

Yukon Roads Inventory

**Department of Community Services
Community Affairs Branch**

Submitted By:

Precision Research Services
Whitehorse, Yukon
www.precisionresearch.ca

DRAFT REPORT

March 2009

Table of Contents

About this Study	4
1.0 Introduction	5
2.0 Yukon Highways	6
2.1 Highway Inventory	6
2.1.1 Yukon Highway System – A Brief Inventory	6
2.1.2 Yukon Highway System - Assessment	7
2.1.2.1 Yukon Bridge and Culvert Management System.....	8
2.1.2.2 Yukon BST Management System	9
2.1.2.3 Yukon Pavement Management System	10
2.2 Yukon Highway System: Objective-setting	10
2.2.1 Bridges and Culverts	10
2.2.2 BST System	11
2.2.3 Pavement System.....	11
2.3 Yukon Highways: Priority-setting	11
2.3.1 Bridges and Culverts	11
2.3.2 BST System	12
2.3.3 Pavement System.....	13
2.3.4 Highways Priority Setting: Comprehensive Approach.....	13
2.3.4.1 Technical Criteria.....	14
2.3.4.2 Non-technical Criteria.....	14
2.3.4.3 Yukon Highway Priorities	14
3.0 Yukon Community Roads	16
3.1 Community Road Inventory	16
3.1.1 Incorporated Communities	17
3.1.1.1 Carmacks	17
3.1.1.2 Dawson City	18
3.1.1.3 Faro	18
3.1.1.4 Haines Junction	19
3.1.1.5 Mayo.....	20
3.1.1.6 Teslin	20
3.1.1.7 Watson Lake	21
3.1.1.8 Whitehorse.....	22
3.1.2 Unincorporated Communities.....	25
3.1.2.1 Beaver Creek.....	25
3.1.2.2 Braeburn	25
3.1.2.3 Burwash Landing (KFN).....	25
3.1.2.4 Canyon Creek (CAFN)	27
3.1.2.5 Carcross	27
3.1.2.6 Champagne (CAFN)	28
3.1.2.7 Deep Creek.....	28

3.1.2.8 Destruction Bay 28

3.1.2.9 Golden Horn 29

3.1.2.10 Grizzly Valley..... 30

3.1.2.11 Henderson Corner 30

3.1.2.12 Ibex Valley 30

3.1.2.13 Jackfish Bay/Shallow Bay..... 31

3.1.2.14 Johnson’s Crossing..... 31

3.1.2.15 Keno City..... 32

3.1.2.16 Marsh Lake 32

3.1.2.17 Mayo Road/Hotsprings Road 33

3.1.2.18 Mendenhall 33

3.1.2.19 Mount Lorne..... 33

3.1.2.20 Nygren..... 34

3.1.2.21 Old Crow..... 34

3.1.2.22 Pelly Crossing (SFN) 35

3.1.2.23 Rock Creek 36

3.1.2.24 Ross River..... 36

3.1.2.25 Silver City..... 37

3.1.2.26 Squanga Lake (CTFN) 37

3.1.2.27 Stewart Crossing 37

3.1.2.28 Tagish 38

3.1.2.29 Takhini River Subdivision (CAFN) 38

3.1.2.30 Upper Liard (LFN) 39

3.1.2.31 West Dawson/Sunnydale..... 39

3.2 Objectives for Yukon Community Roads 40

Appendix A: Yukon Highway Map

Appendix B: Yukon Community Roads Maps

Appendix C: Roads Maintained by the Department of Highways and Public Works

References

About this Study

On March 17, 2008, the Governments of Canada and Yukon announced the signing of a framework agreement under “Building Canada”, the Government of Canada’s new long-term infrastructure plan. Under the agreement, the Yukon will receive \$182.9 million (\$26.13 million per year) over a seven-year period ending in 2013-14 for priority infrastructure projects (75/25 funding formula).

Eligible spending categories include core national priorities of drinking water, wastewater, public transit, national highway system, and green energy, and an additional fourteen categories for eligible spending under local and community priorities. The agreement does not specify the amount of funds that are to be dedicated to each of the spending categories.

The Government of Yukon is required to prepare a 10 to 15 year infrastructure plan within one year of agreement signing. This plan will identify infrastructure gaps and priorities, including those within municipalities, unincorporated communities and First Nation communities. The Government of Yukon has decided to focus on five key spending priorities, namely drinking water, wastewater, solid waste, roads and green energy.

Before the Government of Yukon can launch a public consultation and, subsequently, determine its spending priorities for the Yukon Infrastructure Plan, it must first complete a situational analysis of current infrastructure. In essence, an inventory and assessment of current infrastructure is required within Yukon municipalities, unincorporated communities and First Nation communities.

While information exists within the Government of Yukon for three of key areas – drinking water, wastewater and solid waste – there are gaps in the other two areas, specifically green energy and roads.

It is this latter area – roads – that is the subject of this paper. This paper will provide a high-level inventory of Yukon roads – both community roads and inter-community roads (i.e., highways) – that will be used by government officials to facilitate discussion at the community level on (1) the current state of this infrastructure and (2) priority needs for infrastructure investment.

It should be noted at the outset that, by study design, there will be gaps in this roads analysis. While the Government of Yukon maintains an inventory of inter-community roads and highways (particular the primary roads) within the territory, the same cannot be said for the myriad of community roads. Gaps that are revealed in the network of community roads will be discussed during upcoming consultations with community representatives throughout Yukon.

Finally, the author would like to extend a note of acknowledgement. The maps contained in this report were provided by the Department of Highways and Public Works. In particular, the author would like to express sincere thanks to Elly Marshall, Geographic Database Administrator with the Transportation Engineering Branch for her invaluable, and much appreciated, assistance in this regard.

1.0 Introduction

Using the Department of Community Services *Infrastructure Status Report – 2002* as a basic template, this paper provides insights into the inventory of community roads, as well as inter-community highways, within Yukon. Due to the significant differences between Yukon highways and community roads – as well as the variations in data availability for each – the analysis for each is undertaken separately in this report. However, the structure of reporting is largely the same. For each of these road types, the following basic outline is followed:

- A. Road Inventory: This section provides an inventory of highways and community roads within Yukon. This analysis assesses key information such as road type, surface type, road length, and other related information. Where possible, and where information exists, a preliminary assessment of current road infrastructure is presented in each category.
- B. Infrastructure Objectives: In order to facilitate funding program decision-making, it will help government to determine a set of guidelines, or overall objectives, that can be used to prioritize funding decisions in, and between, communities. A set of objectives for both highways and community roads follows. While these objectives are based on industry standards, as well as the practices of other jurisdictions, they are not intended to be the final set of objectives but should be used to foster discussions during public consultation.

The information collected under these two sections – for both highways and community roads – is presented in a manner that facilitates community-level discussions during the consultation phase for this project and, ultimately, will allow for a complete assessment of road infrastructure throughout Yukon. The final assessment, post consultation, will eventually be used to prioritize financial investments under the Building Canada program.

The research for this study came from three key sources:

1. An extensive literature search of roads-related documents, for Yukon and southern Canada communities, as well as national and provincial highway systems.
2. GIS mapping, provided by the Yukon Department of Highway and Public Works, drawing from the GeoBase, National Road Network, 2007.¹
3. Follow-up correspondence with community- and territorial-level officials within Yukon communities and the Government of Yukon, as required.

¹ GeoBase is a federal, provincial and territorial government initiative, overseen by the Canadian Council on Geomatics, that provides up-to-date geospatial data for all of Canada (www.geobase.ca).

