THE CASE FOR THE NUNAVUT-MANITOBA HIGHWAY
(NUNAVUT-MANITOBA ALL-WEATHER ROAD BUSINESS CASE)

Submitted to:

Nunavut Department of Economic Development and Transportation & Manitoba Infrastructure and Transportation

FINAL REPORT
FEBRUARY 2010

NISHI-KHON/SNC-LAVALIN
EXECUTIVE SUMMARY

In 2005, the Kivalliq Inuit Association (KIA), together with the governments of Nunavut (NU) and Manitoba (MB), commissioned Nishi-Khon/SNC-Lavalin (NKSL) to carry out a two-year multidisciplinary study to determine the best location for a road route linking the community of Rankin Inlet to the Port of Churchill and the existing all-weather road transportation network in Manitoba, and thence to Canada’s National Highway System. The study was completed in November 2007 with the recommendation of a preferred route connecting Rankin Inlet to Manitoba PR 290 at Sundance (near Gillam). Links from the main stem of the preferred route provide connections with Whale Cove and Arviat in Nunavut, and Churchill in Manitoba (see Exhibit ES-1). The preferred route will have a total length of 1,100 km, to be constructed initially to an all-weather two-lane pioneer arterial gravel road standard. The study concluded that the all-weather road (AWR) could, subject to government priorities and budget availability, reasonably be completed in 20 years, including five years of road development from feasibility study, environmental impact assessment, functional and detailed engineering, financial modelling, and land assembly, to permit application and approvals.

In 2008, NKSL was retained by the Nunavut and Manitoba to conduct a Business Case Study for the proposed AWR to provide decision makers and stakeholders with a clear understanding of the value, risks and priority of the AWR development. This Business Case Report documents the findings from this study.
PROBLEM DEFINITION

The existing transportation network in the study area is characterized by a severely constrained system serving a small population. Low population density, vast distances between communities and extreme climate have resulted in high costs of goods, materials and labour compared to the rest of Canada. Nunavut is the only territory in Canada with no direct road link to the National Highway system. In Kivalliq, in the absence of public roads between the communities and connecting to the rest of Canada, the region is almost wholly dependent on air and seasonal marine services for goods transport and passenger travel. Some goods are moved between Churchill and the Kivalliq communities in the winter via a private operation that moves tractor-drawn sleds over sea ice along the western shore of Hudson Bay. In northern Manitoba, the existing all-weather road network ends at PR 290 near Sundance. The Port of Churchill is connected by the Hudson Bay Railway to Sundance and the south west.

Specific transportation issues and challenges in the context of a road link between Nunavut and northern Manitoba can be summarized as:

- remote communities with no or limited road infrastructure
- low population density and small markets
- high construction and maintenance costs
- long distances between communities
- extreme climate and difficult terrain

Nunavut and northern Manitoba are mineral rich areas. Nunavut has a new gold mine at Meadow bank and is undergoing significant mineral exploration. Lack of a public road system is a constraint on mineral exploration and mining development because of high access and resupply costs.

PREFERRED ROUTE FOR ALL-WEATHER ROAD

As concluded in the Nunavut-Manitoba Route Selection Study\(^1\), of the three route alternatives developed in the Route Selection Study, the Eastern Alternative shortlisted is considered the preferred route for the proposed all-weather road (AWR). The rationale for selecting this preferred route can be summarized as follows:

- Most effective, safe and reliable route from Rankin Inlet, Whale Cove and Arviat to Churchill and Thompson in light of its length, the terrain, the lowest construction and maintenance costs and ease of staging;
- Strong support from directly affected communities along the route;
- Moderate environmental impact due to shortest length of new road construction and avoidance of most protected areas\(^2\);
- Greatest potential for early extension of the National Highway System north from Thompson (the northern terminus of Provincial Trunk Highway 6) to Churchill and Nunavut and in so doing, to address inter-jurisdictional trade opportunities, national sovereignty and security needs.

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\(^2\) Except the Bradshaw Lake area of special interest (ASI), the width of the Great Beach on which the route is located through this protected area appears to be sufficient to allow for adequate mitigation of impacts along this feature.
BENEFIT COST ANALYSIS

In the earlier Route Selection Study, a direct benefit cost analysis was conducted for each of the route alternatives. The life-cycle cost of the proposed road (including engineering, construction, maintenance and salvage value over a 25-year project life) was compared to the direct user benefits in the terms of cost, time and safety benefits associated with the various modes of freight and passenger travel along the corridor. Under this analysis, the benefit-to-cost ratios were determined to be 0.32, 0.30 and 0.25 respectively for the Eastern, Central and Western Alternatives.

