

UPDATED KEEYASK TRAFFIC ASSESSMENT

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SOCIO-ECONOMIC SUPPLEMENTAL FILING

The following socio-economic impact assessment supplemental filing contains updated construction traffic analysis for the Socio-Economic Supporting Volume (existing environment and effects assessment); as well as updated text in the Response to EIS Guidelines. There are no changes to operation phase traffic baseline or effects, therefore no supplemental filing is required for those sections.

This updated information relative to construction traffic should replace sections on traffic filed in July 2012; the specific section and page numbers are provided below:

Socio-Economic, Resource Use and Heritage Resources Supporting Volume:

Socio-Economic section:

- Section 5.3.5.2, pgs. 5-136 to 5-141 [existing environment]
- Section 5.4.1.5.2, pgs. 5-194 to 5-201 [effects assessment – construction phase]

Response to EIS Guidelines:

- Section 6.2.3.5.4, pg. 6-164 only [existing environment]
- Section 6.6.5.5.1, pgs. 6-483 and 6-484 only [effects assessment – construction phase]

The percentage of project-related traffic has declined in the updated analysis due to the development of a more realistic projection of background traffic flows based on more current data (i.e., 2011), and more reasonable assumptions for construction personnel travel to and from the Project site.

The updated traffic analysis examines the effects of construction traffic on public roads (PR 280 and PR 391). It does not include traffic effects on private roads or traffic experienced during the operation phase. As a result, the north and south access roads, which will be private during construction, have not been considered in this analysis.

Effects on future hydroelectric developments in the Study Area, such as the Conawapa Generation Project, are addressed in the cumulative effects assessment section included in the Response to EIS Guidelines – there are no changes in this analysis.

Projections of traffic levels during construction are presented in Section 5.4.1.5 of the Socio-Economic Supporting Volume.

SOCIO-ECONOMIC, RESOURCE USE AND HERITAGE RESOURCES SUPPORTING VOLUME

1.0 SOCIO-ECONOMIC, RESOURCE USE AND HERITAGE RESOURCES SUPPORTING VOLUME

1.1 EXISTING ROAD CONDITIONS AND TRAFFIC

1.1.1 Local Study Area

1.1.1.1 Provincial Roadways

The Local Study Area encompasses a large geographic area, is sparsely populated and the distances between communities are quite large as shown in Map 4-1 (Travel Distances in the Local Study Area). Some communities are connected to southern parts of the province by a network of provincially maintained year-round roads. All-weather roads that are open and maintained year-round provide access to the communities of Thompson, Split Lake, Fox Lake (Bird) and Gillam. The roadways relevant to the Project in the Local Study Area include PR 391, PR 280 and PR 290. These roads, in addition to the ice roads used to access the KCNs communities, are shown in Map 4-1. PR 391 runs north and west from the city of Thompson. PR 280 runs from the junction of PR 391 northeast to the Keeyask north access road and onward to the town of Gillam. PR 280 is used to access the communities of Split Lake and Gillam. It also provides access to the ferry landing and ice roads on Split Lake that connect to York Landing and War Lake First Nation at Ilford. PR 290 provides access to Fox Lake (Bird) and the Conawapa site via PR 280.

The following section describes the present condition of roadways and ice roads including their physical attributes, traffic volume and collision statistics for PR 391 and PR 280 within the Local Study Area. In Manitoba, highways under the control of the Minister of Infrastructure and Transportation (MIT) are classified as either Research Transportation Association of Canada (RTAC) routes, Class "A1" or Class "B1" highways¹. Each class of highway has its own specific axle loading and gross vehicle weight limits. Both highways are designated as Secondary Arterial² by MIT, which means that they are designed to carry up to 6,000 vehicles per day depending on their geometric features (Dillon Consulting 2003; ND Lea Engineers and Planners Inc. 2002).

¹Class A1 highways are any Provincial Trunk Highway numbered from 1 to 110 while Class B1 highways have number designations higher than 110 (Government of Manitoba 2010d).

²Primary Arterials provide intra/inter-provincial and international connections and direct service to the most important and larger population centres. Secondary Arterials connect other important population centres (Government of Manitoba 1997).

The Government of Manitoba through MIT has been making improvements to PR 391 and PR 280 for a number of years. In 2002 for example, the Minister of Transportation and Government Services announced that \$700,000 would be invested to add additional gravel on various locations of PR 280 between PR 391 and PR 290 including gravel stabilization on 261 km of road (Government of Manitoba 2002; Keeyask Hydropower Limited Partnership 2009). Since then, the roads in the Local Study Area have undergone regular maintenance and improvements, including road upgrades, signage and pull-offs, which should improve travel on PR 280.

In the 2009 Manitoba Budget Address, the Minister of Finance announced that upgrades would be made to PR 280 between Thompson and Gillam as part of the 2009/2010 Highway Infrastructure Projects. MIT requested that Manitoba Hydro manage upgrades to the roads prior to future hydro development such as the Keeyask Generation Project. The project costs are being shared on a 50/50 basis between Manitoba Hydro and MIT. The detailed design, contract negotiations, and contract management during construction are managed by Manitoba Hydro while MIT is responsible for environmental licensing, land acquisition, and review and approval of designs. MIT continues to own and maintain the roadway as their asset (Government of Manitoba 2009b). The upgrades to PR 280 are being undertaken by Amisk Construction (a joint venture between CNP and Sigfusson Northern). Tasks associated with the upgrades include widening, smoothing and grading (see Section 4.3.5 for additional information).

1.1.1.1.1 PR 391

PR 391 is a two-lane undivided paved roadway with graduated posted speed limits of 50 kph, 70 kph and 90 kph. From the city of Thompson to the Thompson Airport access road, PR 391 is classified as a RTAC Class A1 highway. However, commencing December 1st in any year to the last day of February in the ensuing year, the road is approved as a Seasonal RTAC Route from the city of Thompson and gross vehicle weights (GVW) of 62.5 tonnes are allowed. From March 1 to November 30, the weight limit is reduced to approximately 55 tonnes (Government of Manitoba 2010f).