2.0 Yukon Highways

2.1 Highway Inventory

2.1.1 Yukon Highway System – A Brief Inventory²

The Government of Yukon maintains 4,800 kilometres of road, making it the third smallest in Canada. Within this highway system, 270 kilometres are paved and 1,900 kilometres are surfaced with bituminous surface treatment (BST), a thin asphalt membrane. The remainder is gravel. The Yukon highway system contains 128 bridges.

Surface	Distance (km)
Asphalt	270
Bituminous Surface Treatment (BST)	1,900
Gravel	2,630
Total	4,800
Number of Bridges	128

All Yukon communities, except one (Old Crow), are connected by this system. Given its small population base, Yukon has the highest per capita road network in the country with more than 155 kilometres of road for every 1,000 residents.

Highway Number	Highway Name
1	Alaska Highway
2	Klondike Highway
3	Haines Road
4	Campbell Highway
5	Dempster Highway
6	Canol Highway
7	Atlin Road
8	Tagish Road
9	Top of the World Highway
10	Nahanni Range Road
11	Silver Trail
37	Stewart-Cassiar Highway

The busiest section of Yukon highways – in and around the capital city of Whitehorse – sees about 3,700 vehicles per day. The stretch of the Alaska Highway southeast to Watson Lake carries about

² This text in this section is essentially, with some minor paraphrasing, a direct quote from Government of Yukon, *Prospecting Corridors to Growth – A Transportation Vision for Yukon*, 2006.

³ Government of Yukon, *Yukon Highways Log Book*, October 2008.

700 vehicles per day. Most other Yukon highways see traffic in the 100 to 300 vehicles per day range. Traffic patterns throughout the territory are largely seasonal.

Of interest, a significant portion of the Yukon highway system has been categorized by the Canada Council of Ministers for Transportation under the National Highway System, as indicated in the table below:

Highway	Distance (km)
<i>Core Network</i>	
Alaska Highway (BC border to AK border)	945.0
South Klondike Highway (Whitehorse to AK border)	134.0
<i>Northern and Remote</i>	
North Klondike Highway (AK Highway to Dempster Highway)	483.0
Dempster Highway (North Klondike Highway to NWT border)	465.0
Total NHS	2027.0

Please refer to Appendix A for a map of the Yukon highway system.

2.1.2 Yukon Highway System - Assessment

In 2006, the Department of Highways and Public Works released *Prospecting Corridors to Growth – A Transportation Vision for Yukon*. A central and recurring theme in this publication is that the Yukon Territory has a significant transportation infrastructure deficit that requires significant funding. Says the report:

While the Yukon has reasonably modern road infrastructure for a small, northern territory, there are gaps. The current highway system is ageing in some areas and incomplete in others. Modern highways are required to support economic development, particularly in the resource sector and tourism industry, and as a means of ensuring Canadian security and sovereignty in the north. The Dempster Highway, for example, can be used to support the development of the Mackenzie Valley Pipeline, as well as [be] an emergency access road in the event of disasters in the Beaufort Sea. The Robert Campbell Highway provides access to a mineral rich area of Yukon. Certain sections of the Alaska Highway have fallen below modern highway standards and require upgrading, before traffic levels can rise significantly.⁵

⁴ Council of Ministers Responsible for Transportation and Highway Safety, *Canada's National Highway System: An Overview*, April 2008.

⁵ Government of Yukon, Department of Highways and Public Works, *Prospecting Corridors to Growth – A Transportation Vision for Yukon*, 2006, p.11.

A technical assessment of paved surfaces and all bridges within the Yukon Highway System – under a capital asset management program – is undertaken on an ongoing basis by the Department of Highways and Public Works. This work is documented through three key publications, each released separately on an annual basis:

- *Yukon Bridge and Culvert Management System*⁶
- *Yukon BST Management System*⁷
- *Yukon Pavement Management System*⁸

2.1.2.1 Yukon Bridge and Culvert Management System

Using a scoring range from zero to 100, the Yukon Bridge Management System evaluates the Bridge Sufficiency Rating (BSR) for the 128 bridges in the system along four key criteria, including structural condition, strength, operation and safety. In order to be considered “acceptable,” a bridge must score a BSR of at least 50. All bridges are expected to be above this mark. An “optimal” bridge is one that scores 65 or higher. The goal is to have at least 80 per cent of bridges evaluated as “optimal.”

Following an extensive evaluation for all 128 bridges, the report then recommends rehabilitation under three categories: (i) Routine Maintenance (ii) Capital Maintenance or (iii) Capital Replacement projects.

Some key highlights from the 2007 report are noted below:

- The bridge network is in reasonable condition, as only 32 of the 128 bridges will reach the end of its useful life in the next 20 years.
- Following ten years of BSR declines between 1993 and 2003, the bridge evaluations in the network have been steadily increasing. The average BSR for the network was 59.3 in 2006.
- While 84 per cent of bridges are currently “acceptable,” only 27 per cent are “optimal,” well below the 80 per cent goal for this evaluation score.

⁶ Government of Yukon, Department of Highways and Public Works *Yukon Bridge and Culvert Management System: 2007 Condition Report*, January 2008.

⁷ Government of Yukon, Department of Highways and Public Works *Yukon BST Management System: 2007 Update*, February 2008.

⁸ Government of Yukon, Department of Highways and Public Works *Yukon Pavement Management System: 2007 Condition Report*, January 2008. It should be noted that, unlike the paved portion, the gravel-surface part of the highway system is not assessed on a formal basis. Gravel surfaces on primary highways are managed as part of an ongoing maintenance program, with resurfacing funds allocated on a formula basis. Gravel surfaces on secondary and other roads are managed on a more ad hoc basis depending on usage. Gravel surface roads are not further addressed in this report.

2.1.2.2 Yukon BST Management System

The Yukon BST System includes 1,900 kilometres of BST-surfaced roads, which are divided into three main surface classifications, as identified in the table below:

Class	Definition⁹	Sections	Distance (km)
Class 1	Roads on which the BST has been applied to an unimproved road structure, which has not been designed to any particular standard.	20	74.1
Class 2	Roads on which a 75-150mm thick layer of crushed gravel base course is placed on the sub-grade prior to BST application.	106	637.5
Class 3	Roads with fully designed sub-base and base course layers on which BST is applied as a substitute for hot-mix asphalt concrete.	179	1194.1
Totals		305	1905.7

Ratings under the BST Management System are undertaken annually using a Bituminous Condition Index (BCI) that measures overall distress to the road surface. The BCI, scored from zero to 100, is based on a physical evaluation of the distress of the road surface along 12 specific categories including raveling, bleeding, rutting, sub-grade failure, shoulder disintegration, potholes, cracking, patching, distortions, corrugations, streaking and joints.

Under the BST Management System, there are minimum standards for the BCI rating in each BST Classification, as noted in the table below. When the BCI falls below these minimum thresholds, investment is required.

Class	Minimum BCI	Main Uses
Class 1	60	light traffic; low volumes; dust control
Class 2	60	few trucks; moderate volumes
Class 3	65	300-700 daily vehicles; possible switch to asphalt at ~500 vehicles

Some key highlights from the 2007 BST Report are noted below:

- The level of service provided by the BST-surface road system has been relatively constant since 1996.
- Funding levels are not keeping pace with surface failures on the roads, particularly for permafrost-prone sections of Class 3 BST.
- Annual investment of \$4.8 million is required for proper system maintenance.

