

5. General Management Direction

This section deals with general management direction as it applies to the entire Integrated Management Area (IMA) of the North Yukon Planning Region. For a discussion of how general management direction is applied to specific landscape management units (LMUs), see Section 6 of this Plan.

The management direction proposed here can be integrated into existing processes, such as the land application review process. Other management plans in effect or in preparation for the region should be consulted for additional direction and guidance (see Appendix 3).

An overview of identified ecological, cultural and economic values and resources referenced in this section can be found in Maps 2-4, Appendix 1. Detailed maps and descriptions of resource values are contained in the North Yukon Resource Assessment Report (North Yukon Planning Commission, 2007a,b) and Land Use Scenarios Report (North Yukon Planning Commission, 2009). These materials are available from the NYPC website (www.nypc.planyukon.ca) and should be consulted when further information is required.

Strategies and Best Management Practices

This Plan assumes that whenever possible and practical, the recommended strategies and best management practices will be considered and implemented. Operational decisions regarding the strategies and best management practices are at the discretion of land users, assessment boards and agencies. A summary of best management practices from this section can be found in Appendix 2.

5.1 Sustainable Development

Sustainable development requires consideration of the economic, social and ecological consequences of land use decisions, and management of lands and resources in an integrated and coordinated manner. Steps toward achieving sustainable development include establishing land management objectives, designating lands for management priorities, and minimizing and managing the potentially adverse impacts that can arise from multiple land use activities combined with other natural processes.

GOAL 1 – SUSTAINABLE DEVELOPMENT	
Promote sustainable development by ensuring that social, cultural, economic and environmental policies are applied to the management, protection and use of land, water and resources in an integrated and coordinated manner.	
OBJECTIVES	STRATEGIES
1.1. Consider social, economic and ecological risks and benefits of land use decisions.	1.1.1 Evaluate future land use scenarios to understand social, economic and ecological consequences of land use decisions. 1.1.2 Establish acceptable limits of change and indicators of environmental condition.
1.2. Develop a landscape management framework that facilitates coordinated and integrated decision-making.	1.2.1 Identify and map landscape management units. 1.2.2 Develop and apply a land use designation system to the landscape management units. 1.2.3 Develop and implement a results-based management framework for indicator tracking and reporting. 1.2.4 Develop and maintain a standardized, accessible regional database of identified resources and values.
1.3. Minimize and manage the cumulative impact of multiple land use activities on wildlife and fish habitat, water quality and people.	1.3.1 Utilize results of land use scenarios to recommend measures to minimize potential cumulative land use impacts. 1.3.2 Promote proactive land management through application of a results-based management framework. 1.3.3 Develop appropriate tools, approaches and indicators to monitor and manage cumulative impacts to land, water and ecosystems. 1.3.4 Consider project-level contributions to regional cumulative impacts on land, water, fish, wildlife and people. 1.3.5 Manage location, scale and intensity of land use.
BEST MANAGEMENT PRACTICES – GENERAL	See individual ecological, heritage and cultural, and economic sections below.
INDICATORS	Indicators to be determined through future research and plan implementation.

Three specific sustainable development topics are addressed below:

- cumulative effects management;
- human-caused land and water impacts; and,
- climate change.

5.1.1 Cumulative Effects Management

Cumulative effects are changes to the environment and/or society that result from a land use activity in combination with other past, present and future activities. Negative effects are called cumulative impacts. While one activity may have only a small impact, the combined effect of a number of activities may have a significant impact.

Managing cumulative effects is best accomplished by applying a suite of integrated and coordinated actions to land management. Assessment, mitigation, government policy, legislation and planning all play a role.

In the Yukon, no single agency or group is responsible for cumulative effects management. Adherence to this Plan on its own is not sufficient to manage cumulative effects. However, the tools and approaches in this Plan provide responsible agencies and land users with a framework for cumulative effects management.

Among the key issues related to managing cumulative effects:

- Assessing and mitigating land use activities on a project-by-project basis is not an effective strategy for managing cumulative effects.
- Cumulative effects management must consider both direct and indirect impacts to valued resources.
- Monitoring the impacts of multiple land use activities is necessary to assess and evaluate potential cumulative effects.

RECOMMENDATION	<ul style="list-style-type: none"> • <i>As a general guideline for decision makers and land users, in the Integrated Management Area the amount of surface disturbance in a landscape management unit should be maintained below the cumulative effects indicator levels recommended in the Plan.</i>
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Many of the recommended strategies and best management practices relating to industrial land use activity contribute to maintaining the amount of surface disturbance below the recommended cautionary and critical cumulative effects indicator levels. These strategies should be considered by both project proponents and decision-makers.

The process for maintaining surface disturbance below cautionary or critical levels will involve dialogue between the implementing Parties, the Yukon and Vuntut Gwitchin governments. This process will recognize the discretion of the Parties to make final decisions informed by:

- indicator levels;
- other land use plan recommendations; and,
- advice from third parties, such as YESAB.

Maintaining surface disturbance below these levels will also involve the land users, who will be expected to apply this Plan as a guide when developing project proposals, carrying out operations and decommissioning projects. The mechanics for enforcing this recommendation will be at the discretion of the Parties and will be addressed by the Parties as part of implementation planning.

5.1.2 Human-caused Land and Water Impacts

5.1.2.1 Surface Disturbances

Human-caused surface disturbance is the physical human *footprint* on the land, the most visible legacy of land use activities. Increasing levels of surface disturbance and habitat change represent increasing risks to native wildlife and fish populations, and overall integrity of natural systems.

Approximately 10,000 kilometres of linear features, representing 9,500 hectares of surface disturbance, were created in the region by historical oil and gas and mineral exploration, and transportation infrastructure (Map 4, Appendix 1). Almost all historical linear features are seismic lines, tote roads and winter trails.

Some historical features are relatively permanent and will remain in a disturbed condition for decades. Many historical linear features have recovered to the point where they are no longer functional surface disturbances. Very few of these linear features are actively used by people.

A human-caused surface disturbance is considered recovered when it no longer facilitates travel or access by wildlife and people ¹. In forested areas, a feature can be considered recovered when it contains woody vegetation (trees and shrubs) approximately 1.5m in height.

As human-caused surface disturbances, including linear features, recover through natural re-vegetation or active reclamation, they are subtracted from the total amount of disturbed area. Reclaiming surface disturbances upon completion of activities will allow higher levels of land use to occur in relation to recommended surface disturbance and linear density indicator levels.

Among the key issues related to managing surface disturbances:

- Surface disturbances create direct and indirect impacts to wildlife and fish.
- Visual quality of the landscape for human use and enjoyment can be affected for long periods of time.
- Comparisons of current levels of surface disturbances to recommended indicator levels are required to monitor and track the cumulative effects of land use.

<p>BEST MANAGEMENT PRACTICES – SURFACE DISTURBANCES</p>	<ul style="list-style-type: none"> • The size, intensity and duration of all surface disturbances should be reduced. • Native endemic plants should be used for active reclamation of disturbed sites.
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¹ This definition of recovered is closely linked with human and predator access and potential effects on Porcupine caribou and moose, key values in the region.

RECOMMENDATIONS	<ul style="list-style-type: none"> • <i>Site closure/remediation plans should be developed, implemented and monitored for large-scale industrial and/or infrastructure projects that create significant surface disturbance.²</i> • <i>To provide a benchmark for the monitoring of cumulative effects indicator levels, the status of existing surface disturbances should be documented.</i>
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Considering the future anticipated land uses in northern Yukon, increased opportunities for motorized access and predator movement as a result of new linear features will likely be larger management issues than direct habitat loss.

5.1.2.2 Contaminated Sites

Several contaminated sites have been identified in the region. Based on existing information, one site (Bonnet Lake) requires remediation and six require assessment. The remaining sites are remediated or do not require remediation. Most documented sites consist of empty fuel drums and assorted refuse resulting from historical oil and gas or mineral exploration activities.

While contaminated sites are a concern for the community of Old Crow and local land users, at this time the number and nature of the identified sites do not appear to represent a major threat to regional ecological integrity or the health of wildlife and fish populations.