To build on this analysis and to provide decision makers and stakeholders with a clear understanding of the value, risks and priority of AWR development, an Economic Impact Assessment and a revised benefit cost analysis was conducted in this Business Case Study. Two development scenarios were evaluated to reflect alternate futures for resource development, including potential mining, gas and hydro-electric power development. While future resource development scenarios could include any one of these resources, most of the current activity is focused around mining. Assessing the economic viability of individual resource developments is beyond scope but for analysis purposes, two development scenarios (low and high) are assumed in order to calculate a range of potential benefits and their linkage to a new AWR. In both scenarios it was assumed that the AWR connects Rankin inlet to Churchill and Sundance MB; also it is extended from Rankin inlet to Baker Lake.

**Low Scenario**

- Using Howe’s conclusion that the road may have negligible impact on mining operations, this scenario assumes no incremental mining activity follows from construction of the AWR and that benefits to existing mines would be negligible.
- Economic viability of existing mines is premised on the existing transportation system (i.e. passenger transport by air and bulk transport by water and winter road).
- Road transport is concerned only with access to the nearest water body. Ore bodies located a long distance from navigable waters are unlikely to be economical.

**High Scenario**

- Economic benefits are based on the premise that a new AWR would open up a larger area for exploration as well as increase the economical viability as well as the catchment area for mines or other resources.
- Assume a total of three unspecified new resource developments (mines, oil and gas, hydro etc.), including two in Nunavut and one in Manitoba.
- Resource developments are assumed to be of the scale of the Meadowbank mine development north of Baker Lake ($1.9 billion in exploration, development, production and reclamation over about 20 years or about $90 million/year for one resource development).

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4 A mining sector review conducted by NKSL in the summer of 2008 indicated 45 active exploration properties in the study area in Nunavut, with the most active project, the Meadowbank Gold mine, scheduled to start production in 2010.

Based on this revised Benefit Cost Analysis, the project returns an estimated B/C ratio of 0.66 to 0.69 (for the high and low development scenarios respectively) at a 10% discount rate (see Exhibit ES-2). At a discount rate of 6%, the provincially accepted investment return for Manitoba, the B/C ratio is 1.13 and 1.20 respectively for the two scenarios. By comparison with other rural highway projects, the AWR returns benefits similar to other projects with an Average Annual Daily Traffic (AADT) in the 3,000 to 5,000 range even though the AADT on this AWR is projected to be less than 1,000. This reflects the impact of social benefits not normally seen in other mature highway systems.

Exhibit ES-2: Benefit Cost Analysis Nunavut Manitoba All-Weather Road\textsuperscript{6}
(including Rankin Inlet-Baker Lake Segment)

<table>
<thead>
<tr>
<th>ACCOUNT</th>
<th>Scenario</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COSTS ($millions)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction + Engrg.</td>
<td>Present Values $2009</td>
<td>$679</td>
<td>$679</td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
<td>$25</td>
<td>$25</td>
</tr>
<tr>
<td>Salvage</td>
<td>($61)</td>
<td>($61)</td>
<td></td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td></td>
<td>$643</td>
<td>$643</td>
</tr>
<tr>
<td><strong>BENEFITS ($millions)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freight</td>
<td>Nunavut</td>
<td>$80.1</td>
<td>$80.1</td>
</tr>
<tr>
<td>Passenger</td>
<td></td>
<td>$4.7</td>
<td>$4.7</td>
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<tr>
<td>Accident Cost Savings</td>
<td></td>
<td>($1.2)</td>
<td>($1.2)</td>
</tr>
<tr>
<td>Reduced Social Dependency due to increased employment in:</td>
<td>Road Const. &amp; Mtce</td>
<td>$83</td>
<td>$83</td>
</tr>
<tr>
<td></td>
<td>Mining Activity</td>
<td>$0</td>
<td>$20</td>
</tr>
<tr>
<td></td>
<td>Increased Wages and Employment after 2027 completion</td>
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<td>$227</td>
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<tr>
<td>Nunavut Benefits Total</td>
<td></td>
<td>$394</td>
<td>$413</td>
</tr>
<tr>
<td>Manitoba</td>
<td>Freight</td>
<td>$0.0</td>
<td>$0.0</td>
</tr>
<tr>
<td>Passenger</td>
<td></td>
<td>$0.2</td>
<td>$0.2</td>
</tr>
<tr>
<td>Accident Cost Savings</td>
<td></td>
<td>($0.2)</td>
<td>($0.2)</td>
</tr>
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<td>Reduced Social Dependency from:</td>
<td>Road Const. &amp; Mtce</td>
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<td>$27.0</td>
</tr>
<tr>
<td></td>
<td>Mining Activity</td>
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<td>$2.5</td>
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<tr>
<td>Manitoba Benefits Total</td>
<td></td>
<td>$27.0</td>
<td>$29.5</td>
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<tr>
<td>Total</td>
<td>Present Value of Benefits ($millions)</td>
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<td>$443</td>
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</table>

