

DAWSON PLANNING REGION

TECHNICAL REPORT
ON
ISSUES AND INTERESTS

GOVERNMENT OF YUKON
JUNE 2019

Compiled by the Land Planning Branch of the Department of Energy, Mines and Resources

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AGRICULTURE

Interests

The Dawson Planning Region contains some of the (potentially) most productive agriculture land in the Yukon. High quality agriculture soils are associated with the flood plains and lower terraces of major river valleys all across the Yukon. In this region, there are extensive suitable agriculture areas along the Yukon (both upstream and downstream of Dawson), the lower Stewart River as well as along the Indian and, to a lesser extent, the Klondike River.

Approximately 100 hectares of the most locally available areas of suitable agriculture land are in Sunnydale/West Dawson, Dawson, and Bear Creek. These areas are subject to regulations under the Local Area Plan and the Dawson Official Community Plan.

Agricultural soils of class 3 to 5 with provision for reasonable access are located along existing transportation corridors (road and navigable river) within the Dawson Regional Land Use Planning Area (see Appendix 2 Map 2). Agriculture Branch is interested in such agriculture capable lands for the development of food production. These lands comprise 61,100 hectares of Crown Land of class 3-5 soils. Lands designated as Parks, and land over 750 m elevation were excluded.

There are 31,300 hectares of class 3-5 soils within First Nation Settlement lands, and 700 hectares within Municipal and Community Boundaries. Agriculture Branch is committed to developing agri-capable soils for food production and is available to support such development.

The superiority of the Dawson region for agriculture is based on the continental climate. The summer in the Dawson planning region is considerably warmer than in other regions of the Yukon. Spring rainfall is more predictable, combined with the warmer summers mean cereals may be grown to maturity and successfully harvested. One of the greatest limitations on agriculture in other areas of the Yukon are cool summer temperatures.

In contrast, reconnaissance scale soil mapping (1977, 1: 125,000) by the University of Saskatchewan estimates the Whitehorse Region to have no Class 3 and 4 lands.

The Yukon Agriculture Branch expects continued interest in developing agriculture land in the Dawson Region at a low but steadily increasing level. The great majority of Yukon agriculture is currently located within 80 km of Whitehorse and, with the current emphasis on livestock production, the central Yukon is the natural place to look to for Yukon grown livestock feeds (consisting of grains and hay). Any future agricultural development would take place upon the Traditional Territory of Yukon First Nations and must be undertaken with full consultation and appreciation of this fact.

Issues

- The thaw of discontinuous permafrost (common in the Dawson Region) creates uncertainties related to developmental timelines. Removal of vegetation precipitates melting of ground ice and, depending on depth of frost and soil texture, it is difficult to predict when cleared land will be dry enough to farm.
- Placer mining is extensive in the Dawson Region. Because placer mining claims grant both surface and subsurface rights, the availability of this land for other land uses is difficult in the Dawson region. However, placer mining presents a unique opportunity for agriculture development. At the closure and restoration end of the placer cycle, provided that fine texture materials and organics had been preserved for redistribution over the gravels, revegetation may provide a transition to agriculture uses.

- Tr'ondëk Hwëch'in has recently expressed some interest in using reclaimed placer land for agriculture, but were not in agreement with the lands being sold to the placer miner.
- Climate Change (see below) would appear to reduce the weather risks to agriculture, leading to further demand for land for the production of food.

Tools and Information Products

- <http://www.emr.gov.yk.ca/agriculture/index.html>

CLIMATE CHANGE

Interests

- Average annual temperature across Yukon has increased by more than 2 degrees Celsius over the past 50 years, double the rate of temperature increase in southern Canada.
- Across the Dawson planning region, average annual temperature is projected to increase by 3.7 degrees Celsius to 5.1 degrees Celsius by 2070 to 2079. Changes in winter months will be most substantial, with average January temperatures projected to increase by 4.7 to 7.5 degrees Celsius.
- Average annual precipitation is expected to increase by 19% to 28% by 2070 to 2079. The greatest change in precipitation is projected to occur in the summer, with May and June precipitation increases projected to be 30% to 52% from historic (1901 to 2009) averages.
- A changing climate is and will continue to affect many of the interests and activities in the Dawson planning region. It is therefore important that consideration be given to the significant uncertainties and challenges associated with environmental change, as well as potential opportunities.
- There is a need to ensure that climate change influenced dynamics are reflected in infrastructure planning, land development, and watershed and ecological management in the Dawson planning region in order to reduce potential risks. There is a need to continue to build knowledge about the impacts of environmental change on the Dawson planning region. There is a need for further monitoring and expanded research, including but not limited to assessing changes in ground temperature, permafrost dynamics, streamflow, and water quality. It is essential to draw from both Traditional Knowledge and western science throughout the process.

Issues

Known potential effects of climate change within the Dawson planning region include:

- Roads and infrastructure within the Dawson planning region are and will increasingly be impacted by permafrost thaw. Climate-related operations and maintenance costs for the Dempster highway have increased significantly in the past two decades. On average, an additional \$200,000 dollars per year has been needed to maintain the Dempster highway between 2005 and 2015. Direct and indirect impacts of climate change on mine operations have been experienced across Yukon, ranging from effects of permafrost thaw on tailings to increases in precipitation and stream flooding.
- There is evidence that climate change is affecting traditional food sources in the Dawson planning region.
- There is evidence across the Canadian North that climate change is affecting health through increases in disasters, such as wildfires and floods.

- Climate change has potential to affect historic and cultural sites across Yukon though increase in overland flooding, precipitation changes, and permafrost thaw.
- Climate change is a factor in ecological changes throughout the Dawson planning region, including potential for spruce beetle expansion throughout the region, changing migration patterns and habitat boundaries, and changes to forest composition.

Tools and Information Products

- Scenario Network for Alaska and Arctic Planning: <https://www.snap.uaf.edu/>
- Yukon State of Play: Analysis of Climate Change Impacts and Adaptation: <https://yukon.ca/sites/yukon.ca/files/env/env-yukon-state-play-analysis-climate-change-impacts-adaptation.pdf>
- Yukon Climate Change Indicators and Key Findings: https://www.yukoncollege.yk.ca/sites/default/files/inline/files/Indicator_Report_Final_web.pdf
- Yukon State of the Environment Report 2018: <https://yukon.ca/en/state-environment>
- Dawson Climate Change Adaptation Plan: <https://www.nrcan.gc.ca/environment/resources/publications/impacts-adaptation/case-studies/16275>

CULTURE/HERITAGE

HERITAGE RESOURCES & HISTORIC SITES

Interests

- The Dawson Planning Region is one of the earliest regions to be settled in Yukon and is where the Klondike Gold Rush occurred in 1898, when thousands of people inundated the region looking for gold. This activity left an imprint on the landscape, and the region is recognized as having the highest concentration of historic resources within the territory.
- As of December 1, 2018, there are 1,389 records of historic resources in the Dawson Planning Region. Over 800 of these are located outside of the Dawson municipal boundary. The majority of the sites outside of Dawson date from the early 1900s to the late 1950s and most are related to mining.
- Like archaeological sites, historic resources are protected under Yukon's *Historic Resources Act (R.S.Y. 2002, c. 109)*.
- The Dawson area is listed on the tentative list for World Heritage Site designation demonstrating its historic and cultural significance. If designated a World Heritage Site, there would be no impact to the rights of the Tr'ondëk Hwëch'in or to mining activities in the Klondike Goldfields, however, the area in and around the municipality will continue to be managed according to suggested guidelines in the Dawson Heritage Management Plan in order to preserve historic resources and heritage character.
- There are several significant historic sites in the area including:
 - Dawson City; Moosehide Slide Historic Site; the Forty Mile, Fort Cudahy, Fort Constantine Historic Site; Discovery Claim and Dredge Number 4 National Historic Sites; and Tr'ochëk National Historic Site;
 - The Yukon Ditch system, related infrastructure, large artifacts used to construct and maintain the ditch; the North Fork Ditch, South Fork Ditch, related infrastructure and large artifacts used to construct and maintain the ditches;

- The Whitehorse-Dawson Overland Trail and the remains of associated roadhouse sites; the Ridge Road Heritage Hiking Trail; and remains of the Glacier Creek Trail and associated roadhouses/cabins and informal communities in the Sixty Mile area;
- Remains of industrial sites such as the Adams Dam on Bonanza Creek and the French Gulch Dam on Eldorado Creek; and the Klondike Mines Railway that connected Dawson City to Sulphur Springs near the head of Sulphur Creek; and
- Areas along the Yukon River and the early settlement of Ogilvie located on Ogilvie Island are likely to contain historic resources related to transportation, trapping or farming. The Yukon River south of Dawson City and north of Forty Mile has not been inventoried and the likelihood of well-preserved historic resources is high.

Issues

- The Ridge Road Heritage Hiking Trail is developed for cyclist and pedestrian use and is a fragile trail system. It is necessary to restrict motorized vehicle access due to trail maintenance reasons and public safety for trail users.
- The Yukon Ditch System is a system of pipe, flume and ditch that carried water from Tombstone Mountains to Bonanza Creek with maintenance camps approximately every 20 kilometers. The sections west of the Klondike River have quartz claims. It may be necessary to limit access roads across the ditch to minimize mining impacts on the historic resources. Potential for hiking trails and interpretation of this monumental project is high as it is likely one of a kind in Canada.
- The Yukon Historic Sites Inventory has been updated with a series of field surveys, starting in 2012, in the Dawson Region. The majority of known sites within the planning region have been revisited and updated. Information is still limited on areas along the Yukon River from Coffee Creek to the confluence with the Stewart River, below Dawson City on the Yukon River, north of Forty Mile, along the South and North Fork power projects, along the Indian River and sites along the Yukon Ditch. Those areas were last inventoried in the early 1990s. The need to assess potential impacts on historic resources has grown as the exploration and development of placer and quartz mines increases.

