



Summary of the Dawson Planning Region Resource Assessment Report

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This document is a summary of the much larger and more detailed *Dawson Planning Region Resource Assessment Report*, published by the Dawson Regional Planning Commission in October 2013. The full report, as well as all maps and appendices, are available on the Commission's website (<http://dawson/planyukon.ca>) or by contacting the office in Dawson City at (867) 993-4400 or dawsonplan@planyukon.ca

1 Framework and Regional Context

1.1 Introduction

The Dawson Regional Planning Commission (DRPC) was established in August 2010, with a mandate to recommend a regional land use plan for the Dawson planning region to Yukon government, Tr'ondëk Hwëch'in (TH) and Vuntut Gwitchin First Nation (VGFN). The objectives of the common Yukon land use planning process are described in Chapter 11 (Land Use Planning) of Yukon First Nation Final Agreements. Specifically, Section 11.4.5 establishes the mandate for a Regional Land Use Planning Commission.

The Commission's terms of reference call for a process to produce a regional land use plan that will "create a vision of future land use, including identifying conservation and development areas, and providing land use decision makers with guidance and direction". The plan is to strive to achieve sustainable development, defined in Chapter 1 of Yukon First Nation Final Agreements as "beneficial socio-economic change that does not undermine the ecological and social systems upon which communities and societies are dependent".

One of the required tasks is the development of the Dawson Planning Region Resource Assessment Report (RAR), which has the following objectives:

- Document and describe the natural, human and economic resources of the region;
- Describe the historical, current and potential future land uses and land use patterns; and
- Describe the potential issues relating to current and future land uses.

Information for the RAR was contributed by Yukon and First Nation government departments, residents of the planning region, and other sources researched by Commission staff.

The RAR builds on previous work such as the *Issues and Interests Report* (DRPC 2011), which summarized the results of early community consultations and written input. Some key issues for the regional plan to address include: managing cumulative effects of mineral exploration and mining, especially in regards to access; promoting economic diversity; conserving fish and wildlife habitat; and managing potential land use conflicts within the Yukon River corridor.

The RAR is a major source of valuable knowledge that will help the Commission make decisions. Along with the RAR, the Commission examines existing legislation and policies, management plans, and best management practices. They are guided by the objectives of the planning process noted above, as well as a draft vision statement and planning goals developed in 2012 that will be finalized as the process continues.

1.2 Setting

The Dawson Planning Region shown in Figure 1, is about 45,288 km² or 10% of Yukon. The planning region is bound on the west by the Alaskan border; on the north by the North Yukon planning region; on the east by the Peel Watershed planning region and proposed Northern Tutchone planning region; and on the south by the Traditional Territories of the White River and Kluane First Nations (proposed Kluane planning region).

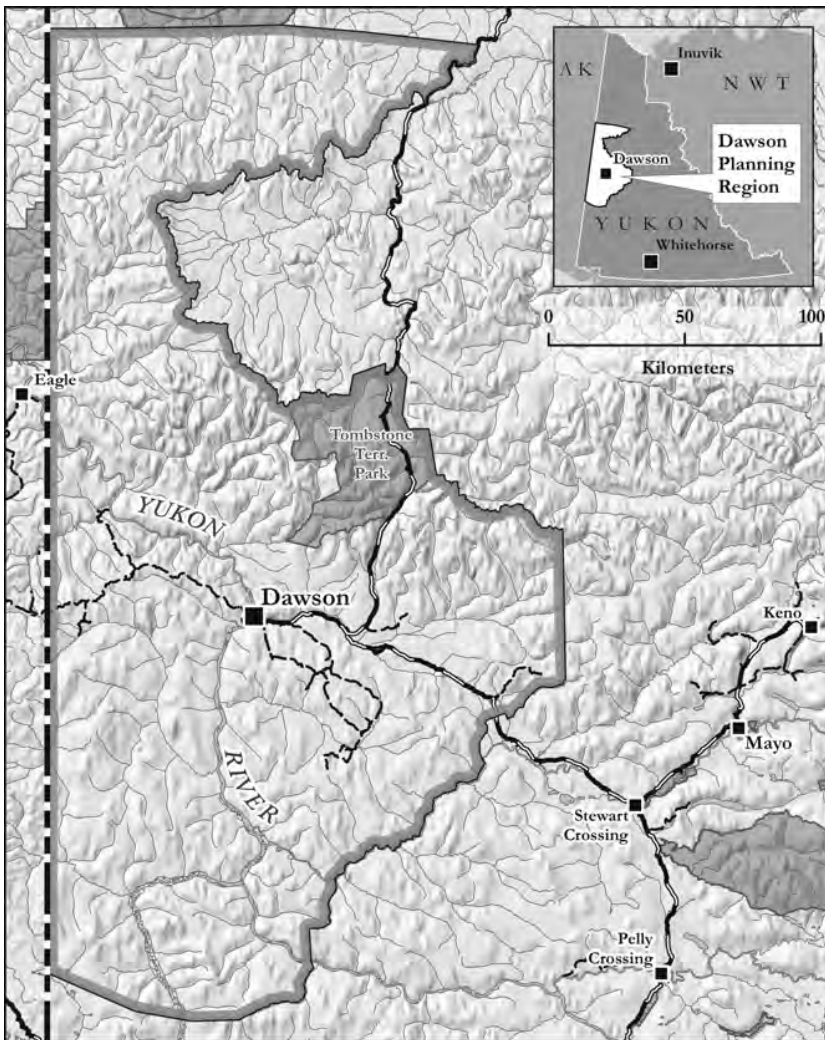


Figure 1. Dawson planning region boundary

1.3 Land Status

The planning region includes Settlement Lands (administered by First Nations governments) and non-Settlement or public lands (administered by Government of Yukon). The planning region also contains lands that are already administered under existing plans (such as management plans, local area plans and municipal plans). These include land within the Dawson City municipal boundary, West Dawson and Sunnydale area, internationally designated lands, National Historic Sites, Yukon Historic Sites and Tombstone Territorial Park. The regional plan does not make recommendations for these specific areas but does consider them.

Land adjacent to the planning region (e.g., other Yukon planning regions as well as Alaska), while outside the scope of the Dawson plan, will still be directly impacted by land use decisions made in the plan, and in turn have an interest in and exert influence on land use priorities for the region. As a result, the Commission also considers these areas in the regional land use planning process.

1.3.1 First Nation Traditional Territories and Settlement Lands

The Dawson planning region is contained entirely within Tr'ondëk Hwëch'in (TH) Traditional Territory. It also contains areas where it overlaps with the Traditional Territories of Vuntut Gwitchin First Nation (VGFN) and Na'Cho Nyak Dun (NND) First Nation. The interests of VGFN and NND are subject to overlap agreements between the affected First Nations, under Chapter 2, Section 9 of the Final Agreements. White River First Nation (WRFN) have recently asserted Traditional Territory within the planning region but the extent of their claim is not known at this time. Yukon Government has provided interim protection for a parcel of interest to WRFN, for the purposes of facilitating a future Land Claim agreement with WRFN. Figure 2 illustrates the Traditional Territories and Settlement Lands of TH, VGFN, and NND.

1.3.2 Public/Non-Settlement Lands

The Government of Yukon manages non-Settlement lands (both surface and sub-surface rights) as per the Yukon First Nations Final Agreements and the lands and resources acts of Yukon and Canada.