PR 391 Traffic Volume

Table 5-14 describes PR 391 traffic volume data collected by MIT (as reported by KGS-Acres (2012)) for the years 2005, 2007, 2009 and 2011 as a count for the Average Annual Daily Traffic (AADT¹). This updated analysis presents all data in the form of AADT volumes (the original report presented data in the form of round trips and AADT). The counts, shown in Table 5-14, represent one-way traffic at Traffic Monitoring Station 2151. The AADT on PR 391 for the years 2005 and 2007 range between 760 and 830 vehicles. There is a noticeable increase in the AADT from 2007 to 2011, which may be a result of traffic associated with projects occurring in the area, in particular the construction of the Wuskwatim, Generating Station.

¹AADT represents the number of vehicles passing a particular point on the roadway on an average day of the year (Manitoba Infrastructure and Transportation 2009).

PR 391 Collision Statistics

The collision data presented in Table 5-15 below represents the total collisions that occurred on two control sections of PR 391 (control section 05391010 and control section 05391015), which are between Thompson and PR 280, over the period from 1990 to 2008. In total, 69 collisions were reported along these sections of the highway that would be used during construction of the Project, which works out to an average of nearly four collisions per year. Of these, 51 resulted in property damage, 18 resulted in injuries and there were no reported fatalities (Nicolas, *pers. comm.*, 2013)¹.

Table 5-1: PR 391 Traffic Volume Summary

Year	Average Annual Daily Traffic (AADT)
2005	760
2007	830
2009	1,230
2011	1,190

Source: KGS-Acres 2012.

Notes:

- Traffic volume for PR 391 is observed at Traffic Monitoring Station 2151 (West of Thompson Airport Access and East of PR 280 junction).

Table 5-2: PR 391 Collision History (combined) for Highway Control Sections 05391010 and 05391015 (1990-2008)

Highway Control Sections	Number of Collisions
05391010	1
05391015	68
Total	69

Source: Nicolas *pers. comm.* 2013.

1.1.1.1.2 PR 280

PR 280 is a two-lane undivided roadway constructed with a mix of gravel and asphalt (Dillon Consulting 2003). From its junction with PR 391 to the Town of Gillam, PR 280 is classified as a RTAC Class A1 highway (Government of Manitoba 2010d).

¹ Data for number of collisions is based on unaudited reported traffic collisions on record, provided to InterGroup by MIT.

PR 280 Traffic Volume

Table 5-16 describes the PR 280 traffic volume data collected by MIT from 2005 through 2011. The traffic counting stations used in this report are known as coverage count stations and are short-term traffic count stations that are surveyed on a two-year cycle. On the selected cycle year, coverage count stations are typically surveyed 2 times a year for 48 hours each time. The traffic counting stations were correlated to the appropriate highway section as described in the Methodology Section 5.2. The traffic along each highway section varies. Table 5-16 presents traffic volumes as an average for the portion of the road from the PR 391 junction with PR 280 to the junction with the Keeyask north access road. Average annual daily traffic volumes on PR 280 as shown in Table 5-16 range between 161 and 221 vehicles depending upon the year. The data show a 60 vehicle increase in AADT between 2005 and 2011, an increase of 27%.

Table 5-3: PR 280 Traffic Volume Summary

Year	Average Annual Daily Traffic (AADT)
2005	161
2007	167
2009	180
2011	221

Source: MIT and University of Manitoba. Talled by InterGroup Consultants.

Notes:

- Data for the Average AADT comes from MIT counting stations 2293, 2376, 2377, 2437, 2438, 2441, 2442 between the PR 391 junction and the Keeyask north access road junction.

PR 280 Collision Statistics

To assist in identifying safety issues, the latest available collision data were obtained for PR 280 along the roadway control sections identified in Table 5-17. The collision data covered the period of time from 1990 to 2008. In total, 233 collisions were reported along those control sections of the highway in the Local Study Area. Of these, 147 collisions resulted in property damage and 82 resulted in injuries..

Manitoba Infrastructure and Transportation (2013) reported a total of four fatalities along this road since 1990¹.

¹ MIT indicated that this was the earliest data available for fatalities on this road.

Table 5-4: PR 280 Collision History by Highway Control Section (1990-2004)

Highway Control Section	Total Collisions
05280010	39
05280020	33
05280030	46
05280040	19
05280050	32
05280060	17
05280070	14
05280080	33
Total	233

Source: (Nicolas, *pers. comm.* 2013).

1.1.1.1.3 PR 391 and PR 280 Estimated Background Traffic Volumes (2014-2021)

Table 5-18 presents the projected average background traffic for the summer season and Table 5-19 presents the projected average background traffic for the winter season along four highway sections of PR 391 and PR 280 for the years 2014 to 2021. The traffic counts presented in the table are AADT estimates of the vehicles that would be using the roads assuming no future Keeyask Project.

Highway Section 1 in Table 5-18 and Table 5-19 represents the stretch of PR 391 between Thompson and PR 280. This highway section has the greatest volume of background traffic of all of the highway sections in the Local Study Area. For the summer months, the AADT background traffic is estimated to grow from 3,362 vehicles in 2014 to 4,894 vehicles in 2021. For the winter months, the AADT background traffic for this section of PR 391 is estimated to grow from 2,825 vehicles in 2014 to 4,112 vehicles in 2021.

Highway Section 2 represents the stretch of PR 280 between PR 391 and the Split Lake Junction and the AADT summer traffic for this highway section is estimated to grow from 293 vehicles in 2014 to 413 vehicles in 2021; and in winter the AADT traffic is estimated to range between 246 vehicles in 2014 to 347 vehicles in 2021.

