Hires refer to the number of people hired on the Project site for any duration. To September 30,2016, there were 7,008 hires on the Bipole III Transmission Project. Forty-eight per cent of the total hires were for construction of the KCS, twenty-one percent of the hires were for the RCS, and thirty-one percent of the hires were for transmission line construction. See Tables 4-6 for a further breakdown of total hires up to September 2016.

Table 4 Total hires – Project commencement to September 2016: 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 Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires
Northern Manitoba Indigenous	819	12%	612	9%	15	0%	1446	21%
Northern Manitoba Non-Indigenous	65	1%	46	1%	2	0%	113	2%
Cumulative Total	3359	48%	2177	31%	1472	21%	7008	100%

Note: Figures above are not additive top to bottom.

Table 5 Total hires – Project commencement to September 2016: Indigenous and non- Indigenous

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires
Indigenous	1339	19%	1153	16%	248	4%	2740	39%
Non-Indigenous	2020	29%	1024	15%	1224	17%	4268	61%
Cumulative Total	3359	48%	2177	31%	1472	21%	7008	100%

Note: Figures above are not additive top to bottom.

Table 6 Total hires – Project commencement to September 2016: Manitoba and non-Manitoba

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires
Manitoba	2610	37%	1838	26%	1356	19%	5804	83%
Non-Manitoba	749	11%	339	5%	116	2%	1204	17%
Cumulative Total	3359	48%	2177	31%	1472	21%	7008	100%

Note: Figures above are not additive top to bottom.

5.1.3 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. To September30, 2016, a total of 5,062 employees were hired on the Bipole III Transmission Project. A total of eighty-one percent of the total employees to date reside in Manitoba. See Tables 5-7 for the breakdown of total employees up to September 2016.

Table 7 Total employees – Project commencement to September 2016: 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 Project Employees	Employees	% of Total Project Employees	Employees	% of Total Project Employees	Employees	% of Total Project Employees
Northern Manitoba Indigenous	495	10%	450	9%	14	<1%	908	18%
Northern Manitoba Non-Indigenous	56	1%	33	1%	2	<1%	89	2%
Cumulative Total	2347	46%	1583	31%	1385	27%	5062	100%

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

Table 8 Total employees – Project commencement to September 2016: Indigenous and non-Indigenous

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Employees	% of Total Project Employees	Employees	% of Total Project Employees	Employees	% of Total Project Employees	Employees	% of Total Project Employees
Indigenous	827	16%	823	16%	238	5%	1800	36%
Non-Indigenous	1520	30%	760	15%	1147	23%	3262	64%
Cumulative Total	2347	46%	1583	31%	1385	27%	5062	100%

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

Table 9 Total employees – Project commencement to September 2016: Manitoba and non- Manitoba

Measure	Keewatinohk Converter Station	Transmission Line Construction	Riel Converter Station	Bipole III Transmission Project Total

	Employees	% of Total Project Employees	Employees	% of Total Project Employees	Employees	% of Total Project Employees	Employees	% of Total Project Employees
Manitoba	1744	34%	1297	26%	1276	25%	4093	81%
Non-Manitoba	603	12%	286	6%	109	2%	969	19%
Cumulative Total	2347	46%	1583	31%	1385	27%	5062	100%

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

The number of employees 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 2016, the Bipole III Transmission Project has employed 253 persons who have worked on multiple components of the Project.

5.1.4 Employment duration

From the onset of the Project to the reporting period ending September 30, 2016, the average employment duration was 5.0 months. Data for the calculation includes both separated and active hires (hires that were still working on September 30, 2016). As of September 30, 2016, 2,293 hires were active. See Table 10 for a breakdown of employment duration.

Table 10 Breakdown of employment duration – Project commencement to September 2016

Measure	Average Employment Duration (Months)			
	Keewatinohk Converter Station	Transmission Line Construction	Riel Converter Station	Bipole III Transmission Project Total
Indigenous	6.1	2.8	4.6	4.7
Non-Indigenous	5.9	2.9	4.9	5.1
Northern Manitoba Indigenous	6.1	2.5	0.0	4.6
Northern Manitoba Non-Indigenous	4.2	2.8	0.0	3.7

Measure	Average Employment Duration (Months)			
	Keewatinohk Converter Station	Transmission Line Construction	Riel Converter Station	Bipole III Transmission Project Total
Manitoba	6.0	2.9	4.8	5.0
Non-Manitoba	5.8	2.6	5.1	4.9
Cumulative Total	6.0	2.8	4.9	5.0

Note: Figures above are not additive.

5.1.5 Type (job classifications) of work available

Total hires by job classification are provided in Table 11 below. In total there were twenty-eight job categories in which 7,008 workers were hired over the span of the Project to September 2016. The top three combined categories as a percentage of total hires were equipment operators (21%), labourers (20%) and "other" (19%). For employee privacy and confidentiality reasons, the numbers of hires by residency cannot be disclosed, as the numbers are low for some of the classifications listed.