1.4 Protected Areas

Areas within the planning region currently designated for protection include the following:

National Historic Sites, which includes the Klondike National Historic Sites (Dawson Historic Complex National Historic Site, S.S. Keno National Historic Site, Former Territorial Courthouse National Historic Site, Dredge No. 4 National Historic Site and Discovery Claim National Historic Site) and Tr'ochëk National Historic Site

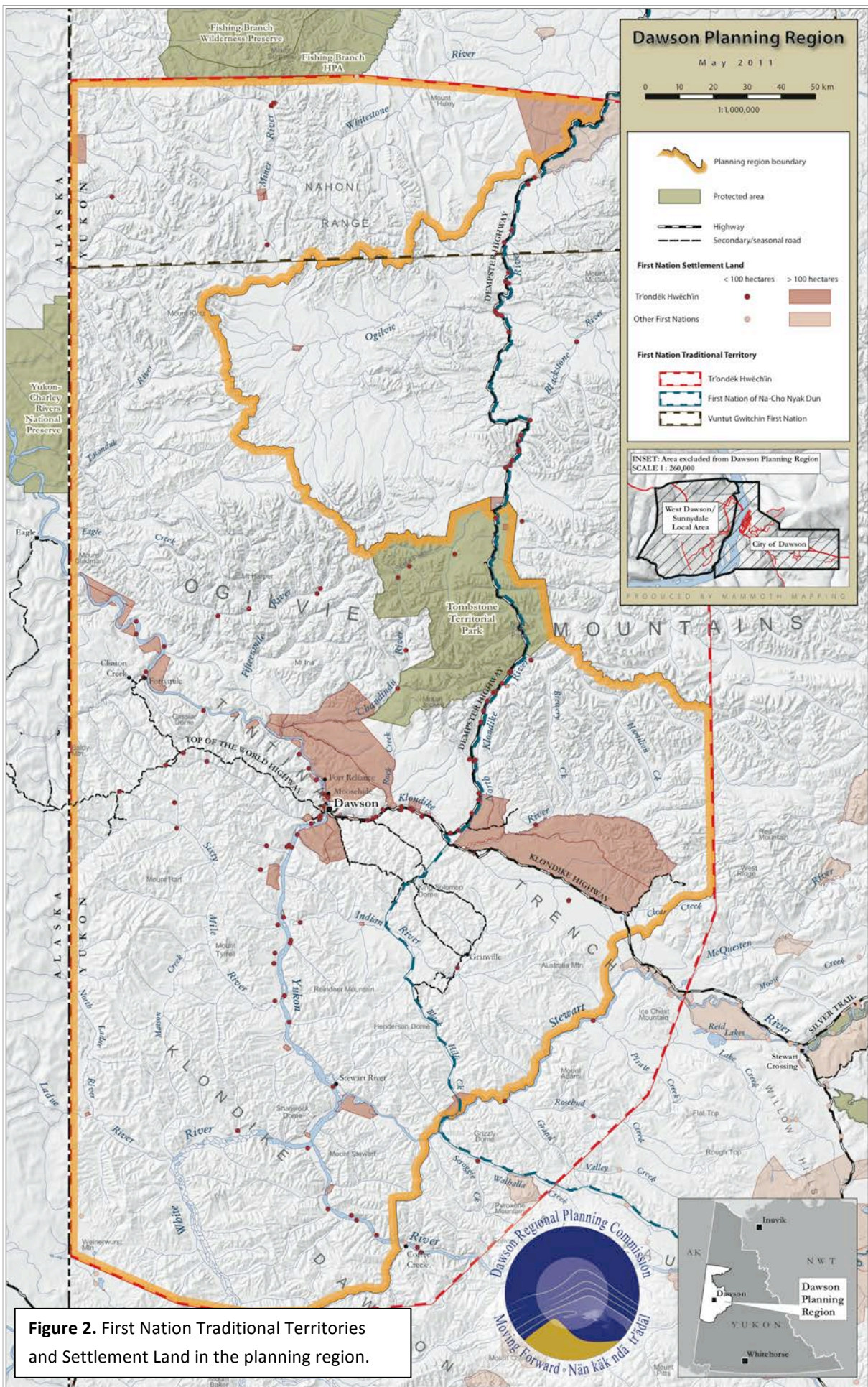


Figure 2. First Nation Traditional Territories and Settlement Land in the planning region.

- Located within the Dawson City municipal boundary with the exception of the Discovery Claim National Historic Site, Tr'ochëk National Historic Site and Dredge No. 4 National Historic Site

Internationally Designated Lands, which includes the Klondike National Historic Sites

- Part of the “The Klondike Gold Rush International Historic Park” which includes Klondike Gold Rush sites in Washington, Alaska, British Columbia and Yukon

Tombstone Territorial Park

- Located in the North Ogilvie and Mackenzie mountain ecoregion, 22,050 km² in size (4.5% of the planning region)
- Established pursuant to Schedule A of Chapter 10 of the Tr'ondëk Hwëch'in (TH) Final Agreement

Forty Mile, Fort Cudahy and Fort Constantine Historic Site (Ch'ëdä Dëk)

- Located at the confluence of the Yukon and Fortymile rivers, 50 ha in size
- Required in the Tr'ondëk Hwëch'in (TH) Final Agreement to be designated a Yukon Historic Site because of its cultural significance
- Designation date is in progress

1.4.1 Adjacent Designated Lands

Niinlii'njik (Fishing Branch) Territorial Park is located north of the planning region approximately 100 km south of Old Crow. The park encompasses approximately 6,500 km². Yukon-Charley Rivers National Preserve is located in Alaska, directly west of the planning region. The preserve encompasses 10, 226 km².

1.5 Other Interests

Third-party interests in the planning region include fee-simple title, leasehold interests, easements, and other public lands where the Government of Yukon is responsible for disposition (on either a temporary or permanent basis). Outside of the Dawson municipal boundary, most titled third-party interests are rural residential parcels. Other interests include reservations for heritage sites, prospecting leases, placer and quartz mining claims (and land use permits for more advanced operations), and agricultural Agreements for Sale.

1.6 Existing Land Use Footprint and Cumulative Effects

For the purposes of this report, existing disturbances and access features in the region were mapped (see Figure 3 – the map of Infrastructure, Access and Land Status). Most footprints

related to human-caused disturbance are located in the immediate vicinity of Dawson City. Outside of Dawson, non-mining disturbances (approximately 23 km² or 15% of total disturbed area) are associated with small farms, residential properties, roads, trails, power lines and gravel pits. 85% of the surface disturbance in the planning region is related to placer and quartz mining activities, and represents approximately 129 km².