Benefit/Cost Ratio at Discount Rate

<table>
<thead>
<tr>
<th>Discount Rate</th>
<th>10%</th>
<th>7%</th>
<th>6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>10% Benefit/Cost Ratio</td>
<td>0.66</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>7% Benefit/Cost Ratio</td>
<td>0.97</td>
<td>1.02</td>
<td></td>
</tr>
<tr>
<td>6% Benefit/Cost Ratio</td>
<td>1.13</td>
<td>1.20</td>
<td></td>
</tr>
</tbody>
</table>

NPV at 10% | $-222 | $-199 |
NPV at 6% | $96 | $142 |

\textsuperscript{6} All costs and benefits expressed in Present Value 2009 Dollars at 10% discount rate over 30 years from 2013 to 2042; construction staging assumed per Exhibit ES-1.
RISKS AND OPPORTUNITIES

The Benefit Cost Analysis for the AWR summarized the financial costs and benefits that could accrue over a 30-year planning period to 2042 (assuming road construction starts in 2013 and completes by 2027). Over and above the monetary costs and benefits inherent in proceeding with the project, there are a number of qualitative risks and opportunities associated with either (i) not proceeding with the project or (ii) building the highway and achieving either the low or the high development scenarios. These risks and opportunities are summarized below.

Scenario A: With No All-Weather Road:

Nunavut: The quality of life in Nunavut would be constrained by continued isolation from the rest of Canada; a high cost of living; high levels of unemployment; high costs for transporting people and perishable goods; high costs for the annual purchase and storage of bulk commodities including fuel oil; an air and marine transportation system whose reliability is very dependent on the weather; and less opportunities for natural resource and tourism development. The recent European Union ban on the import of seal products would likely reduce the livelihood of fishers, although for now, the controlled hunting and harvesting of caribou can continue, with the associated production and export of caribou meat. Mining and mineral exploration would likely continue at current levels as would the protection and management of the barren ground caribou herds. Economic development of hydro-electric potential at major rivers would be less viable with no all-weather road.

Churchill: Trade and business opportunities in Churchill would continue to be constrained by their sole reliance on air service, summer/fall marine service, and the all-weather service provided by the rail connection to Thompson and the rest of Canada. Churchill is quite isolated and has higher costs for transporting people and perishable goods than communities already connected to Manitoba’s existing all-weather road system. Opportunities for Churchill to have a greater role as a year round intermodal freight distribution centre are also constrained by the lack of an all-weather road from Churchill north to service Nunavut communities along the west coast of Hudson Bay. As Canada’s major port on the Arctic Ocean, serving the Arctic gateway to Europe and northern Russia, Churchill’s lack of road access puts it at a disadvantage compared with other Canadian ports servicing the Pacific and Atlantic trade corridors.

Other Northern Manitoba Communities: With no all-weather road north from Gillam to Nunavut there would be no significant traffic increase on roads, such as PR 391, 280, and 290 servicing these Northern Manitoba Communities other than short term increases associated with further hydro-electric development along the Nelson and Churchill River Systems. Business opportunities associated with long term traffic increases, as well as easier access to Nunavut mining development, would not occur if there was no road north.

Scenarios B And C: With All-Weather Road

Nunavut: With an all-weather road, under both the low and high development scenarios, Nunavut would likely lose its sense of isolation and become more fully integrated into the Canadian family of provinces and territories. The high cost of living should drop as the costs of transporting people and goods decline. Increased access for mining, fishing, hunting and tourism, resulting from an all-weather road should lead to increased commercial activity for the Inuit population, with a concomitant increase in employment. Consolidation of high quality health care facilities; educational institutions; and improved port infrastructure, all linked by an all-weather road, would be possible resulting in significant economy of scale. Intercommunity sports and visitations as well as family vacations away from home would all become more viable with an all-weather road.
There would, with a road, be more easy access to drugs and alcohol as well as easier access for southern hunters to deplete wild life.