Addressing contaminated site issues was not a major focus of the Plan. The most important strategy to minimize potential contaminated site impacts in the region is prevention of new contaminated sites through careful mitigation, operating practices and monitoring.

5.1.3 Climate Change

Northern Yukon is anticipated to experience some of the largest climate-related changes in Canada. Residents of the region are concerned about the impacts of future climate change on the land, water, wildlife and fish, and the resulting changes to the culture and traditional economy of the Vuntut Gwitchin and other First Nations.

² Land uses that do not result in the creation of functional disturbance are exempted from the requirement for site closure/remediation plans. Re-vegetation and reclamation of impacted sites should be considered in the preparation of these plans.

Among the key issues related to managing climate change effects:

- Biophysical changes are predicted to occur³, but with uncertain magnitude.
- Three general habitat types are at significant risk of change due to vegetation conversion and permafrost degradation:
 - high elevation habitats used by Porcupine caribou and other valued wildlife species;
 - low-mid elevation non-forested tundra habitats; and,
 - major wetland complexes.
- In-stream water flow rates may decrease, resulting in reduced water availability for fish over-wintering and industrial land uses.
- Changing winter snow and ice conditions may affect Porcupine caribou distribution, migration patterns and range use.
- Old Crow residents’ ability to travel on the land and by river may be affected by decreasing summer flow rates and changing winter snow and ice conditions.

RECOMMENDATIONS	<ul style="list-style-type: none"> • <i>In the North Yukon Planning Region, potential climate change impacts should be considered in all land management decisions.</i> • <i>Due to the potential cumulative effects of climate change and land use impacts, sensitive wetland habitats and Porcupine Caribou Herd habitats at risk of significant change should be managed more cautiously, and with a high level of conservation focus.</i>
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Climate Change

A land use plan cannot manage climate change effects. However, predicted climate change effects can be considered and accounted for. The precautionary principle and adaptive management are relevant concepts for managing and adapting to climate change.

The Plan considers and accounts for potential climate change effects by recommending a higher level of conservation management focus in important Porcupine Caribou Herd habitats, major wetland complexes and major river corridors. These areas are at greatest risk from climate change impacts.

Climate change was considered when selecting recommended cumulative effects indicator levels for Integrated Management Area zones (e.g., Richardson Mountains) and was an important consideration for the Protected Area recommendations of this Plan.

³ Predicted changes include increasing and more variable winter snow depths, increasing summer drought indices, decreased in-stream water flow, increasing fire rates, and vegetation community change and conversion.

5.2 Ecological Resources

The region contains significant ecological resources and sensitive habitats for a variety of species. The Vuntut Gwitchin and other First Nations have relied on the wildlife and fish resources of the region for thousands of years; First Nations and non-First Nations people continue to rely on them today.

Sustaining regional wildlife and fish populations requires the maintenance of regional habitat integrity and management of significant habitats. Ecologically important areas that support wildlife and fish populations are shown in Map 2, Appendix 1. Strategies to maintain habitat integrity for wildlife and fish populations are directed at focal species (Porcupine caribou, moose, marten and sheep) and wetlands, lakes and rivers.

5.2.1 Wildlife Habitat

Wildlife populations are susceptible to a variety of impacts that can affect both population health and the integrity of habitat.

Among the key issues related to managing wildlife habitat:

- Industrial land use activities may create direct wildlife habitat impacts including habitat loss, alteration and fragmentation. Potential indirect wildlife habitat effects include avoidance or reduced use of habitat around areas actively being used.
- Human and predator access facilitated by linear features associated with industrial land use activity (seismic lines, trails and winter and all-season roads) may provide increased opportunities for harvesting and/or predation, potentially leading to higher rates of mortality.
- Climate change effects on wildlife habitats and populations are uncertain and require a precautionary and adaptive management approach.

GOAL 2 – WILDLIFE	
Maintain terrestrial habitat in a condition required to sustain regional wildlife populations.	
OBJECTIVES	STRATEGIES
2.1. Minimize direct and indirect human-caused habitat disturbance and alteration.	2.1.1 Reduce size, intensity and duration of human-caused physical surface disturbances (e.g., utilize low impact seismic, winter roads and enhanced reclamation). 2.1.2 Reduce other human land use impacts such as noise, smell and light.
2.2. Minimize habitat fragmentation as a result of human features.	2.2.1 Coordinate, manage and minimize new road and trail access.
2.3. Minimize potential habitat avoidance that results from human features and activities.	2.3.1 Avoid or reduce activities in significant wildlife habitats during important biological periods (e.g., utilize timing windows).
BEST MANAGEMENT PRACTICES – GENERAL	<ul style="list-style-type: none"> • Avoid or minimize the creation of new access roads and trails; utilize existing routes unless their use will cause additional long term environmental impacts (e.g., permafrost degradation). • Avoid or minimize the size, extent, duration and level of activities in concentrated seasonal use areas. • Use appropriate operational timing-windows in significant wildlife habitats to minimize activities, whenever possible, during periods of wildlife use. • When new access creation is necessary: <ul style="list-style-type: none"> o Non-permanent winter access routes should be developed and utilized versus all-season access routes. o Gate or otherwise restrict hunting along new access routes. o Where possible, direct new access routes through less significant wildlife habitats.
INDICATORS	<ul style="list-style-type: none"> • Surface disturbance. • Linear density. • Other indicators to be determined through future research and plan implementation.

No specific recommendations relating to management of habitats for focal wildlife species are required at this time.

5.2.2 Focal Species Management

5.2.2.1 Porcupine Caribou

The Porcupine Caribou Herd is the most important and valued ecological and socio-cultural resource in the region. Caribou management priorities are focused on areas showing concentrated and general use by animals over many years (mid-1980s to present), or where animals occupy the same area during many seasons within a year, suggesting a high intensity of caribou use. It is important to note that the Porcupine Caribou Herd uses the entire planning region, at various times of year.

The herd has been declining since 1989 and, as of March 2008, there is no current evidence that the decline is reversing. Managing concentrated use areas with a higher level of conservation focus will support the Yukon, Vuntut Gwitchin and Federal governments in their national and international efforts to conserve the herd.

While there is variability from season to season and year to year in how the herd utilizes its range, the current concentrated use assessment is based on the best available information. Consistent with the precautionary principle, a high degree of harvest and management caution is warranted across the herd’s range. Range use may change over time in response to many factors, including changing climate and human activities.

More specific areas of concentrated use, by season, are provided in the North Yukon Resource Assessment map series (*see* Maps 19-24 of North Yukon Planning Commission, 2007b).

<p>BEST MANAGEMENT PRACTICES – PORCUPINE CARIBOU</p>	<ul style="list-style-type: none"> • Avoid or minimize the size, extent, duration and level of activities in concentrated seasonal use areas (<i>see</i> Map 2, Appendix 1 for locations). • Avoid using or crossing seasonal migration corridors with new access routes. • Define and implement safe operating distances from the herd. • Consider the following seasons when determining appropriate operational timing-windows (seasons when Porcupine caribou occupy the region as reported by McNeil et al., 2005): <ul style="list-style-type: none"> Winter: December 1 to March 31 Spring migration: April 1 to May 31 Early summer: July 1 to July 15 Mid to late summer: July 16 to August 7 Fall migration: August 8 to October 7 Rut: October 8 to November 30
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5.2.2.2 Moose

Moose use most of the planning region at various times of year. Areas of importance on a seasonal or annual basis are the region's lakes, wetlands, rivers, and river valleys. Moose are not subjected to as high a harvesting pressure as Porcupine caribou, but they are an important alternative subsistence species when caribou are not available.

Moose are fairly tolerant of disturbance from land use activities, but they are susceptible to increased harvest as a result of new road and trail access. Management of linear features (roads, trails and seismic lines), and of their use, is an important consideration for this species. During certain periods of the year, moose prefer younger forest and shrub habitats. Habitat conditions may therefore improve as a result of increased fire activity and re-generating land use disturbances.