Highway Section 3 represents the stretch of road between the Split Lake junction and the Keeyask junction (where the Keeyask north access road meets PR 280). The AADT summer traffic for this highway section is estimated to grow from 515 vehicles in 2014 to 958 vehicles in 2021, and in winter the AADT traffic is estimated to grow from 432 vehicles in 2014 to 805 vehicles in 2021.

Highway Section 4 represents the stretch of road between the Keeyask junction and PR 290 (north of Gillam). The AADT summer traffic for this highway section is estimated to grow from 103 vehicles in 2014 to 133 vehicles in 2021 and in winter the AADT traffic is estimated to grow from 86 vehicles in 2014 to 112 vehicles in 2021.

Table 5-5: Estimated Background Traffic (Summer: AADT Trips) in the Local Study Area (2014-2021)

	2014	2015	2016	2017	2018	2019	2020	2021
Highway Section 1: PR 391-Thompson to PR 280	3,362	3,580	3,812	4,059	4,253	4,457	4,670	4,894
Highway Section 2: PR280-PR 391 to Split Lake Junction	293	308	325	342	359	376	394	413
Highway Section 3: PR 280-Split Lake Junction to Keeyask Junction	515	595	688	795	833	873	915	958
Highway Section 4: PR 280-Keeyask Junction to PR 290	103	105	108	110	116	121	127	133

Source: Source: Adapted from KGS-Acres 2012 Traffic Analysis for Keeyask and Conawapa Environmental Assessments Memorandum, dated October 24, 2012.

Table 5-6: Estimated Background Traffic (Winter: AADT Trips) in the Local Study Area (2014-2021)

	2014	2015	2016	2017	2018	2019	2020	2021
Highway Section 1: PR 391-Thompson to PR 280	2,825	3,008	3,203	3,411	3,574	3,745	3,924	4,112
Highway Section 2: PR 280-PR 391 to Split Lake Junction	246	259	273	288	302	316	331	347
Highway Section 3: PR 280-Split Lake Junction to Keeyask Junction	432	500	578	668	700	733	769	805
Highway Section 4: PR 280-Keeyask Junction to PR 290	86	88	91	93	97	102	107	112

Source: Source: Adapted from KGS-Acres 2012 Traffic Analysis for Keeyask and Conawapa Environmental Assessments Memorandum, dated October 24, 2012.

EFFECTS ASSESSMENT

2.0 EFFECTS ASSESSMENT

2.1 ROAD-BASED TRAVEL, ACCESS AND SAFETY

Increases in traffic volume due to Keeyask construction activities could affect road conditions and the safety of road users. This section examines the nature, extent and effects of Project-related construction traffic.

2.1.1 Local Study Area

This section examines the effects of Keeyask Generation related traffic on publically-owned and used roads. It focuses on the construction phase, when sizeable amounts of Project-related traffic are generated¹.

During construction, effects on public road travel will stem from increased vehicular traffic associated with delivery of materials, equipment, and construction personnel and travel by construction service providers on public roads in the Local Study Area. Increased traffic volume on public roads could affect the condition of the roads and traffic safety.

Existing roads between Thompson and Gillam along PR 391 and PR 280 will be affected. These are shown on Map 1-1 Socio-Economic Local Study Area. The distance between relevant junctions and communities in the Local Study Area is shown in Table 5-22.

For purpose of assessing the effects of Project-related construction traffic, the potentially affected roadways have been divided into four road sections (see Appendix A-1):

- Road Section 1 (PR 391): Thompson to the PR 280 junction;
- Road Section 2 (PR 280): PR 391 junction to the Split Lake junction;
- Road Section 3 (PR 280): Split Lake junction to the Keeyask north access road junction; and
- Road Section 4 (PR 280): Keeyask junction to PR 290.

PR 290 is not included as Project traffic levels will be very small and will be similar to Road Section 4. No freight traffic is expected on this segment.

Average annual daily background traffic levels (under existing conditions) for these road sections are presented in Section 5.3.5. Due to the seasonal variation of background traffic flow, the estimates for Project-related traffic are shown for both summer and winter.

¹ Operation effects are addressed in Section 5.4.2.5.2 of the original SE SV – there are no changes to that analysis and therefore not included in this supplemental filing.

Effects on Project-related private roads are not included as the north and south access roads will be private roads to the Project site during construction, with traffic restricted by a security gate to those with authorization to use the roads. The north access road, which will have been built as part of the Keeyask Infrastructure Project, will be in place and ready for use from the start of Project construction. The south access road is being built as part of the Project and will be operated as a private road during the construction phase.

A Project Construction Access Management Plan will be in place prior to construction to address access to and use of the north access road and the south access road. Both access roads will remain private until the end of the construction phase, and will be gated to prevent public access..

Project-related traffic will be generated to move freight (equipment and materials), construction workers, contractors and service delivery vehicles providing incidental services. The vast majority of this traffic is expected to travel between Thompson and the Project, along PR 391 to the PR 280 junction and along PR 280 to the north access road junction. A small portion is expected to originate at Long Spruce Siding and Gillam and approach the Project site from the northeast (KGS-Acres 2012). Detailed summer and winter forecasts of Project-related traffic levels were developed to assess the effects of construction traffic on infrastructure and travel safety. The forecasts are based on the following assumptions:

- Project-related traffic would access the main Project site from the north side of the Nelson River via PR 280;
- The Project traffic would travel from Winnipeg, Thompson, Split Lake, Gillam or other communities, before turning onto the north access road;
- All traffic during construction is assumed to access the Project site via PR 280 (KGS-Acres 2012); and
- Travel between the north access road and the south access road across the Nelson River would not occur during the construction phase.

The Project-related traffic projections are organized by three categories:

- Heavy trucks hauling freight;
- Incidental support service vehicles traveling to the camp and construction work areas; and
- Vehicles transporting people to and from the Project site.