Table 11 Total hires by job classification – Project Commencement to September 2016

Classification	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires
Equipment Operators (includes HD Mechanics)	465	7%	834	12%	141	2%	1440	21%
Labourers	440	6%	706	10%	279	4%	1425	20%
Carpenters	298	4%	18	<1%	130	2%	446	6%
Teamsters, Chauffeurs, Warehouseme n and Helpers	193	3%	99	1%	115	2%	407	6%
Catering and Janitorial Staff	256	4%	61	1%	<5	<1%	320	5%

Classification	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires
Electrical Workers	145	2%	31	<1%	121	2%	297	4%
Iron Workers	167	2%	0	0%	61	1%	228	3%
Office and Professional Employees	147	2%	34	<1%	27	<1%	208	3%
Plumbers and Pipefitters	98	1%	<5	<1%	28	<1%	129	2%
Linemen and Associated Collector Line Trades	0	0%	107	2%	19	<1%	126	2%
Rodmen	101	1%	0	0%	23	<1%	124	2%
Roofers	45	1%	0	0%	30	<1%	75	1%
Crane Operators	23	<1%	11	<1%	35	<1%	69	1%
Lathing and Drywall Workers	22	<1%	0	0%	44	1%	66	1%
Insulator Workers	52	1%	0	0%	12	<1%	64	1%
Security Guards	53	1%	<5	<1%	0	0%	54	1%
Sheet Metal Workers	18	<1%	0	0%	29	<1%	47	1%
Painters	23	<1%	0	0%	18	<1%	41	1%
Bricklayers and Allied Craftsmen	13	<1%	0	0%	21	<1%	34	<1%
Cement Masons	25	<1%	0	0%	5	<1%	30	<1%
Floor Covering Installers	17	<1%	0	0%	<5	<1%	21	<1%
Sheeters, Deckers and Cladders	15	<1%	0	0%	5	<1%	20	<1%

Classification	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires	Hires	% of Total Project Hires
Sprinkler System Installers	<5	<1%	0	0%	7	<1%	11	<1%
Boilermakers	10	<1%	0	0%	0	0%	10	<1%
Glass Workers	6	<1%	0	0%	<5	<1%	8	<1%
Refrigeration Workers	<5	<1%	0	0%	<5	<1%	<5	<1%
Elevator Constructors	<5	<1%	0	0%	0	0%	<5	<1%
Other[6]	719	10%	272	4%	312	4%	1303	19%
Cumulative Total Hires	3359	48%	2177	31%	1472	21%	7008	100%

5.1.6 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 businesses 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 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. Business outcomes are measured in terms of direct expenditures of the Project for goods and services.

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

[6] *The "Other" category refers to hires in non-craft job classifications. 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).*

of the Project in nearby communities. 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.

5.1.7 Direct project expenditures

There was $1,672.1 million spent on goods and services for the Project, from its' inception to September 2016.The total construction phase expenditures reported in the EIS were estimated to be approximately$2,115.2[7] million. The subject reporting period represents approximately 79% of the total expenditures made during the construction phase of the Project. Tables 12-14 summarizes the breakdown of total Project purchases to September 2016.

Table 12 Direct purchases to September 2016: 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 Project	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project
Northern Manitoba Indigenous	$34.5	2%	$-	0%	$152.3	9%	$186.8	11%
Northern Manitoba Non-Indigenous	$6.7	0%	$-	0%	$4.5	0%	$11.2	1%
Cumulative Total	$678.1	41%	$387.1	23%	$607.0	36%	$1,672.1	00%

Note: Figures above are not additive.

Table 13 Direct purchases to September 2016: Indigenous and non-Indigenous

Measure	Keewatinohk Converter Station		Riel Converter Station		Transmission Line Construction		Bipole III Project Total	
	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project
Indigenous	$40.8	2%	$0.0	0%	$203.8	12%	$244.6	15%

[7] *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 Project	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project
Non-Indigenous	$637.3	38%	$387.1	23%	$403.3	24%	$1,427.7	85%
Cumulative Total	$678.1	41%	$387.1	23%	$607.0	36%	$1,672.1	100%

Note: Figures above are not additive.

Table 14 Direct purchases to September 2016: Manitoba and non-Manitoba

Measure	Keewatinohk Converter Station		Riel Converter Station		Transmission Line Construction		Bipole III Project Total	
	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project	$ (Millions)	% of Total Project
Manitoba	$450.6	27%	$238.3	14%	$323.2	19%	$1,012.1	61%
Non-Manitoba	$227.5	14%	$148.8	9%	$283.8	17%	$660.0	39%
Cumulative Total	$678.1	41%	$387.1	23%	$607.0	36%	$1,672.1	100%

Note: Figures above are not additive.