Tools and Information Products

- Yukon Historic Sites Inventory
- Yukon Heritage Reserves Inventory
- Yukon Aircrash Inventory
- Research reports on the Whitehorse-Dawson Overland Trail, the Klondike Mines Railway, the Yukon Ditch, and the North Fork Ditch system
- Dawson Heritage Management Plan

ARCHAEOLOGY

Interests

- Archaeological sites and resources are protected and managed in Yukon according to the *Historic Resources Act (R.S.Y. 2002, c. 109)* and the *Archaeological Sites Regulation (O.I.C. 2003/73)*. The *Quartz and Placer Mining Land Use Regulations* also address protection/avoidance of heritage sites (including burials) and require that miners who encounter heritage sites report their discovery to the Yukon government.
- As of June 2011, there are 451 recorded archaeological sites in the planning region. These are predominantly prehistoric archaeological sites, which span the period from

just before the end of the last Ice Age (14,000 years ago) to historic times in the Yukon, such as the Gold Rush at the turn of the century and the building of the Alaska Highway in 1942-43. Included in this number are several significant sites relating to the Klondike Gold Rush period, including Forty Mile/Chödä Dëk and the National Historic Site Tro'chëk/Klondike City, which preserve the material record of this dynamic period of culture contact and change in Yukon history.

- Although inventories are incomplete for large portions of the planning area, archaeological site concentrations identified in and around Tombstone Park appear to represent areas of importance for seasonal harvesting of migrating caribou over several millennia. Upper drainages of the Tatonduk, Miner, Whitestone, Eagle, Fifteen Mile and Chandinidu Rivers are expected to have similar high concentrations of prehistoric site values.
- The ancient terraces along the Yukon River in the Dawson Planning Region have been identified as potentially preserving some of the earliest evidence of human populations in the unglaciated Beringian landscapes of the late Ice Age. The site of Moosehide has yielded evidence of occupations dating back to about 8,000 radiocarbon years (ca. 9,000 calendar years). The Yukon River was also the location of historically important salmon fish camps for Han people, which reflect subsistence adaptations, developed within the past 2,000 years.
- Due to intensive mining in the Klondike goldfields over more than a century, the prehistoric archaeological record of this area is largely unknown. The narrow valleys and steep rolling hills typical of this area may not have been ideal for hunters throughout much of the Holocene. One site in the Klondike Gold Fields, however, yielded an antler billet dated to about 11,500 radiocarbon years in age (ca. 13,000 calendar years), suggesting additional evidence of late ice age human presence may yet be found preserved in the frozen mucks, much like the fossil palaeontological evidence.

Issues

- YG has limited archaeological site inventory information for large portions of the Dawson planning region, yet efforts are being made to increase the information base.
- The need to assess potential impacts on archaeological resources has grown with increasing mining and exploration activity in the region. Heritage resources are identified as one of the major areas of concern in the majority of project reviews under YESAA.

Tools and Information Products

- Yukon Archaeological Site Inventory: <http://www.tc.gov.yk.ca/archaeology.html>
- Handbook for the Identification of Heritage Sites and Features: http://www.tc.gov.yk.ca/pdf/Heritage_Handbook_2007.pdf
- First Nations Heritage Legislation
- Yukon Forum heritage table

PALAEONTOLOGY

Interests

- There are 149 recorded palaeontological sites in the planning region. These are predominantly Ice Age fossil sites in the Klondike Goldfields and include the areas of the lower Stewart River, Thistle Creek, Black Hills Creek, Henderson Creek, Fifteen Mile Creek, and Sixty Mile River watersheds. There are over 28,000 fossils from the region accessioned into the fossil collections of Yukon government and the Canadian Museum of Nature.

- Fossils are protected and managed in Yukon according to the *Historic Resources Act (1996)*. Management activities include periodic site visits and monitoring by Yukon government paleontology staff at active placer mines to collect fossil resources uncovered by mining activity. The *Placer Mining Land Use Regulations* require that miners who recover fossils report their discovery to the Yukon government.
- Permafrost found throughout the region enables exceptional preservation of ancient Ice Age biological remains, such as proteins and DNA in prehistoric bone, mummified animal soft tissue, plants, soils, bacteria, and is the focus of active scientific research programs.
- The region attracts internationally renowned scientific researchers annually to study Ice Age fossil localities.
- Virtually every drainage area that has been mined historically, or is currently being mined for placer gold, has yielded Ice Age fossil bones.
- Additional pre-Ice Age fossil sites are expected to be discovered in bedrock outcrops north of the Tintina Trench in the Ogilvie Mountains (Tatonduk River, Monster River, Ogilvie River), in the northern part of the planning region.

Issues

- Lack of palaeontological regulations under the *Historic Resources Act* to enforce industry compliance.
- YG has limited palaeontological resource inventory information for much of the region outside of the historical footprint of the Klondike Gold Fields.
- There are potential impacts on fossil resources by industry in light of increasing gold mining and other industry activity in the region that have not been assessed.
- There is a substantial unregulated commercial trade in fossils from the Klondike region.

Tools and Information Products

- Yukon Palaeontology Program fossil database:
<http://www.tc.gov.yk.ca/palaeontology.html>
- Canadian Museum of Nature fossil database
- Scientific journal manuscripts and books

ECONOMIC DEVELOPMENT

Interests

- Interest in future mineral development is high as the Dawson region is experiencing historically high levels of exploration spending. There is interest in the White Gold area in the Dawson region, an area that has potential in terms of resource value, however requires significant delineation to better understand the resources in the area. The Casino property is located primarily outside of the planning region, at the southeast boundary of the region. If developed, Casino could provide substantial benefits to the territory, as it is larger than projects currently operating in the territory. Current estimates have the cost of development as high as \$2.5 billion, and the project could see production activity for 25 to 55 years. Continued exploration activities and development of mineral production throughout the region has the potential to have a variety of benefits, including:
 - Direct employment
 - Indirect employment
 - Taxation benefits

- Royalties
- The Coffee Project has the potential to go to production in the short-to-medium term and could provide long-term economic impacts to the Dawson region and Yukon. Development of mining properties will require supporting infrastructure, in particular access and energy. Ongoing mineral exploration and future mineral development in the region is dependent on short-term exploration access and long-term access and infrastructure corridors to potential development projects.
- The majority of placer mines in Yukon are serviced out of Dawson City and the industry provides direct (e.g. equipment operators) and indirect (e.g. fuel hauling, gold buying) employment opportunities within the planning region.
- Tr'ondek Hwech'in First Nation is working to identify and pursue economic opportunities associated with mining development in their Traditional Territory.
- The Dawson region has a rich mining history that has contributed to Dawson City being a world-renowned destination for tourists who want to experience the feeling of a historic mining community. The successful co-existence of tourism and mining activities within the Dawson region continues to provide employment opportunities in the region and economic benefits to the local business community.
- In order to maximize conformity between the plans, regional land use planning needs to be linked to and cognizant of the Regional Economic Development Plan for the Tr'ondëk Hwëch'in Traditional Territory which was signed in August 2015 by Canada, Government of Yukon and the Tr'ondek Hwech'in. The plan recommended 36 strategic initiatives over a six-year period ending in 2018. The plan identified housing and regional land development processes as priorities as both housing and developable land are scarce resources that affect economic development. Strategic recommendations in the plan were organized around themes of People, Place and Business. People strategies focused on human resources initiatives such as housing and readiness for employment in the mining sector. Place strategies emphasized physical and infrastructure improvements such as roadside pullouts and airport development. The Business strategies touch on all aspects of business development including diversification and support services to industry. Specific recommendations included: regional transportation infrastructure planning; regional energy planning, agriculture development as the primary target for import substitution and forest resource development with particular emphasis on green energy, value-added wood processing and non-timber forest resources harvesting.
- Capitalizing on mining, exploration and development in the region was identified as an opportunity in the Regional Economic Development Plan for the Tr'ondëk Hwëch'in Traditional Territory.
- The planning region has a well-established and active tourism sector that provides economic benefits to the region and Territory. The Yukon Tourism Development Strategy makes recommendations that could affect the Dawson region's tourism sector, such as exploring opportunities for new and improved road infrastructure and signage, and pursuing opportunities for wilderness tourism.
- The regional land use plan and process needs to find a workable balance between environmental protection and economic development. Development opportunity in the Dawson region has the potential to be an important contributor to Yukon's overall economic health and growth in the future, especially regarding development of mineral resources. The regional land use plan should consider the needs of businesses, industry, and how to address those needs while limiting potential conflict among resource users.

- It will be important to identify and support opportunities for the Tr'ondek Hwech'in First Nation and other First Nations with overlapping territories to benefit from resource development. Economic opportunities for First Nations could arise from development in the region including:
 - Direct employment opportunities
 - Indirect employment opportunities (i.e. service sector jobs)
 - Establishment of businesses to service resource development
 - Royalties on Category A Settlement Land
 - Mining reclamation opportunities
 - Development of energy resources on First Nation Settlement Land

Issues

- Economic development in the Dawson region could be constrained by inadequate supply of affordable clean energy and the need to improve or create new transportation infrastructure.
- Dawson is the fastest growing community in Yukon, growing 18.3% in 7 years since 2010 (from 1,881 to 2,226 people). Due in part to this growth, Dawson is experiencing acute shortages of housing and availability of land for building. A January 2018 Housing Analysis prepared by the Klondike Development Organization identified ensuring a suitable land supply is developed for new home construction and to ensure that subdivision designs match lots and prices to market affordability. There is an acute shortage of land for development and the price of existing lots has risen significantly since the 2011 Issues and Interests submission.
- Economic diversity can contribute to the long-term health of the region. A strong exploration and mining sector provides opportunities to diversify the economy. Investment in advanced projects supports the high-tech sector and inspires innovation and technology. The demand for a trained workforce provides incentive for support and funding to technical schools and colleges. The demand for specialized geological, engineering, archaeological and environmental consultants supports numerous businesses based in Dawson and Whitehorse. Exploration and mining investment creates demand transportation of workers, accommodation, vehicle rentals and the retail sector, which benefits the tourism sector.
- Alternative economic resource uses include activities related to tourism, forest products, agriculture, arts and culture and oil and gas development.
- As tourism related activities provide significant economic contributions to the Dawson region, including employment for many residents, the regional land use plan should ensure that the tourism and mining sectors can continue to co-exist and provide economic benefits to the Dawson region.
- It is difficult to establish an accurate economic baseline for the Dawson region as the appropriate data at a regional or community level currently does not exist. Without the ability to develop baseline data, it will be difficult to quantify the economic impacts associated with the development of the Dawson Regional Land Use Plan. This is an issue that is not isolated to a review of the Dawson region, and in the absence of new and improved data sets, will remain a challenge for all future land use planning.