**Churchill:** Churchill would likely experience, with an all-weather road connection to the south, many of the same benefits as Nunavut, i.e. less isolation, a lower cost of living, and increased commercial activity. If the road is first built north from Churchill, the town’s importance as a distribution centre from the rail head would be enhanced. When the road is completed south to Gillam MB, some traffic may bypass Churchill. However the road south should increase the competitiveness of Churchill vis a vis Canada’s eastern and western seaboard ports by encouraging more diversification in the goods shipped in both directions through Churchill.

**Other Northern Manitoba Communities:** With an all-weather road north, communities such as Thompson, Split Lake, Gillam and Fox Lake should experience an internal increase in business and commercial opportunities as a result of increased traffic, as well as employment opportunities extending north into the Kivalliq region of Nunavut. Thompson’s role as a northern distribution centre should also increase.

**PROJECT FUNDING**

The construction cost of the new 1,100 km AWR was estimated at $1.2 billion in 2009 Dollars including property acquisition. The cost of annual maintenance was estimated at $5100/km/year or $5,600,000 per year for the entire length (2009 Dollars).

Under the High Development Scenario, the present worth in 2013 (construction start year) of corporate taxes over the 30 year life of the project would break down in the following percentages:

- Canada: 49%
- Nunavut: 33%
- Manitoba: 18%

This provides one starting point for estimating a cost share for the AWR. Other typical cost-sharing arrangements in highway construction programs in Canada and the US are summarized below:

<table>
<thead>
<tr>
<th>US Interstate National System</th>
<th>Canada’s National Highway System</th>
<th>Yukon and Northwest Territories(^8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal 90%</td>
<td>Canada 50%</td>
<td>Canada 50-75%</td>
</tr>
<tr>
<td>State 10%</td>
<td>Province 50%</td>
<td>Territory 25-50%</td>
</tr>
</tbody>
</table>

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\(^7\) The project cost was initially developed in 2006 Dollars and was projected to 2009 Dollars using the Canadian Price Index. A nominal amount of $10 million was provided in the 2006 cost estimates for acquisition of property. No additional funding has been identified to settle the Sayesi Dene Land Claim through which the AWR route passes.

\(^8\) 50/50 is a typical federal/territorial cost-share for eligible road construction. Under the current Building Canada Agreement, the split is 75/25.
CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the questions asked at the beginning of the Business Case Study are recapped below, along with provision of broad-brush answers based on the outcome of this study. A number of recommendations are also outlined at the end of this section for the immediate next steps to bring this important project to fruition.

**Question 1: What are the likely long-term economic effects in the study area with no AWR development?**

**Answer:** The economic situation could remain “business as usual” with continued high cost and sometimes weather-related unreliability of transport. The cost of living will likely remain significantly higher than in southern Canada.

Mining activity may increase due to an increase in national and world demand for minerals, helping to reduce high levels of unemployment. However, the lack of labour mobility, coupled with the potentially high cost of resupplying mines, may encourage mining companies to look elsewhere in Canada or overseas.

Access to modern health facilities, with a full range of specialist services in curative and preventative medicine, will continue to be time consuming and costly.

Barren ground caribou herds will not be impacted by AWR construction and maintenance activities; however, because mining transport will continue to be restricted to limited periods (e.g. summer sea lift, and winter hauling over frozen tundra), there is a greater likelihood of a clash with caribou movements and migration, if they occur during those periods.

**Question 2: What are the low and high development scenarios for economic activities as a result of AWR development?**

**Answer:** *The low development scenario* assumes the road would have, of itself, a negligible impact on mining operations. However, the reduced cost of transportation and increased mobility should have a beneficial effect on the cost of living, the levels of education and employment, as was evident when comparing the Sahtu region in NWT, with no AWR, with the NWT communities of Inuvik, Hay River and Fort Smith, with AWR service.

With an AWR, additional benefits to the quality of life should accrue, such as easier and more affordable access to stores and shops, to specialist health services, for recreation, and for participation in sports events.

Impacts on caribou from AWR construction, maintenance, and traffic can be reduced through application of regulations covering exclusion periods.

AWR access may allow easier access for alcohol, drugs, and southern hunters; all of which can be controlled to a degree by the communities, supported by police patrols along the road.