5.1.8 Labour income and tax revenue

Labour income is an important indicator of the direct economic impact of a project. Income levels also 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.

5.1.3.1 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[8].Total cumulative labour income earned was approximately $161.1 million up to September 2016. Tables 15-17 lists the breakdown of cumulative labour income earned on the Project.

Table 15 Cumulative labour income to September 2016: 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 Project	Labour Income (Millions)	% of Project	Labour Income (Millions)	% of Project	Labour Income (Millions)	% of Project
Northern Manitoba Indigenous	17.4	11%	2.9	2%	0.2	0%	20.5	13%
Northern Manitoba Non-Indigenous	2.1	1.3%	0.3	0.2%	0.02	0.01%	2.4	1.5%
Total	95.5	59%	44.9	28%	20.7	13%	161.1	100%

Note: Figures above are not additive top to bottom.

Table 16 Cumulative labour income to September 2016: Indigenous and non-Indigenous

[8] *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 Project	Labour Income (Millions)	% of Project	Labour Income (Millions)	% of Project	Labour Income (Millions)	% of Project
Indigenous	28.9	18%	16.8	10%	3.2	2%	49.0	30%
Non-Indigenous	66.5	41%	28.1	17%	17.5	11%	112.1	70%
Total	95.5	59%	44.9	28%	20.7	13%	161.1	100%

Note: Figures above are not additive top to bottom.

Table 17 Cumulative labour income to September 2016: Manitoba and non-Manitoba

Measure	Keewatinohk Converter Station		Transmission Line Construction		Riel Converter Station		Bipole III Transmission Project Total	
	Labour Income (Millions)	% of Project	Labour Income (Millions)	% of Project	Labour Income (Millions)	% of Project	Labour Income (Millions)	% of Project
Manitoba	69.2	43%	38.1	24%	17.1	11%	124.4	77%
Non-Manitoba	26.3	16%	6.8	4%	3.7	2%	36.8	23%
Total	95.5	59%	44.9	28%	20.7	13%	161.1	100%

Note: Figures above are not additive top to bottom.

5.1.9 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 2016 is $125.4 million. The estimate includes $3.5 million in payroll taxes[9], $40.1 million in personal income taxes[10], $9.5million in capital tax, $3.4

[9] *Health and Post-secondary Education Tax is calculated as 2.15 percent of the estimated labour income of $156.2 million.*

[10] *Personal income taxes are paid by individual employees to the federal and provincial governments. Each individual's personal tax situation (and therefore taxes payable) will vary. However, this estimate is based on a range of reasonable assumptions.*

million in fuel tax[11] and $69.0 million in provincial sales tax[12].

[11] *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; provincial taxes of 3.0 cents/litre for propane fuel; provincial and federal taxes of 3.2 cents/litre and 4.0 cents/litre, respectively, for aviation fuel.*

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

6 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 for 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. In the SE monitoring plan the measurable parameters consisted of 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 Worker Interaction Subcommittee (WIS) will remain confidential. However, Manitoba Hydro will continue to use the information provided by community and service providers' representatives on the WIS to assist in identifying areas in which the Corporation 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.

Information related to Project impacts was sought, in part, through the WIS that was established by Manitoba Hydro. The WIS was 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.

WIS members during 2015-16 included Manitoba Hydro, Fox Lake Cree Nation, the Town of Gillam, the RCMP (Gillam Detachment), the Gillam Hospital, and the Gillam School. Other stakeholder members may be identified by the WIS on an as needed basis.

From October 1, 2015 to September 30, 2016, the WIS met four times (January 7, 2016; April 28, 2016; June 23, 2016; and September 22, 2016). During the period, the WIS continued to implement its plans and processes for monitoring and considering areas of community interest regarding potential Project impacts. This included maintaining an ongoing reporting and tracking process for specific

community concerns and incidents identified by or to its members. Through this mechanism, 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 Butnau Road) 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).

Manitoba Hydro activities during the period with relevance to matters discussed by the WIS included: providing a hospital services information sheet developed by the Gillam Hospital (regarding hospital facilities, doctor availability, and related hours) to all workers; instructing Keeyask and Keewatinohk buses/shuttles to park in a designated area away from the airport doors; implementing 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); provision of funding to Manitoba Infrastructure for implementation of an augmented PR 280/PR 290 maintenance program; and, provision of 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.

6.1 Resource use

6.1.1 Trapper education

The furbearer and trapline monitoring program[13] 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 SE nature of the furbearer and trapline monitoring program includes a trapper education component to train 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 SE effects monitored for the subject report relate to traditional and general economic gains.