2.1.1.1 Freight Traffic

Freight traffic includes heavy transport trucks hauling bulk cement, fuel, reinforcing steel, heavy construction equipment, construction supplies and equipment for installation in the generating station and miscellaneous items associated with the Project. Projected traffic volumes are based on estimates of the amount and size of equipment and materials required for construction and shipped from manufacturers and suppliers to the Project. It does not include traffic to move aggregate materials as this will all occur on roads dedicated to Project traffic, not on public roads.

2.1.1.2 Incidental Service Traffic

Incidental service traffic is intended to cover routine traffic providing various services to the camp and construction work areas. It potentially includes removal of recyclable refuse, mail/courier/package, vendors/suppliers, commercial service vehicles, catering and visitors traveling to and from the site each day. The estimated volumes of traffic for this category were based on experience and judgment. The forecast for incidental service traffic has been assumed to be constant over the duration of the construction phase of the Project, although it may be somewhat lower in years when construction activity is lower (KGS-Acres 2012).

2.1.1.3 Construction Personnel Traffic

The labour force for the Project will be made up of personnel from various local communities, including Thompson, Split Lake, York Landing, Ilford, Gillam (including FLCN), and other northern Manitoba communities. Workers from the south are expected to fly to Thompson or Gillam and then be transported to the Project site by shuttle transportation. Virtually all workers will live at the construction site while on the job. This means most will travel to and from the site at the beginning and end of their work shifts. It has been assumed that personnel will be on a 30-day turnaround (with some frequency of travel in between). It has also been assumed that approximately 75% of the workforce will use the shuttle bus service to and from the Project site. Forecasts for shuttle service and personnel vehicle usage were based on experience and judgement from previous projects; and were calculated based on 2010 manpower estimates (KGD-Acres 2012).

Table 5-22 below summarizes the sources of traffic expected in each road section, based on the assumptions presented above.

Table 5-1: Roadways Used by Project Traffic

<p>Road Section 1: PR 391 - Thompson to PR 280 Junction</p>	<ul style="list-style-type: none"> · All of the freight for the Project · Incidental service vehicles (visitors, commercial service vehicles, vendor/suppliers) traveling from Thompson and south of Thompson · Construction personnel for the Project from Thompson and any point south of Thompson
<p>Road Section 2: PR 280 - PR 391 Junction to Split Lake Junction</p>	<ul style="list-style-type: none"> · All of the freight for the Project · Incidental service vehicles for the Project traveling from Thompson and south of Thompson · All construction personnel for the Project traveling via Thompson (including any point south of Thompson)
<p>Road Section 3: PR 280 - Split Lake Junction to Keeyask North Access Road Junction</p>	<ul style="list-style-type: none"> · All of the freight for the Project · Incidental service vehicles for the Project traveling from Thompson and south of Thompson · All construction personnel for the Project traveling via Thompson and from the Split Lake area (including any point south of Thompson)
<p>Road Section 4: PR 280 - Keeyask North Access Road Junction to PR 290</p>	<ul style="list-style-type: none"> · All of the incidental service vehicles for the Project traveling from Gillam · All construction personnel for the Project traveling from Gillam

Source: KGS-Acres (2012).

Note:

- Personnel traffic attributable to the small number of workers who might fly into Gillam and be transported out to the Project site could not be predicted and is not included.
- PR 290 is not included as Project traffic levels will be very small and similar to Road Section 4. No freight traffic is expected on this segment.

Updated Project-related traffic projections based on the above considerations are presented in Table 5-23 for each road section and season during construction. This table also shows how the projected volumes compare to background volumes and what the combined projected and background volumes are estimated to be (in terms of AADT volumes). Table 5-24 illustrates the percentage increase in traffic on each road section and in each season during construction from Project-related freight traffic, which is the source of greatest concern for wear and tear and road safety (including the potential for accidents with other users of the road).

Table 5-2: Forecast of Combined Background and Project-related Average Annual Daily Traffic During Summer and Winter (2014-2021)

	Road Section 1: PR 391 - Thompson to PR 280 Junction			Road Section 2: PR 280 - PR 391 Junction to Split Lake Junction			Road Section 3: PR 280 - Split Lake Junction to Keeyask North Access Road Junction			Road Section 4: PR 280 - Keeyask North Access Road Junction to PR 290		
	BG Traffic	Project Traffic	BG and Project Traffic	BG Traffic	Project Traffic	BG and Project Traffic	BG Traffic	Project Traffic	BG and Project Traffic	BG Traffic	Project Traffic	BG and Project Traffic
2014 Summer	3,362	16.0	3,378	293	16.0	309.0	515	16.1	531.1	103	3.1	106.1
2014 Winter	2,825	14.3	2,839	246	14.3	260.3	432	14.3	446.3	86	3.1	89.1
2015 Summer	3,580	22.3	3,602	308	22.3	330.3	595	22.5	617.5	105	3.4	108.4
2015 Winter	3,008	15.1	3,023	259	15.1	274.1	500	15.3	515.3	88	3.2	91.2
2016 Summer	3,812	54.5	3,867	325	54.5	379.5	688	55.3	743.3	108	4.1	112.1
2016 Winter	3,203	21.5	3,225	273	21.5	294.5	578	21.9	599.9	91	3.4	94.4
2017 Summer	4,059	54.1	4,113	342	54.1	396.1	795	54.9	849.9	110	4.2	114.2
2017 Winter	3,411	20.4	3,431	288	20.4	308.4	668	20.6	688.6	93	3.4	96.4
2018 Summer	4,253	34.5	4,288	359	34.5	393.5	833	35.1	868.1	116	3.8	119.8
2018 Winter	3,574	20.7	3,595	302	20.7	322.7	700	21.0	721.0	97	3.4	100.4
2019 Summer	4,457	22.6	4,480	376	22.6	398.6	873	22.9	895.9	121	3.4	124.4
2019 Winter	3,745	19.0	3,764	316	19.0	335	733	19.3	752.3	102	3.4	105.4
2020 Summer	4,670	17.1	4,687	394	17.1	411.1	915	17.3	932.3	127	3.2	130.2
2020 Winter	3,924	16.5	3,941	331	16.5	347.5	769	16.6	785.6	107	3.2	110.2
2021 Summer	4,894	4.8	4,899	413	4.8	417.8	958	4.8	962.8	133	-	133.0
2021 Winter	4,112	6.0	4,118	347	6.0	353.0	805	6.0	811.0	112	0.0	112.0