Specific areas of suitable habitat for moose, by season, are shown in the North Yukon Resource Assessment map series (*see* Maps 25-29 in North Yukon Planning Commission, 2007b).

BEST MANAGEMENT PRACTICES – MOOSE	<ul style="list-style-type: none"> • Avoid seasonal use/concentration areas and migration corridors. • Avoid using or crossing seasonal migration corridors with new access routes.
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5.2.2.3 Marten

Marten use most of the planning region at various times of year. Areas of importance on a seasonal or annual basis include stands of mixed-wood or coniferous forest, particularly within river/stream valleys. Marten are an important trapping resource for First Nation and non-First Nation residents.

Marten are generally fairly tolerant of and resilient to disturbance. However, documented information on marten in the region is limited, and the species is poorly understood in northern environments.

More specific areas of suitable winter habitat for marten are provided in the North Yukon Resource Assessment map series (*see* Map 30 of North Yukon Planning Commission, 2007b).

Specific recommendations relating to management of marten habitat are not required at this time.

5.2.2.4 Sheep

Sheep generally use high elevation and alpine habitats. Sheep management priorities are focused on key habitat areas (Yukon Department of Environment, 2005) and local knowledge areas. Sheep hunting is not a major part of First Nation subsistence harvest activities in the region.

Sheep winter range is an important and sensitive habitat. Critical winter habitat for sheep generally characterized as relatively snow-free, wind-swept, south-facing slopes. Sheep have strong fidelity to specific areas, and tend to use those areas around the same time each year. Sheep populations are vulnerable to direct habitat loss and disturbance from various activities.

More specific areas of suitable habitat for sheep are provided in the North Yukon Resource Assessment map series (*see* Map 16 of North Yukon Planning Commission, 2007b).

BEST MANAGEMENT PRACTICES – SHEEP	<ul style="list-style-type: none"> • Avoid sensitive sheep habitats and key areas, with emphasis on winter range avoidance (<i>see</i> Map 2, Appendix 1 for locations).
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Specific recommendations relating to management of sheep habitat are not required at this time. VGFN, the Tetlit Gwich'in First Nation, and other groups have prepared a draft sheep management plan for the Richardson Mountains (Working Group for Northern Richardson Mountains Dall's Sheep, 2008).

5.2.3 Other Wildlife Species

The region contains several other important mammal species, including grizzly bear, black bear, wolverine, wolf, and fox. Most of these species are occasionally hunted or trapped. The Federal *Species at Risk Act* (SARA) lists grizzly bear and wolverine as species with special concern status.

The majority of bird species in the region are migratory and present only during the breeding season, which extends from approximately May to September. There are three bird species under SARA—the Rusty Blackbird is at risk but has not yet been listed (as of February 2008), the Short-eared Owl and Peregrine Falcon (*tundrius* subspecies) have special concern status, and the Peregrine Falcon (*anatum* subspecies) has threatened species status. The *anatum* subspecies is most common in the region. A national recovery plan for the *anatum* subspecies was prepared in 1988 (Erickson et al. 1988), but Yukon populations are doing very well (Tom Jung, Yukon Department of Environment, pers. comm.).

There are currently no specific SARA guidelines or required management prescriptions for species with special concern status. There are also no immediate conservation or management concerns regarding these two mammal and three bird species in northern Yukon.

5.2.4 Fish Habitat

Fish populations are susceptible to a variety of impacts that can affect both population health and the integrity of habitat. The level of understanding of fish and fish habitat in the region is generally considered poor, particularly for lakes and wetlands.

Salmon (Coho, Chum, and Chinook) use most of the major river/streams in the Porcupine watershed. Adult salmon may be present from July (Chinook migration) to December (Coho migration). Juvenile salmon are present throughout the year. Freshwater fish are present throughout the watershed, and many important stocks migrate between summer and over-wintering habitats.

Among the key issues related to managing fish habitat:

- Industrial land use activities may create direct fish habitat impacts including habitat loss, degradation and barriers to fish passage.
- In-stream water withdrawals required for industrial land uses may lead to impacts on fish over-wintering habitat.

- Human access facilitated by linear features related to industrial land use activity (seismic lines, trails and winter and all-season roads) may increase opportunities for harvesting, potentially leading to decreased fish populations.
- Climate change effects are anticipated to result in decreased stream-flow rates, potentially impacting fish habitats and populations.

Fish species goals, objectives, and strategies were developed to conserve significant fish stocks and habitats. Specific strategies are aimed at minimizing human disturbances in significant or sensitive habitat, with special focus on over-wintering habitat.

GOAL 3 – FISH	
Maintain aquatic habitat in a condition required to sustain regional fish populations.	
OBJECTIVES	STRATEGIES
3.1. Minimize human-caused aquatic habitat disturbance and alteration.	3.1.1 Minimize surface and vegetation disturbance in riparian areas. 3.1.2 Avoid in-stream aggregate (gravel) extraction.
3.2. Minimize stream crossings and/or stream crossing impacts as a result of roads and trails.	3.2.1 Coordinate and manage road and trail access.
3.3. Maintain significant fish over-wintering and spawning habitat.	3.3.1 Avoid direct disturbance to sensitive over-wintering habitats. 3.3.2 Avoid significant salmon spawning habitat. 3.3.3 Avoid or reduce activities in fish habitat during important biological periods or seasons (e.g., utilize timing windows). 3.3.4 Avoid or reduce winter in-stream water withdrawals in sensitive over-wintering fish habitat.
3.4. Maintain fish migration routes and access to required seasonal habitats.	3.4.1 Avoid direct or indirect blocking of identified fish migration routes.
BEST MANAGEMENT PRACTICES – GENERAL	<ul style="list-style-type: none"> • To minimize potential impacts to regional fish populations, aggregate (gravel) mining should be prohibited in significant fish habitats. • If aggregate mining is required in significant fish habitats, appropriate operational timing-windows should be utilized to minimize activities during important biological periods.
INDICATORS	<ul style="list-style-type: none"> • Indicators to be determined through future research and plan implementation.

Given the current level and type of land use activity, the use of ice roads or winter roads as river crossings—if conducted in accordance with best management practices—is generally considered adequate to mitigate potential impacts to fish stocks or habitats⁴.

⁴ Al von Finster, Department of Fisheries and Oceans, pers. comm., February 2008.

RECOMMENDATIONS	<ul style="list-style-type: none"> • <i>To minimize potential impacts to regional fish populations, in-stream and lake over-wintering habitat should be identified in advance of the assessment process for large-scale industrial and/or infrastructure projects.</i> • <i>Water withdrawals in sensitive⁵ fish over-wintering areas should be prohibited (see Map 2, Appendix 1 for known locations).</i>
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Given the current low levels of land use activity, implementation of the first recommendation is not required at this time. The need to identify sensitive fish habitat should be reviewed on an ongoing basis in consideration of industrial activity levels.

5.2.5 Wetlands, Lakes and Rivers

Wetlands are ecologically and culturally significant and sensitive areas that provide a variety of goods and services, such as wildlife and fish habitat, carbon storage and clean drinking water. They are also important travel and use corridors for a variety of socio-cultural and wilderness/cultural tourism activities.

In this Plan, wetlands⁶ are defined as “*all open water aquatic environments, both lentic (still water) and lotic (moving water) features, and their adjacent environments.*” Environments adjacent to wetlands include riparian and peatland (bogs and fens) habitats, although peatlands are likely underestimated by this definition. Wetland complexes are concentrated groupings of individual wetlands, and may include both wetland and non-wetland habitats. Wetland complexes function as an integrated hydrologic system.

The Porcupine, Bell, Whitestone, Miner, Fishing Branch, Old Crow, and Eagle rivers are identified as Major River corridors. The corridor includes the river channel with a 1-km buffer on either side, for a 2-km total corridor width.

A comprehensive and accurate map showing all wetland, lake, and river habitats in the region is not currently available.

⁵ The sensitivity of fish habitat to water withdrawals depends on a variety of factors. Significant over-wintering habitats in some of the Major Rivers may be relatively resilient to water withdrawals, due to their size and rate of flow. The sensitivity of over-wintering fish habitats requires additional assessment.