⁹ For definitions, see <http://www.hpw.gov.yk.ca/trans/maintenance/bst.html>.

2.1.2.3 Yukon Pavement Management System

The Yukon Pavement System includes 269.2 kilometres of asphalt concrete surface over 48 distinct sections. The condition of these pavements is evaluated annually using a Pavement Condition Index (PCI) that captures the density and severity of pavement distresses in the system. The PCI is scored on a scale from zero to 100. A PCI score of 63 is the minimum acceptable score, for which no rehabilitation action is required. According to the 2007 Report, the following table illustrates the extent of asphalt condition below this minimum threshold and, therefore, in need of rehabilitation.

Interestingly, some 166 kilometres, or 62 per cent, of the entire pavement network requires rehabilitation. On average, the PCI for the entire system is 60.3, below the PCI minimum of 63.

PCI Rating	Distance Covered (km)	Action Required
Less than 55	80.5	-extensive repairs
From 55 to 60	78.6	-moderate repairs
From 60 to 63	7.3	-basic overlay

2.2 Yukon Highway System: Objective-setting

While there are numerous methods by which to set objectives for infrastructure investment, this section will discuss the main technical approach to this exercise in the Yukon under the Bridge, BST and Pavement Management Systems. A more inclusive (technical and non-technical) priority-setting recommendation will follow in Section 2.3.4 of this report.¹⁰

2.2.1 Bridges and Culverts

The overall objective of the Bridge Management System is to ensure safe and efficient transportation across the 128 bridges within the bridge network. Failure of such infrastructure is not an option. As such, the Bridge Management System aims to provide ongoing bridge evaluation services, while recommending necessary (i) Routine Maintenance (ii) Capital Maintenance or (iii) Capital Replacement projects. The system is guided by two key objectives:

- (1) All bridges must be evaluated at the “acceptable” level or higher (i.e., BSR of 50+)
- (2) At least 80 per cent of bridges should be “optimal” (i.e., BSR of 65+)

¹⁰ Implicit in this report is the assumption that roads and bridges will be built and maintained to the proper technical and engineering standards as detailed by the appropriate regulatory agencies.

2.2.2 BST System

Under the BST Management System, there are minimum standards for the BSI rating in each BST Classification, as noted in the table below. When the BCI falls below these minimum thresholds, investment is required.

Class	Minimum BCI
Class 1	60
Class 2	60
Class 3	65

Upgrading from one BST Class to another, and from BST Class 3 to asphalt concrete, depends on several factors, most notably, traffic volume and traffic type. Lower classes of BST are not designed, nor are they capable of, handling large volumes of traffic, particularly truck traffic. As traffic volumes increase, investment in more structurally sound and longer-lasting BST, or asphalt, is considered.

2.2.3 Pavement System

Under the Pavement Management System, a PCI score of 63 is the minimum acceptable score, for which no rehabilitation action is required. As shown in Table 7, the extent of rehabilitation work required generally depends on the degree to which the PCI is below this minimum standard.

PCI Rating	Action Required
Less than 55	-extensive repairs
From 55 to 60	-moderate repairs
From 60 to 63	-basic overlay

2.3 Yukon Highways: Priority-setting

Using the objectives for the Bridge, BST and Pavement Management Systems, the Department of Highways and Public Works determines priorities for investment in this highway infrastructure.

2.3.1 Bridges and Culverts

Meeting the two key objectives of the Bridge Management System requires a significant financial commitment from the Government of Yukon. As noted in the 2007 Report:

...the Yukon bridge network had continuously deteriorated from 1993 to 1996 and was almost constant from 1996 to 2003, reflecting that the levels of funding provided were only enough to keep pace with deterioration and not adequate to raise the overall condition of the system. The increased funding since 2003 has resulted in improved condition of the system from a BSR of 57.1 in 2003 to 59.3 in 2007.

It is recommended that routine maintenance funding levels of approximately \$500,000 annually should be provided. It is also recommended that a significant, dedicated level of funding in the order of \$5 million annually be established to undertake capital maintenance work for Yukon bridges.¹¹

Using the BSR rating as a guide, all 128 bridges in the network are evaluated on an investment priority basis. Using these evaluations, the tables below illustrate the current total investment required within the bridge and culvert system to bring infrastructure up to a more acceptable standard.¹²

Action	Investment Required (\$)	# of Bridges
Routine Maintenance	2,923,186	118
Capital Maintenance	22,051,374	59
Capital Replacement	30,574,835	42
Total	55,549,395	

2.3.2 BST System

Ongoing BST maintenance requires a significant financial commitment from the Government of Yukon. As noted in the 2007 Report:

Currently, BSTs identified for rehabilitation in the next year are performing very poorly, well below the economically efficient levels identified for resurfacing. If rehabilitation is not undertaken at the economically efficient point, more costly and consuming maintenance activities (particularly cold mix patching) will need to be performed. Only through sustained rehabilitation funding of an average \$4.8 million per year will the system approach rehabilitation at an economically efficient level, avoiding costly ongoing maintenance activities for very poorly performing sections.¹³

In order to avoid large-scale replacement costs associated with surface failure, ongoing rehabilitation is required. The Department of Highways and Public works proposes the following rehabilitation investment five-year plan:

¹¹ See p. ix.

¹² The report notes that, under a comprehensive risk management approach, other criteria should also be considered, including safety risks, public demand, economic impacts, etc...

¹³ See p. viii.

Table 10: BST 5-Year Plan					
Investment (millions, \$)					
	2008	2009	2010	2011	2012
Class 1 and 2	1.4	2.0	1.9	2.4	3.1
Class 3	3.0	3.1	2.9	2.0	2.1
Total	4.4	5.1	4.8	4.5	5.2
Distances Covered (km)¹⁴					
	2008	2009	2010	2011	2012
Class 1 and 2	37.0	52.0	49.9	64.0	81.6
Class 3	73.5	75.4	70.5	49.1	51.5

2.3.3 Pavement System

According to the 2007 Report:

The condition of YG pavements is at the point where major investment is required.¹⁵

An investment of \$2 million annually over the next six years is needed to just hold the system at approximately its present, substandard condition. An annual investment of \$5 million would be required to bring the system up to better than its 1993 level over the next six years.¹⁶

The following priority projects, by primary highway, are noted for rehabilitation in the 2007 Report, based on PCI rating:

Table 11: Pavement – Potential Rehabilitation Projects		
Highway	Number of Sections	Total Length (km)
Alaska	13	72.2
Klondike	16	64.2
Haines	2	24.8
Campbell	2	10.2
Total	33	171.4

2.3.4 Highways Priority Setting: Comprehensive Approach

Setting priorities for investment in the Yukon highway system is a complex matter that must assess as wide a range of factors as possible. Fundamentally, investment decisions on road construction and/or maintenance should be based on the “need” for this work to be done. Of course, competing priorities will generally force decision makers to choose between projects. As such, a comprehensive priority-setting exercise will help facilitate the most rational decisions.

¹⁴ The report recommends specific sections of highways for rehabilitation. For the sake of brevity, these will not be listed here but can be found in Table 12 on page 83 of the report.

¹⁵ See p. 4.

¹⁶ See p. 2. Current annual funding of \$2 million is insufficient.