Source: Adapted from KGS-Acres 2012 Traffic Analysis for Keeyask and Conawapa Environmental Assessments Memorandum, dated October 24, 2012.

Notes: BG=background. These numbers represent Average Annual Daily Traffic by road section. The analysis is based on the 85% freight by truck scenario, which was considered to be the traffic volume scenario as compared to the 15% freight by truck scenario also contained in the KGS-Acres 2012 report.

Table 5-3: Percentage Increase in Traffic Resulting from Project-related Average Annual Daily Traffic During Summer and Winter (2014-2021)

	Road Section 1: PR 391 - Thompson to PR 280 Junction		Road Section 2: PR 280 - PR 391 Junction to Split Lake Junction		Road Section 3: PR 280 - Split Lake Junction to Keeyask North Access Road Junction		Road Section 4: PR 280 - Keeyask North Access Road Junction to PR 290	
	% Increase due to Project Traffic	% Freight in Project Traffic	% Increase due to Project Traffic	% Freight in Project Traffic	% Increase due to Project Traffic	% Freight in Project Traffic	% Increase due to Project Traffic	% Freight in Project Traffic
2014 Summer	0%	19.4%	5%	19.4%	3%	19.3%	3%	0.0%
2014 Winter	1%	14.0%	6%	14.0%	3%	14.0%	4%	0.0%
2015 Summer	1%	33.6%	7%	33.6%	4%	33.3%	3%	0.0%
2015 Winter	1%	13.2%	6%	13.2%	3%	13.1%	4%	0.0%
2016 Summer	1%	61.8%	17%	61.8%	8%	60.9%	4%	0.0%
2016 Winter	1%	27.9%	8%	27.9%	4%	27.4%	4%	0.0%
2017 Summer	1%	60.4%	16%	60.4%	7%	59.6%	4%	0.0%
2017 Winter	1%	27.5%	7%	27.5%	3%	27.2%	4%	0.0%
2018 Summer	1%	46.4%	10%	46.4%	4%	45.6%	3%	0.0%
2018 Winter	1%	25.1%	7%	25.1%	3%	24.8%	4%	0.0%
2019 Summer	1%	31.9%	6%	31.9%	3%	31.4%	3%	0.0%
2019 Winter	1%	21.6%	6%	21.6%	3%	21.2%	3%	0.0%
2020 Summer	0%	22.8%	4%	22.8%	2%	22.5%	3%	0.0%
2020 Winter	0%	20.0%	5%	20.0%	2%	19.9%	3%	0.0%
2021 Summer	0%	0.0%	1%	0.0%	1%	0.0%	-	-
2021 Winter	0%	20.0%	2%	20.0%	1%	20.0%	0.0%	0.0%

Source: Adapted from KGS-Acres 2012; Tallied by InterGroup Consultants Ltd.

The largest increase in traffic is expected to occur during the summer seasons during the peak construction periods. As shown in Table 5-23 the greatest overall amount of Project-related traffic in the summer season is expected to occur in the summers of 2016 and 2017, with the former experiencing the highest volumes. The greatest amount of Project-related winter traffic is expected to occur in winter 2016 and 2018, with the highest levels reached in the winter of 2016. While traffic levels are higher in summer than winter, winter driving conditions are typically more hazardous. Overall, Road Section 2 will experience the largest percentage increase in Project-related traffic.

For Road Section 1 (PR 391 - Thompson to PR 280 Junction), the expected volume of traffic in Summer 2017 based on normal traffic growth is 4,059 vehicles/day and the number of Project-related vehicles using this road is expected to add another 54.1 vehicles for a total of 4,113 vehicles/day during the core construction period. Of those Project-related vehicles, 61% of them are expected to be freight vehicles while the remainder of traffic will come from incidental service and personnel vehicles (shown in Table 5-24). The overall increase due to Project traffic on this section is 1% or less in all periods. As, noted in the existing environment Section 5.3.5, PR 391 is designed with a capacity of up to 6,000 vehicles per day. The increase in traffic on the road as a result of the Project should be readily accommodated by the road design.

During the peak construction period (summer 2017) on Road Section 2 (PR 280 – from the junction with PR 391 to the Split Lake junction), the expected background traffic volume is estimated to be 342 vehicles/day, and the number of Project-related vehicles using this road is expected to add another 54.1 vehicles for a total of 396 vehicles/day during the core construction period. This is an increase of 16% over the expected background traffic. Of the Project-related traffic, approximately 32 vehicles (60%) are expected to be trucks transporting freight. The remainder of the vehicles will be incidental service and personnel vehicles. On Road Section 2, the Project is expected to increase the number of vehicles on the road in summer months in excess of 10% in years 2016 (17%) and 2017 (16%). During the winter months Project-related traffic will increase the number of vehicles on the road and will peak at 8% in the winter of 2016 (with 28% of that Project traffic being attributable to freight).