⁶ The National Wetlands Working Group (1988) define wetlands as “land that has the water table at, near, or above the land’s surface or which is saturated for a long enough period to promote wetland or aquatic processes as indicated by hydric soils, hydrophytic vegetation, and various kinds of biological activity that are adapted to the wet environment”. Permafrost conditions can create poor soil drainage conditions across broad geographic areas, resulting in hydric soil conditions for much of the growing season with possible seasonal standing water. Such areas would typically not be considered wetlands.

Among the key issues related to managing wetlands, lakes and rivers:

- Minor alterations to wetland hydrology through construction of all season roads, well pads and similar features can result in significant impacts.
- Large volumes of aggregate are typically required to support all-season infrastructure in wetland environments, making reclamation difficult.
- Land use conflicts might arise between: a) traditional economic activities and industrial land uses, and b) wilderness/cultural tourism and industrial land uses.

Wetland, lake and river management goals, objectives, and strategies were developed to maintain significant habitats, to mitigate potential development impacts in areas susceptible to surface disturbance, permafrost degradation, and altered hydrology, and to maintain water quality/quantity.

GOAL 4 – WETLANDS, LAKES AND RIVERS	
Maintain the integrity of wetlands, lakes, rivers and sensitive permafrost areas.	
OBJECTIVES	STRATEGIES
4.1. Minimize amount of human-caused surface disturbance within and adjacent to lakes, rivers, wetlands and sensitive permafrost areas.	4.1.1 Avoid or minimize industrial land use activities in wetlands and riparian areas. 4.1.2 Coordinate and manage road and trail access. 4.1.3 Reduce surface and vegetation impacts in riparian and sensitive permafrost areas.
4.2. Maintain wetland and riparian connectivity.	4.2.1 Avoid or minimize industrial land use activities in wetlands and riparian areas. 4.2.2 Coordinate and manage road and trail access. 4.2.3 Reduce surface and vegetation impacts in riparian and sensitive permafrost areas. 4.2.4 Minimize alteration of drainage patterns, water flow and soil temperature.
4.3. Maintain visual quality and aesthetics of Major River corridors.	4.3.1 Avoid or minimize industrial land use activities in wetlands and riparian areas. 4.3.2 Coordinate and manage road and trail access. 4.3.3 Reduce surface and vegetation impacts in riparian and sensitive permafrost areas. 4.3.4 Avoid large-scale industrial and/or infrastructure projects within Major River corridors.
4.4. Maintain significant seasonal habitats for wetland-dependent organisms.	4.4.1 Avoid or reduce activities in wetland habitat during important biological periods or seasons for breeding waterbirds and other wetland-dependent organisms (e.g., utilize timing windows).
4.5. Maintain quantity, quality and rate of water flow, including seasonal rate of flow.	4.5.1 Avoid or reduce water withdrawals in sensitive wetland areas.
BEST MANAGEMENT PRACTICES – WETLANDS & LAKES	<ul style="list-style-type: none"> • All-season infrastructure should be discouraged in key wetland complexes⁷ (see Map 2, Appendix 1 for locations). • Locations of all-season infrastructure should maintain a minimum distance of 100m from wetlands and lakes⁸. • Activities in the vicinity of wetlands and wetland complexes should be carried out during the winter period. • If land use activities are required in wetlands, hydrology, water flow, and natural drainage patterns should be maintained. • If required, surface disturbance within and adjacent to wetlands and lakes should not result in diminished water quality or quantity.
BEST MANAGEMENT PRACTICES –	<ul style="list-style-type: none"> • To maintain visual quality and aesthetics, all-season

⁷ Key wetland complexes are those defined in the Yukon Department of Environment Key Areas database.

⁸ Source: Petrula (1994).

<p>MAJOR RIVERS & RIVER VALLEYS</p>	<p>infrastructure should be discouraged within Major River corridors (see Map 2, Appendix 1 for locations).</p> <ul style="list-style-type: none"> • Minimize construction of new permanent river crossing structures and routing new all-season access roads through Major River and other riparian corridors (see Map 2, Appendix 1). • Where new all-season or winter access roads and/or trails are required to cross Major River and other riparian corridors, these should be designed, constructed, and used in a manner that minimizes direct and indirect impacts to fish, wildlife and their habitats. • Surface disturbance and land use activities within and adjacent to Major River and other riparian corridors should not result in diminished water quality, quantity or flow. • Whenever possible, avoid aggregate (gravel) mining activities in Major River Corridors.
<p>INDICATORS</p>	<ul style="list-style-type: none"> • Surface disturbance. • Linear density. • Other indicators to be determined through future research and plan implementation.

<p>RECOMMENDATIONS</p>	<ul style="list-style-type: none"> • <i>To minimize potential impacts to regional wetlands, an assessment of wetland hydrology and connectivity should be conducted in advance of the assessment process for large-scale industrial and/or infrastructure projects.</i> • <i>Water withdrawals in ecologically sensitive wetland areas should be prohibited.</i>
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Given the current low levels of land use activity, implementation of the first recommendation is not required at this time. The need to identify ecologically sensitive wetland areas should be reviewed on an ongoing basis in consideration of industrial activity levels. There is currently no wetlands policy in the Yukon to provide additional management guidance for the Plan.

5.3 Heritage, Social and Cultural Resources

Maintaining and conserving heritage, social and cultural resources and values are important objectives of the Plan. Significant heritage resources, current community use areas, and Vuntut Gwitchin culturally important areas are shown in Map 3, Appendix 1.

Heritage resources include sites and objects that are 45 years old or older and relate to human history, including archaeological and historic sites and artifacts. This definition also includes palaeontological resources—fossil and other remains of extinct or prehistoric plants and animals.

Current community use areas include important locations for current subsistence harvest activities, cultural pursuits, and travel, including the community of Old Crow.

Cultural resources include places and locations associated with events, stories, and legends.

Significant heritage, current community use areas, and cultural resources were identified and mapped from local and traditional knowledge, with the focus on areas of importance to the Vuntut Gwitchin First Nation and community of Old Crow. Tetlit Gwich'in areas of cultural significance were considered within the Tetlit Gwich'in Secondary Use Area (Mackenzie Delta-Beaufort Sea Regional Land Use Planning Commission, 1991).

There are currently few issues with respect to the management of identified heritage sites and current community use areas. They are not generally at risk from land use activities.

Among the key issues related to the maintenance of heritage sites and current community use areas:

- Conservation and maintenance of significant heritage and community use areas are important to maintain the First Nations traditional economy.
- First Nations opportunities to participate in traditional economic activities and other cultural pursuits depend on the continued availability of and access to heritage and cultural areas.
- Conflicts might arise between community use and conservation of heritage values within the Dempster Highway Corridor and Whitefish wetlands complex and future industrial land use impacts within these areas.

GOAL 5 – HERITAGE AND CULTURE	
Recognize, conserve and promote the heritage and cultural resources and values of the Vuntut Gwitchin, other affected First Nations, and the Yukon.	
OBJECTIVES	STRATEGIES
5.1. Apply appropriate protection and conservation measures to identified heritage and cultural resources.	<p>5.1.1 Minimize land use impacts in the vicinity of identified heritage and historic resources.</p> <p>5.1.2 Minimize land use conflicts by avoiding or reducing the level of land use activities in important subsistence harvesting and current community use areas.</p> <p>5.1.3 Avoid or reduce activities in significant heritage and current community use areas during important seasonal use periods (e.g., utilize timing windows).</p> <p>5.1.4 Where impacts to identified heritage and cultural sites and resources are unavoidable, implement appropriate mitigation practices.</p>
5.2. Provide opportunities for the continuation of First Nations land-based subsistence lifestyles and harvesting.	<p>5.2.1 Avoid or reduce activities in significant heritage and current community use areas during important seasonal use periods (e.g., utilize timing windows).</p> <p>5.2.2 Where impacts to identified heritage and cultural sites and resources are unavoidable, implement appropriate mitigation practices.</p>
BEST MANAGEMENT PRACTICES – GENERAL⁹	<ul style="list-style-type: none"> • Avoid and/or mitigate exploration and development activities and impacts in areas with known heritage or historic resource values, where such areas or sites are not otherwise protected through existing land withdrawals (see Map 3, Appendix 1). • In identified current community use areas (see Map 3, Appendix 1) exploration and construction activities should be minimized or mitigated during subsistence harvesting periods. • Work camps associated with resource exploration and development activity should be sited near areas of resource production, away from identified heritage routes, historic sites, current community use areas, and the Old Crow Community Area.
INDICATORS	<ul style="list-style-type: none"> • Indicators to be determined through future research and plan implementation.