This comprehensive program will likely involve both technical and non-technical criteria. A proposed set of criteria is presented below (the more criteria that a road addresses, the greater its likelihood for investment):

2.3.4.1 Technical Criteria

- (1) Asset Management Needs: *Do condition deficiencies, as noted in the Bridge, BST or Pavement Management Systems, necessitate investment? Existing deficient infrastructure should be addressed on a priority basis.*
- (2) Functional Needs: *Does the amount and/or type of traffic (present and future projections) necessitate improvements? And how will these improvements be made via road configuration (width, alignment, grades), structure (load capacity) and surface (concrete, asphalt, BST, gravel) needs? Those facilities that deviate the most from the required standard will require more immediate attention.*
- (3) Cost: *Are investment decisions based on the most rational economic models? For example, if maintaining a highway through repeated rehabilitation will result in increased life-cycle costs, is reconstruction seriously considered as a viable alternative? Maintenance and reconstruction decisions should be based on defensible economic analysis that includes consideration of both agency and user costs. Projects that lower life cycle costs should be given priority.*

2.3.4.2 Non-technical Criteria¹⁷

- (1) Economic Development: *Does a particular road or road system support demonstrated economic development? Does it provide greater access to markets outside of the Yukon? In Yukon, this could mean support for the resource sector or the tourism industry, for example. If so, it should receive priority investment.*
- (2) Outside Access: *Does a particular road, or road system, enhance the security of road users by providing greater access to and from the territory? Does it enhance national security or sovereignty? Does it contribute to emergency preparedness and response? If so, it should receive priority investment.*
- (3) Community Connections: *Does a road, or road system, connect Yukon communities to each other, and to the south in a manner that facilitates efficient transportation? If so, it should be considered for investment.*

2.3.4.3 Yukon Highway Priorities

Assessing road infrastructure for future investment is managed on an ongoing basis within the Department of Highways and Public Works using the criteria as noted above within the department's Capital Asset Management Framework. Priority setting within the Department has resulted in a current list of potential projects for which funding is required – over the next 10 years – as identified below. Total investment needs exceed \$255 million.

¹⁷ These criteria are based on department priority-setting as identified in *Prospecting Corridors to Growth*, p. 15.

Table 12: Building Canada, Priority Projects, 2008/09 to 2018/19	
Road Infrastructure	Estimated Cost (\$ '000)
Alaska Highway	
Bridge Rehabilitation	
Albert Creek	1,200
Deadman Creek	1,200
Partridge Creek	1,200
Upper Liard	6,000
Nisutlin Bay	17,000
Pavement Rehabilitation	30,000
Klondike Highway	
Bridge Rehabilitation	
Nares River	10,800
Takhini River	600
Fox Creek	1,050
Tatchun Creek	3,900
Yukon River (Carmacks)	500
Flat Creek	2,200
Too Much Gold and All Gold Creeks	2,095
Beaver Dam Creek	750
Highway Safety and Strengthening	
Km 388 to 430 (Tatchun Road to Minto)	20,200
Km 714 to 716 (Front Street)	3,500
Dempster Highway	
Resurfacing	7,500
Drainage Structure Rehabilitation	2,500
Erosion Control	1,300
Robert Campbell Highway	
Reconstruction km. 10 to 190	111,155
Atlin Road	
Reconstruction km 6 to 41	22,100
Top of the World Highway	
Base, sub-base and surface stabilization	8,500
Total 10-Year Investment	\$255,250

3.0 Yukon Community Roads

Information related to roads within Yukon communities is not as readily available as that for the Yukon Highway System. In incorporated communities, of which there are eight, the responsibility for design, construction and maintenance of community roads largely rests with the municipal government. Only Whitehorse, due to its size, maintains a publicly available comprehensive program for work related to the roads system. While the remaining seven municipal governments provide roads services, much information related to these systems is not readily available to the public.

This issue is more pronounced in unincorporated communities throughout Yukon, of which 31 are profiled in this report. Road design, construction and maintenance in these communities is managed by a variety of responsible authorities, including local officials, local advisory councils, First Nations Governments and, more often than not, the Government of Yukon. For a complete list of roads currently maintained by the Government of Yukon, please refer to Appendix C.

The information to follow in this report, related to community roads, draws on all available public records at the consultant's disposal, as well as follow-up correspondence with community-level officials. As noted previously, there are gaps in this inventory and assessment that will, it is expected, be addressed during upcoming community consultations on these matters.

3.1 Community Road Inventory

For the purposes of this analysis, community road inventory data was derived from current maps, provided by the Department of Highways and Public Works, from the GeoBase, National Road Network, 2007.¹⁸ Maps for all Yukon communities can be found in Appendix B. Maps were created using community boundaries. Road types within the maps are defined below:

Road Type	Definition
Arterial	Major thoroughfare with medium to large traffic capacity.
Collector	Minor thoroughfare mainly used to access properties and to feed traffic with right of way.
Expressway/Highway ¹⁹	High-speed thoroughfare with a combination of controlled access intersections at any grade.
Local Road – Paved	Low-speed, paved, thoroughfare dedicated to provide full access to the front of properties with possible access regulations.
Local Road – Unpaved	Low-speed, unpaved, thoroughfare dedicated to provide full access to the front of properties with possible access regulations.
Other Roads – Paved	All paved roads not captured above. May include alleyways, ramps, resource/recreation roads and service lanes.
Other Roads – Unpaved	All unpaved roads not captured above. May include alleyways, ramps, resource/recreation roads and service lanes.

¹⁸ See www.geobase.ca

¹⁹ In Yukon, this category essentially captures highways that intersect communities, as opposed to major expressways seen in southern Canada.

Road assessment information, where available, was derived from two key sources:

- (1) Integrated Community Sustainability Plans, where available.
- (2) Follow-up correspondence with community officials.

Population statistics for all incorporated communities, as well as select unincorporated communities (Beaver Creek, Burwash Landing, Carcross, Destruction Bay, Marsh Lake, Old Crow, Pelly Crossing, Ross River and Tagish) are from the Yukon Bureau of Statistics, *Population Report, December 2008* and are accurate to the end of December 2008. All other population statistics, where available, are estimates provided by the Department of Community Services.

3.1.1 Incorporated Communities

Note: Unless otherwise noted, municipal governments are responsible for maintaining all roads in their respective communities.

3.1.1.1 Carmacks

Road Type – Carmacks	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	14.8
Local Road – Paved	6.1
Local Road – Unpaved	9.4
Other Roads – Paved	0.1
Other Roads – Unpaved	0.2
Total Road Length	30.6
Population (#)	472

Road Assessment Information:

- Carmacks roads are in reasonable condition. Most are surfaced with BST, which requires periodic maintenance and upgrading.
- Condition of community roads listed generally “poor”.
- Specifically, several gravel roads in the town are noted for needing an upgrade to BST, with the highest priority listed as the Gruder Drive/Lepage Road Loop.

Source: Village of Carmacks, Integrated Community Sustainability Plan, 2006.

3.1.1.2 Dawson City

Road Type – Dawson City	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	11.5
Local Road – Paved	6.2
Local Road – Unpaved	35.4
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	53.1
Population (#)	1,923

Road Assessment Information:

- Dawson roads are primarily gravel, with BST on main thoroughfares.
- Condition of community roads listed as “poor” and “insufficient.” Drainage is cited as a problem and road wear is significant due to extreme climatic conditions.
- Specifically, the City of Dawson would like to see improvement to many of its community roads, via the application of BST or asphalt. The City is also considering the prohibition of commercial traffic on main streets and possibly limiting traffic on these roads to pedestrians only.

Source: The City of Dawson and the Tr'ondek Hwech'in First Nation, Integrated Community Sustainability Plan, 2008.