Tools and Information Products

- Yukon Bureau of Statistics: <http://www.eco.gov.yk.ca/stats/index.html>
- Socio-economic Web Portal: <http://sewp.gov.yk.ca/region?regionId=YK.DW>
- Statistics Canada: <http://www.statcan.gc.ca/start-debut-eng.html>

- Dawson Regional Economic Development Plan
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ENVIRONMENTAL ASSESSMENT

Interests

- The potential for cumulative effects in the Dawson region, particularly for mineral projects and related linear access, would be best addressed on a regional scale rather than a local scale or project specific basis.
- Consideration is being given to access corridors to the White Gold region from Yukon's highway network to minimize cumulative effects. A list of baseline studies to support cumulative effects analysis is being prepared.
- Yukon government is working towards a series of recommendations for the YESAA process to ensure access is appropriately managed. When completed, information will also be provided to DRPC pursuant to 11.2.1.2 of the Umbrella Final Agreement, and should dovetail well with the Commission's regional planning work and schedule.

Issues

- The unprecedented level of mineral claim staking and resulting exploration programs in the White Gold region has raised concerns about cumulative effects on wildlife, particularly in relation to linear corridors.

Tools and Information Products

- Map of cumulative effects study areas and baseline information priorities under development.
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ENVIRONMENTAL CONTAMINATION AND EFFECTS

Interests

- To date there are 54 sites within the Dawson City region which are tracked within our contaminated site list. Of the current 54 sites, twenty-six are considered contaminated, twenty-one are considered unknown due to having insufficient information to support successful site remediation as per the requirements set out within the contaminated site regulations and seven are considered successfully remediated.
- Beside the aforementioned 54 sites, frequent conversation regarding unregulated contamination sites occur. A common contaminated site issue involves elevated metal concentration in soil and water media within the Dawson area. Common metals, which are seen at elevated concentrations, include arsenic, asbestos, nickel and chromium.
- Promoting site investigations, site monitoring and remediation projects are of specific interest to ensure the protection of surface water, groundwater, air and soil in order to mitigate adverse effects to human, aquatic and terrestrial life.

Issues

- Contaminated sites may affect fish and wildlife habitat and populations as well as human health.
- Minimal treatment facilities for contaminated material within the region create increased expenditures for site remediation due to having to transport contaminated material to southern locations such as Mayo, Whitehorse or Fort Nelson. In some situations, the cost of treating the contaminated material could make some remediation projects intangible.

Tools and Information Products

- Contaminated sites registry: <https://yukon.ca/en/waste-and-recycling/contaminated-sites/make-contaminated-sites-information-request>
- Contaminated site regulations, protocols and guidance documents administered by Standard & Approvals.

ENVIRONMENT SOLID WASTE AND AIR QUALITY

Interests

- There are multiple small landfill and incineration sites in the Dawson region.
- Effects of such sites need to be minimized.
- Healthy standard air quality should be maintained.

Issues

- Landfills may affect fish and wildlife habitat and populations as well as human health.
- An increase of people results in more camps, waste generation, and a greater potential for contamination. A greater need for management, monitoring, and mitigation is therefore needed.
- Wood smoke, garbage burners and industrial-scale burners are a threat to air quality in the region.

FISH & WILDLIFE

FISH

Interests

- Fish species have high subsistence, commercial and sport fishery value in the planning region.
- There are 22 species of fish in the Dawson region, including three species of salmon.
- The Yukon, Stewart, and Whitestone rivers have the highest recorded diversity of fish species in the Dawson region.
- Fish are a primary indicator and a key component of the health of aquatic ecosystems.

Issues

- Maintenance of functioning aquatic ecosystems that support healthy fish populations is important to First Nations, the public and government agencies.
- Salmon are migratory species that require broader regional and transboundary perspectives in habitat management.
- Industrial development has the potential to affect fish populations through direct loss of habitat, alteration of water quality or quantity.
- Road access increases the potential for harvest of fish from previously inaccessible locations. Increasing access also results in more river crossings and culverts, and the need for mitigation of negative impacts on fish habitat.
- Little information exists on the distribution of freshwater fish and their important habitats in the planning region.

Tools and Information Products

- Department of Fisheries and Oceans (DFO) maintains a fisheries database called FISS which provides spatially represented summary level fish and fish habitat data for waterbodies throughout the Yukon.
- DFO and YG both have stream files that have information about fish resources.
- The Yukon Salmon Subcommittee operates under the Umbrella Final Agreement: <http://yssc.ca/>
 - The public advisory body provides recommendations to the Minister of Fisheries and Oceans and First Nations on matters related to salmon and their habitat.
- The DFO watershed authorizations and the Fish Habitat Management System for Yukon Placer Mining provides guidance about the terms and conditions that regulate placer mining in the watersheds of the planning region.
- The Fish Habitat Management System for Yukon Placer Mining uses fish habitat classification based on habitat quality, sensitivity, productive capacity and fish distribution to model fish habitat for Yukon River drainage in the planning area: <http://www.yukonplacersetariat.ca/>

WILDLIFE

Interests

- Woodland and barren-ground caribou, moose and Dall's sheep inhabit the planning region and are important for subsistence, licensed hunting, and non-consumptive use (wildlife viewing).
- There are four caribou herds - Porcupine, Forty Mile, Hart River and Clear Creek and Nelchina. All of them are subject to regulated harvest and have a variety of fish and wildlife tools, such species plans, community fish and wildlife plans, harvest plans etc. to provide guidance in planning.
- The Hart caribou herd has approached upper sustainable harvest levels. One measure recently implemented was to apply woodland caribou, on limits to October 31st. This measure would reduce the risk of harvesting Hart caribou as if they were Porcupine caribou. If Porcupine caribou are present in sufficient numbers, these subzones may be caribou season closures for five Game Management subzones that overlap with Porcupine opened later in the season to January 31st.
- The Porcupine caribou herd is comprised of barren-ground caribou. It is the Yukon's largest caribou herd and is cooperatively managed between the Yukon, Northwest Territories and Alaska via the Porcupine Caribou Management Agreement under the terms of the Porcupine Caribou Management Agreement. Barren ground caribou have recently been assessed as Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and are currently being considered for formal listing under the federal *Species at Risk Act* (SARA). If listed, critical habitat will need to be defined and protected, and a recovery plan will need to be drafted. Their harvest is regulated under Schedule B of the Wildlife Regulation in Yukon.
- The Forty Mile herd is also comprised of large migratory herd caribou and is an international herd that ranges between Alaska and the Yukon, while calving exclusively in Alaska. A management plan *Forty Mile Caribou Herd Harvest Plan 2012-2018* for this herd was originally developed in 2006, by Alaska. Yukon is working with Tr'ondëk Hwëch'in First Nation in outlining a harvest plan to guide future use of this herd in Yukon. Legislation has been developed to enable a licensed harvest once a Yukon based harvest plan has been completed (Schedules B and C of Wildlife Regulation).
- Moose is the major species for subsistence and harvest in the planning region

- The largest numbers of sheep are found in the northern portion of the planning region in the Ogilvie Mountains. There are small, discrete groups of sheep occurring along the Yukon River in the southern portion of the planning region.
- Aside from Tombstone Territorial Park, there are currently no Habitat Protection Areas or Special Management Areas for wildlife in the planning region.
- The importance of the Klondike Valley area as a refuge for lynx has been identified in the Klondike Valley plan.
- The Dawson region is primarily a Beringia landform and is very lush and productive.
- Wildlife resources are managed with a combination of legislation, regulations, policies, environmental assessment guidelines and management plans.
- Identification and management of wildlife corridors that preserve connectivity. Such corridors allow the linkage of seasonal habitats and facilitate wildlife movement.

Issues

- Maintenance of functioning ecosystems that support wildlife populations is vital to First Nations, the public and the responsible agencies.
- Industrial development has the potential to affect wildlife populations through direct loss of habitat, the creation of barriers to movement, direct mortality, disturbance to individual animals and disturbance causing avoidance of certain areas.
- Increased road access increases the potential for harvest of animals and roadkill.
- Wildlife populations may be negatively affected by an increase in human activity due to hunting.
- The potential for cumulative effects on wildlife is an important consideration in the planning region.
- In some areas, harvest rates for some species may be near or at maximum.

Tools and Information Products

- The Department of Environment provides information on the distribution or range of the major wildlife species in the region: <https://yukon.ca/en/wildlife-habitat-planning#species-management-plans->

RARE FLORA, FAUNA and ECOSYSTEMS

Interests

- The planning region supports a number of rare and endangered plants, possibly rare small animals and some unique ecosystems.
- A portion of the planning region is classified as Beringian, an area that was not glaciated in the last Ice Ages.
- There are many wetland complexes in the Dawson planning region, including the Indian River wetlands, and others located on valley bottoms and north slopes.

Issues

- Maintenance of functioning ecosystems that support rare flora and fauna is vital to agencies, First Nations and the public.
- Industrial development has the potential to impact rare flora and fauna through increased access, small changes to water regimes in creeks, and direct loss of habitat.
- Human activity and associated interactions can negatively impact unique ecosystems.
- Limited knowledge of rare species in the region.
- Potential for invasive species in the reclamation of mineral properties.

- Work has been done to map wetlands and their classification in the Indian river valley as well work is underway on a wetlands strategy for the territory.

Tools and Information Products

- Rare ecosystems or features will be mapped using the Ecological Land Classification being developed: <https://yukon.ca/en/science-and-natural-resources/landscape-and-ecology/ecological-and-landscape-classification#what-is-ecological-and-landscape-classification-elc>

OUTFITTING AND TRAPPING

Interests

- Portions of three outfitting concessions overlap the planning region.
- There are 42 trapping concessions wholly or partially within the planning region.
- The outfitting and trapping concessions have associated camps, and in some cases titled property.
- Outfitting and trapping are important sustainable industries, and the region contains some very productive trapping areas.
- Traplines in the Dawson Region are subject to the *Dawson Region Renewable Resources Council Trapline Allocation Criteria and Guidelines* and these stipulate minimum efforts for reassignments of traplines.