Initially six potential community RTLs were identified for the monitoring program (Fox Lake Cree Nation, Tataskweyak Cree Nation, Thicket Portage, Wabowden, Cormorant and Opaskwayak Cree Nation). 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.

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

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 October2014 and consisted of trapper training workshops with the participating Community/Youth RTLs. Manitoba Hydro has continued to support the program, involving both Elders and youth on deliverables including the documentation of program meetings and other communications, trapper/community involvement summaries, project mapping, trapper diaries, program results and reports.

During the subject 2015/2016 reporting period, two trapper education courses were conducted, one at Fox Lake Cree Nation 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. In addition, two kick-off meetings were held with Opaskwayak Cree Nation and Thicket Portage.

6.2 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; noise and nuisance effects during construction). The experience of such effects will vary for individuals, families, and communities as a whole.

One 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 electric and magnetic fields (EMF). Manitoba Hydro is in the process of undertaking measurements at a testing site near Dugald, MB to understand electric and magnetic fields associated with the Bipole III HVDC line. 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. Measurements 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.

6.2.1 Public safety - worker interaction

Construction of the KCS and associated facilities requires a sizeable workforce drawn from a wide

geographic area. Neighbouring communities have identified concerns regarding potential adverse effects of increased numbers of construction workers in the area.

The Worker Interaction Subcommittee (WIS), established by Manitoba Hydro, serves as a forum for information sharing and communication related to such effects. 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. 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.

During the period of October 1, 2015 to September 30, 2016, the WIS considered public safety- related concerns identified by members in areas such as traffic safety (e.g., traffic speed and oversized loads on PR 280 and PR 290), 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. In addition, the WIS developed an information sheet for WIS representatives to share with community members as required and finalized a sheet outlining the WIS' process for following up on specific concerns and incidents identified by or to its members. Due to the sensitive nature of the topics addressed, specific information gathered by the WIS will remain confidential.

Manitoba Hydro activities during the period with relevance to matters discussed by the WIS included: communication with contractors regarding concerns raised by WIS members (e.g., notifications to contractors regarding workers' behavior in public and being mindful of others); working with Fox Lake Cree Nation to implement cultural awareness training for short-term contractors; regular updates by WIS members related to the status of the presence of drugs in the communities; and tracking and reporting data on speed trends from newly installed traffic monitoring stations on PR 280 and PR 290. (Additional information on WIS membership, meeting dates, and monitoring activities is provided under Section 5.2 - Community services.)

6.2.2 Transportation

During construction, project effects on road-based travel are 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 on 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 remain regarding traffic safety and road conditions as evidenced by feedback received from WIS activities.

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 May and September of 2016.

Road conditions on PR 280 deteriorated significantly in the spring of 2016. Soft subgrade conditions resulted in the road being nearly impassable at some locations. Traffic safety and road conditions have been a substantial concern expressed by in-vicinity First Nations in a number of forums, including the PR 280 Joint Advisory Committee. 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 (PTH) 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.

The plan was to help reduce wear and tear on the roads and allow Manitoba Infrastructure (MI) to focus on areas requiring increased maintenance. MI is responsible for the existing provincial highway system, including the maintenance and upgrade of PR 280 and PR 290. Monitoring efforts will be

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.

6.2.2.1 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 6-A below shows a typical traffic monitoring station. Figure 6-B shows the locations of the monitoring stations.