Road Section 3 (PR 280 - Split Lake junction to the Keeyask north access road junction) is expected to experience the greatest amount of combined Project-related traffic. Road Section 3 will have three types of Project vehicles traveling along it including: heavy trucks hauling freight, incidental support service vehicles traveling to the camp and construction work areas and personnel vehicles transporting people to and from the Project site. In Summer 2017, the expected background traffic volume is estimated to be 795 vehicles/day, and the number of Project-related vehicles using the road is expected to add another 55 vehicles for a total of 850 vehicles/day during the core construction period. As mentioned above, Road Section 3 will see the greatest total amount of Project traffic in Summer 2017 with 60% of the Project traffic made up by freight traffic and the remainder (40%) will be attributable to personnel traffic. On Road Section 3, the Project is not expected to increase the number of vehicles on the road in excess of 10% in both summer and winter seasons. As construction ramps up, the increase in Project traffic on Road Section 3 is expected to be approximately 4% in summer 2015 and is expected to reach a peak of 8% in the summer of 2016. The greatest increase in traffic due to the Project in the winter months is expected to occur in 2016 when the Project is estimated to increase traffic by 4% (with 27% of that Project traffic being attributable to freight).

On Road Section 4 (PR 280 – the Keeyask north access road junction to PR 290) during the peak construction period, the expected background traffic volume is estimated to be 110 vehicles/day, and the number of Project-related vehicles using this road is expected to add another 4 vehicles for a total of 114 vehicles/day. In Summer 2017, this is an increase of 4% over the estimated background traffic. The only Project traffic expected to travel along this road section is incidental service and personnel vehicles. Road Section 4 is not expected to have an increase in traffic volume in excess of 10%. None of the Project-related traffic is expected to be from freight vehicles.

In summary, the percentage increases in traffic due to the Project on Road Sections 1, 2, 3, and 4 is low and should be accommodated by the roadway design tolerances. Road Section 2 has percentage increases in traffic from Project-related traffic that exceed 10% at peak times although the total volume of background and Project-related traffic is well below the roadway design tolerances.

Local residents and regular haulers already travelling these routes are likely to notice the increase in the number of vehicles that they meet or have to travel behind or pass. This increases concerns about the potential for accidents to occur. As well, many of the Project-related vehicles will be large trucks. TCN interviewees have noted that large trucks travelling on PR 280 can stir up large amounts of dust reducing driving visibility and can be intimidating to drivers of smaller vehicles (CNP *pers. comm.* 2011). Other KCNs Members and residents of the Local Study Area have expressed concern about the safety and conditions of PR 280 prior to the improvements, citing numerous examples of damaged windows and vehicles, traffic accidents as well as concern about dust from trucks causing visibility hazards. Concerns have also been raised that added traffic could increase collisions with wildlife trying to cross the road. Speed restrictions and additional signage where the risk of such collisions is greatest have been identified as ways of reducing such collisions. At the time of submission, it was not known whether planned road improvements will fully address the concerns voiced by the KCNs.

RESPONSE TO EIS GUIDELINES

3.0 RESPONSE TO EIS GUIDELINES

3.1 EXISTING ENVIRONMENT

3.1.1 Road Travel

The Local Study Area encompasses a large geographic area between Thompson and north of Gillam. The main roadway and travel distances in this area are shown in Map 4.1 of the Socio-Economic Baseline of the Keeyas EIS (appended). Prior to 1979-1981 there was no KCNs road access. Today, all-weather roads that are open and maintained year-round provide access to the communities of Thompson, Split Lake, Fox Lake (Bird) and Gillam. Ilford can be accessed year-round by rail line and air (weather permitting) and in the winter by winter road. York Landing is accessible by ferry during the open water season and by winter road for several weeks in the winter, as well as by air year-round (when weather conditions enable landing and takeoff). YFFN Members rely on various transportation modes to travel to Split Lake and Thompson on a regular basis (*e.g.*, weekly and/or daily). YFFN have expressed concerns about the reliability and safety of the winter road which affects overall access to York Landing (see Transportation Infrastructure above) (YFFN KPI Program 2009-2010).

PR 391 and PR 280 are the main roadways in the Local Study Area. The Average Annual Daily Traffic on PR 391 for the years 2005, 2007, 2009 and 2011 ranges between 760 and 1,230 vehicles. Traffic volumes on PR 280 vary, but the average annual daily traffic for the years 2005, 2007, 2009 through 2011 range between 161 and 221 vehicles depending upon the year and the section of road. KCNs Members have expressed concern over the existing conditions of PR 280, noting high levels of dust and poor road conditions. In addition, vehicle damage (particularly cracked windshields) is a common issue related to PR 280. Over the past several years, the Government of Manitoba through the Department of Infrastructure and Transportation (MIT) has been making improvements to roadways, signage, and pull-offs along PR 280 (see Section 5.3.5 SE SV).

3.2 EFFECTS ASSESSMENT

3.2.1 Road Travel

During construction, the Project will generate road traffic, including delivery of materials, equipment and personnel to the Project site (including construction workers, contractors and suppliers).

Noteworthy effects on public roads will occur during constructions along PR 391 from Thompson to the junction with PR 280 and along PR 280 to the junction with the north access road. PR 280 beyond the Keeyask north access road junction and PR 290 will experience minimal effects. The north and south access roads will be privately-owned during construction with restricted and controlled use.

Section 5.4.1.5 of the SE SV provides updated detailed traffic projections with and without the Project. Background or existing traffic levels are generally low for a typical provincial road, and Project-related traffic will increase these levels over most construction years by 1- 10%, with the exception of 17% and 16% increases on PR 280 to the Split Lake junction in the summers of 2016 and 2017, respectively (KGS-Acres 2012). The following focuses on the peak construction period of 2015 to 2019 between the junction of PR 391 and PR 280 and the north access road junction accessing the Project Site (see SE SV section 5.4.1.5):

- Between PR 391/280 junction near Thompson and the Split Lake junction, traffic is expected to increase 6- 17%, with the summer months producing the largest volumes. Volumes during winter months will be lower; however, road conditions will be more difficult. Freight transport by truck is expected to produce the greatest wear and tear on the road and road safety, and accounts for 13-62% of the increased Project-related traffic.
- Between the Split Lake junction and the Keeyask north access road junction, traffic is expected to increase 3-8% (depending on the construction year and season). Freight traffic will account for 13-61% of the increased Project-related traffic.