Issues

- Maintenance of functioning ecosystems that support wild populations is vital to trappers and outfitters.
- Outfitting generally relies on a wilderness experience where other human activity is minimal.
- Industrial development has the potential to impact wildlife populations through increased access for hunting, increase in human-bear conflicts, direct loss of habitat, and disturbance to the animals.
- Increased road access may increase the potential for harvest of animals.
- Human activity and associated interactions as a result of an influx of people can negatively impact outfitting and trapping.

Tools and Information Products

- Outfitting and trapline concessions: <http://www.env.gov.yk.ca/maps/>
 - Some cabins, camps and associated holdings are mapped.
 - Wildlife harvest numbers are available on a Game Management Subzone basis.
 - Furbearer harvest numbers are available for groupings of 10 or more active traplines.

FOREST MANAGEMENT

OPERATIONS & ACTIVITY

Interests

- Forest resources and their use can play an important role in the society, culture and economy of the region.

- The use of forest resources are planned and undertaken in a way that benefits socio-economic change while not undermining the ecological and social systems upon which the region depends.
- The annual Limit for green wood harvesting is 5,000m³ per year for conifers and 2,000m³ for deciduous in the Dawson region, this limit is established in the *Forest Resources Regulation*. The Government of Yukon, Tr'ondëk Hwëch'in and the Dawson District Renewable Resources Council are working on a new timber supply analysis and when this work is completed the Government of Yukon will set a new annual allowable cut.
- The largest operator in the Dawson region is Arctic Inland Building Products, with a permanent outlet in Dawson. Arctic Inland has updated its milling operation and has expanded its retail sales by developing a yard within Whitehorse.
- An average of 10 to 17 permits are issued to commercial wood-cutters each year, harvesting approximately 1,100 m³ of fuel wood annually.

FOREST-BASED ACTIVITY

Interests

- In addition to timber and fuel wood harvesting, harvesting and processing of non-timber forest products can also contribute to the forest-based economy.
- Mushrooms are a commercial non-timber forest product that is occasionally harvested and sold, in the year following an exceptional wildfire event. Personal fuel wood collection and the harvest of other non-timber forest products, such as wild berries, are also common non-commercial uses of the forest land base.

BIO-ENERGY

Interests

- An existing bio-energy project in Dawson heats domestic water at the Reservoir Pumphouse and the Wastewater Treatment Plant from October to May each year.

LEGISLATION & PLANS

Interests

- The *Forest Resources Act* guides forest management and prioritizes the maintenance and protection of the long-term health of Yukon forests for the benefit of current and future generations.
- The Act establishes a hierarchy of planning prior to harvesting. The larger strategic planning process or forest resources management plans and their linkages to regional planning are included within Chapters 11 and 17 of the Final Agreements. These plans identify the long term forest land-base where forest operations can be considered and also the forest which can contribute to sustainable harvest.
- The Dawson Forest Resources Management Planning process was initiated in 2006 through a joint planning committee with equal representation from Tr'ondëk Hwëch'in and Government of Yukon. The plan covers both settlement and non-settlement land and was approved in 2013.
- There are twelve approved timber harvest plans within the Dawson region. Not all areas are currently active. No harvesting of timber under a harvesting license may occur until there is an approved timber harvest plan for the area.

Issues

- Ensuring that there is an economically viable land base for sustainable forest resource harvesting and access to forest resources. Viability generally includes access with

limited road building requirements, three to five kilometers off existing all-season roads, and within 1.5 hours drive from the community of Dawson City.

- Development of a landscape level timber harvest plan in the Gold Fields. The intent of this timber harvest plan is for fuel wood harvest opportunities in burned areas and salvage of timber from mining operations and other land use (e.g. road construction).
- Maintaining the areas of traditional / historical harvesting and facilitating areas and priorities for future development of forest resources as identified through the *Forest Resources Act* planning processes.

Tools and Information Products

- Dawson Forest Resources Management Plan:
http://www.emr.gov.yk.ca/forestry/dawson_frmp.html
 - Timber harvest plans are listed in the *Forest Resources Regulations* and on the Forest Management Website: <http://www.emr.gov.yk.ca/forestry/dawson-thps.html>
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LANDS

Interests

- Within the City of Dawson, Community Services works in cooperation with the City of Dawson for the development of planned lots within the municipal boundaries. While spot applications (commercial and institutional) are accepted within the city and subject to review with the municipality, no spot applications for rural residential are accepted within the municipality.
- Land Management Branch works with Land Planning Branch, EMR on spot applications that occur within a local planning area such as West Dawson/Sunnydale. Spot applications are accepted in local planned areas and are subject to the zoning recommendations/regulations.
- In areas outside of local area plans, spot applications (rural residential, commercial/industrial, Institutional/Non-Profit) are accepted within 1km of all season roads except for big game outfitting and trapping uses which are accepted in hinterland areas.
- Many of land rights administered by LMB are located either in or near municipalities or along transportation corridors.
- LMB works with municipalities and Land Planning Branch-EMR to ensure any issuance of tenure is compliant with approved plans and in conformance with any applicable zoning.
- Land rights issued by LMB are subject to a review process that includes consultation with First Nations and may also include a YESAA review.

Issues

- No land tenure in place to address hinterland use of land for commercial wilderness activities.
- Need to develop new sources of granular materials as existing sites are exhausted, particularly in the Dawson City area as well as along the Klondike Highway, Top of the World Highway and Dempster Highway.
- The demand for land (planned lots and spot applications) continues to grow which calls for increased demand for all levels of planning, and land tenure policy for commercial wilderness activity in the hinterland areas.

- Lack of available urban, country residential and industrial lots; expected increasing demand for lots.
- Challenging terrain (permafrost, high water table (Klondike Valley), asbestos in soils (Dome Road, Downtown and likely other locations).
- Existing quartz and placer claims limits options for developable lots.
- As part of implementation of the Resource Access Roads Framework document, LMB is working on developing a Resource Roads Regulation that will provide a permit system to manage new resource roads during construction, use and closure.

Tools and Information Products

- The Land Information Management System (LIMS) provides a land registry database within Yukon land management branches which is supported by a GIS mapping system.
- Data from the GIS system is available through a land viewer system:
http://www.emr.gov.yk.ca/mlv_jump.html

LOCAL AREA PLANNING

Interests

- Zoning regulations are currently being drafted with Tr'ondëk Hwëch'in to implement the West Dawson and Sunnydale Local Area Plan.
- Additional planning may be necessary to manage growth and guide development in the Klondike Valley.
 - Memorandum of Understanding Respecting the Development of a Local Area Plan for West Dawson and Sunnydale, section 1.3 specifies that "The Parties may agree to enter into a separate local area planning process for Bear Creek, Rock Creek and Henderson Corner area".
 - Klondike Valley District Plan suggested the need for more detailed plans being developed for the broader Klondike Valley.

Issues

- The broader Dawson area is experiencing increased demand for land and services in connection with increased mineral exploration activities.
- In cases where facilities cannot be located within the municipality or local planning areas, consideration is needed of infrastructure requirements in the region that serve both Dawson and outlying rural communities such as solid waste disposal sites, sewage lagoons, sources of potable water, airport, power lines, energy corridors, etc.
- Future growth areas and sequencing for rural residential, commercial and industrial land uses or mixtures of these land uses, that cannot be accommodated within municipal and local area plan boundaries, may need to be identified in the Dawson region, along with the need for additional district or local area planning in such areas.

Tools and Information Products

- West Dawson and Sunnydale Local Area Plan:
<http://www.emr.gov.yk.ca/landplanning/pdf/West-Dawson-Sunnydale-local-area-plan-2013.pdf>
- West Dawson and Sunnydale Draft Development Regulations:
<http://www.emr.gov.yk.ca/landplanning/west-dawson-sunnydale-zoning-regulation.html>

- Klondike Valley District Land Use Plan (1988):
<http://www.emr.gov.yk.ca/landplanning/pdf/Klondike-Valley-land-use-plan-1988.pdf>
 - Klondike Valley District Land Use Plan – Implementation Strategy (1989):
<http://www.emr.gov.yk.ca/landplanning/pdf/Klondike-Valley-implementation-strategy-1989.pdf>
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MINING & MINERALS

- The Yukon government supports exploration and mining activity because it provides significant investment into the territory, it provides employment, tax and royalty revenue.
- The mining industry is the largest employer of aboriginal peoples in Canada (Mining Industry Human Resources, Guide for Aboriginal Communities).

QUARTZ MINING & EXPLORATION

Interests

- As of December 18, 2018, there are 45,745 active quartz claims in the Dawson planning region. This represents approximately 10,861 square kilometers or 24 percent of the planning region.
- These claims are owned/operated by 96 individuals, partnerships or companies.
- In 2018, there were approximately 38 quartz Class 1 Notifications and there are 31 active Quartz Mining Land Use Approvals within the planning region.
- Quartz claims in the planning region are predominantly located in the Klondike Gold Fields, White Gold District, Dawson Range and east of the Dempster Highway.
- From 2009 to 2011, the planning region experienced a record level of mineral staking and exploration activity due to significant discoveries at White Gold and Coffee Creek. Since then, annual claim staking numbers have been a fraction of this number and a good number of claims have lapsed (see Figure a).
- Since 2000, the planning region has experienced a significant level of exploration activity and, with the discovery of the White Gold occurrence in 2007 and the Coffee Creek occurrence in 2010, the level of exploration has increased dramatically. Between 2000 and 2018, a minimum of \$495,911,000 has been spend on quartz exploration in the region. In 2018 alone, exploration expenditures were a minimum of \$147,764,000 (see Figure b).
- In 2015, under the *Quartz Mining Act*, a temporary mineral staking prohibition order within the City of Dawson municipal boundaries came into effect (O.I.C. 2015/258).