*The high development scenario* assumes the road will open up larger areas for exploration, as well as increase the economically viable catchment area for mines and other resources, such as oil, gas and hydro-electric power. The benefits of the high development scenario would be felt in...
similar sectors of regional life as in the low development scenario, except to a greater degree (i.e. a lower cost of living and higher employment would likely result).

Potential impacts on caribou, access for alcohol, drugs and southern hunters would likely be the same as for the low development scenario, since these are more dependent on having a road versus not having a road, than on the overall level of economic activity.

**Question 3: What are the social-economic benefits and costs attributable to the construction and operation of the AWR?**

**Answer:** The project costs and benefits are summarized as follows:

I) **Construction, Engineering and Property Costs ($2009):**
- Rankin Inlet to Sundance, MB $1,215.3 million (1,100 km)
- Rankin Inlet to Baker Lake $121.1 million (270 km)
- **Total:** Baker Lake to Sundance, MB $1,336.4 million (1,370 km)

II) **Annual Maintenance Costs ($2009: based on $5100/km/year):**
- Rankin Inlet to Sundance, MB $5.6 million/year
- Rankin Inlet to Baker Lake $1.4 million/year
- **Total:** Baker Lake to Sundance, MB $7.0 million/year

III) **Benefit Cost Analysis (Present Value in $2009, based on 10% discount rate, 30 year planning period starting in 2013):**
- Total Cost: Baker Lake to Sundance, MB $643 million
- Total Benefits (Low Development Scenario) $421 million
- Total Benefits (High Development Scenario) $442 million

<table>
<thead>
<tr>
<th>Discount Rate</th>
<th>B/C Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Development Scenario</td>
<td></td>
</tr>
<tr>
<td>10%</td>
<td>0.66</td>
</tr>
<tr>
<td>7%</td>
<td>0.97</td>
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<tr>
<td>6%</td>
<td>1.13</td>
</tr>
<tr>
<td>High Development Scenario</td>
<td></td>
</tr>
<tr>
<td>10%</td>
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</tr>
<tr>
<td>7%</td>
<td>1.02</td>
</tr>
<tr>
<td>6%</td>
<td>1.20</td>
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</table>

While the project does not return a positive B/C ratio at a 10% discount rate (the Federal Treasury Board discount rate), it is estimated to break even (with a B/C of >1.0) at a discount rate of 6% (the accepted rate of return for Manitoba) in both low and high development scenarios. Though the project may not be justified based on project economics alone, a number of social and public policy imperatives would need to be considered.

The gap analysis conducted as part of this study indicated the significant social and economic gaps that could be bridged with the development of this AWR. Using the Northwest Territories (NWT) as a reference, higher education level, labour participation, employment and income are

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9 Total project cost includes engineering, construction, maintenance and salvage value at the end of the 30 year planning period.
evident in the AWR-served communities in NWT compared to the communities not served by an AWR in both NWT and Nunavut.

Both the Economic Impact Assessment and the Benefit/Cost Analysis concluded that most of the project benefits would accrue to the area residents in the form of increased education and employment opportunities, increased income, and reduced cost of living. These would in turn result in reduced social dependence and, therefore, reduced government spending and subsidies. Considerable increases in GDP and corporate taxes would also provide much stimulus to the economies of both Kivalliq and northern MB as a result of the AWR development.

**Question 4: What other values will be provided for by the AWR under the low and high development scenarios that cannot easily be quantified?**

**Answer:** The AWR would likely bring:

- Significant year-round transportation as well as inter-jurisdictional trade benefits;
- Increased support for and stimulation of natural resources development including mining, fisheries and recreation;
- A higher level of social and economic equity for the Inuit people, reducing their isolation and integrating them more fully into the Canadian mosaic;
- Strengthening and solidifying Canadian sovereignty in the north by demonstrating a national and internationally important commitment to more fully invest in the people and resources located within 20% of the Canadian land mass and the hinterland of our third sea coast (“..... from sea to sea to seal!”).

Our initial scoping of environmental impacts of a new all-weather road, leads us to believe that with careful planning, design, construction and maintenance, along with accompanying regulations and monitoring, the road can be successfully integrated into the existing fragile and unique natural environment.

**Question 5: Who are the beneficiaries of the AWR, and what are the gains in their respective jurisdiction?**

**Answer:** The major beneficiaries of the road implementation include:

- Governments of Canada, Nunavut and Manitoba: Benefits will accrue through the reduced cost of providing support for essential services, as well as increased income and corporate tax revenue. The federal government will further benefit from the extension of the National Highway system into the last unconnected region of Canada and the statement this makes regarding Canadian sovereignty in the north.