Strategies to maintain heritage resources, current community use areas, and cultural resources are discussed below. Historic resources are discussed under Heritage resources.

⁹ Additional best management practices related to heritage and historic resources are available from Yukon Department of Energy, Mines and Resources, Oil and Gas Management Branch (2007a).

5.3.1 Heritage Resources

Priority areas for heritage resource conservation were identified during the North Yukon Planning Commission’s community consultations and research. Locations of identified historic, archaeological and palaeontological sites were obtained from Yukon Department of Tourism and Culture, Cultural Services Branch.

5.3.1.1 VGFN Heritage Routes and Sites

One recommendation is proposed in relation to specific provisions of the VGFN Final Agreement (Section 13.4.6.2 and Chapter 13, Schedule A):

RECOMMENDATION	<ul style="list-style-type: none"> • <i>Management guidelines for identified routes and sites within the Integrated Management Area should be developed jointly by the Vuntut Gwitchin and Yukon governments¹⁰.</i>
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Within the IMA, eight VGFN heritage routes¹¹ and no sites were identified as per Chapter 13, Schedule A. The identified heritage routes in the IMA occur on both settlement and non-settlement lands (Figure 5.1). The remaining identified heritage routes and sites are located in protected areas or within the North Yukon Land Withdrawal.

No issues associated with the management of heritage routes within the IMA were identified during the planning process. The status of this recommendation should be evaluated in future Plan reviews.

¹⁰ Existing standards and guidelines for the management of heritage resources (Standards and Guidelines for Conservation of Historic Places in Canada) could be adopted for the management of identified routes and sites (Parks Canada, 2003).

¹¹ VGFN identified heritage routes include: 1) Old Crow to Whitestone Village, 2) Old Crow to Ft. McPherson via Salmon Cache and Lapierre House, 3) Whitestone Village to Johnson Creek Village, 4) Johnson Creek Village to LaChute River via Whitefish Lake, 5) Whitestone Village route connecting with the Old Crow—Ft. McPherson route (Route #2, above) at the western approach to the Northwest Territories border, 6) Whitestone Village route connecting with the Old Crow—Ft. McPherson route (Route #2, above) via Upper Stony Creek, 7) Old Crow to Rampart House, and 8) Old Crow to Johnson Creek Village via White Snow Mountain (#10 shown on map).

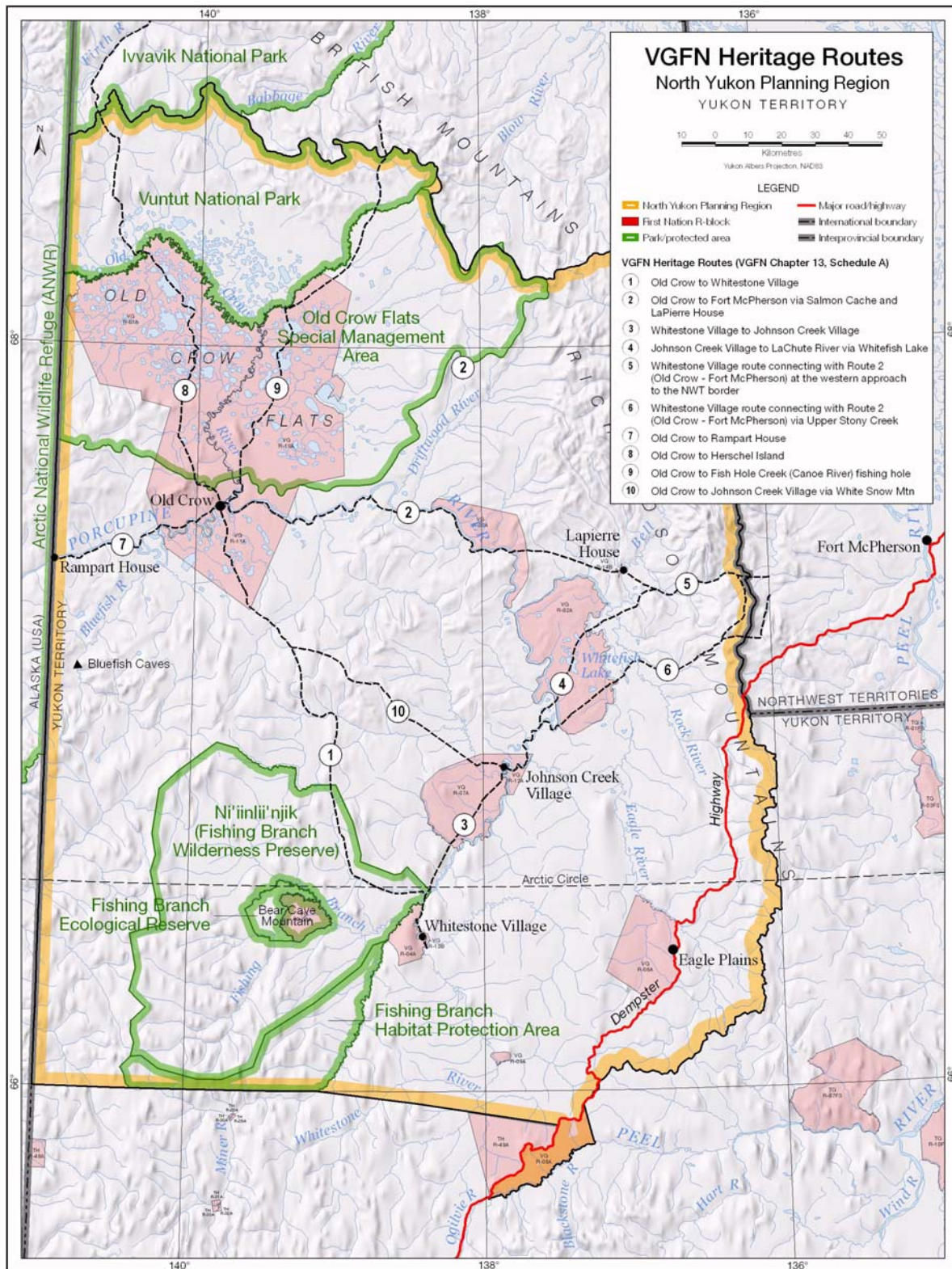


Figure 5.1. VGFN identified Heritage Routes.

5.3.1.2 Other Heritage and Historic Resources

Important First Nation heritage resources include Vuntut Gwitchin camps/cabins, historical fish traps, travel routes, hunting/fishing/trapping areas, and caribou fences. Many camps and cabins are S-sites (see Map 1, Appendix 1). S-sites are site-specific Yukon First Nation settlement lands of heritage, cultural or traditional economic significance to the First Nation.

Historic resources include: (a) a historic site, (b) a historic object, and (c) any work or assembly of works of nature or of human endeavour that is of value for its archaeological, palaeontological, prehistoric, historic, scientific, or aesthetic features

Historic objects include: (a) an object that is more than 45 years old and has been abandoned, (b) an archaeological object, (c) a palaeontological object, and (d) an object designated under subsection (2) of the *Historic Resources Act* as a historic object.

RECOMMENDATION	<ul style="list-style-type: none"> • <i>Known historic camps/cabins, historical fish trap locations, archaeological sites and other heritage resources should be identified prior to exploration and development activities, and protected from disturbance.</i>
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Documented sites and areas are not currently considered at risk from land use activities. Project proponents should contact heritage offices of the Vuntut Gwitchin and Yukon governments for information on the location of heritage sites of concern for a proposed development.