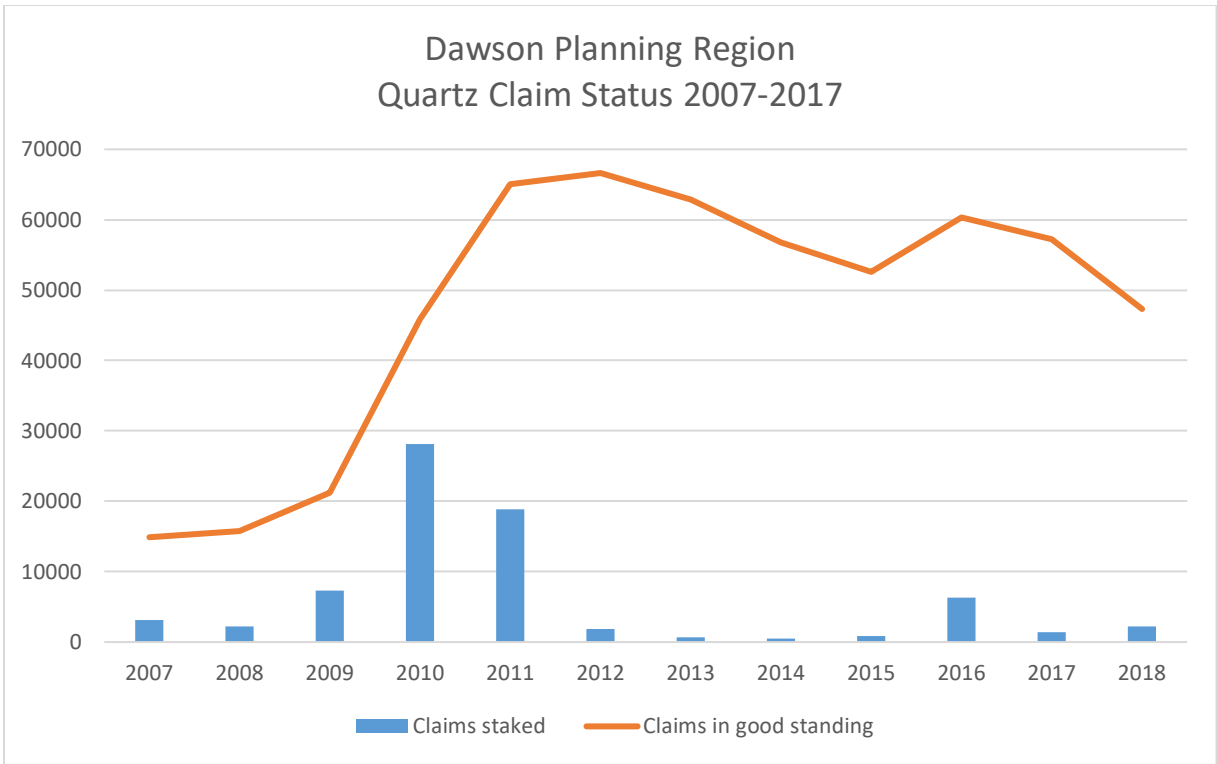


Figure a

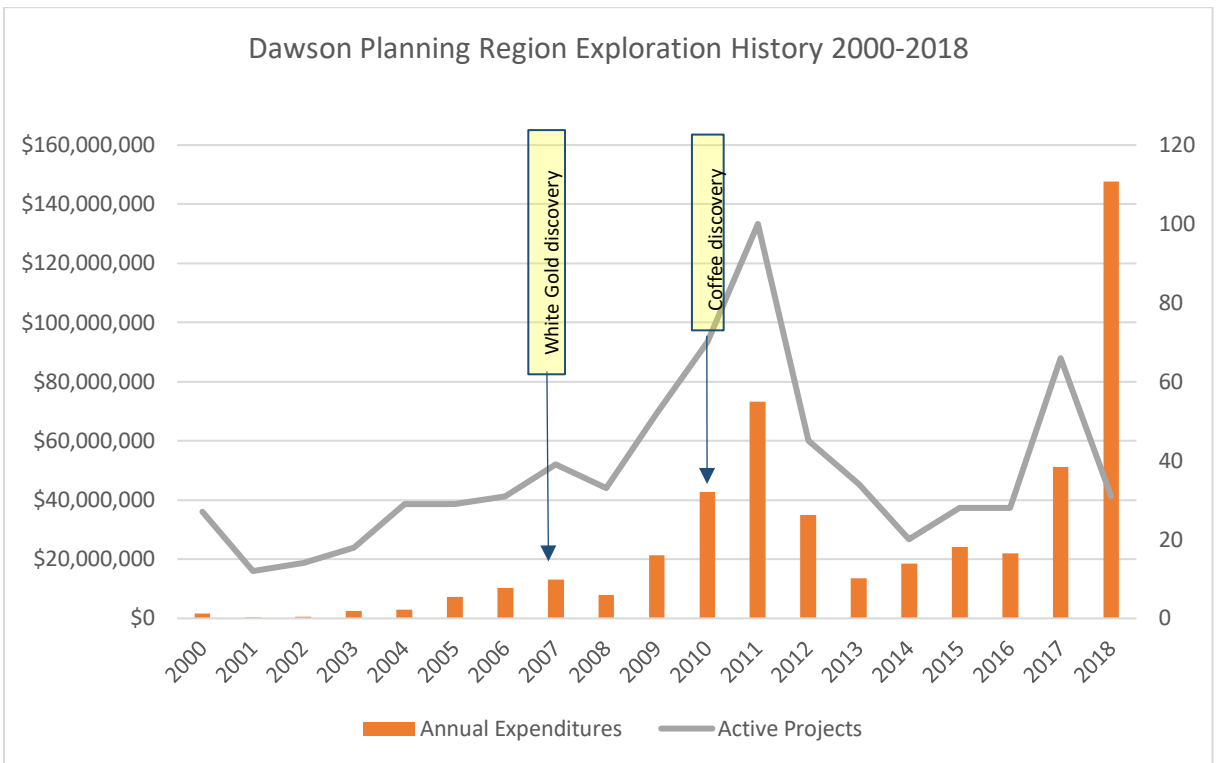


Figure b

- The Coffee Project is the most advanced mineral project in the planning region. The Coffee Project is currently in the exploration stage however, a mine project proposal was submitted to YESAB for assessment in 2017.
- The proponent is proposing an open-pit, heap leach mining operation that would employ 663 workers during the construction (2.5 years) and employ 372 workers during production (12 years). Upon completion of production, Goldcorp would conduct reclamation and closure of the site over an 11-year period and post-closure monitoring beyond that.
- The mine is expected to contribute \$251.1 million to the Yukon economy annually during production and contribute \$427.5 million to government revenues, in the form of taxes and royalties, over the life of the mine.
- The Proponent and Tr'ondëk Hwëch'in First Nation have signed a Collaboration Agreement related to the project.
- Four other projects in the region are in the advanced exploration stage, each with a resource definition. These are Lone Star (Klondike Gold Corp), White Gold (White Gold Corp), QV (White Gold Corp) and Brewery Creek (Golden Predator Exploration Limited).
- The planning region is primarily being explored for gold and there are a number of new interesting discoveries, such as the Vertigo target belonging to White Gold Corp.
- The mineral potential north of the Tintina Trench is less well known primarily due to the lack of exploration activity in that area.

Issues

- Exploration activities require access to large areas of land in order to identify resources (i.e. deposits). Maximizing the land base available for exploration is necessary for economically sustainable exploration and future mineral development, recognizing that an operating mine footprint is relatively small though the location is unknown until discovery, delineation, etc.
- Identification of a sustainable land base for resource development needs to consider economies of scale, access, and compatibility of adjacent and/or overlapping land use activities.
- To expand on access, current and future mineral development will require continued and improved access to resources.
- Restrictions on access and access fragmentation to areas of mineral potential affects the ability to identify resources and the economic viability of such resources.
- Access planning is needed, especially in the White Gold area, with linkages to the Dawson Trail and other connecting routes (see discussion of Dawson Trail in Transportation section).

Tools and Information Products

- Yukon Geological Survey MINFILE occurrences database:
www.geology.gov.yk.ca/databases_gis.html
 - Given the pace of exploration and new discoveries in the past few years and the requirements for confidentiality, the MINFILE database is not up-to-date and contains fewer occurrences than current exploration work activity would indicate.
- Bradshaw, G.D. and van Randen, J.A., 2003. Yukon Regional Mineral Potential by Deposit Models 2003. Yukon Geological Survey, Open File 2003-11(D), 1 CD:
[http://publications.gc.ca/site/archivearchived.html?url=http://publications.gc.ca/collections/Collection/R71-41-2003E\(5\).pdf](http://publications.gc.ca/site/archivearchived.html?url=http://publications.gc.ca/collections/Collection/R71-41-2003E(5).pdf)

- Gordey, S.P. and Makepeace, A.J. (compilers), 2003. Yukon Digital Geology (version 2), Geological Survey of Canada, Open File 1749 (also known as Yukon Geological Survey Open File 2003-10(D), 1 CD:
<https://geoscan.nrcan.gc.ca/starweb/geoscan/servlet.starweb?path=geoscan/fulle.web&search1=R=214639>
- Yukon government quartz claims status maps: <http://www.emr.gov.yk.ca/mining/>
- Mining Map Viewer: <http://mapservices.gov.yk.ca/Mining/>

PLACER MINING & EXPLORATION

Interests

- As of December 2018, there are 18,291 active and pending placer claims in the Dawson planning region. This represents approximately 2,556 square kilometers or 5.6 percent of the planning region. The majority of placer claim area remains undisturbed from mining. For example, disturbance from all mining and non-mining activity in the planning region is approximately 244 square kilometers or 0.54 percent.
- There is significant overlap between placer claims and quartz claims.
- Placer claims in the planning region are located within the drainages of the Klondike River, Indian River, west Yukon (Forty Mile and Sixty Mile Rivers and the Moosehorn Range River), lower Stewart River and tributaries to the Yukon River in the Dawson Range.
- In 2018, there were approximately 186 Class 1 Notifications and there are 292 active Placer Mining Land Use Approvals within the planning region.
- Compared to the rest of Yukon, the Dawson region (Klondike Plateau portion specifically) supports approximately 85% of the placer mining activity based on the number of claims and production value.
- More than 1900 km of placer streams (major gold bearing streams with significant mechanized placer mining operations) are found within the planning region.
- Placer mining contributes ~\$90 million per year to the Yukon economy. Placer mines are largely owned by Yukon residents, Canadian citizens and some foreigners.
- Mining production and exploration requires significant local spending.
- High gold prices are driving increased interest in placer mining and production on placer claims in the region.
- Placer exploration is privately funded and requires similar land access requirements as the quartz mining and exploration industries in order to succeed.