Figure 6-A Traffic monitoring station

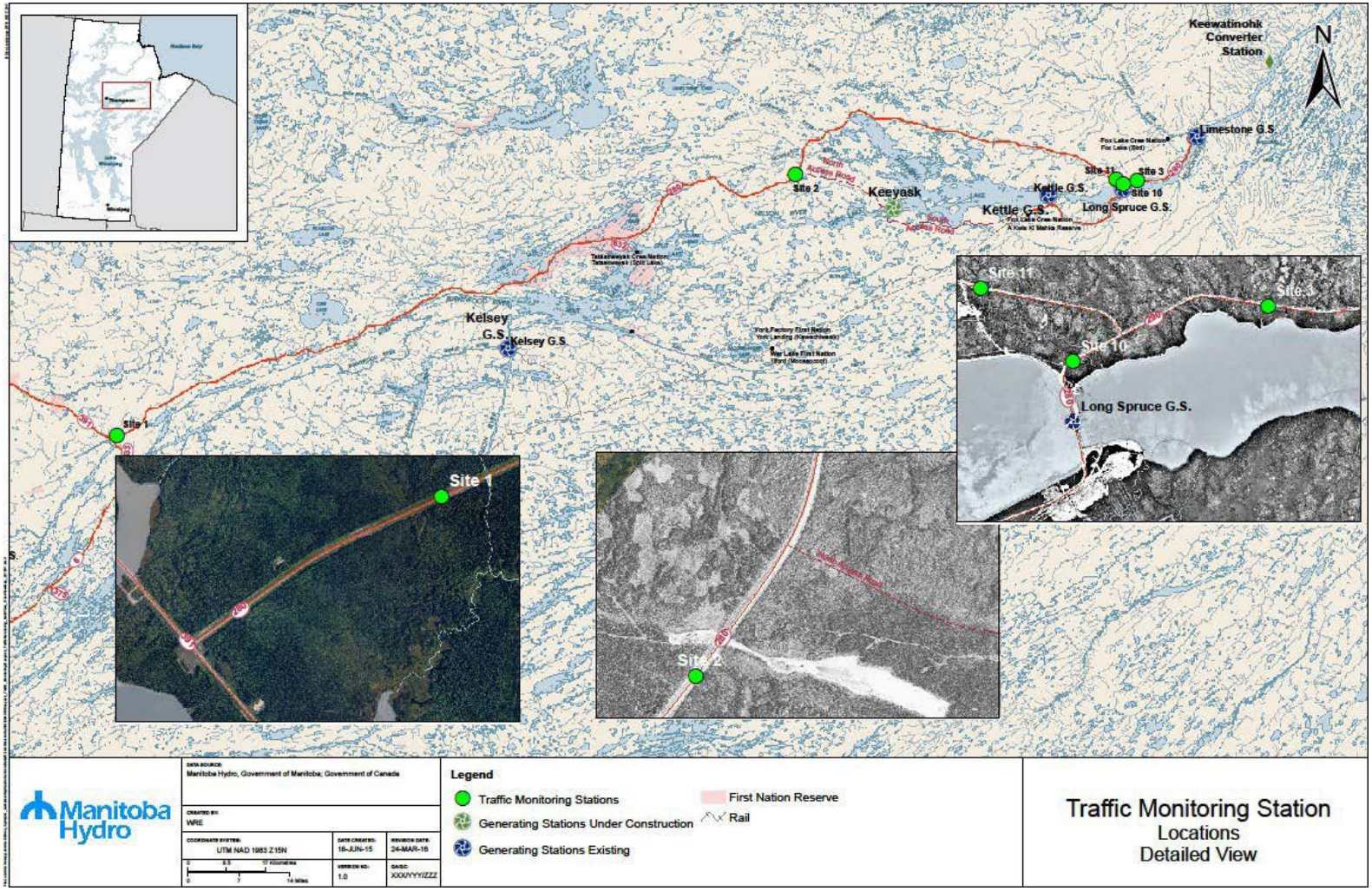


Figure 6-B PR 280 traffic monitoring stations

Traffic volume information was obtained from the Manitoba Highway Traffic Information System 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 Manitoba Highway Traffic Information System 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, PR290 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 8 (combined for northbound and southbound traffic rounded to the nearest five). While there is some variation across years, the 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.

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 6-C.