5.3.2 Current Community Use Areas

Community use areas support such activities as hunting, fishing, trapping, wood cutting, berry picking, and general travel. First Nations and other residents of the region spend a considerable amount of time on the land participating in various seasonal activities. The use and enjoyment of community areas depends on the continued health of the land, water, and ecosystems. The long-term availability and health of community use areas contributes to the maintenance of Vuntut Gwitchin culture and assists in providing economic opportunities within the regional mixed economy.

Current community use areas are shown in Map 3, Appendix 1. Many of these activities occur in the vicinity of Old Crow, but areas as far as Whitestone Village and the Eagle and Bell rivers are utilized. Summer boat travel between Old Crow and Ft. Yukon in Alaska is common. Some Old Crow and Fort McPherson residents travel by snow machine between the two communities via the Old Crow – Ft. McPherson trail (see Figure 5.1, Route 2). The timing of these activities, particularly harvesting, varies in response to the availability of resources and travel conditions. Proponents and land users are encouraged to contact the Vuntut Gwitchin Government for further information regarding community use areas.

Given the current low levels of land use activity, specific recommendations relating to the maintenance of current community use areas are not required at this time.

5.4 Economic Development

Maintaining regional economic development opportunities and benefits that do not result in unacceptable impacts to valued ecological and cultural resources are important objectives of the Plan. The region has a mixed economy, where traditional and wage-based economic pursuits co-exist. Residents of the region desire to maintain opportunities in both economic spheres. Areas of economic development interest and potential are shown in Map 4, Appendix 1. Areas where traditional economic activities occur are shown in Map 3, Appendix 1.

The Plan proposes management strategies related to regional sectors of interest: transportation and access, the traditional economy, tourism and recreation, oil and gas, minerals, and aggregate (gravel) resources. Forestry, renewable energy, and guiding/outfitting are also discussed.

Region-wide strategies and best management practices focus on mitigating the potential land use impacts that transportation and access might have on valued heritage, socio-cultural and ecological values.

GOAL 6 – ECONOMIC	
Facilitate economic development opportunities and activities that result in socio-economic benefits to the community of Old Crow, other affected First Nations and Yukon as a whole, and that meet the sustainable development criteria established by this Plan.	
OBJECTIVES	STRATEGIES
6.1. Maintain opportunities to access lands and resources for a variety of land users and uses, including but not limited to transportation, subsistence harvesting, cultural pursuits, tourism, recreation, oil and gas, minerals and gravel extraction.	6.1.1 Minimize land use conflicts by avoiding or reducing the level of land use activities in important subsistence harvesting areas and current community use areas.
6.2. Create land use status certainty.	6.2.1 Provide clear and consistent land management direction and recommendations linked to Plan objectives. 6.2.2 Develop clear guidelines and process links to YESAA.
6.3. Maintain opportunities for a mixed economy to continue where traditional subsistence harvesting and cultural activities and wage-based economic activities co-exist, ensuring long term maintenance of First Nation culture, people's connection with the land, and their well-being.	6.3.1 Minimize land use conflicts by avoiding or reducing the level of land use activities in important subsistence harvesting areas and current community use areas. 6.3.2 Avoid or reduce activities in significant heritage and current community use areas during important seasonal use periods (e.g., utilize timing windows). 6.3.3 Manage location, scale and intensity of land use.
BEST MANAGEMENT PRACTICES – GENERAL	<ul style="list-style-type: none"> • See individual sector discussions below.
INDICATORS	<ul style="list-style-type: none"> • Indicators to be determined through future research and plan implementation.

Specific recommendations are provided below for issues related to:

- transportation and access;
- development in the community of Old Crow; and,
- industrial land use activities.

5.4.1 Transportation and Access

Transportation networks and infrastructure have a major influence on the pattern of land use and economic development in remote northern jurisdictions. Many of the impacts that result from industrial land uses, particularly to wildlife and fish populations, are a result of the direct and indirect effects of roads and people's use of them.

Transportation and access management considerations are closely linked with maintaining regional ecological integrity and socio-cultural values. The management approaches advocated by the Plan are intended to provide opportunities to create required road and access routes, while mitigating potential impacts.

Road, air and water are all important modes of transportation in the region, but transportation and access options are currently very limited. Road access, outside the all-season Dempster Highway corridor, typically relies on construction of ice roads or winter roads. Major Rivers, particularly the Porcupine, Eagle and Bell, are important transportation corridors for residents and tourism/recreation users in the region.

Access to Resources

The Plan considered the maintenance of access to resources across the working landscape through land use designation and cumulative effects indicators. The Plan does not recommend specific locations for future road and access routes, nor does it prescribe road construction techniques.

As a general guideline, in order to minimize potential impacts to valued ecological and heritage/cultural resources it is recommended that where road access is required, winter roads, ice roads and other temporary access techniques be utilized preferentially over all-season roads.

Requirements and locations for new road and access construction are at the discretion of a project proponent in consideration of the strategies, best management practices, and recommendations proposed in the Plan.

Among the key issues related to transportation and access:

- The construction and use of linear features may result in direct loss and fragmentation of wildlife habitat, and indirect impacts on wildlife, including avoidance of such features, increased harvest pressures, and/or increased levels of predation.
- Where roads and access routes cross rivers, improperly constructed stream crossings may impact fish directly through habitat disturbance or indirectly through increasing harvesting pressures or blockage of fish passage/migration.
- Significant water and gravel withdrawals for road building or maintenance may cause direct disturbance to fish and wildlife habitat.
- Where all-season roads and access routes become established, they tend to persist for long periods of time, making full decommissioning and reclamation difficult.

<p>BEST MANAGEMENT PRACTICES – TRANSPORTATION & ACCESS</p>	<ul style="list-style-type: none"> • Avoid or minimize the creation of new access roads and trails; utilize existing routes unless their use will cause additional long term environmental impacts (e.g., permafrost degradation). • Where new all-season or winter access roads and/or trails are required, these should be designed, constructed and used in a manner that minimizes direct and indirect impacts to fish and wildlife, their habitats and human viewscapes (i.e., minimize size and extent of features). • Avoid significant caribou, moose, marten, and sheep habitat when constructing new access routes. • Avoid important trapping, harvesting, and current use areas (see Map 3, Appendix 1). • Avoid using or crossing wildlife seasonal migration corridors with new access routes. • Whenever possible, land use activities should be coordinated to utilize the same access route(s). • Reclamation requirements and decommissioning strategies should be considered during planning and assessment of new road and access features. • Limit and/or control use of new industrial access routes to authorized users only.
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Specific recommendations for the Dempster Highway Corridor, an Old Crow all-season road, and Eagle Plains access management are provided below.

5.4.1.1 Dempster Highway

The Dempster Highway provides an important corridor for many activities, including transportation, tourism, subsistence harvesting and communications. The highway is recognized as critical infrastructure for future regional economic development—uninterrupted operation and maintenance of the Dempster Highway is therefore a regional priority. A cooperative Yukon Government and northern Yukon First Nations (VGFN, THFN, and NNDFN) effort to create an economic development plan for the highway area is ongoing. In 2005, the highway was designated a Northern and Remote Route under the National Highway System (Council of Ministers Responsible for Transportation and Highway Safety, 2005).

New potential access routes off the Dempster Highway will likely be one of the most important management issues facing the region in the future.

Among the key issues related to management of activities within the Dempster Highway corridor:

- The highway is a multiple use corridor. A development corridor must be maintained to support current and future land use activity without undermining the heritage, social and ecological resource values in the vicinity of the highway.
- The highway is promoted as both a scenic tourism route and an industrial/ transportation infrastructure corridor.
- Access to adequate gravel resources in close proximity to the highway is required for regular maintenance and potential future upgrades.
- A potential future pipeline and related infrastructure would likely parallel the highway.