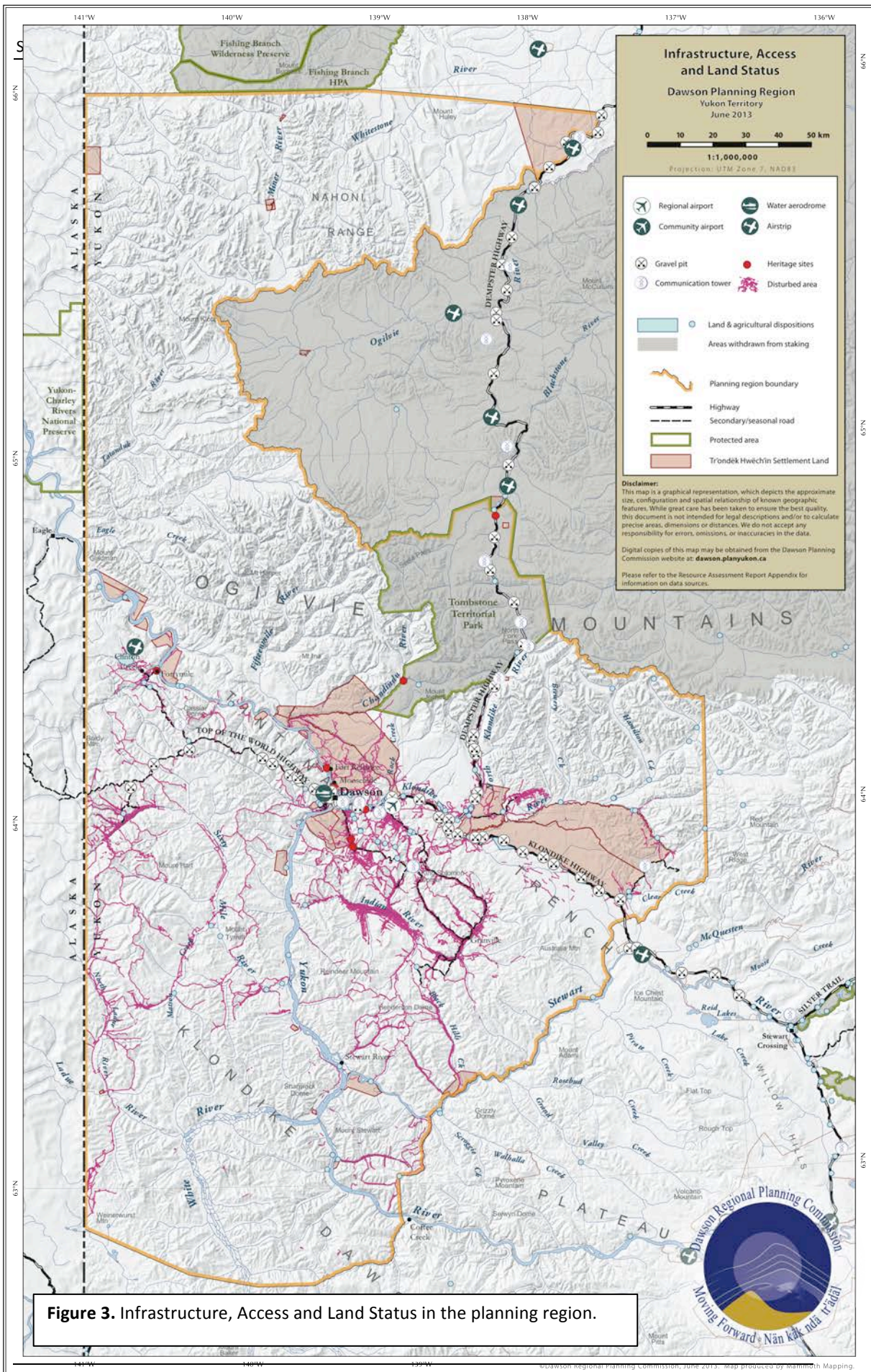
Surface disturbance and linear access features (e.g. roads, trails, seismic lines) are highest in the Goldfields (approaching 4%), and the Indian River drainage has the highest percentage. In contrast, the area around Brewery Creek in which hard rock mining is occurring has a relatively small footprint (0.2%). The northern portion of the region has virtually zero surface disturbance. Disturbances are found mainly on the gentle slopes and floodplain ecosystem types, mostly in shrub and coniferous forest.

Potential cumulative effects of access are best addressed at a regional level, rather than on an individual project basis. Existing roads, trails or airstrips may be shared by private companies, but there is no requirement to coordinate activities or jointly plan new access routes. Government of Yukon has recently released a Yukon Resource Access Roads Framework. Its goal is to minimize negative environmental impacts from mining and oil and gas access roads, and to minimize liability for unmaintained roads left after activities are completed.

1.7 People, Settlement and Economy

Two self-governing First Nations own land and have administrative authority within the Dawson planning region: Vuntut Gwitchin First Nation (VGFN) and Tr'ondëk Hwëch'in (TH). Vuntut Gwitchin literally means "people of the lakes" and the VGFN homelands are centered on the Old Crow River and the lakes of the Old Crow Flats, north of the planning region. Tr'ondëk Hwëch'in are primarily Hän, Gwich'in and Northern Tutchone people and for generations have lived and travelled in a large area of the Yukon River valley spanning the Yukon-Alaska border.

Dawson City is located 536 km from Whitehorse, is the only major permanent community in the planning region and has a population of 1,319 residents (Statistics Canada, 2012). In the early 1960s Dawson City was declared a National Historic Site due to its Klondike Gold Rush history and many well-preserved historic structures. Several settlements are located in the Klondike Valley outside of Dawson City, including: Sunnydale, West Dawson, Bear Creek, Rock Creek, Henderson's Corner and Flat Creek. A number of other rural residential properties occur along major highway corridors.



Moosehide is located 5 km downstream of Dawson City and is a traditional fish camp. It is also where Chief Isaac moved the TH people in the spring of 1897, after the traditional Hän village at Tr'ochëk was transformed from a fishing camp into a crowded Gold Rush settlement and industrial site. The importance of Tr'ochëk to TH culture and history is recognized in the Final Agreement and led to its designation as a National Historic Site.

The economy in the planning region is a mix of market-based activity, primarily in mining, tourism, forestry, and government services, alongside a traditional economy. Accommodation and food services employed 20% and mining employed 10% of the Dawson work force in 2006 (Statistics Canada 2007). Federal and Yukon governments are important employers, maintaining educational, health and safety services as well as a number of regional resource management offices. Much of the available work is seasonal or short-term, and there is considerable dependence on the rapidly changing sectors of tourism and mining.

Tr'ondëk Hwëch'in have a broad definition of a traditional economy and define it as a system of harvesting, processing, production, technological adaptation and innovation. The concept of traditional economy includes the harvest of natural resources but also includes the broader traditional society, land use and environment (Tr'ondëk Hwëch'in 2012).

1.8 Biophysical Environment

The most distinct geologic feature of the planning region is the Tintina Trench, which runs northwest-southeast, a nearly 1,000 km fault line along the continental margin of ancient North America. To the north of the fault, rocks and mountain were formed from sediments deposited along the ancient coastline (e.g. shale, slate, sandstone and chert). South of the Tintina Trench lie sedimentary deposits, which contain a variety of minerals including asbestos, copper and gold. Gold eroding from quartz veins was concentrated by pre-ice age rivers into placer sand and gravel deposits. Most of the region was part of Beringia, a landscape that remained unglaciated during the Pleistocene glacial periods (20,000 to 200,000 years ago).

The climate of the planning region is continental with long, cold winters and relatively warm summers. Most of the annual precipitation comes in the form of convective showers and thunderstorms from June to August. The region is also underlain by continuous and discontinuous permafrost; permafrost is more widespread in the northern and higher elevation areas of the planning region.