In anticipation of increased traffic levels associated with the Project, improvements were initiated by MIT in 2011 at several locations on PR 280 prior to the Project, including widening, curve shaping and grade improvements. Road improvements will continue to be made in 2012 to complete the MIT activity prior to Project construction. KCNs Members have expressed concern about the safety and conditions of PR 280, citing numerous examples of damaged windows and vehicles, traffic accidents as well as concerns over dust from trucks creating visibility hazards (see Section 6.6.4 for information related to road infrastructure). At the time of writing, the concerns identified by the KCNs continue as not all improvements had been completed.

A Keeyask Generation Project Construction Access Management Plan has been developed for the operation of the north access road and for construction and operation of the south access road¹. Restrictions on who is authorized to travel on the north access road is included in the KIP AMP and will

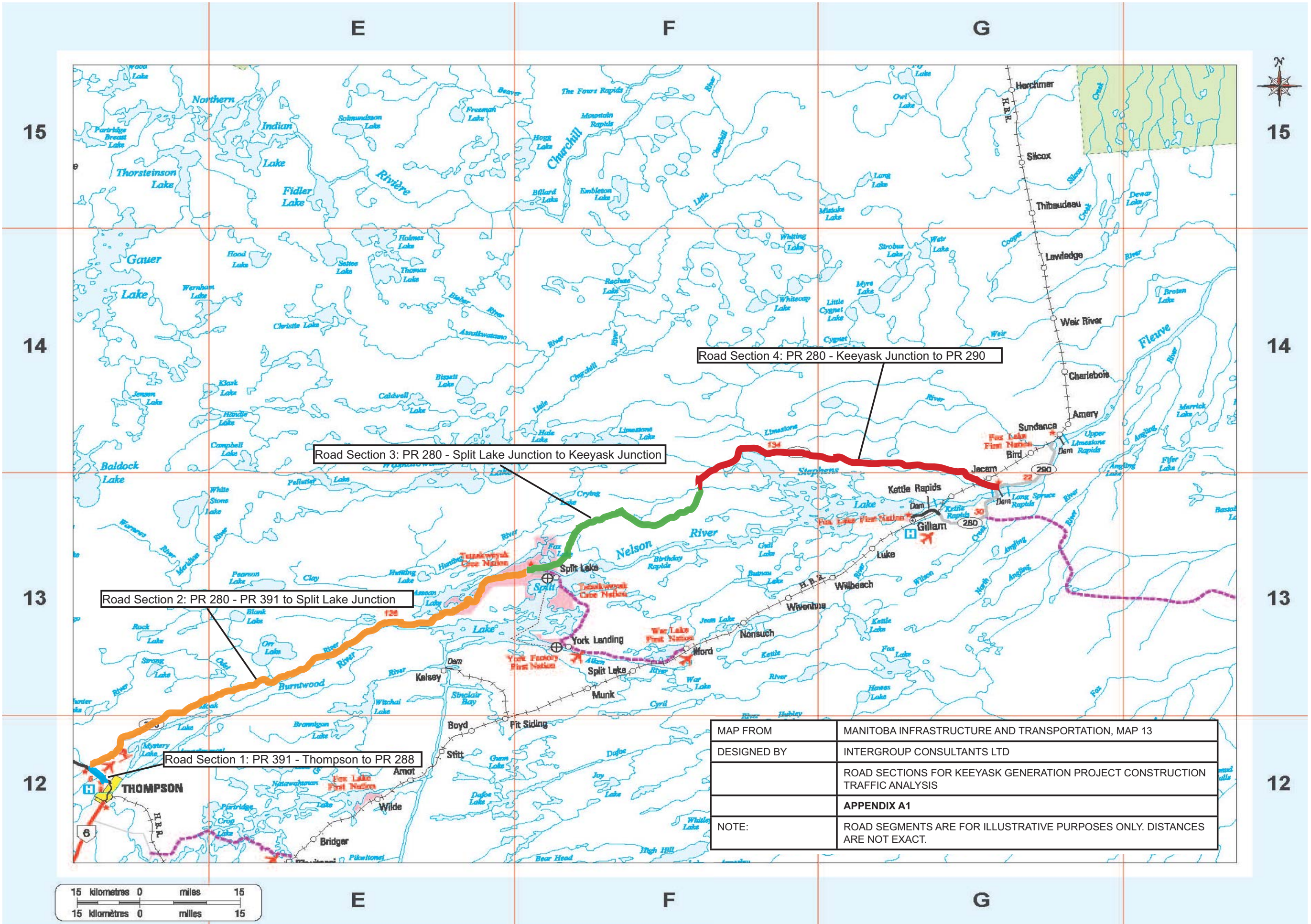
¹ The AMP is anticipated to be filed in the spring of 2013.

be included in this Project's AMP, as well as restrictions on bringing firearms, boats, ATVs and snowmobiles to site. The north and south access roads will be private access roads during the construction phase, with traffic restricted by a security gate on both access roads to restrict use of the access roads by the public. Permission to use the access roads will be granted to those with authorization to access the Project site, including workers, contractors, suppliers, representatives of the KHLP and eligible resource users (as outlined in the Construction Access Management Plan).

MIT may need to consider implementing increased signage during peak construction seasons (May through October) to advise motorists to expect increases in traffic. The Partnership will track statistics collected by MIT on traffic-related incidents and complaints on PR280. If traffic incidents and/or complaints have increased considerably, the Partnership will dialogue with MIT to determine if additional mitigation measures are appropriate (see Chapter 8).