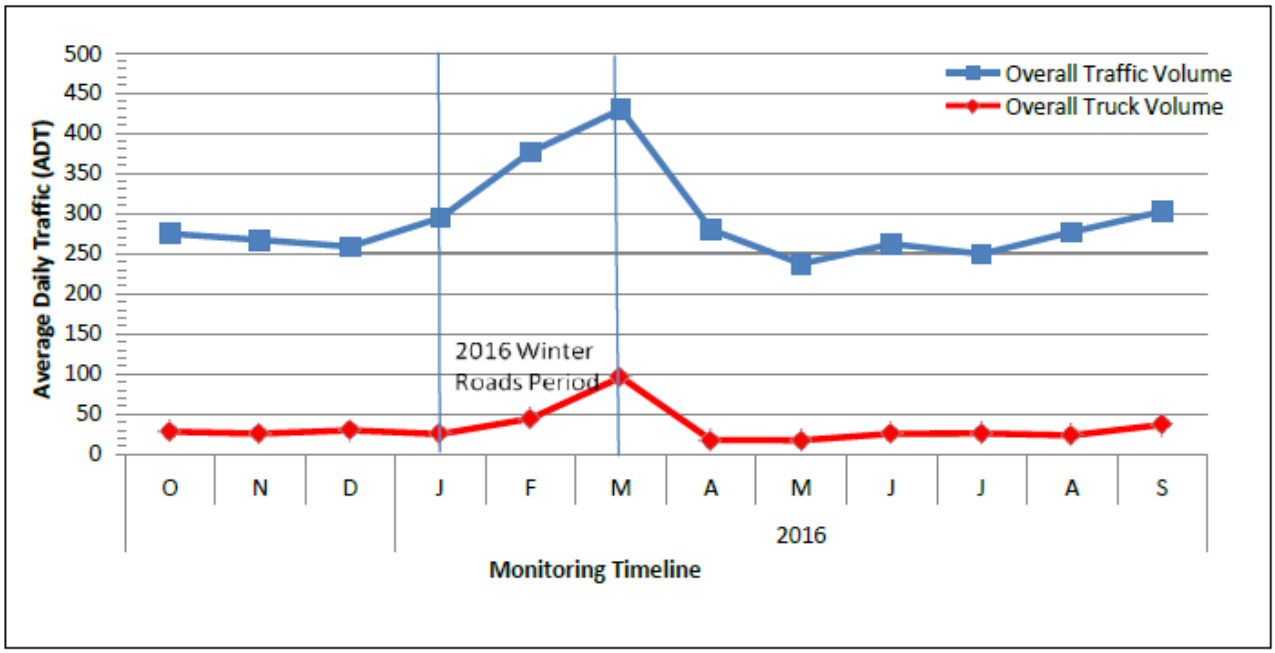


Figure 6-C Total traffic vs truck traffic at site 10 – 2015-2016 monthly variations (both directions combined)

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 Study Area. Table 18 shows the projected traffic volumes to allow comparison with actual counts for the road segments identified. Comparison of traffic counts from the monitoring station located at Site 3 (closest station to the Conawapa Access Road) with gate counts at the site allows construction related traffic to be quantified with regards to overall traffic on PR 290.

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

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 suggest that there is other activity happening between Thompson and Split Lake that is not related to the Project 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.

6.2.2.2 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[14], injury or fatality). There was a total of 88 collisions on PR 280 in the years prior to

[14] *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 damage*

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 (2014-2016) there have been a total of 91 collisions on PR 280; an average of 30 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.

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 90% of all collisions during the analysis period.

6.2.2.3 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 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 2015-2016 year, these two sets of traffic counts indicate that Keewatinohk-related construction traffic accounts for approximately 40% of all traffic on PR 290.

Table 19 provides a summary of vehicle access to the KCS site from October 1, 2015 to September 30, 2016. On average, 93 vehicles per day used the road during the reporting period.

Table 19 Security gate counts at Keewatinohk Converter Station, October 1, 2015 to September 30, 2016

Period	Gate Count Total	Daily Average
Previous Reporting	61,026	96

does not include cracked or chipped windshields.

Period	Gate Count Total	Daily Average	
Periods*			
2015	October	2,482	80
	November	2,578	86
	December	2,604	84
2016	January	3,253	105
	February	2,805	97
	March	3,148	102
	April	3,875	129
	May	2,166	70
	June	2,886	96
	July	2,889	93
	August	2,352	76
	September	2,784	93
	Total	33,822	93

Note: *Gate record keeping began January 6, 2014 Source: Keewatinohk Converter Station Master Gate Log

6.3 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 directly affect heritage resources and 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 Bipole III 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.

6.3.1 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 deal with human remains or cultural and heritage resources discovered or inadvertently 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. During the training sessions, 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 2016 Heritage Monitoring program was to monitor heritage ESS locations that had not yet been cleared. Heritage monitoring activities were carried out on sections N4 throughC2 along the transmission line ROW (see Appendix 1 for map of Project sections).

Summary of heritage assessment for section N4

Seven heritage ESS sites identified through research and ATK feedback were assessed in section N4: five sites identified as heritage ESS locations, and two sites identified in the 2015 program as requiring further investigation (i.e., Bell River and Woody River).

Traditional knowledge had indicated the potential for burial locations in proximity to the Bell River. The surrounding area was examined through pedestrian survey and subsurface testing. All 20 shovel tests were negative for heritage materials and no depressions or mounds that would be indicative of

possible burial locations were observed. While no burial features were noted, it was flagged that caution should be taken while conducting construction activities in the area.

Pedestrian survey and subsurface testing occurred along areas of the Woody River. All six shovel tests were negative for heritage materials and there are no further concerns with this heritage ESS location.

Three sites along the Swan River were investigated, which included a total of 17 shovel tests and extensive pedestrian survey. No heritage resources were identified, and no further heritage concerns were noted with the Swan River locations.

Areas along the Red Deer River were not accessible, and investigation of this location will occur in subsequent monitoring activities.

Summary of heritage assessment for section C1

Twenty-one heritage ESS locations were assessed in 2015-2016, including locations along larger creek crossings.

Subsurface testing and pedestrian surveys were conducted in the area of Bigstone Creek, Wellburns Creek and Cork Cliff Creek at proposed tower locations and open agricultural fields and pastureland. All 13 shovel tests were negative for cultural materials and no heritage resources were identified. These areas were determined to not require further heritage mitigation.

Two sites were not examined through shovel testing as aerial overflight determined that the environmental conditions in the area limited the potential for heritage resources (e.g., marshland, areas of frequent flooding). A large section in C1 had restricted access and was not assessed. This area will require heritage monitoring in the future should access be permitted. At the completion of the 2016 field season there were eight outstanding ESS location assessments.