There are three major drainage basins in the planning region. The southern portion of the region drains northwest via the Yukon River, the northern portion drains north via the Porcupine River-Yukon River, and the Blackstone River in the Tombstone Ranges drains eastward to the Peel and Mackenzie drainage.

The majority of the region is forested but there are areas of alpine, subalpine, taiga shrub and wetlands. Due to their low abundance relative to other areas of Yukon, all wetland areas in the planning region are considered ecologically important. A key influence on the forest ecology of the region, particularly in the southern portion, is wildfire. The Klondike Plateau has some of the highest levels of fire activity in Yukon, with an average fire cycle of approximately 100 years. Lightning accounts for about 85% of forest fire causes - the region includes an area that receives the highest frequency of lightning strikes in Yukon.

Active riparian zones (areas along rivers and streams that are periodically flooded by flowing water) cover about 4% of the planning region. Flooding is most common with the spring freshet, and can also occur due to ice jams that form during spring break-up or winter freeze-up. Dawson City is on the floodplain just below the confluence of the Yukon and Klondike rivers, and has been flooded a number of times since 1898. In 1987, a new protective dike was built along the riverbank to prevent future flooding.

1.9 Climate Change

Average annual temperatures are increasing in the planning region. An analysis of temperature records from 1955 to 2004 shows a warming trend of approximately 6°C per century, with precipitation trends showing more variability (Werner et al. 2009). Models used in the *Dawson Climate Change Adaptation Plan* (Hennessey et al. 2011) project a continued warming trend of 2.5 to 3.5 °C by the 2050s.

Annual average precipitation amounts are expected to increase by 10 to 40 per cent in the Dawson area, while drier conditions are expected to the north and east of Dawson City. More precipitation is expected during the winter months. A changing climate will have direct and indirect impacts on the vegetation, wildlife, water, landscape, infrastructure, traditional practices, and economic opportunities in the region. Climate change may also cause changes to soil moisture and runoff regimes due to longer growing seasons, shifts in vegetation, changing drainage from permafrost loss, and altered fire cycles.

2 Regional Resource and Land Use Descriptions

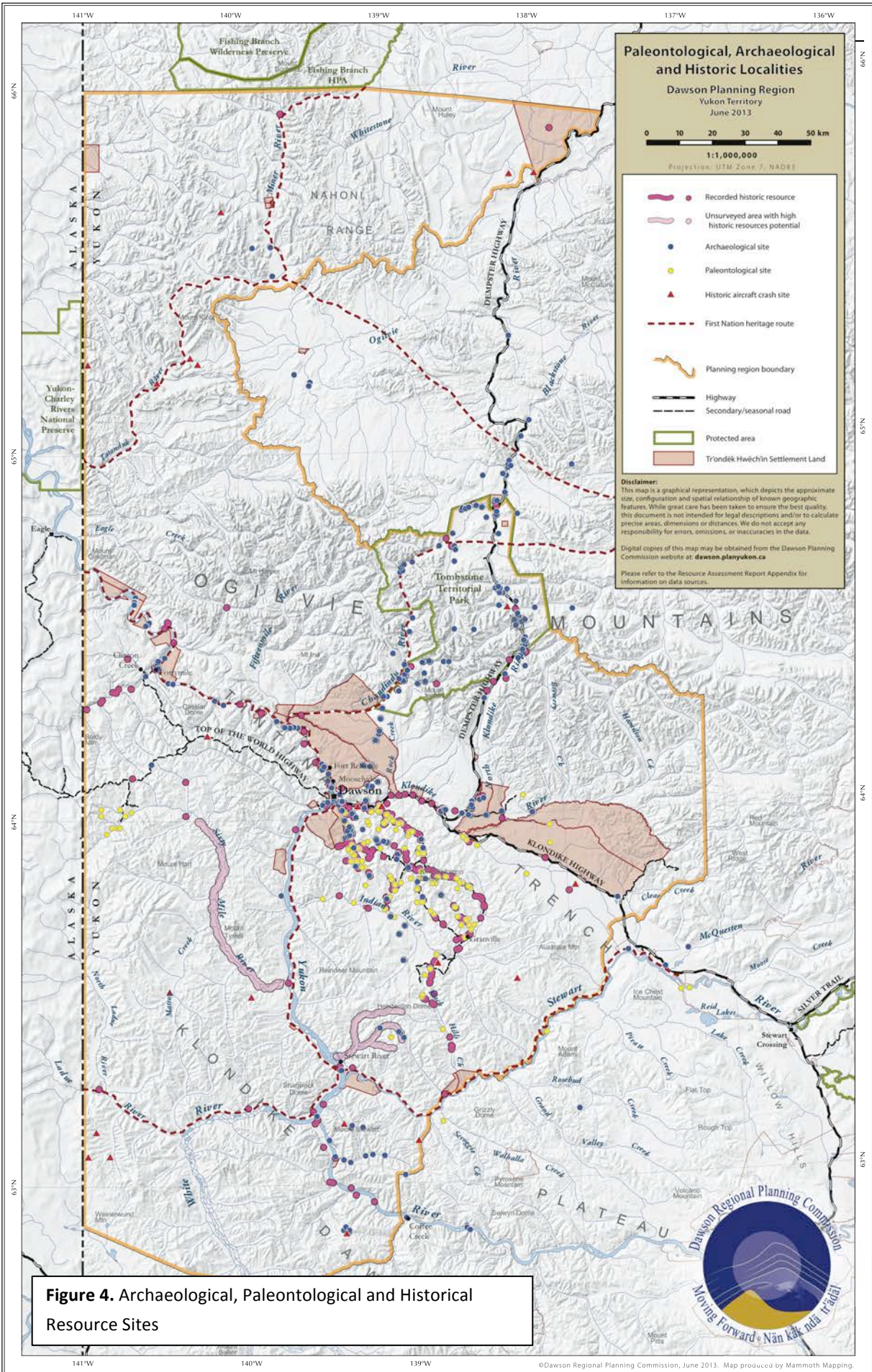
2.1 Heritage

The planning region is part of the Traditional Territories of the Vuntut Gwitchin, Tr'ondëk Hwëch'in and Na-Cho Nyak Dun. The people of these First Nations occupied, travelled and harvested throughout these Traditional Territories. Their presence is reflected in the trails, place names, cultural and historic sites throughout the region, which provide a window into the history of the region.

First Nations in the region define heritage resources broadly to encompass all aspects of cultural identity including language, stories, a connection to ancestors, beliefs and values shared through generations and the continuation of traditional land use practices. In this sense, heritage resources includes harvestable resources (e.g. fish, wildlife, plants); natural resources (e.g. migration routes, waterways, mineral licks, and calving areas); medicines; raw materials (e.g. wood, stone and fiber); place names and stories connecting people, places and events; camps, trails and caches; sacred and burial sites; current subsistence harvesting areas; and traditional knowledge.

Government of Yukon uses the term “historic resources”, as defined by the *Historic Resources Act* (RSY 2002, c109), to include paleontological (fossils), archaeological (prehistoric) and historic (more than 45 years old) sites or objects. The definitions are clearly focused on physical objects and material remains, as opposed to the “living heritage” viewpoint of First Nations. As of January 2013, there are approximately 139 recorded paleontological sites in the planning region, 370 archaeological sites and 750 historic resources sites (see Figure 4). Although the planning region contains a large number of heritage resources, there are still large portions of the region that have not been surveyed. Increasing land access and human activities, particularly land clearing and disturbance of sediments, raises the potential for impacts on these undiscovered resources.