- Kivalliq Inuit Association: Since the highway needs to cross extensive tracts of Inuit owned land (IOL), revenue should accrue to KIA from access and land use permits, as well as royalties for the extraction of road building aggregates.

- Qulliq Energy and Manitoba Hydro: These electrical generation and transmission agencies could benefit from the highway, since it would provide access to potential hydro-electric generation sites, as well as providing reliable year round access for building and maintaining a north-south transmission line. Qulliq Energy would also benefit from the highway as a supplementary fuel supply route.
• Mining Companies: If the highway is extended from Rankin Inlet to Baker Lake the Meadowbank Gold Mine located north of Baker Lake could benefit. Exploration for minerals or access to new mines would be more economical with a highway supply route up the west coast of Hudson Bay. Mine life may become longer, since all-weather road access will likely make the mining of lower grade ores economically feasible.

• Northern Manitoba Aboriginal People and First Nations: These could benefit from the highway in terms of fully participating in its construction and maintenance, as well as possibly, in the construction and operation of appropriately located traveller stops along the route for brief rests or for food, fuel and accommodation.

**Question 6: What are the risks of not proceeding with the AWR development?**

**Answer:** There is no doubt that a road link to Nunavut will eventually be needed, but like the transcontinental railway and National Highway System, both of which have had a profound impact on the development of Canada, the true benefits cannot always be foreseen or quantified. Similarly, the cost of not proceeding is also uncertain in numerical terms.

The answer to this question is perhaps best provided in the words of the Premier and also the Commissioner of Nunavut.

On September 10, 2009 at a Northern Transportation Conference held in Iqaluit, the Hon. Eva Aariak, Premier of Nunavut, stated, “We have no connection to the National Highway System, no intercommunity roads…we are left at the edges of economic growth. We want to secure a high quality of life, to build our future, to have affordable food, housing and access to land. Our updated Transportation Strategy ‘Let’s Get Moving’ (if fulfilled) will enable full participation in Canadian life…Nation building (was enabled by) the national railway and highway system. We need roads to access communities and the outside world, to complete the map of Canada from ‘sea to sea to sea.’”

In a subsequent address to the conference on September 11, 2009, the Hon. Anne Hansen, Commissioner of Nunavut, echoed many of the sentiments expressed above by the Premier.

**Recommended Next Steps:**

- Present the findings of the technical Route Selection Study, as well as the Business Case Study (The Case for the Nunavut Manitoba Highway) to the respective Ministers responsible for transportation in the Nunavut, Manitoba and Federal governments. The presentations will need to be supported by a Cabinet-level White Paper defining the rationale, scope, schedule and budget for the project, along with the preferred delivery mechanism (probably P3).

- Move to protect a broad corridor, containing the preferred route, in government land use policy/transportation strategy documents. This broad corridor protection would need to cover mineral exploration, new mines, quarry access rights, community expansion and development, forestry, hunting and trapping, fishing, and so on.

- Subject to approval in government budgets, proceed with the mapping; geotechnical investigations; engineering design, including hydrology and bridge design at river crossings; as

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For additional detail, see Study Recommendations in the November 2007 Technical Report.
well as conducting more detailed natural and social environmental studies; all of which are needed to define the route as well as its right-of-way requirements. Carry out a formal Environmental Impact Assessment (EIA) for the project.

- Prepare updated construction and maintenance quantities, and cost estimates as well as right-of-way areas and acquisition costs.

- Initiate another round of public and stakeholder consultation, focussing on providing more detailed project information, as well as environmental mitigation opportunities. Update the project website.

- Conduct official consultation with the Aboriginal and First Nations communities along and affected by the preferred route.

- If it is agreed by the respective governments to use a P3 delivery model, then proceed to seek out and negotiate with prospective parties, in order to establish and finance a design-build (DB) or design-build-operate (DBO) project delivery mechanism.

If it is decided to proceed with the project, Nishi-Khon SNC-Lavalin is of the opinion a minimum of 5 years will be needed from the “go” decision, before actual construction can start. This period is the minimum required for the establishing of a delivery model; the engineering design; the EIA; consultation; acquisition of land access for the road and quarries; mobilization and training of construction teams; securing construction equipment; and building as well as provisioning of work camps.