Summary of heritage assessment for section C2

Heritage monitoring of section C2 was completed in 2015, but further investigation occurred in2016 subsequent to the identification of a potential Red River Cart trail through traditional knowledge studies. The area identified was visited and it was determined that the trail has now become the mile road in the area, and no further heritage concerns remain.

Summary of heritage assessment for sections S1 and S2

Monitoring of tower installation along the Red River (S2) and Assiniboine River (S1) crossings was postponed to 2016-2017, as construction of this section of the line was deferred. The west side of the

Rat River had been inspected in 2015; as the east side was under crop (i.e., corn), it was also deferred to a later date.

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. Please refer to Section 6.3.3 of the Biophysical Monitoring Report for more details.

6.4 Liaising with communities

Many mitigation measures relating to culture focused on continuous dialogue and involvement of local communities to ensure 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.

‘Fur, Feathers, Fins and Transmission Lines’ youth camp

A pilot ‘Fur, Feathers, Fins and Transmission Lines’ youth camp was held August 29 to September 2,2016 at the Sandilands Discovery Centre. Pursuant to a Bipole III licence condition to invest in educational and/or knowledge transfer programs that promote trapping as well as plant harvesting to affected communities, the one week camp included Elder participation and focused on trapping, traditional plant use, environmental monitoring. Eight youth aged 12-16 from Dakota Tipi First Nation, Roseau River Anishinabe First Nation, Swan Lake First Nation and the Manitoba Metis Federation

participated.

Feedback received was highly favourable.

Wabowden

Wabowden community members participated in ground transect surveys during the winter of 2015as part of mammal monitoring along with consultants. Community members snowshoed transects up to one kilometer off the ROW and noted animal track observations to determine the presence and extent of furbearer activity both on and off the ROW.

Opaskwayak Cree Nation

An Opaskwayak Cree Nation community member participated in camera deployment and maintenance for access monitoring for the Project. In addition to the above, a traditional use survey with Opaskwayak Cree Nation Natural Resource Council also occurred as well as a field tour to determine the efficacy of ROW clearing prescriptions.

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 heritage resource monitoring activities in S1 andS2 construction segments. Community members conducted shovel testing, ground surveys and artifact collection.

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. There are currently ten communities that have Environmental Monitors and/or Community Liaisons.

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:

- 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.

7 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 KCS 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 to reduce potential negative effects where feasible; 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.

8 Summary

This report documents SEMP results for the Project from October of 2015 to September 30, 2016. 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 2015/2016 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 81% of direct Project employment was derived within Manitoba, and that 34% of Project employment was Indigenous. To date 38% of the predicted person years of direct employment on the Project had been realized. Approximately 36% of tax revenue predicted to be generated by the Project to date for the province of Manitoba has been realized, and 79% 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 several 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 two trapper education courses (conducted in Fox Lake Cree Nation and Tataskweyak Cree Nation) in preparation for the trapping program and conducted kick-off meetings with Opaskwayak Cree Nation and Thicket Portage.

SE effects monitored in this report are those associated with the trapper education program relating to traditional and general economic gains.

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 continued in collaboration with MI, MPI, and the RCMP to assess EIS predictions and respond to community traffic concerns. Traffic monitoring was conducted to analyze effect of construction activities on the existing road network, specifically PR 280 and PR 290. Trend data on the use of PR 280 and PR 290 has suggested that the trend in traffic volumes was cyclical with an increase occurring from January to March, followed by a decrease later in the spring and flattening out over the summer months. The main driver of the increase in traffic during winter was determined to be small vehicles (i.e., cars, pick-up trucks, vans). It is expected that as Bipole III construction winds down in 2018, the traffic counts over the winter months will decrease.

The results of a comparison between predicted traffic volumes and actual counts indicate that some roads are experiencing higher traffic flows than predicted and others are seeing lower traffic flow.

Actual construction related traffic appears to be trending lower than predicted in the EIS.

There has been a total of 91 collisions on PR 280; an average of 30 collisions per year from the start of construction on the KCS to 2016 (2014-2016). The collision rate for 2016 was 1.20 incidents per MVKT which remains below the industry standard threshold (1.5 incidents per MVKT). Monitoring of traffic volumes on the Conawapa Access Road to the Keewatinohk Converter Station continued in 2016. On average, 93 vehicles per day were logged at the security gate as using the road during the reporting period.