Issues

- Placer mining requires access to (and the ability to modify) rivers and streams. Such land use considerations need to be tied to the Yukon Placer Mining Regime stream classifications. Future exploration and development of placer resources depends on continued access to valley-bottom, wetland and riparian-zone land in the planning region.
- The placer industry requires roads for transporting heavy equipment and an industrial and residential land base for mining operations adjacent to the resource.
- Little information exists with regard to placer potential in the Nahanni Range and Ogilvie Mountains in the northern part of the planning region.
- Future expansion out of traditional gold fields will likely be focused where the most prospective deposits are located in the region. The Klondike Plateau ecoregion will continue to be the primary area of interest for the placer industry within the planning region.

- Although staking of new claims is not permitted within the City of Dawson municipal boundary under the *Placer Mining Act*, the boundary was recently extended and now overlaps with active placer claims. This has led to land use conflicts between surface and subsurface users (e.g. Slinky Mine and residential development, Heydorf/Vincent claims and Tr'ondëk Hwëch'in C4 residential development) and non-conforming activities in zoned areas under the Official Community Plan.

Tools and Information Products

- Yukon Placer Mining Industry Report 2015-2017, Bond and van Loon, 2018.
- Placer Gold Potential Map – Dawson Land Use Plan, YGS Open file 2012-13.
- Yukon Placer Activity Map. YGS Open File 2001-34.
- Dawson Area Placer Activity Map, Portions of NTS Sheets 116B&C and 115N&O, Yukon. YGS Open File 2001-36.
- Stewart River Placer Project, Resource Appraisal Map for Placer Gold in the Stewart River (115N/O) and Part of the Dawson (116B/C) Map Areas, Yukon (1:250 000 scale). YGS Open File 2002-6.
- Placer geology of the Stewart River (115N&O) and part of the Dawson (116B&C) map areas, west-central Yukon, Canada. YGS Bulletin 14.
- Yukon Watershed Placer Atlas: http://www.yukonplacerecretariat.ca/placer_atlas.html
- Yukon Placer Database : http://www.geology.gov.yk.ca/databases_gis.html
- Mining Map Viewer: <http://mapservices.gov.yk.ca/Mining/>

OIL & GAS

The northern section of the Dawson planning region encompasses 2,538 km² of the Kandik and 1,315 km² of the Eagle Plain sedimentary basins. Both basins are identified as having potential for oil and natural gas resources.

Interests

Eagle Plain Basin

- The extreme southwest portion of the Eagle Plain Basin occurs in the Dawson planning region.
- Oil and natural gas discoveries have been made in southern Eagle Plain basin, immediately northeast of the Dawson planning region boundary (see Osadetz *et al.*, 2005).
- Thirty-four oil and gas wells have been drilled in the Eagle Plain basin. Seven wells recovered oil/condensate and twenty-four recovered natural gas from drill stem tests (Osadetz *et al.*, 2005).
- Mean petroleum resource estimates for the entire Eagle Plain Basin are 436 MMbbls oil and 6,054 Bcf gas (Osadetz *et al.*, 2005). More subsurface and surface geological knowledge is required to adequately delineate and quantify oil and natural gas resources.
- There are no oil and gas dispositions in the planning region portion of Eagle Plain Basin. Northeast of the planning region there are existing dispositions.

Kandik Basin

- The southeast portion of the Kandik Basin occurs in the Dawson planning region.
- The Kandik Basin contains sedimentary strata which are prospective for both oil and gas resources. Mean petroleum resource estimates for the Yukon portion of the Kandik

Basin are 99.3 MMbbls oil and 649 Bcf gas (adapted from Hannigan *et al.* (2000) by adjusting for area % of play occurring in Yukon). These values are based on conceptual plays in an area where no defined pools or discoveries have been made.

- In general, there is a lack of geological knowledge about the region. In the Alaska portion of the basin, oil staining has been observed in outcrop samples. In 2000, a resource assessment was conducted for the basin based on very limited subsurface geological data. In order to adequately assess the petroleum resource potential of the basin, substantial subsurface data (including well data and seismic data), and a better understanding of the rock units from surface outcrops would need to be obtained.
- Petroleum exploration in the Kandik Basin in the Yukon occurred in the early 1970s. Between 1970 and 1972, three exploration wells were drilled in the basin. These wells did not encounter hydrocarbons. A reflection seismic survey of approximately 180 line-kilometres was conducted in the region in 1971.
- Based on limited geological knowledge in the surrounding region, the rocks in the Kandik Basin are expected to contain all elements of a petroleum system including reservoir and source rocks, seals and traps.
- There are no oil and gas dispositions in the Yukon Kandik Basin.

Issues

- Access fragmentation and access restriction to areas of petroleum potential affects the ability to identify and achieve an economic and sustainable land base for resource development.
- The identification of an economically sustainable land base for resource development needs to consider economies of scale, access and compatibility of adjacent activity.
- Exploration and future development in the region is dependent on short-term exploration access (e.g. drilling programs, seismic acquisition) and long-term access and infrastructure corridors to potential development projects.
- Development of oil and gas resources in and north of the planning region is dependent on access to potential industrial customers in the South such as the mining belt in the southern portion of the planning region. Consideration of an access and energy corridor traversing the region is required.
- An inventory of surficial materials (e.g. sand and gravel) would be beneficial as these resources are key building materials for roads and pipeline corridors.
- YG is working on creating a North Yukon Intergovernmental Oil and Gas Forum with Vuntut Gwitchin Government, Tr'ondëk Hwëch'in and First Nation of Na-Cho Nyäk Dun to ensure a joint review and cooperation on oil and gas activities in northern Yukon;
- YG has put in place a moratorium on the use of hydraulic fracturing for oil and gas development.

Tools and Information Products

- Oil and Gas Resources: <http://www.emr.gov.yk.ca/oilandgas/>
- Hannigan, P.K., Osadetz, K.G., Dixon, J, and Bird, T. 2000. Petroleum resource assessment of the Kandik Basin, Yukon Territory, Canada. Oil and Gas Resources Branch, Department of Economic Development, Yukon government, 20 p. plus appendices.
- Oil and Gas Resources, Department of Energy, Mines and Resources, Government of Yukon, Yukon Oil and Gas: A Northern Investment Opportunity, 2010.

PARKS & PROTECTED AREAS

Interests

Ecological Representation and Connectivity

Yukon has a goal of protecting representative core areas within each of the territory's twenty ecoregions, which is articulated in the Parks and Land Certainty Act. To date, the majority of the ecoregions and their associated ecodistricts within the Dawson land use planning region are under-represented in the territory's protected areas network. In particular, protected areas capturing the unique ecological characteristics of the Yukon Plateau-North, Klondike Plateau, and Yukon Plateau-Central ecoregions are largely non-existent. The ecodistricts captured by the planning region for Klondike Plateau (Top of the World, King Solomon's Dome, and Dawson Range) and Yukon Plateau-Central (Flat Top Mountain) are currently absent from the territory's protected areas network. It is important that some representative core areas within these zones are prioritized for conservation.

- In 2015, the Government of Canada established the 2020 Biodiversity Goals and Targets for Canada to meet the Aichi Targets from the UN Convention on Biological Diversity. Yukon government endorsed this plan in writing through a letter from the Minister of Environment to the federal Minister of Environment.
- To achieve the requirement for an ecologically representative system of protected areas Yukon needs to ensure that each of the territory's ecoregions, and ideally each ecodistrict, is represented in its network of protected areas.
- To achieve the requirement for a well-connected system of protected area Yukon needs to ensure that wildlife corridors are preserved. Protecting areas adjacent to existing protected areas such as Ni'inlii'njik (Fishing Branch) Territorial Park, Tombstone Territorial Park, and Yukon-Charley Rivers National Preserve will bolster connectivity in the region.

Tombstone Territorial Park

- Tombstone Territorial Park (TTP) is the only protected area located within the Dawson planning region. Comprising a total of 2,050 km², TTP was formally designated as a park in 2004 and further established as a Natural Environment Park in August 2009, when the Park Management Plan was approved by the Parties: Yukon government and Tr'ondëk Hwëch'in.
- Abundant populations of five big game species inhabit TTP, which is highly unusual in so small an area. The area is also critical to Hart River caribou, a local woodland herd.

Recreation Values

- The Klondike Region is one of the Yukon's most active recreation and tourism destinations. The region is well known for its wilderness landscapes, wildlife resources and recreational river routes – with most activities centered on the Yukon River, Tombstone Territorial Park, and the Dempster Highway. It is an important recreation area for the wilderness tourism industry as well as for Yukon residents and self-guided tourists. TTP has exceptional hiking, sightseeing, hunting and fishing opportunities. Other popular activities within the region include hiking and backpacking, canoeing, fishing, boating, biking, berry picking, horseback riding and photography. Winter recreational activities focus on Dawson City for dog mushing, and Tombstone Territorial Park for skiing and snowmobiling.

Issues

Tombstone Territorial Park

- Development activities that are occurring outside the park boundaries – and associated potential cumulative effects – could affect the state of the ecological and cultural features of the park – i.e. wildlife corridors, critical habitat for wildlife whose range extends beyond the boundaries of the Park.
- The well-being of TTP's wildlife populations relies on healthy ecosystems inside and outside the park boundary. Management of habitat continuity beyond the park boundary is an important contribution to the well-being of TTP's wildlife populations.
- Since hikers and other recreational users often travel into TTP from routes that begin outside the park boundary, a high quality wilderness setting adjacent to the park is important for the overall wilderness experience.