Paleontological sites in the region are predominantly Ice Age fossil sites in the Klondike Goldfields. Permafrost enables exceptional preservation of biological remains such as DNA and mummified tissue, and the region attracts internationally renowned scientific researchers. Relic permafrost discovered on Dominion Creek is the oldest known ice in North America at over 750,000 years old. Placer mining activity has been the principal source of these fossil remains. Almost every drainage area that is or has been mined has yielded fossils, and additional sites may be expected north of the Tintina Trench in the Ogilvie Mountains and in the Tatonduk River, Miner River and Ogilvie River areas.



Archaeological sites are predominantly prehistoric sites spanning the period from the end of the last Ice Age (10,000 years ago) to historic times. In general, areas of increased archaeological resource potential are: in proximity to water bodies; on hills, terraces, ridges and knolls with viewpoints; and in key habitat areas for wildlife. The upper Forty Mile, upper Chandindu and upper Blackstone River areas appear to have been used for millennia for seasonal caribou harvest, and the Moosehide site also shows evidence of occupation dating back around 9,000 years. The Yukon River, Klondike River and Chandindu River were major travel corridors and were themselves the focus of fishing, trapping and moose hunting activities. The upper drainages of the Tatonduk, Miner, Whitestone, Eagle, Fifteen-mile and Chandindu Rivers and terraces along the Yukon River are expected to have similarly high concentrations of prehistoric sites. Environmental changes (e.g. volcanic eruptions resulting in the White River ash layer seen throughout west-central Yukon and east-central Alaska), technological innovations (e.g. use of fish traps and caribou surrounds), and changes in settlement patterns (e.g. larger groupings in seasonal camps) are reflected in the archaeological record of the region.

The Dawson region has the highest concentration of historic resources in the Yukon. The majority of sites date from the early 1900s to the late 1950s and most are related to mining, but also include First Nations history. During the Klondike Gold Rush of 1898, thousands of stampedeers flooded into the region and had a profound impact on the lives of First Nations people. Mining techniques evolved from individual miners panning in creeks to huge wooden dredges owned by large corporations. Sites include the Dawson Historical Complex, Discovery Claim, S.S. Keno, and Dredge No. 4 National Historic Sites; Forty Mile/Ch'édä Dëk Historic Site (Yukon); many settlements, camps, farms and graves; industrial sites and dredge camps; routes and trails including the Overland Trail from Dawson City to Whitehorse; the Yukon Ditch (a massive system of pipes, flumes and ditches built to carry water 70 miles from the Ogilvie Mountains to mining operations on Bonanza Creek and the Klondike River); hydroelectric plants; railway lines; and historic town sites such as Bear Creek, Grand Forks and Granville. The region also continued to be used for hunting, fishing, trapping and trading purposes. Historic sites and artifacts are likely to be found nearly everywhere throughout the region. In general, however, areas of increased potential for historic sites are adjacent to creek drainage systems and mountain valleys, and near major historic era communities, travel routes and utility corridors.

The Dawson Historical Complex along with the Chilkoot Trail National Historic Site, Thirty Mile section of the Yukon River, and other sites in Washington and Alaska form the Klondike Gold Rush International Historic Park, and commemorate their shared history. The 'Klondike' is also on the tentative nomination list for UNESCO World Heritage Site designation, recognizing its outstanding universal value. Heritage resources are an important attraction for the region and provide substantial economic benefits.

2.2 Water

The water resources of the region are highly valued for their role in providing important fish and wildlife habitat, food, drinking water, nutrient-rich sediments, transportation connections, opportunities for traditional economic activities, and as landscapes with spiritual and aesthetic value. Chinook and Chum salmon migrate the entire length of the Yukon River, and many other wildlife species use the rivers, lakes, wetlands and riparian areas.

Wetlands are of significant habitat importance to waterfowl, moose and other species; absorb the impacts of hydrologic events such as floods; serve important ecological functions such as filtering sediments and toxic substances; and are valuable recreational areas. Although several small wetlands exist in the planning region, there are no large wetland complexes. This makes all wetlands in the planning region very important.

The Yukon River corridor is a significant watercourse in the region and it provides year-round recreation, historical and educational opportunities including hunting, fishing, angling, wildlife viewing, and transportation. The Yukon River watershed is fundamental to the Bering Sea ecosystem, providing most of the freshwater runoff, sediments and dissolved solutes in the eastern part of the sea.

Water in the region also provides economic value through transportation, domestic use, hydroelectric power, mining, tourism, forestry, agriculture, fisheries, and oil and gas activities. A large number of industries in the region utilize water, rely on the availability of water for their operations, and have the potential to impact water resources. Future industrial demand for water is expected to increase.

Information on water in the planning region is considered sparse; the region has three active hydrometric stations, three active snow survey courses and one water quality monitoring station managed by Government of Yukon. Average yearly precipitation in the region is 200 to 500 mm; with the northeastern part of the region receives the most precipitation.

Permafrost has a significant influence on groundwater and runoff, and river ice jams continue to be a major cause of flooding (six major floods have occurred in Dawson within the last century). Snowmelt results in rapid increase in stream discharge in the spring, while groundwater is a significant source of winter flows.

There are many laws and regulations governing water protection and use in the Yukon, including the *Waters Act*, *Fisheries Act*, *Navigable Waters Protection Act*, *Environment Act*, *Public Health and Safety Act*, and First Nations Final Agreements.

2.3 Forests

The planning region lies within the Boreal Forest and is predominately covered by conifer and mixed forests. The dominant tree species are black spruce, white spruce, trembling aspen and birch. These forests are shaped largely by wildfire and provide a diversity of habitats for birds and wildlife. They provide habitat for ecologically important species such as caribou, wolves, bear, moose sheep, marten and lynx and 180 bird species. They also contain wetland areas that support a high level of biodiversity.

Boreal forests contain high recreational, cultural and educational value. Some activities relate directly to forest resources such as firewood gathering, plant harvesting and mushroom and berry picking. Other activities include hiking, bird watching, wildlife viewing, paddling, trail riding, cross-country skiing, snowmobiling, dogsledding, hunting and trapping.

Forests in the planning region also contain high economic value. Timber is harvested locally for both fuel wood and saw logs, with annual allowable cuts for the region set by Yukon Government's Forest Management Branch (currently set at 5,000m³ for coniferous trees and 2,000 m³ for deciduous trees). Forests also provide traditional economic value through the harvest and use of traditional foods including caribou, moose, bear, sheep, grouse, rabbit/hare freshwater fish and salmon. Many plant species including mushrooms, berries and shrubs are gathered for their nutritional or medicinal properties.