3.1.1.3 Faro

Road Type – Faro	Length (km.)
Arterial	--
Collector	10.7
Expressway/Highway	8.0
Local Road – Paved	9.5
Local Road – Unpaved	11.7
Other Roads – Paved	24.5
Other Roads – Unpaved	0.1
Total Road Length	64.5
Population (#)	395

Road Assessment Information:

- Faro roads are predominately BST, with about 20 per cent asphalt and 10 per cent gravel.
- Condition of community roads is listed as “poor.” Community roads are impacted regularly by erosion caused by in-ground water leaks from the town water system.
- Specifically, Faro has noted that an important medium-term goal for the community is to develop a road upgrade and replacement plan.

Source: Town of Faro, Integrated Community Sustainability Plan, 2007 and Rose Price, Chief Administrative Officer, Town of Faro.

3.1.1.4 Haines Junction

Road Type – Haines Junction	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	8.7
Local Road – Paved	13.3
Local Road – Unpaved	8.9
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	30.9
Population (#)	848

Road Assessment Information:

- Haines Junction roads are predominately BST.
- Condition of community roads is listed as “average”. Capital expenditures ranges from \$50,000 to \$80,000 annually.
- Of the 12 key priorities noted in the Haines Junction ICSP, community roads were not listed. The focus was on water and sewer, heating systems and affordable housing. It should be noted, however, that the ICSP was developed in the context of gas tax-eligible projects. Haines Junction, therefore, focused on eligible projects such as water/sewer and heating systems.

Source: Village of Haines Junction, Integrated Community Sustainability Plan, 2007 and Colin Dean, Chief Administrative Officer, Village of Haines Junction.

3.1.1.5 Mayo

Road Type – Mayo	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	3.5
Local Road – Paved	5.0
Local Road – Unpaved	13.1
Other Roads – Paved	--
Other Roads – Unpaved	0.2
Total Road Length	21.8
Population (#)	466

Road Assessment Information:

- Roads in Mayo are predominately serviced by the Village of Mayo, with the exception of seven kilometres under the management of the Na-Cho Nyak Dun First Nation (the old village, C-6 sub-division, and others). Mayo roads are mainly BST-surfaced.
- Condition of community roads is listed as “fair” as the Village of Mayo attempts to address BST failures as they emerge. In some places, roads have poor drainage resulting in sporadic home flooding during the spring melt.
- Mayo officials note that the primary access to the community, via the Silver Trail, is in poor condition and should be addressed by the Government of Yukon.
- Mayo officials stress that community roads are not a current key priority (priorities include drinking water, solid waste, green energy and sewer infrastructure).

Source: Village of Mayo, Integrated Community Sustainability Plan, 2006 and Na-Cho Nyak Dun, Integrated Community Sustainability Plan, 2008 and Margrit Wozniak, Chief Administrative Officer, Village of Mayo.

3.1.1.6 Teslin

Road Type – Teslin	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	1.7
Local Road – Paved	7.7
Local Road – Unpaved	2.9
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	12.3
Population (#)	458

Road Assessment Information:

- Teslin roads are mainly BST-surfaced. Condition of community roads is listed as “poor”.
- Teslin officials have engaged in discussions with the Government of Yukon towards the improvement of community roads.
- Specifically, Teslin has noted that many community roads require upgrade or replacement, as noted below:
 - i. Rehabilitation/reconstruction of the 1.5km Nisutlin Drive, at an estimated cost of \$210,000. Of this amount, \$75,000 has already approved under the Gas Tax Fund.
 - ii. The intersection in front of the Teslin Tlingit Administration Building requires relocation. Engineering studies are nearly complete in consultation with the Department of Highways and Public Works and Quest Engineering. The estimated cost is \$300,000.
 - iii. The drainage throughout much of the Teslin Tlingit Settlement land within the municipal boundary requires some ditching to preserve ongoing road integrity. For example, drainage improvements and related roadwork are required behind the arena to ensure that emergency vehicles have proper access at all times. Quest Engineering estimates this job at \$90,000.
 - iv. According to the Village of Teslin, the balance of community roads could be resurfaced for an additional \$850,000.

Source: Teslin Tlingit Council and the Village of Teslin, Integrated Community Sustainability Plan²⁰ and Wes Wirth, Chief Administrative Officer, Village of Teslin.

3.1.1.7 Watson Lake

Road Type – Watson Lake	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	29.7
Local Road – Paved	27.7
Local Road – Unpaved	25.6
Other Roads – Paved	0.8
Other Roads – Unpaved	0.2
Total Road Length	84.0

²⁰ Teslin ICSP is currently being updated.

Population (#)	1,594
-----------------------	--------------

Road Assessment Information:

- Watson Lake has a “network of roads with BST or gravel surface, generally without curb and gutter and with surface storm-water drainage discharged via ditches and culverts to ponds, wetlands and minor watercourses.”²¹
- Condition of community roads is listed fair to good. “Existing roadways are generally in good condition, with some isolated surface breakup in low, wet areas, where sub-grade saturation is occurring.”²²
- Specifically, upgrade of 9th Street is one of the nine infrastructure priorities listed in the Watson Lake Integrated Community Sustainability Plan. Due to climatic conditions, the road foundation has failed. This road is a primary emergency service road.
- There are a number of other roads located on a subdivision adjacent to Watson Lake which are completely gravel (5.5 km). The Town would like to see these replaced with BST.

*Source: Town of Watson Lake, Integrated Community Sustainability Plan, 2007.*²³

3.1.1.8 Whitehorse

Road Type – Whitehorse	Length (km.)
Arterial	14.3
Collector	27.1
Expressway/Highway	40.7
Local Road – Paved	171.0
Local Road – Unpaved	137.2
Other Roads – Paved	3.0
Other Roads – Unpaved	0.7
Total Road Length	394.0
Population (#)	25,403

Road Assessment Information:

- The City of Whitehorse is responsible for all roads within the city limits, except the Alaska Highway and the Klondike Highway, which are the responsibility of the Government of Yukon.

²¹ Quest Engineering Group, *Infrastructure Assessment Report, Town of Watson Lake*, 2006, p. 4.

²² Ibid. p. 27

²³ Information in the ICSP process is supported by Quest Engineering Group, *Infrastructure Assessment Report, Town of Watson Lake*, 2006.

- The following quote is from the City of Whitehorse, Integrated Community Sustainability Plan, September 2007:

There are over 220 kilometres²⁴ of road and vehicle traffic in the City of Whitehorse. Approximately 60% of the roads are hard surfaced. The Alaska Highway is the main corridor through the City of Whitehorse and is under the jurisdiction of the Yukon Government. The arterial roads, which include Second and Fourth Avenues, Two Mile Hill, Robert Service Way, Mountainview Drive and Hamilton Boulevard, are all connected to the Alaska Highway and the major areas of traffic generation.

The urban areas of Whitehorse that rate poor for road quality are also the areas that require water and sewer reconstruction. The areas include: Downtown, Marwell, Takhini North and Hillcrest. The DNA Downtown District Pre-design Report 1997, reports the roads are generally fair to poor with alligator cracks, many trench patches, undulated and very coarse.

The rural roads are also rated as poor and require asphalt to lower the ongoing maintenance. Many of the rural roads have a BST surface.

- The City of Whitehorse has significant concerns with keeping pace with ongoing road demands in the city. As gravel roads cost up to five times more to maintain than asphalt and BST roads cost twice as much as asphalt, the City would prefer an increase in asphalt-surfaced roads. However, asphalt roads tend to have greater capital construction costs. Their development, therefore, is limited by the City's budget envelope.
- Road priority areas in Whitehorse are noted as follows:
 - Rebuild roads in Marwell, Downtown, Takhini North and Hillcrest.
 - Surface Country Residential Neighbourhood roads with asphalt.
 - Establish and implement a pavement maintenance system.
 - Rebuild 6th Avenue.
 - Reuse asphalt in lanes.