RECOMMENDATION	<ul style="list-style-type: none"> • <i>In recognition of the strategic importance of the Dempster Highway and its designation as a Northern and Remote Route under the National Highway System, surface disturbance and linear density indicator reporting and evaluation are exempt within a distance of 1 km on each side of the highway centre line (2-km total corridor width).</i>
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The Dempster Highway corridor is intended to encourage the location of land use activities within the existing zone of influence of the highway. Under this recommendation, surface disturbance and linear density indicator reporting and evaluation would be considered only for new activities outside of the 2-km corridor buffer. Numerous archaeological sites exist within the corridor and these would need to be identified and protected prior to additional development, as per existing regulations. Detailed assessment and planning of new developments within the corridor should also carefully consider visual impacts, and mitigate to the extent practicable.

This recommendation and the need for more detailed management direction within the Dempster Highway corridor should be evaluated during future Plan reviews.

5.4.1.2 Old Crow All-season Road

The Old Crow winter road provides an occasional winter transportation route between the Dempster Highway, near Eagle Plains Lodge, and the community of Old Crow (*see* Map 4, Appendix 1). The winter road is constructed as required, primarily in response to community needs for the transportation of materials and equipment.

All-season road construction to Old Crow received limited attention during the regional planning exercise. NYPE did not evaluate specific issues associated with potential all-season road access or possible alternative surface transportation options.

Periodic construction of the winter road along the existing access route is currently sufficient to meet community needs for surface transportation. The existing Old Crow winter road route should be maintained and used as required. However, in the future there may be climate change considerations related to winter road construction and operation.

In relation to the VGFN Final Agreement (Specific Provision 11.10.1), the following recommendation is provided:

RECOMMENDATION	<ul style="list-style-type: none"> • <i>An all-season access road to Old Crow is not required at this time.</i>
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This recommendation should be evaluated in future Plan reviews.

5.4.1.3 Eagle Plains Access Management

The Eagle Plain oil and gas basin may receive significant levels of future industrial activity, particularly from the energy sector. One recommendation is proposed to address future access management in the Eagle Plain basin.

RECOMMENDATION	<ul style="list-style-type: none"> • <i>In advance of significant levels of energy sector activity, an access management plan should be developed for the Eagle Plain oil and gas basin.</i>
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This recommendation is intended to foster a coordinated approach to new road and access route development in an area where focused oil and gas exploration and development activities are probable.

The timing and scope of this recommendation will be at the discretion of the Parties and will be addressed by the Parties as part of implementation planning. Specific strategies and best management practices related to road and access route siting may be included as part of this future access management plan.

5.4.1.4 North Slope Access

Previous studies have identified a conceptual transportation corridor, through the Northern Richardson Mountains, along the Bell River, providing access to Yukon North Slope shipping opportunities at Kings Point (Yukon Government, Department of Energy, Mines and Resources, 2003). It is the perspective of the North Yukon Planning Commission and recent port and rail assessments (KPMG and Gartner Lee Ltd., 2007) that port access at Kings Point on the Yukon North Slope is an unlikely scenario in the coming decades.

However, options for a possible transportation corridor to the Yukon North Slope should be considered at a future date, including potential routing through the proposed Summit Lake – Bell River Protected Area (LMU 4C). Such consideration would be subject to applicable planning processes for the protected area, and may be linked to the Eagle Plain Access Management recommendation of this Plan (*see* Section 5.4.1.3, above).

5.4.2 Community of Old Crow

The community of Old Crow and surrounding area is the economic and cultural centre of the region. Many land use issues facing the community are municipal concerns – housing, roads, and recreation facilities, for example. Other key considerations are access to gravel resources and land for new development.

RECOMMENDATION	<ul style="list-style-type: none"> • <i>To support maintenance and growth of Old Crow, the Community Area (CA) should be exempt from surface disturbance and linear density indicator monitoring.</i>
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Development plans for the community of Old Crow are referenced in Appendix 3.

5.4.3 Traditional Economy

In Old Crow, considerable economic activity is still focused on subsistence harvesting. Residents spend time on the land participating in traditional economic pursuits such as hunting, fishing and berry harvesting in order to provide staple food items for themselves and feed (e.g., chum salmon) for dog teams. Trapping is still a main or supplementary economic activity when fur prices warrant. Traditional economic activities are strongly linked to the maintenance of Vuntut Gwitchin culture and Old Crow community well-being. Important subsistence harvesting and trapping areas are shown on Map 3, Appendix 1.

Among the key issues related to maintenance and pursuit of traditional economic activities:

- The traditional economy is vital to maintaining Vuntut Gwitchin culture, community well-being and ties to the land.
- Subsistence harvesting and traditional economic activities are important means of offsetting the high cost of food in Old Crow.
- Subsistence harvesting opportunities may benefit from construction of new roads and trails resulting in increased harvest of wildlife and fish resources

- Land use conflicts might arise between: a) traditional economic activities and industrial land uses, b) traditional economic activities and wilderness/cultural tourism, and c) traditional economic activities and Porcupine Caribou Herd conservation.

Specific recommendations relating to traditional economic activities are not required at this time. Subsistence use/harvesting activities have few, if any, direct impacts on other land use sectors.

5.4.4 Tourism and Recreation

Current tourism and recreation activity in the region is low, tourism products and services are modest, and the tourism market is not well developed. Opportunities are associated with wilderness travel, wildlife viewing, Old Crow visits and stays, touring along the Dempster Highway, and travel in major river corridors (Porcupine, Eagle, and Bell rivers). Approximately 7,000 tourists travel the Dempster Highway annually.

Exposure to VGFN culture is an important draw for Old Crow tourism activities and wilderness travel. There is good potential to develop a small-scale, carefully managed tourism industry based on the cultural and ecological resources of northern Yukon.

Maintenance of visual quality and ecological values are important considerations for wilderness tourism. Priority areas for maintaining visual quality are major river corridors and sections of the Dempster Highway, particularly in the vicinity of the Southern Richardson Mountains and Foothills (LMU 10) (*see* Map 4, Appendix 1).

Among the key issues related to tourism and recreation:

- Wilderness tourism and recreation pursuits require access to large, intact wilderness areas.
- Land use conflicts¹² might arise between: a) wilderness/cultural tourism activities and industrial land uses, and b) wilderness/cultural tourism activities and traditional economic activities/First Nations culture.

Specific recommendations relating to the management of tourism and recreation activities are not required at this time. The site-specific and temporary nature of wilderness tourism activity, the relatively small ecological footprint of these operations, and the anticipated low levels of future tourism activity are expected to result in relatively few significant impacts to ecological resources, traditional economic activities, and other land use sectors in the region.

Refer to the North Yukon Tourism Strategy (Yukon Department of Tourism and Culture and Vuntut Gwitchin First Nation, 2006) for specific tourism objectives. Best management practices related to wilderness tourism are available from Yukon Department of Energy, Mines and Resources, Oil and Gas Management Branch (2007c).

¹² Conflicts between wilderness tourism, recreation, and other land uses are likely to be most acute within Major River Corridors and along the Dempster highway corridor paralleling the Southern Richardson Mountains and Foothills.

5.4.5 Oil and Gas Resources

The Plan is intended to assist in establishing land use certainty for oil and gas activities. While oil and gas activity in the region is currently low, the region holds moderate oil and significant natural gas potential. Access to pipeline infrastructure is considered to be a major factor limiting natural gas development in northern Yukon.

The region contains three oil and gas basins: Eagle Plain, Kandik, and Old Crow Flats. Eagle Plain is currently the basin of highest interest, and is considered to have the highest resource potential. As of fall 2008, there were 16 oil and gas exploration permits and licenses covering about 5,000 square kilometres, or nine percent of the planning region. All parcels are in Eagle Plain. Locations of identified oil and gas resources and potential areas are shown in Map 4, Appendix 1.

Among the key issues related to oil and gas exploration/development activities:

- Oil and gas exploration and development activities and associated land uses (transportation, gravel extraction, and water withdrawal) can cause cumulative and adverse change over large landscapes.
- Impacts could affect valued ecological resources, including Porcupine Caribou Herd, moose, marten, wetlands, lakes and rivers.
- The construction and ongoing operations of large-scale oil and gas infrastructure would bring many new workers to the region.
- Coordinated and effective management of the Porcupine Caribou Herd habitat and population requires an integrated management approach, in advance of increasing industrial land use.
- Land use conflicts might arise between: a) oil and gas and wilderness/cultural tourism, b) oil and gas and traditional economic activities and cultural pursuits, and c) oil and gas and Porcupine Caribou Herd use of winter range.