APPENDIX A-1

ROAD SECTIONS FOR KEYYASK GENERATION PROJECT CONSTRUCTION TRAFFIC ANALYSIS



Road Section 2: PR 280 - PR 391 to Split Lake Junction

Road Section 3: PR 280 - Split Lake Junction to Keeyask Junction

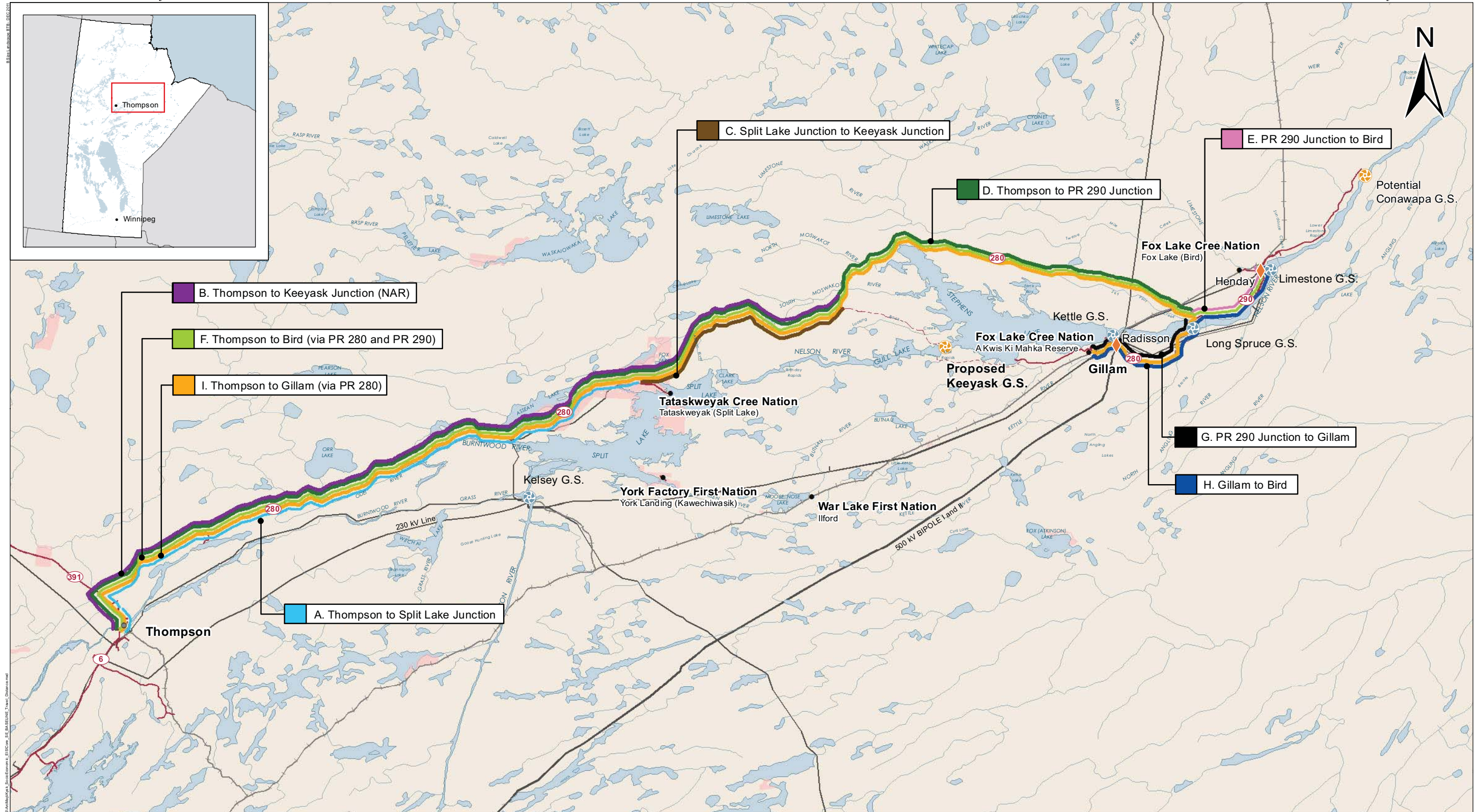
Road Section 4: PR 280 - Keeyask Junction to PR 290

Road Section 1: PR 391 - Thompson to PR 288

MAP FROM	MANITOBA INFRASTRUCTURE AND TRANSPORTATION, MAP 13
DESIGNED BY	INTERGROUP CONSULTANTS LTD
	ROAD SECTIONS FOR KEYASK GENERATION PROJECT CONSTRUCTION TRAFFIC ANALYSIS
	APPENDIX A1
NOTE:	ROAD SEGMENTS ARE FOR ILLUSTRATIVE PURPOSES ONLY. DISTANCES ARE NOT EXACT.

APPENDIX A-2

TRAVEL DISTANCES IN LOCAL STUDY AREA



	DATA SOURCE: Manitoba Hydro, NTS, Stantec Consulting Ltd.		Legend Road Segment A Thompson to Split Lake Junction B Thompson to Keyask Junction (NAR) C Split Lake Junction to Keyask Junction D Thompson to PR 290 Junction E PR 290 Junction to Bird F Thompson to Bird (via PR 280 and PR 290)	Distance (km) 135.4 182.7 47.3 269.5 23.2 292.7	Road Segment G PR 290 Junction to Gillam H Gillam to Bird I Thompson to Gillam (via PR 280)	Distance (km) 29.8 53.0 299.3	<h2>Travel Distances in Local Study Area</h2>	
	CREATED BY: Stantec Consulting Ltd.							
	COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 16-DEC-10						REVISION DATE: 18-MAY-12
		VERSION NO.: 1.0						QA/QC: GS/YY/MWZ

Map 4-1