Protected Areas and Conservation Priorities

- Protected areas can act as ecological benchmarks. Ecological benchmarks are intact areas, representative of natural environmental variation, and large enough to maintain natural ecosystem dynamics, ecologically functional wildlife populations, and terrestrial and hydrologic connectivity. No single area would adequately represent the whole planning region, and so the establishment of geographically distinct ecological benchmarks is essential for landscape-level conservation and adaptive management, especially in the face of climate change.
- Important considerations for determining the location, size and function of protected areas:
 - Size and Scale: a protected area should be large enough to accommodate major landscape disturbance, such as wildfires and climate change.
 - Watersheds provide an effective means to define the boundaries of a protected area in order to manage conservation, recreation and other values.
 - Ecologically intact areas should remain intact.
 - Ecological connectivity is important between areas of high conservation value – either within or adjacent to the planning region.
 - Ecological representation: capturing the full range of ecosystem types and ecological processes is important, and mandated by Yukon's *Parks and Land Certainty Act*.
- Waterways, wetlands, and riparian zones in the planning region provide important ecological functions, and can provide resilience to climate change.
- Yukon Parks branch is working on a parks strategy, which will provide guidance for park development into the future.

Tools and Information Products

- Outdoor Recreation Data Review – a report commissioned by Yukon Parks and contracted to Environmental Dynamics Inc.
- Recreation Features Inventory maps (to be digitized in 2011)
- Tombstone Territorial Park Management Plan (2009): <https://yukon.ca/en/outdoor-recreation-and-wildlife/parks-and-protected-areas/tombstone-territorial-park>
- Dawson Regional Land-use Plan Preliminary Conservation Values Assessment (Environment Yukon, 2012)
- Consideration of Protected Areas in the Dawson Planning Region (Yukon Parks, 2013)

RENEWABLE ENERGY

For the purpose of this report, 'renewable energy' is defined as energy which comes from natural resources such as sunlight, wind, rain, tides and geothermal heat; all of which are renewable or naturally replenished. Current renewable energy interests in Yukon include hydroelectric, solar, wind, geothermal and biomass energy.

Interests

Hydro Electric

- The Dawson region has recently and significantly lessened its dependency on diesel power generation in favour of hydro power from the Mayo dam located outside of the planning region. The North Klondike River was a source of power in the past for the Dawson region and could again be a source in the future.
- Redevelopment of the North Fork Hydro Project is a priority interest for Yukon government. (See Section 7.8.1 of the Tr'ondëk Hwëch'in Final Agreement for reference to the North Fork Hydro Project.)

Solar

- The Dawson region receives on average approximately 2.66 kWh/m² of solar radiation per day.
- Large scale solar energy projects (>1MW) are unlikely in the region in the short term. This region may see an increase of smaller scale solar projects (<1MW) associated with existing residential/commercial developments located within community boundaries.

Wind

- The wind speed has been measured at several sites (approximately six) in the Dawson region and all sites have shown a poor wind regime, with wind speeds under five metres per second.
- The best wind regimes are on high mountain tops, but not at the specific locations where the wind was measured in the Dawson region. The findings in the Dawson region are consistent with other areas in the Yukon.

Geothermal

- No records or research on geothermal resources in the Dawson City region.

Biomass

- See Forestry section.

Issues

- Access is needed for potential future renewable energy producers in the region to be able to connect to the Yukon's electrical energy grid.
- Renewable energy development needs to be undertaken in an environmentally, social and economically sustainable manner.

Tools and Information Products

- The "Energy Strategy for Yukon" (2009):
http://www.energy.gov.yk.ca/energy_strategy.html
- Renewable energy resource map:
http://www.energy.gov.yk.ca/renewable_energy_map_viewer_jump.html.

TOURISM

Interests

- The Dawson region is a premier destination for visitors to the Territory. Regional tourism is an important contributor to the Yukon economy.
- The Yukon River, Dempster Highway, Tombstone Territorial Park and wilderness areas accessed from rivers and the Dempster Highway north of Dawson City are particularly important.
- Historic sites and travel routes play a key role in supporting the region's tourism sector as attractions and as the basis for interpretation of the region's ancient and recent history. Current work in this area includes the Top of the World Highway Interpretative Plan and the recent UNESCO World Heritage site application.
- Canoeing, hiking, motorized boat tours and summer and winter events are the most popular visitor activities:
 - Annually, 14-18 tourism operators, the majority of which are Yukon-based, guide over 300 multi-day canoeing clients on the Yukon River; and 1,500 tourists rent canoes for self-guided trips on the Yukon River.
 - About 15,000 tourists take motorized boat trips on the Yukon River each year, mostly between Dawson and the Yukon-Alaska border and return.
 - From 1995 to 2007, annual visitation to the Dempster Highway Interpretive Centre grew from about 3,000 to over 12,000. Approximately 20 tour companies include the Dempster Highway and Tombstone Park as part of a Yukon tour, and six companies, the majority of which are Yukon-based, guide multi-day trips into the Park.
 - Three outfitters guide hunts in the planning region.
- The 2018-2028 Yukon Tourism Development Strategy (YTDS) has identified a number of goals, core values, and action plans that can inform land use planning (the strategy was developed by Yukoners and a Steering Committee, through the Department of Tourism and Culture's largest ever public engagement session):
 - One main goal is sustainable tourism development, to ensure tourism growth supports healthy communities and preserves our natural environment for generations to come.
 - A key value is to preserve and enjoy our natural environment – Our natural environment must be effectively managed so that visitors and residents can explore our wild and dynamic landscapes without detracting from them or impacting wildlife habitat. Our wilderness is our strength and a fundamental part of who we are.
 - Another key value is to honour our heritage, which includes Indigenous knowledge and traditions, the natural environment, heritage sites and experiences, and significant historical events such as the Klondike Gold Rush.
 - Three of the strategy action plans include:
 - Improve access, including signage, roads and airport facilities, as well as better managing access and infrastructure to trails, lakes, heritage resources etc. in a way that is respectful, sustainable and safe; Establish the Yukon as a premier destination for Indigenous tourism experiences and;
 - Establish Yukon as a year-round destination, which will involve leveraging and expanding existing seasonal and community capacity, while also developing new experiences and infrastructure.

- The “what we heard” documents of the YTDS indicate that people want to develop new products, especially around wilderness/ecotourism and indigenous tourism experiences, as well as sports tourism, arts, culture and heritage experiences, and meetings and conferences. This can include enhancing existing attractions (e.g. Forty Mile), creating new attractions (e.g. new biking trails), and building infrastructure to support these products.

Issues

- Tourism is a resource-based industry. The continued success of existing tourism businesses and potential growth in the Dawson planning region depends on maintaining important resources and developing new resources that tourism is based on.
- Industrial activity and related access can have negative impacts on wilderness, wildlife and historic resources that support tourism. Areas of particular concern include:
 - Aesthetics, water quality and safety considerations along the Yukon River corridor;
 - Development activities near Tombstone Park boundaries that affect tourism values;
 - Any activities that affect wilderness, wildlife and wildlife habitat, in relation to wildlife viewing, guided tours and guided hunting;
 - Scenic viewscapes and access to recreation activities along the Dempster Highway and river corridors; and
 - Impacts of new ground access on Yukon Quest International Dog Sled Race route. (See discussion of Dawson Trail in Transportation section.)
- Increased resident and visitor use of popular routes and destinations may impact environmental and cultural values and resources. The development and use of new and different areas can help manage overuse of existing areas.
- The current seasonal shortage of visitor accommodation (hotels) and living accommodation for tourism industry staff.
- Improved access to the region (airport, roads, ferry etc.) and within the region (trails, lakes, heritage sites etc.)

Tools and Information Products

- Dawson Regional Land Use Plan Tourism Information Report
- Yukon Wilderness Tourism Status Report 2008
- *Yukon Wilderness Tourism Licensing Act* – trip and rental report information
- Klondike Regional Land Use Plan: Outdoor Recreation Data Review
- Draft Wilderness Tourism Resources and Activity map for the planning region
- 2012-13 Yukon Visitor Exit Survey (2017-18 will be available in spring 2019)
- Tourism Yukon 2017 Year-End Report
- Yukon Tourism Visitation Report Q2 (Quarterly indicator report)
- Klondike Visitors Association and Development Corporations

TRANSPORTATION

Interests

The Klondike, Dempster and Top of the World highways are important transportation facilities in the planning region. There are many maintained secondary highways and unmaintained roads in the region as well providing access to residential, commercial, recreational, cultural and

industrial properties and/or land uses. The Dawson Airport provides a vital transportation service to the region. Several other airstrips serve a variety of economic and public safety purposes. Chapman Lake and McQuesten Field airstrips are managed by YG Highways and Public Works (HPW). HPW also retains tenure on a number of road building and maintenance material sources in varying stages of development.

Issues

- The need to preserve the ability to provide reasonable ground access within the region in response to confirmed access needs.
- Continued operation and ongoing development of existing construction and maintenance material sources, including sources of water.
- Need to develop new material sources as existing sites are exhausted and new sites are identified.
- Potential for development of new roads or other infrastructure in response to economic or other development that requires transportation service. Wherever possible, linear infrastructure development, such as roads, power lines and pipelines, should be grouped within a corridor.
- Potential replacement of ferry service at Dawson City with a permanent bridge.
- Major upgrading of Klondike Highway requiring realignment.
- Major upgrades to the Dawson Airport, dependent in part on the realignment of the Klondike Highway.
- Potential year round operation of roads now operated seasonally.
- The Dawson Trail and other connecting accesses are not all-season routes, but may have potential for all-season access to the White Gold region. There are multiple and varied uses of such trails including tourism, dog-mushing, mining, hunting and recreation. There is a need for access planning and consideration of cumulative effects (see Environmental Assessment section).

WATER RESOURCES

Interests

- The Water Resources Branch is committed to the preservation, conservation and sustainable use of water resources in the region.
- As of January 2019, Water Resources Branch is responsible for
 - two active hydrometric stations
 - three active snow survey courses
 - one long-term water quality monitoring station and three long-term groundwater monitoring stations within the Dawson Planning Region
- There are several active water licences in the region which the Environmental Compliance and Inspections branch enforces under the *Waters Act*.