Source: City of Whitehorse, Integrated Community Sustainability Plan, 2007 and Brian Crist, Director of Operations, City of Whitehorse.

²⁴ This number conflicts with the total number of roads identified in the table above. There are two possible reasons for this: (1) there may be roads in the table that are not the jurisdiction of the City of Whitehorse and (2) there may be roads in the table that are un-maintained and not captured by the City of Whitehorse road inventory.

3.1.2 Unincorporated Communities

Note: Unless otherwise noted, the Yukon Department of Highways and Public Works, Transportation Maintenance Branch maintains all roads in unincorporated communities. The Transportation Maintenance Branch does not maintain roads on First Nation Settlement Land except in the communities of Pelly Crossing, Old Crow and Burwash and on some Settlement Land parcels in Beaver Creek and Upper Liard.

3.1.2.1 Beaver Creek

Road Type – Beaver Creek	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	1.5
Local Road – Unpaved	1.7
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	3.2
Population (#)	97

3.1.2.2 Braeburn

Road Type – Braeburn	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	2.1
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	2.1
Population (#)	15

3.1.2.3 Burwash Landing (KFN)

Road Type – Burwash Municipal	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	2.5
Local Road – Unpaved	3.7
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	6.2
Population (#)	105

Road Type – Burwash Land Claims Boundary	Length (km.)
Arterial	
Collector	
Expressway/Highway	4.7
Local Road – Paved	2.6
Local Road – Unpaved	3.4
Other Roads – Paved	
Other Roads – Unpaved	
Total Road Length	10.7
Population (#)	Unknown

3.1.2.4 Canyon Creek (CAFN)

Road Type – Canyon Creek	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	2.5
Local Road – Paved	--
Local Road – Unpaved	0.8
Other Roads – Paved	--
Other Roads – Unpaved	0.2
Total Road Length	3.5
Population (#)	25

3.1.2.5 Carcross

Road Type – Carcross	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	0.8
Local Road – Paved	2.7
Local Road – Unpaved	3.8
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	7.3
Population (#)	436

Road Assessment Information:

- Carcross roads are primarily surfaced with BST with some gravel.
- While the roads in the Carcross (and neighbouring Tagish) are said to be “sufficient for local travel requirements”, the condition of them is listed as “poor” as road surface and drainage problems are apparent throughout the community.

- Many roads in the region are said to require upgrading, particularly to support the tourism industry that makes regular tour-bus stops in the area during the summer months.

Source: Carcross/Tagish First Nation, Integrated Community Sustainability Plan, 2007 and correspondence with Linda Pringle, Chair, South Klondike Local Advisory Council..

3.1.2.6 Champagne (CAFN)

Road Type – Champagne	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	0.7
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	0.7
Population (#)	20

3.1.2.7 Deep Creek

Road Type – Deep Creek	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	0.8
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	0.8
Population (#)	100

3.1.2.8 Destruction Bay

Road Type – Destruction Bay Municipal	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	3.9
Local Road – Paved	--
Local Road – Unpaved	2.7
Other Roads – Paved	--
Other Roads – Unpaved	0.2
Total Road Length	6.8
Population (#)	48

Road Type – Destruction Bay Land Claims Boundary	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	0.5
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	0.5
Population (#)	Unknown

3.1.2.9 Golden Horn

Road Type – Golden Horn Subdivision	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	1.4
Local Road – Unpaved	5.8
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	7.2
Population (#)	279

Road Type – Golden Horn Local Advisory Area	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	14.0
Local Road – Paved	1.8
Local Road – Unpaved	10.9
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	26.7
Population (#)	Unknown

3.1.2.10 Grizzly Valley

Road Type – Grizzly Valley	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	9.4
Local Road – Paved	--
Local Road – Unpaved	5.5
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	14.9
Population (#)	Unknown²⁵

3.1.2.11 Henderson Corner

Road Type – Henderson Corner	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	2.7
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	2.7
Population (#)	Unknown

3.1.2.12 Ibex Valley

Road Type – Ibex Valley	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	43.8
Local Road – Paved	0.3
Local Road – Unpaved	15.5
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	59.6
Population (#)	315

Road Assessment Information:

- Local roads in the Ibex Valley (not Alaska Highway) are primarily gravel with some BST. Several roads in the region are said to require upgrading.

²⁵ Combined population for Grizzly Valley, Jackfish Bay/Shallow Bay and Mayo Road/Hotsprings Road is estimated at 856.

- Some road sections, - the Old Alaska Highway (2km of the total 8km is currently BST), Echo Valley Road (4km) and Echo Lane – could support BST upgrade. Some road sections – Jackson Road – could use gravel resurfacing, while other need gravel re-surfacing or BST – Scout Lake Road – to support the tourism potential in the area.
- The IbeX Valley Hamlet Council contends that the section of the Alaska Highway through the area is in a state of disrepair and requires reconstruction, beyond the annual patching program.

Source: Bob Atkinson, Chair, IbeX Valley Hamlet Council.

3.1.2.13 Jackfish Bay/Shallow Bay

Road Type – Jackfish Bay/Shallow Bay	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	1.4
Other Roads – Paved	--
Other Roads – Unpaved	
Total Road Length	1.4
Population (#)	Unknown²⁶

3.1.2.14 Johnson's Crossing

Road Type – Johnson's Corner	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	0.9
Local Road – Paved	--
Local Road – Unpaved	2.7
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	3.6
Population (#)	25

²⁶ Combined population for Grizzly Valley, Jackfish Bay/Shallow Bay and Mayo Road/Hotsprings Road is estimated at 856.

3.1.2.15 Keno City

Road Type – Keno City	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	0.3
Local Road – Paved	--
Local Road – Unpaved	2.3
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	2.6
Population (#)	20

3.1.2.16 Marsh Lake

Road Type – Marsh Lake Community	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	0.7
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	0.7
Population (#)	Unknown

Road Type – Marsh Lake Local Advisory Area	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	40.7
Local Road – Paved	7.7
Local Road – Unpaved	31.6
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	80.0
Population (#)	422

3.1.2.17 Mayo Road/Hotsprings Road

Road Type – Mayo/Hotsprings Road	Length (km.)
Arterial	--
Collector	9.2
Expressway/Highway	11.8
Local Road – Paved	6.0
Local Road – Unpaved	35.1
Other Roads – Paved	--
Other Roads – Unpaved	2.5
Total Road Length	64.6
Population (#)	Unknown²⁷

Note: Includes Hotsprings Road Development Area and Mayo Road Development Area (separate maps).

3.1.2.18 Mendenhall

Road Type – Mendenhall	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	6.8
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	6.8
Population (#)	Unknown

3.1.2.19 Mount Lorne

Road Type – Mount Lorne	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	18.7
Local Road – Paved	--
Local Road – Unpaved	54.3
Other Roads – Paved	--
Other Roads – Unpaved	0.5
Total Road Length	73.5
Population (#)	379

²⁷ Combined population for Grizzly Valley, Jackfish Bay/Shallow Bay and Mayo Road/Hotsprings Road is estimated at 856.