Specific recommendations relating to the management of oil and gas exploration and development activities are not required at this time. Standard oil and gas industry practices have a much smaller footprint and impact on ecological values than practices used in the 1960's. Current operating practices significantly reduce the potential for major long-term impacts. Given the current low levels of activity, existing site-specific best management practices, used in combination with the direction provided by this Plan, are considered adequate to mitigate potential impacts of oil and gas activity.

5.4.6 Mineral Resources

The Plan is intended to assist in establishing land use certainty for mineral exploration and development activities. Mineral interest and activity in the region is currently low. A lack of land use certainty, low mineral potential, remoteness and limited road infrastructure are contributing factors.

Mineral potential in the planning region is not well understood. However, relative to other areas of Yukon, it is currently considered low. Placer and gemstone potentials have not been assessed. There is a low likelihood that a producing mine will be established in the region in the near future.

As of March 2008, there were 509 active mineral claims in the North Yukon Planning Region, covering an area of about 11,000 hectares. Most mineral claims are located in the vicinity of the Dempster Highway in the Southern Richardson Mountains and Foothills (LMU 10). Areas with mineral potential, and existing mineral claims, are shown in Map 4, Appendix 1.

Among the key issues related to mineral exploration/development activities:

- Mineral activities require access to large areas of land, and substantial exploration efforts are required to identify economically viable deposits.
- The construction and ongoing operations of large-scale mining activity would bring many new workers to the region.
- Mine site operations can lead to local and downstream water impacts and localized wildlife/habitat disturbance.
- Land use conflicts might arise between: a) mineral activities and wilderness/cultural tourism, b) mineral activities and traditional economic activities and cultural pursuits, and c) mineral activities and Porcupine Caribou Herd use of seasonal ranges.

Specific recommendations relating to the management of mineral activities are not required at this time. Given the low levels of activity, existing site-specific best management practices, used in combination with the direction provided by the Plan, are considered adequate to mitigate potential impacts of mineral activity.

5.4.7 Aggregate (Gravel) Resources

Gravel is an important but scarce resource in northern Yukon. Existing gravel pits supply the requirements of the Dempster Highway and the community of Old Crow. As of 2008, there were 28 active gravel pits in the planning region; 27 are within one kilometre of the Dempster Highway. Active quarrying affects about 190 hectares of land.

Aggregate along the portion of the Dempster Highway within the planning region is in limited supply. In the Eagle Plains area, there are generally no identified conventional gravel sources. Aggregate sources are present along the northern portion of the Dempster Highway, in the vicinity of the Southern Richardson Mountains and Foothills, but are of poor quality. The community of Old Crow has established a gravel quarry on Crow Mountain to secure suitable aggregate materials.

Future land use scenarios for the region project that substantial volumes of aggregate will be required to support the development of industrial infrastructure, particularly for the oil and gas and transportation sectors. These future requirements would be in addition to existing required volumes utilized by Dempster Highway maintenance and upgrades, and Old Crow infrastructure.

A regional aggregate assessment has not been completed outside of the Dempster Highway corridor. Potential sources of new aggregate materials are high terraces above rivers, exposed ridges and bedrock, and dry river/creek beds. Some river valleys offer potential sources of aggregate but also contain some of the most important ecological and cultural values in the region.

Among the key issues related to aggregate extraction activities:

- Obtaining required volumes of aggregate to support regional infrastructure development may disturb large areas of land, in some cases nearly as large as the direct infrastructure footprint itself.
- Impacts from activities to ecological, socio-cultural, and economic values include long term habitat disturbance and visual impacts.
- Land use conflicts might arise between: a) aggregate extraction activities and wilderness/cultural tourism, b) aggregate extraction activities and traditional economic activities and cultural pursuits, and c) aggregate extraction activities and potential impacts to ecological values.

<p>BEST MANAGEMENT PRACTICES – AGGREGATE EXTRACTION</p>	<ul style="list-style-type: none"> • To minimize potential impacts to regional fish populations, aggregate (gravel) mining should be prohibited where it may affect significant fish habitats. • Minimize gravel requirements for necessary infrastructure through coordinated access, feature reduction, and geo-technical engineering. • Ensure efficient use of identified aggregate resources.
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<p>RECOMMENDATION</p>	<ul style="list-style-type: none"> • <i>To mitigate potential impacts to significant and/or sensitive ecological or cultural resources and values, the identification and mapping of potential sources of aggregate should be undertaken in advance of the assessment process for large-scale industrial and/or infrastructure projects.</i>
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Given the current low levels of land use activity, implementation of this recommendation is not required at this time. The timing and scope of an aggregate study will be at the discretion of the Parties, and will be clarified during implementation planning by the Parties.

5.4.8 Forest Resources

There is very limited or no commercial forestry potential and interest in the region. Management of forest resources for fuelwood and building materials is a local issue for the community of Old Crow. Forest harvesting generally occurs within a 20-30 km radius of the community, centred on the Porcupine River corridor. The location of the Old Crow community forest harvesting area is shown in Map 3, Appendix 1.

Among the key issues related to forest management and community harvest:

- Securing an adequate and accessible long-term wood supply.
- Forest harvesting activities that occur in proximity to cabins and camps.

RECOMMENDATION	<ul style="list-style-type: none"> • <i>A future Old Crow Forest Management Plan should maintain community fuelwood and forest harvesting opportunities within the identified fuelwood and forest harvesting area shown in Map 3, Appendix 1.</i>
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The Plan does not directly address forest management or forest harvesting strategies and did not consider best management practices for community forest harvesting activities.

5.4.9 Renewable Energy

Renewable energy refers to the generation of heat and electricity from natural resources that are not depleted over time. Examples include hydro, wind, solar, geothermal (heat from steam or hot groundwater), earth (heating or cooling using below ground ambient temperatures), and trees or other vegetation that can regenerate after some of the resources are used.

Old Crow, through a variety of partnerships, has actively investigated wind energy on Crow Mountain. Through the Northern Canada Power Commission, potential large-scale hydro sites were identified in the planning region the 1960s and 70s, including Porcupine Canyon at Rampart House, and Salmon Cache canyon, both on the Porcupine River. Neither site received a formal feasibility assessment and, given the scale of the conceptual projects, neither is likely to be economic.

In northern Yukon, wind and small-scale hydro are considered to hold the greatest potential for renewable energy production. Site-specific seasonal solar power and additional tree biomass fuels may also be options. It is unlikely that diesel generation will be replaced completely by renewable energy in the near term. As mentioned above, the community of Old Crow also utilizes fuel wood for a portion of its heating requirements.

Among the key issues related to renewable energy production:

- Almost all power needs in the region are currently met by the costly and polluting combustion of diesel fuel.
- Per capita, Old Crow carbon emissions are approximately twice those of the average Canadian.
- The community of Old Crow actively desires to decrease diesel fuel consumption and increase use of renewable energy options.

RECOMMENDATION	<ul style="list-style-type: none"> • <i>Renewable energy options and solutions for the community of Old Crow should continue to be researched and promoted.</i>
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Addressing renewable energy issues was not a major focus of the Plan.

5.4.10 Guiding and Outfitting

There are no guiding and outfitting concessions in the region. VGFN view the communal use of wildlife and fish resources as required for subsistence and cultural purposes, and not to be pursued for monetary gain. VGFN does not wish to participate in or have commercially guided sport hunting or fishing occur within their traditional territory at this time.

Non-consumptive guiding and outfitting tours may represent future business and employment opportunities for VGFN citizens and other residents of Yukon. A range of opportunities related to wildlife viewing and wilderness travel have been recognized as potential tourism and recreation opportunities by the North Yukon Tourism Strategy (Yukon Department of Tourism and Culture, 2006).

Specific recommendations relating to guiding and outfitting are not required at this time. Interest in guiding and outfitting should be evaluated in future Plan reviews.

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