Cultural and heritage monitoring:

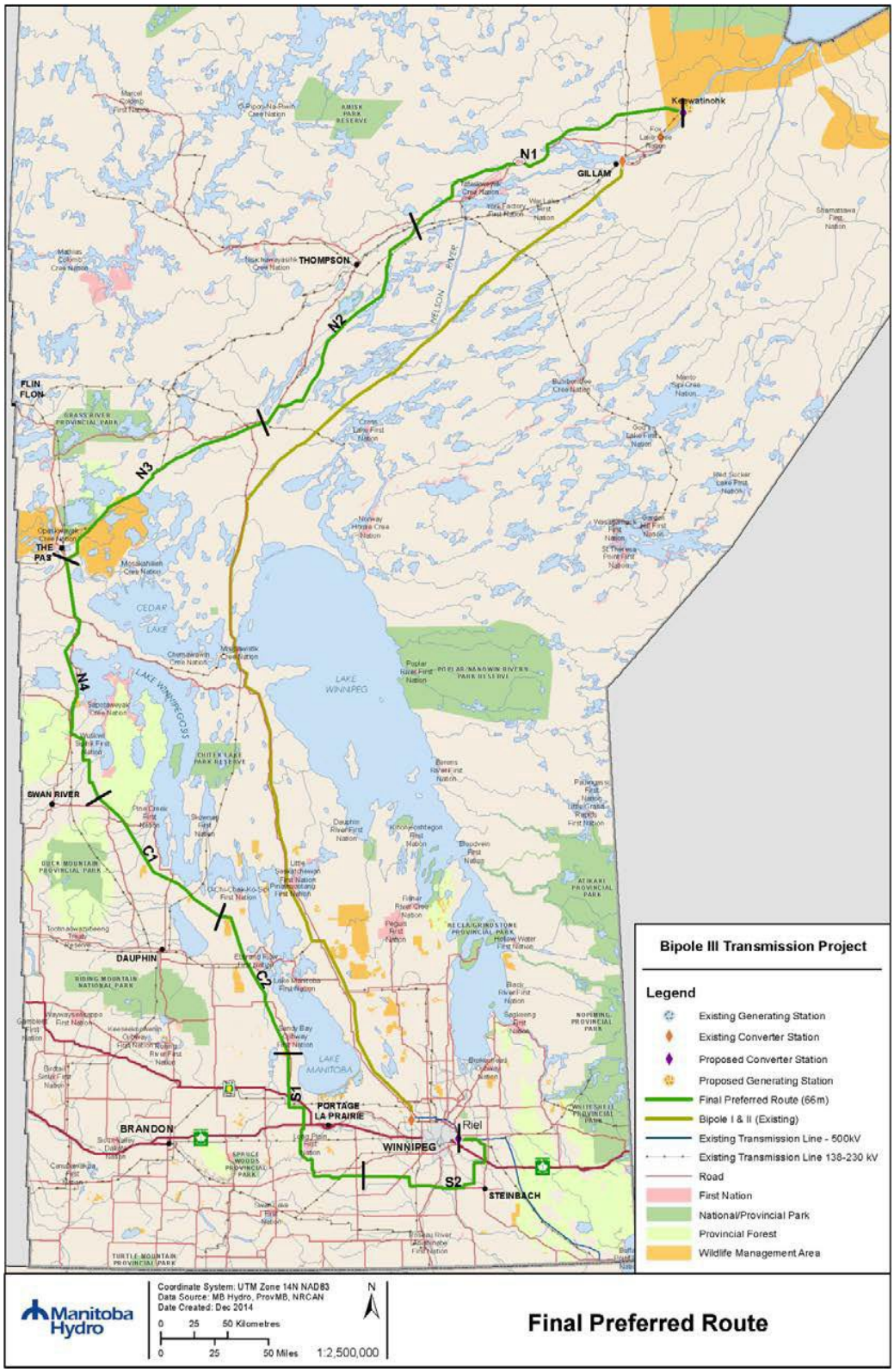
Cultural and heritage monitoring focused on monitoring heritage ESS locations that had not yet been cleared along the transmission line ROW. Heritage monitoring activities were carried out on sections

N4 through C2 over the reporting period. No further heritage concerns were identified for ESS locations in section C2. At the end of 2016, two heritage ESS locations in section C1 were deemed as not requiring further investigation while eight sites were identified as still requiring investigation. Monitoring of tower installation locations along the Red and Assiniboine River crossings (S1 and S2) was postponed to 2016- 2017, as construction of this section of the line was deferred.

The Cowan blueberry site was again the focus of monitoring in 2016. Overall, community members from Pine Creek and Duck Bay, along with Manitoba Hydro staff and the Vegetation team, observed that cover conditions for blueberries had improved over the previous year.

Liaising with communities continued over the reporting period. Activities were undertaken with Wabowden, Opaskwayak Cree Nation, 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. A pilot youth camp held at Sandilands Discovery Centre focusing on trapping, traditional plant use, and environmental monitoring involving youth participants and Elders from Dakota Tipi First Nation, Roseau River Anishinabe First Nation, Swan Lake First Nation and the Manitoba Metis Federation. 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. At the end of the 2015-2016 report period there were ten communities with Environmental Monitors and/or Community Liaisons. 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