Road Assessment Information:

- Local roads include the South Klondike Highway (BST) and several small feeder roads (primarily gravel). The longest road in the area is the Annie Lake Road, which supports some 45 lots and extensive backcountry and recreational activities (first two kilometres BST; the remainder is gravel).
- The highway and most feeder roads are in fair to good condition.
- The Annie Lake road is in poor condition and is viewed by the Local Advisory Council as the primary road rehabilitation need. Since original construction, over 24 years ago, the road has deteriorated significantly. The road's crown is depressed, ditches are not clear and grader work brings sub-grade material to the surface regularly.

Source: Rick Macdonald, Hamlet of Mount Lorne Advisory Council.

3.1.2.20 Nygren

Road Type – Nygren	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	1.1
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	1.1
Population (#)	Unknown

3.1.2.21 Old Crow

Road Type – Old Crow	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	7.5
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	7.5
Population (#)	251

3.1.2.22 Pelly Crossing (SFN)

Road Type – Pelly Crossing Municipal	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	0.2
Local Road – Unpaved	0.2
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	0.4
Population (#)	323

Road Type – Pelly Crossing Land Claims Boundary	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	5.7
Local Road – Paved	7.2
Local Road – Unpaved	10.8
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	23.7
Population (#)	Unknown

Road Assessment Information:

- The Selkirk First Nation provides most local road maintenance in Pelly Crossing, although some areas are under Government of Yukon jurisdiction (see below). Roads in Pelly Crossing are surfaced by gravel and BST.
- Road condition is stated as “variable” to “poor.” There are three key issues with some roads - inadequate structural bases, seasonal drainage problems and/or insufficient BST treatment. The Selkirk First Nation Government maintains roads in the community with a \$20,000 annual budget, which is believed to be insufficient for this task.
- Specifically, priority roads areas include four kilometres of BST in the John Ra and Willow Creek subdivisions and reconstruction of the first five kilometres of the Pelly Farm Road (the latter is a Government of Yukon responsibility). In addition, the community would like to see the Government of Yukon upgrade the Mica Bridge to a current safety standard.

Source: Selkirk First Nation/Pelly Crossing, Integrated Community Sustainability Plan, 2007.

3.1.2.23 Rock Creek

Road Type – Rock Creek	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	0.9
Local Road – Paved	--
Local Road – Unpaved	1.0
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	1.9
Population (#)	20

3.1.2.24 Ross River

Road Type – Ross River	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	1.2
Local Road – Paved	7.0
Local Road – Unpaved	0.7
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	8.9
Population (#)	369

Road Assessment Information:

- Roads in Ross River are gravel and BST and are maintained by Yukon Highways and Public Works.
- Road condition is stated as “fair.” Community representatives note that the local road system is adequate.
- There is significant concern about the quality of roads leading into and out of Ross River, specifically the Robert Campbell Highway and the North and South Canal Roads.

Source: Ross River, Integrated Community Sustainability Plan, 2006.

3.1.2.25 Silver City

Road Type – Silver City	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	4.2
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	4.2
Population (#)	15

3.1.2.26 Squanga Lake (CTFN)

Road Type – Squanga Lake	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	0.8
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	0.8
Population (#)	Unknown

3.1.2.27 Stewart Crossing

Road Type – Stewart Crossing	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	2.1
Local Road – Paved	0.7
Local Road – Unpaved	2.7
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	5.5
Population (#)	30

3.1.2.28 Tagish

Road Type - Tagish	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	8.1
Other Roads – Paved	2.1 ²⁸
Other Roads – Unpaved	--
Total Road Length	10.2
Population (#)	221

Road Assessment Information:

- See Carcross Road Assessment previously.

Source: Carcross/Tagish First Nation, Integrated Community Sustainability Plan, 2007.

3.1.2.29 Takhini River Subdivision (CAFN)

Road Type – Takhini River	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	3.0
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	3.0
Population (#)	Unknown

²⁸ This figure was provided by the Department of Highways and Public Works and did not get captured by the GeoBase inventory.

3.1.2.30 Upper Liard (LFN)

Road Type – Upper Liard	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	2.3
Local Road – Paved	--
Local Road – Unpaved	6.9
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	9.2
Population (#)	100

Road Assessment Information:

- Roads in Upper Liard are primarily gravel. Road maintenance is provided by: (i) the Liard First Nation in Albert Creek (ii) the Town of Watson Lake in the 2 and 2.5 mile settlement areas and (iii) Yukon Highways and Public Works in Upper Liard and other areas.
- Road condition is stated as “fair.”
- Drainage and sub-grade improvements are required in the Upper Liard Village and Albert Creek areas, as well as BST surfacing throughout Upper Liard. Road construction will be required to support further subdivision development.

Source: Liard First Nation, Integrated Community Sustainability Plan, 2007.

3.1.2.31 West Dawson/Sunnydale

Road Type – West Dawson/Sunnydale	Length (km.)
Arterial	--
Collector	--
Expressway/Highway	--
Local Road – Paved	--
Local Road – Unpaved	1.7
Other Roads – Paved	--
Other Roads – Unpaved	--
Total Road Length	1.7
Population (#)	Unknown

3.2 Objectives for Yukon Community Roads

Ultimately, under the *Municipal Act*, an incorporated community (municipality) “has jurisdiction, management and control over all highways in the boundaries of the municipality, other than a highway excepted by order of the Commissioner in Executive Council.”²⁹ For these purposes, a highway is defined as:

*any thoroughfare, street, road, trail, lane, alley, square, avenue, parkway, driveway, bridge, viaduct, causeway, and any other place which the public is ordinarily entitled or permitted to use for the passage or parking of vehicles and that is in the boundaries of a municipality.*³⁰

In keeping with this responsibility, municipal governments require a roads policy that includes a technically sound road evaluation/condition program, as well as important data collection techniques, such as a traffic count program. These programs can then be used to facilitate decisions on future road investment.

There is, however, no comprehensive plan in place that captures objectives or standards for community roads throughout the Yukon. Due to its size and associated access to resources, the City of Whitehorse is the only jurisdiction in the territory with published standards related to the design, construction and maintenance of its community roads.³¹

By illustration, the City of Whitehorse Transportation Maintenance Policy Objectives include the following:

1. *To provide vehicular and pedestrian traffic with adequate mobility within the City’s financial resources.*
2. *To prevent or reduce accidents and injuries.*
3. *To extend the life of transportation infrastructure.*
4. *To set the level of service for transportation infrastructure maintenance.*
5. *To provide an operational plan outlining how, when, where and in what order of priority transportation maintenance is carried out.*

In the remaining seven incorporated communities, no published policies could be found. In these communities, municipal staff will generally provide roads services in a manner that reflects the direction of the local council or municipal government. In some cases – such as Watson Lake and Old Crow – agreements have been struck with the Government of Yukon or the relevant First Nation (or First Nation Government) to provide road maintenance services via shared services agreements.

In unincorporated communities, the Government of Yukon is, almost exclusively, the road service provider (see Appendix C).

²⁹ See *Municipal Act*, Sec. 272.

³⁰ See *Municipal Act*, Sec. 1.

³¹ See City of Whitehorse, *2008-2009 Transportation Maintenance Policy* and *2008-2009 Snow and Ice Control Policy*, <www.whitehorse.ca>.

Given the significant differences – particularly in population size and associated road traffic flows – between (1) the City of Whitehorse (2) other incorporated communities and (3) unincorporated communities, it is difficult to develop a set of road design, construction and maintenance standards that apply equally to all Yukon communities.