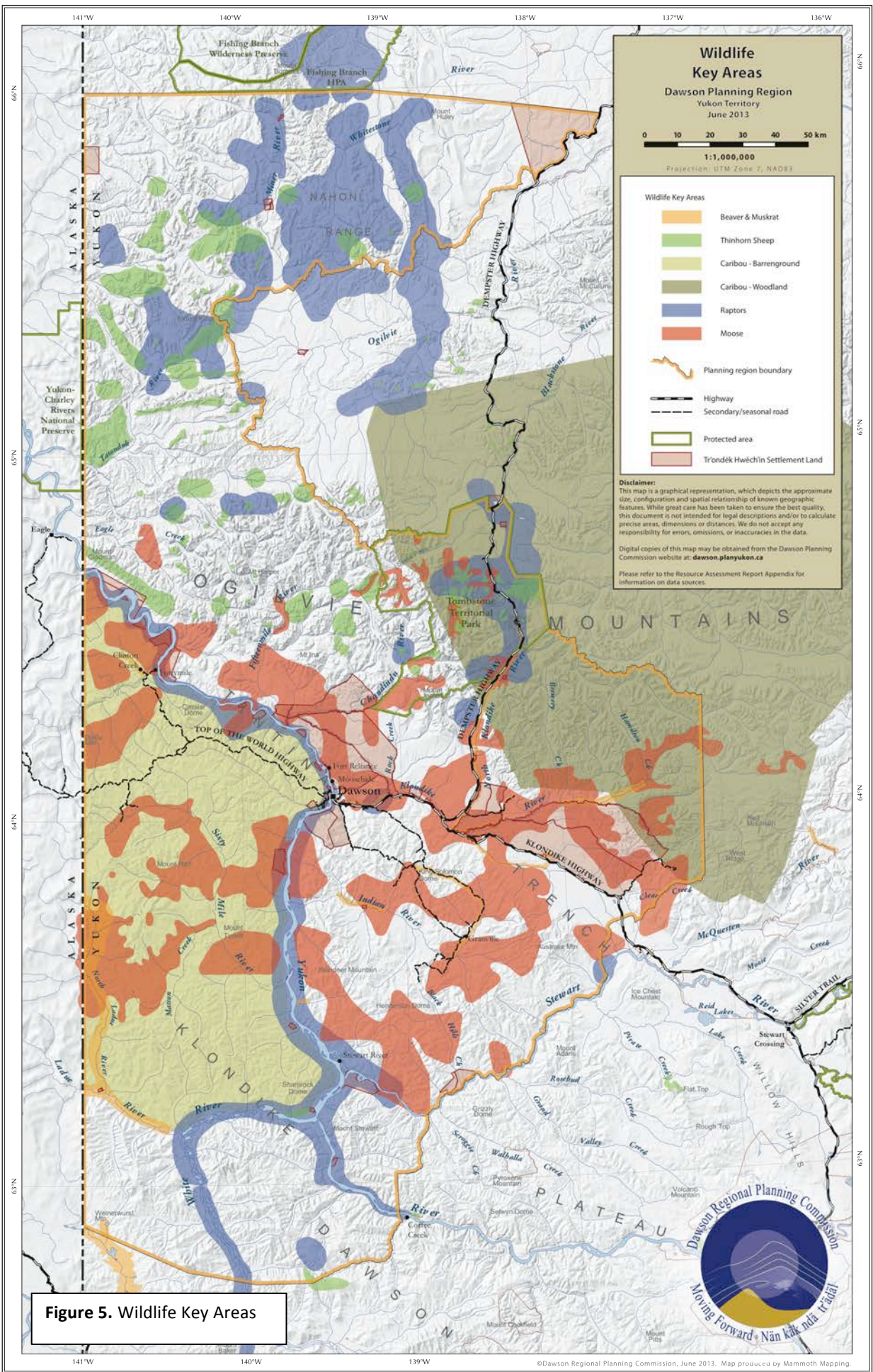
Climate change may impact the rate and extent of forest pests and the frequency of wildfire in boreal forest areas of the planning region.

2.4 Fish and Wildlife Habitat

There are 46 mammal species, 82 bird species, 53 species of butterflies and 22 species of fish in the planning region. Caribou, moose, sheep grizzly bear, lynx, beaver and muskrat are considered focal species. Key wildlife areas for several of these species are depicted in Figure 5.

Caribou are an important subsistence species and both barren ground and woodland caribou occur in the planning region. The ranges of the barren ground Porcupine and Forty Mile herds and the northern mountain Hart River and Clear Creek herds cover nearly the entire planning region. Current estimates for caribou herds are: Porcupine (169,000), Forty Mile (56,509), Hart River (2,200) and Clear Creek (900).

Moose populations in the region appears stable and areas to the southeast of Dawson City support large populations. Mountain ranges to the northwest of the Tombstone ranges are important year-round habitat for sheep.



Information regarding fish and fish habitat is limited; however, the Yukon, Stewart and Whitestone Rivers have the highest recorded diversity in the planning region. The Yukon River also remains an important migratory habitat for salmon.

Fish and wildlife have important traditional, recreational and economic value in the planning region. Moose, caribou and salmon are an important component of a traditional diet of the Tr'ondëk Hwëch'in. Wildlife is also a draw for tourism and recreational activities. Finally, guided hunting and outfitting, trapping and wild game meat processing provide employment within the region.

2.5 Conservation Priorities Assessment

Areas of broad conservation interest include large intact areas that are representative of natural environmental variation (Cooke and Reid 2012). During the land use planning process, several candidate areas were selected that have high conservation interest (Government of Yukon 2012), which are listed below.

2.5.1 Northern Area – Beringian Connections

The Northern area is the portion of the planning region north of Dawson City and includes the Ogilvie Mountains north to the Nahoni Range. This area is rich in limestone and has a unique ecology represented by a suite of rare Beringian endemic species. Opportunities for conservation focus in this region include:

- Tatonduk River – high conservation values and trans-boundary connection to Yukon-Charley Rivers National Preserve in Alaska;
- Ni'iinlii Njiik (Fishing Branch) Habitat Protection Area (HPA) southern boundary

2.5.2 Southern Area – Intact Sub-Watersheds

The Southern area is the portion of the planning region south of Dawson City and it includes the Klondike Plateau and the north edge of the Dawson Range. Conservation of intact sub-watersheds in the Southern area would serve both to represent and protect unique endemic species (Cooke and Reid 2012).

2.5.3 River Corridors

The Yukon and Stewart Rivers dominate the ecology of the planning region, particularly in the central and southern portions. These rivers feature habitats and species not represented elsewhere in the planning region.

2.6 Minerals

For over a century, Yukon economic development has been and continues to be closely tied to mineral deposits such as lead/zinc, gold, silver, tungsten, molybdenum, nickel and iron. The

planning region is no exception; there is advanced exploration in copper, silver, zinc, lead and gold. Gold, however, is by far the most significant metal in terms of economic importance, in both hard rock and placer deposits, and accounts for most of the 365 known mineral occurrences documented within the region.

2.6.1 Hard Rock (Quartz)

Hard rock exploration is a significant economic activity within the planning region. Continued high gold prices through 2011 spurred Yukon exploration expenditure to over \$300 million. In June 2011, quartz mineral claims in good standing covered about 10,861 km² or 24 per cent of the region (Yukon Geological Survey, 2013). Recent exploration projects near Brewery Creek Mine identified new gold targets for future mine development in the White Gold, Dawson Range and areas to the east of the Dempster Highway. Despite the large portion of quartz mineral claims, Brewery Creek is the only active quartz mine within the region. Figure 6 illustrates the current quartz claims in the planning region.



Figure 6. Current quartz claims in the planning region.

2.6.2 Placer Mining

Placer claims in the Dawson region total approximately 1,100 km² (2% of the region) and include the drainages of the Klondike River, Indian River, west Yukon (Fortymile and Sixtymile rivers and Moosehorn Range River) and Stewart River (Figure 7). More than 1,900 km of placer streams are found within the planning region. During the period from 2007 to 2009, more than 87% of total Yukon placer gold production came from the unglaciated districts of the Dawson region. The Indian River area is the top gold producing drainage in the Yukon, followed by the Klondike, West Yukon and Lower Stewart.

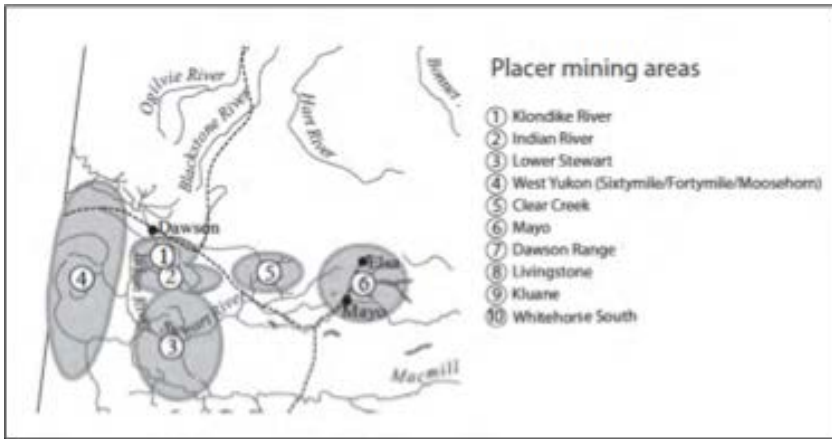


Figure 7. Placer mining areas (adapted from the Yukon Geological Survey 2013).

2.7 Energy

The majority of the energy used in the Yukon is for transportation and heating of residential, commercial and institutional buildings. Energy costs in the planning region are high, even compared to Whitehorse. There is also a higher consumption of energy due to older buildings that are often inefficient to heat and colder winter temperatures.

Within the planning region there are several sources of non-renewable energy (coal, oil and natural gas, liquefied natural gas and unconventional hydrocarbons) and renewable energy (hydroelectricity, biomass, solar, wind and geothermal).

2.7.1 Non-Renewable energy

Coal deposits are found within the planning region in the Tintina Trench and Indian River areas.



Figure 8. Oil and gas basins in the planning region.

There are no dispositions for coal in the region and it is unlikely that coal will be pursued for exploration and development.

Oil and natural gas resource potential exists in the northern section of the planning region in the Eagle Plains and Kandik basins (Figure 8). The Eagle Plain basin consists of two sub-basins, Bell in the north and Eagle in the south and the majority of the oil and gas exploration took place in the 1960s and 1970s. Northern Cross Limited has submitted a recent proposal to the Yukon Environmental and Socio-economic for winter and summer drilling.

The Kandik basin straddles the Yukon-Alaska border and to date there have been no discovered reserves in the basin.

Unconventional hydrocarbons are reserves such as shale gas or natural gas in coal that are chemically identical to conventional reserves but they are contained in rock formations that require more production techniques (e.g. hydraulic fracturing) to release the gas. Shale gas has not been explored in the Yukon; however, future gas project will likely consider shale gas reservoirs in the future.

2.7.2 Renewable Energy Resources

Hydroelectric energy is the main provider of electric energy in the planning region; it currently accounts for over 90 percent of annual Yukon power generation. Yukon Energy Corporation (YEC) owns and operates the Mayo-Dawson system, which provides electric energy to the planning region. YEC has stated that there are several potential sites of interest for future hydroelectric projects within the planning region. These sites include the North Fork River, Chandindu River, Rock Creek, Fifteen Mile River, North Klondike River, Forty Mile River, Yukon River, Indian River, Sixty Mile River and Stewart River.

Bioenergy is commonly used as an energy source in the planning region and across the Yukon. Cordwood is most commonly used but wood chips, pellets and briquettes are also burned. Recently, bioenergy has been used to heat Dawson's water supply and sewage treatment plant and will be used to produce heat for neighboring buildings.

Solar energy is used on a small-scale in the planning region and throughout the Yukon. The planning region receives close to the same amount of energy annually as many other regions of Canada. Although most of that energy is seasonal, solar energy is a viable and potentially increasingly used technology for producing heat and electricity in the planning region. Currently, many households use solar energy for water heating or energy generation. The Dawson swimming pool, telecommunication businesses, highway maintenance camps, park interpretive centers, camps and research facilities are all examples of places where solar energy is being used.

There are currently no wind or geothermal energy sites in the planning region.

2.8 Agriculture

Areas of the planning region considered suitable for agriculture are found in areas adjacent to the Yukon, Indian, lower Stewart and Klondike Rivers. This area is considerably warmer in the summer months than elsewhere in the Yukon. This area also receives more predictable rainfall in the spring, alleviating problems with dry soil conditions that exist elsewhere and it is also underlain by some of the most potentially productive agricultural soil in the Yukon.

There has been farming in the Dawson area since the early 1900s. Today, commercial agricultural production in the Dawson region is limited and is geared towards the local market.

In 2011, there were only two commercial operations in the area, one at 9 Mile Island in the Yukon River and one at Henderson's Corner with 2.5 acres in production (Conservation Klondike Society 2011). With the addition of a Rock Creek commercial operation, the total area may be adjusted to 3.5 acres (Government of Yukon 2012).

In the 2011 *Dawson Community Food Survey*, local produce was found by consumers to be desirable and reasonably priced. However, respondents indicated that supply is inconsistent and not in sufficient quantities to meet demand.

2.9 Tourism and Recreation

The planning region is an important tourism destination for visitors to the Yukon. Well-known historic and cultural attractions, along with wilderness destinations such as the Yukon River, Tombstone Territorial Park and road-accessible tundra landscapes, continue to attract visitors looking to explore Yukon history, cruise and paddle historic and wild rivers, hike through sub-arctic landscapes and learn about the cultural history of the Tr'ondëk Hwëch'in and the Klondike Gold Rush.

In 2010, Environmental Dynamics Inc. (EDI) prepared a report for Yukon Parks entitled *Klondike Regional Plan: Outdoor Recreation Data Review*. The report summarizes the major areas for recreation in the region and notes current and potential tourism values for the planning region, which are illustrated in Figure 9.

Dawson City receives the highest visitation in the planning region and has well-established attractions, accommodation, infrastructure and other tourism services. Many of the historic resources and attractions tied to the Klondike Goldrush are concentrated in and around Dawson City. Dawson is a destination for nearly all highway and backcountry visitors and is an important factor in tourism growth in the region. While most tourists visit in the summer, Dawson has a growing winter tourism season anchored by outdoor and cultural events and activities that attract both visitors and media.

Aside from Dawson City, the other major tourism assets in the planning region include the Yukon River, Tombstone Territorial Park and the Dempster highway. Hiking, canoeing, motorboat tours, rafting and biking are the most popular day trip activities and canoeing and backpacking are the most popular multi-day activities. Wildlife viewing is a highlight associated with many of these activities, particularly along the Dempster Highway.