This being said, however, there are key principles that can address road development and maintenance across all communities. The Building Canada commitment to local and community roads, for example, has three key principles:

- *To improve road safety, mobility and sustainability*
- *To promote the rehabilitation of bridges, tunnels and other structures*
- *To support economic and community development*

In keeping with these broad principles, and following an extensive literature review of road maintenance policies in several other Canadian municipal jurisdictions³², a set of objectives is required that assist in demonstrating a clear need for road investment in a particular community.

To demonstrate this need, two key criteria might include (1) an updated road condition report and (2) current road traffic counts. In nearly all Yukon communities, neither is available.³³ As such, other key criteria are needed to justify increased road investment. Below are two tables that attempt to capture this, via a ‘made-in Yukon’ approach.

In the first table, Table 14-A, recommended road surface types are presented using community population as the key baseline criteria. This, of course, will prove to be an incomplete decision-making tool, as there are often competing criteria that can be used to support road investment, particularly in smaller communities.

The second table, Table 14-B, attempts to remedy this deficiency by noting several additional key criteria that should be considered prior to investment decisions being made. These are categorized under four main objectives, namely economic, safety and security, environmental and technical. For each objective there are a series of related questions (i.e., investment criteria) that could be addressed when considering the design, construction and maintenance needs of a particular road, or of community roads in general. Essentially, the more questions that are answered in the affirmative, the higher the priority for investment.

³² Jurisdictions assessed include the City of Hamilton, City of Ottawa, City of Brandon, City of Toronto, City of Whitehorse, Halifax Regional Municipality, the Islands Trust (BC), Municipality of the County of Annapolis, Town of Ajax and Town of Whitecourt.

³³ Or, could not be found through research conducted as part of this project.

Category	Population	Surface Recommendations
A	2000 or more	All Roads – Asphalt or BST; Gravel for very low use roads
B	1,000 to 1,999	Arterial, Collector, Some Local Roads – BST or Asphalt; Other Local – Gravel
C	500 to 999	Arterial and Collector – BST; Other Local Roads – Gravel
D	100 to 499	Arterial and Collector – BST or Gravel; Other Local Roads – Gravel
E	Less than 100	All Roads – Gravel (unless justification provided via Table 14-B below)

1. Economic
<ul style="list-style-type: none"> • Does community population, and economic potential, support increased road investment? • Is better road access to the town/city centre or prime business areas required? • Does the community require expanded road access to the Yukon highway system?
2. Safety and Security
<ul style="list-style-type: none"> • Do community emergency roads have structural deficiencies that should be addressed? • Do roads have any clear safety issues that need to be addressed? • Does the community require increased road access to the Yukon highway system?
3. Environmental
<ul style="list-style-type: none"> • Are road drainage issues posing environmental (or safety) concerns? • Do roads require enhancement to support secondary, non-motorized, traffic? • Are transit routes, or route enhancements, required?
4. Technical
<ul style="list-style-type: none"> • Do road functional classifications need to be revised in the community?³⁴ • Do road traffic volumes – or vehicle type – support a higher road standard/classification?³⁵ • Are roads built to an acceptable construction/engineering standard?³⁶

³⁴ In other words, are there roads that should be at higher classification (arterial, collector, local, etc...)?

³⁵ It appears that only the City of Whitehorse officially tracks traffic volumes for its community roads. This essential piece of information is often needed to support any increased investment.

³⁶ This question can only be answered with a clear understanding of the current geometric and other standards as required by organizations such as the Transportation Association of Canada (TAC).

Appendix A

Yukon Highway Map

Appendix B

Yukon Community Road Maps

Appendix C

Roads Maintained by the Department of Highways and Public Works

References

- Carcross/Tagish First Nation. *Integrated Community Sustainability Plan*. 2007.
- City of Brandon. *Street Classifications*. 2009. <www.brandon.ca>.
- City of Dawson and Tr'ondek Hwech'in First Nation. *After the Gold Rush: Integrated Community Sustainability Plan*. 2008.
- City of Hamilton. *Rural Roads Standards Policy Paper*. 2009. <www.myhamilton.ca>.
- City of Ottawa. *Road Classification Summary*. 2009. <www.ottawa.ca>.
- City of Toronto. *Road Classification System*. 2009. <www.toronto.ca>.
- City of Whitehorse. *2008-2009 Snow and Ice Control Policy*. 2009. <www.whitehorse.ca>.
- City of Whitehorse. *2008-2009 Transportation Maintenance Policy*. 2009. <www.whitehorse.ca>.
- City of Whitehorse. *Integrated Community Sustainability Plan*. September 2007.
- Council of Ministers Responsible for Transportation and Highway Safety. *Canada's National Highway System: An Overview*. April 2008. <www.comt.ca>.
- Council of the Federation. *Looking to the Future: A Plan for Investing in Canada's Transportation System*. December 2005. <www.councilofthefederation.ca>.
- GeoBase. 2009. <www.geobase.ca>.
- Government of Yukon, Department of Highways and Public Works. 2009. <www.hpw.gov.yk.ca>.
- Government of Yukon, Department of Highways and Public Works. *Northern Connections: A Multi-Modal Transportation Blueprint for the North*. Whitehorse: Government of Yukon, 2008.
- Government of Yukon, Department of Highways and Public Works. *Prospecting Corridors to Growth – A Transportation Vision for Yukon*. Whitehorse: Government of Yukon, 2006.
- Government of Yukon, Department of Highways and Public Works. *Yukon Highways Log Book*. October 2008. <www.hpw.gov.yk.ca>.
- Government of Yukon, Department of Highways and Public Works. *Yukon BST Management System: 2007 Update*. Whitehorse: Government of Yukon, 2008.
- Government of Yukon, Department of Highways and Public Works. *Yukon Pavement Management System: 2007 Condition Report*. Whitehorse: Government of Yukon, 2008.

Government of Yukon, Department of Highways and Public Works. *Yukon Bridge and Culvert Management System: 2007 Condition Report*. Whitehorse: Government of Yukon, 2008.

Halifax Regional Municipality. *Snow and Ice Control*. 2009. <www.halifax.ca>.

Inukshuk Planning and Development. *Selkirk First Nation/Pelly Crossing Integrated Community Sustainability Plan*. May 2007.

Islands Trust. *Roads Standards, Classifications*. 2009. <www.islandstrust.bc.ca>.

Liard First Nation. *Integrated Community Sustainability Plan*. November 2007.

Liard First Nation. *Integrated Community Sustainability Plan*. November 2007.

Municipality of the County of Annapolis. *Road and Street Standards Manual*. 2009. <www.annapoliscounty.ns.ca>.

Na-Cho Nyak Dun First Nation. *Tan Sothan – A Good Path: Integrated Community Sustainability Plan*. May 2008.

Teslin Tlingit Council and Village of Teslin. *Our Bridge to the Future: Teslin Integrated Community Sustainability Plan*.

Town of Ajax. *Design Criteria*. 2009. <www.townofajax.com>.

Town of Faro. *Integrated Community Sustainability Plan*. December 2007.

Town of Watson Lake. *Integrated Community Sustainability Plan*. 2007.

Town of Whitecourt. *Design Standards for Local Improvements*. 2009. <www.whitecourt.ca>.

Village of Carmacks. *Integrated Community Sustainability Plan*. 2006.

Village of Haines Junction. *Integrated Community Sustainability Plan*. 2007.

Village of Mayo. *Integrated Community Sustainability Plan*. 2006.

Yukon Bureau of Statistics. 2009. <www.eco.gov.yk.ca/stats>.

Zanasi, Luigi and Malcolm Taggart. *Ross River Integrated Community Sustainability Plan*. May 2006.