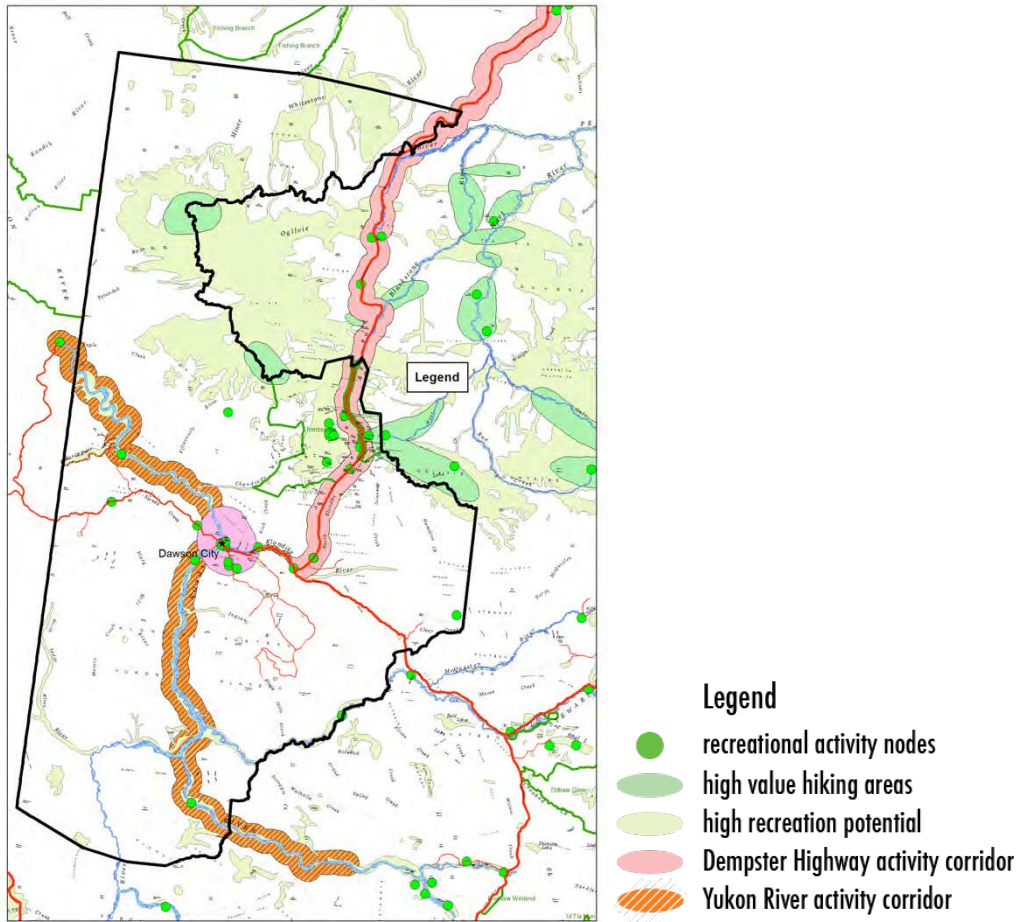


Figure 9. Tourism values in the planning region.

Tourism contributes significantly to the economy of Yukon. In 2011, tourism added \$103.4 million to Yukon’s total Gross Domestic Product and \$178.8 million to total private sector revenue. The last comprehensive regional visitor survey (Government of Yukon 2006a) was conducted in 2004, when 60,350 tourists visited the Klondike Region. The majority of tourists visiting the Yukon are from the United States, followed by Canada and German-speaking Europe (Germany, Switzerland and Austria).

2.10 Transportation and Access

Access and transportation networks are vital for the movement of people, food, freight and other goods and supplies. Transportation networks and infrastructure also have a major influence on the pattern of land use and economic within the planning region. There are three modes of transportation in the planning region: roads and access corridors, water access and air access.

Roads and access corridors are the most predominant types of access in the planning region. This includes highways, secondary roads, cutlines, power transmission lines, seismic lines,

pipelines, airstrips, railway lines and bridges. The Klondike and Dempster Highway are the main multi-use transportation corridors that utilized and maintained year-round and link the planning region to the North and South. The Top of the World Highway is accessible during the summer months and connects the planning region with Alaska. There are also numerous other roads and trails in the planning region that provide access to residential, commercial and industrial properties as well as recreational and cultural use areas. Existing levels of linear and surface disturbance in the planning region is highest in the Goldfields, especially in the vicinity of gold-bearing creeks.

2.10.1 Water Access

The Yukon River is the major navigable waterway in the planning region and an important access corridor. Barge transportation of fuel and supplies provides an economic option for seasonal resource industry activity and seasonal ferry service across the Yukon River links Dawson City to the Top of the World Highway and Alaska. The Yukon River, Klondike River and other rivers provide important access corridors for subsistence harvesting and recreational opportunities.

2.10.2 Air Access

The Dawson community airport has scheduled Air North passenger service to and from Whitehorse, Inuvik and Old Crow. Yukon government also manages airstrips to Chapman Lake and McQuesten Field. Air transportation via fixed wing planes, floatplanes, and helicopters is vital for the movements of people, fuel, goods and supplies for numerous resource sectors. Associated infrastructure includes remote airstrips, floatplane landing sites and helicopter pads.

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Resource Summary Maps

The following Resource Summary Maps are distributed with the Resource Assessment Report, and represent information current to the date of publishing (June 2013):

- Dawson Planning Region
- Physiographic Regions and Simplified Geology
- Glacial History
- Fire History, pre-1950 to 2011
- Ecological Landscape Classification – Bioclimate
- Ecodistricts
- Unique and Special Landscape Features
- Wildlife Key Areas
- Paleontological, Archaeological and Historic Localities
- Peregrine Falcon: Habitat Suitability
- Caribou: Range and Habitat Suitability
- Moose (adult): Habitat Selection – Late Winter
- Moose (cow and calf): Habitat Selection –Late Winter
- Beaver: Habitat Suitability
- Muskrat: Habitat Suitability
- Sheep: Habitat Selection – Late Winter
- Stream Classification for Fish Habitat Suitability
- Relative Distribution of Gold, All Deposit Types
- Quartz Mining Activity
- Placer Gold Potential
- Placer Mining Activity
- Oil and Gas Basins
- Infrastructure, Access and Land Status
- Recent YESAB Applications, January 2010-April 2012
- Watershed Boundaries
- Yukon Wilderness Tourism: Resources, Infrastructure, and Activities

These maps are available on the DRPC website (<http://dawson.planyukon.ca/>) or by contacting the DRPC office.

Appendices

The following Appendices are distributed with the Resource Assessment Report:

Appendix A - Issues and Interests Report

Appendix B - Guidelines for Data Submission

Appendix C - Tr'ondëk Hwëch'in Resource Report for the Dawson Regional Planning Process

Appendix D - Government of Yukon - Information Submission to Resource Assessment

Appendix E - Bioclimate, Ecodistrict and Ecologically Significant Mapping for the Dawson Planning Region, Yukon

Appendix F - Dawson Land Use Planning Mineral Potential Assessment

Appendix G - Placer Potential Map

These appendices are available on the DRPC website (<http://dawson.planyukon.ca>) or by contacting the DRPC office.