Issues

- This is a data sparse region. Therefore, increased water quality and quantity baseline data is required to adequately understand and support the impacts to water of future developments.
- The use of historical hydrometric data (there is little current data) for design purposes could result in inadequate design.
- Climate change could significantly alter flow regimes and water quality (with respect to elements liberated from permafrost such as organic carbon).

- Due to the acidity of soils, disturbance of the soils has the potential to impact water chemistry.
- The long winter and limited flow regimen severely limits human water use and the dilution of contaminants.
- Future industrial demand for water is expected to increase which may impact water quality and quantity.

Tools and Information Products

- Yukon Snow Survey Bulletin and Water Supply Forecast: <https://yukon.ca/en/science-and-natural-resources/research-and-monitoring/snow-surveys-and-water-supply-forecasts#snow-and-water-supply-data>
- River Flood Forecasting (data maintained internally by Water Resources Branch)
- Yukon Hydrometric Network - historical data from 1975 to 2004: <https://yukon.ca/en/yukon-water-resources-hydrometric-program-historical-summary-1975-2004>
 - data since 2004 is maintained internally by the Water Resources Branch
- Yukon Meteorological Network
 - data maintained internally by Water Resources Branch
- Yukon Wide Long-Term Groundwater Monitoring Program
 - data maintained internally by Water Resources Branch
- Yukon Water Well Registry: http://gin.gw-info.net/service/api_ngwds:gin2/en/gin.html
- Pacific Yukon Water Quality Monitoring Program data: <http://aquatic.pyr.ec.gc.ca/webdataonlinenational/>

CONCLUSION

Yukon government departments have identified a very wide range of technical interests and issues for the Dawson Regional Planning Commission (DRPC) to consider in developing a regional land use plan. As noted at the start of this document, the interests and issues listed are technical in nature, and not necessarily exhaustive or reflective of Yukon government priority and policy.

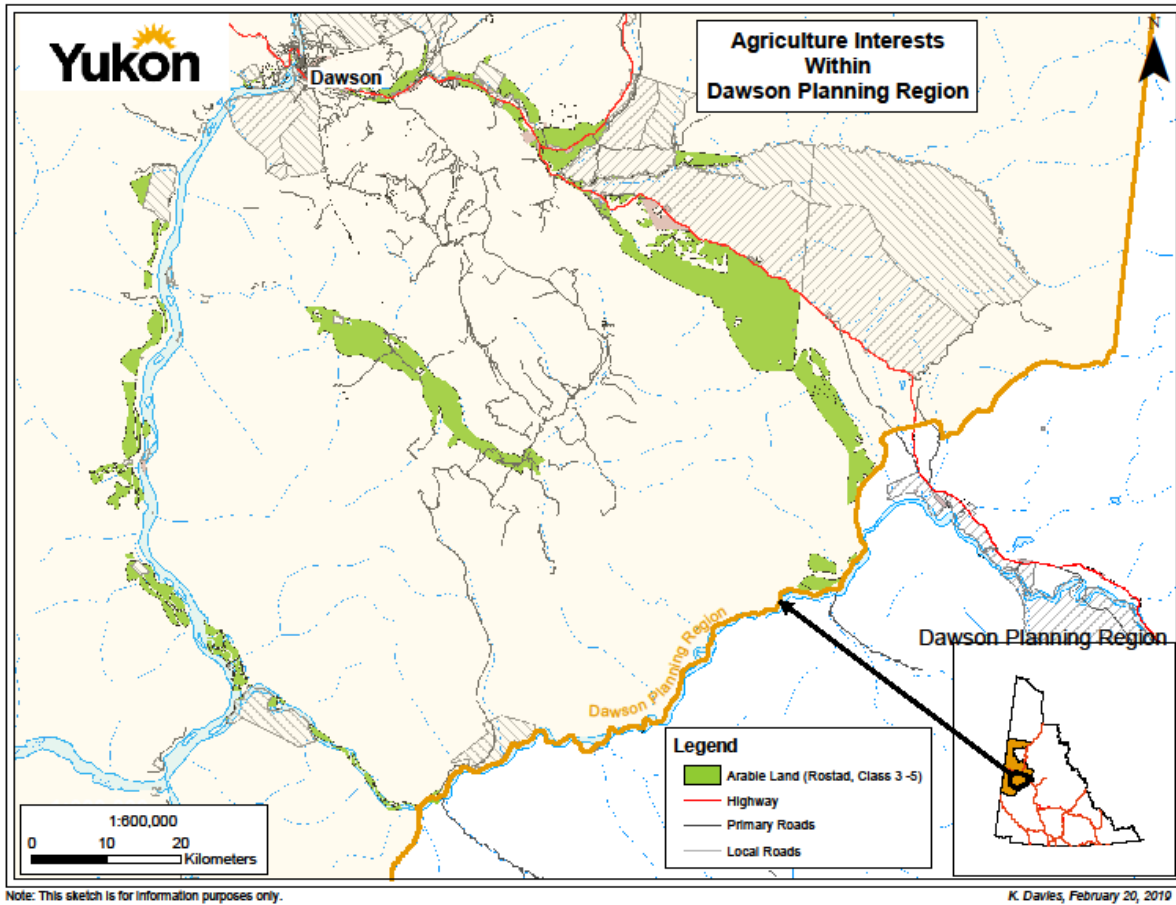
The contributors to this document throughout Yukon government have a wealth of knowledge and experience that will be provided to Dawson Regional Planning Commission (DRPC) in the preparation of the Dawson Regional Plan, particularly during the next Resource Assessment stage of the planning process. Should there be any questions or need for further information about this report or concerning other documents and expertise within Yukon government; pursuant to Section 11.1 and Appendix A of the Terms of Reference for DRPC, please contact the Yukon's Technical Working Group member for further details, meetings, briefings or transmittal of information between DRPC and Yukon government.

APPENDIX 1: RESOURCES

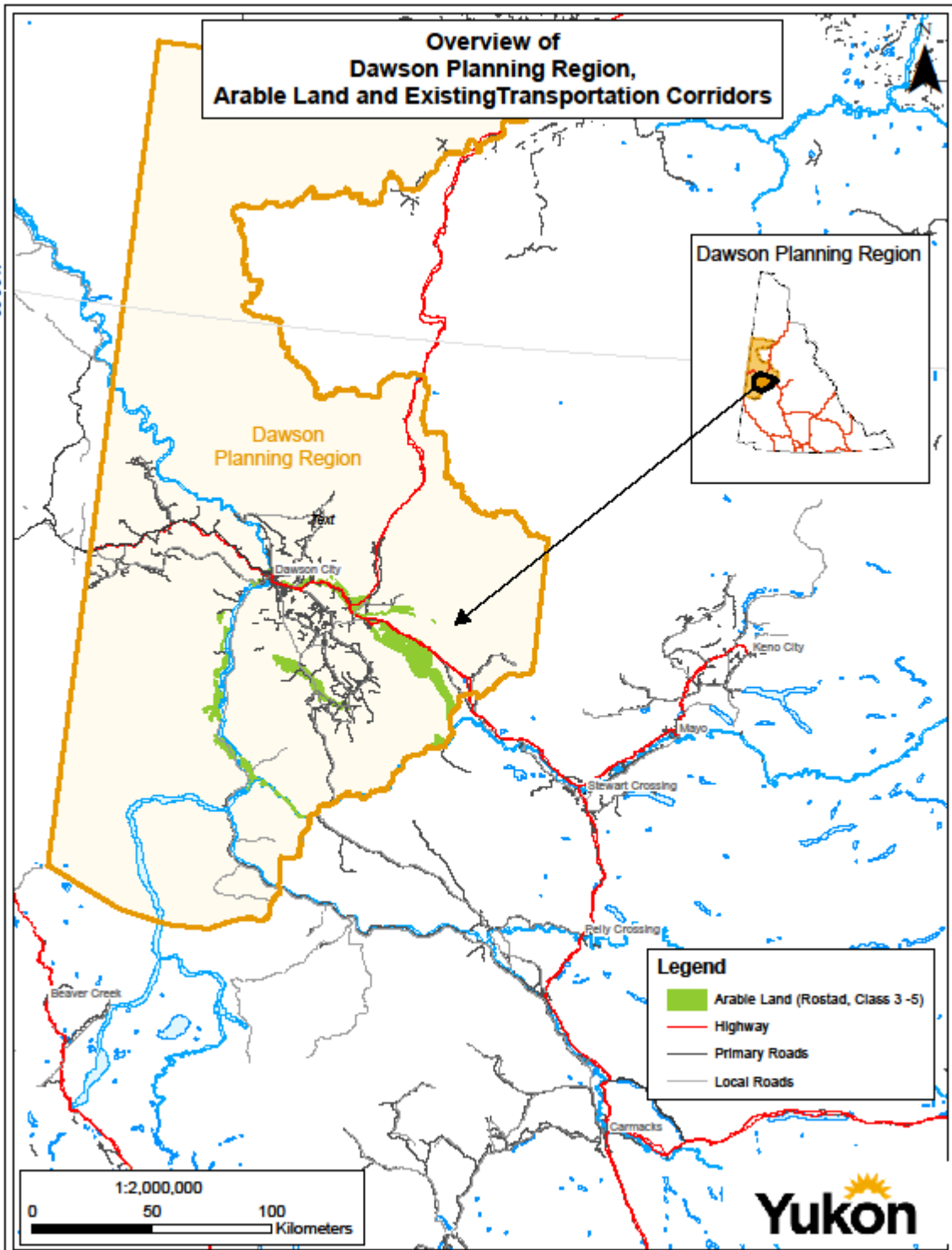
The Yukon government sectoral planning report (as of May 2019) identified the following planning processes for the Dawson Planning Region:

- Tombstone Territorial Park Management Plan, 2009
- A draft Tombstone Corridor plan prepared by an internal Yukon government working group will be undergoing internal reviews
- Regular North Yukon Oil & Gas disposition processes are proceeding
- Mineral assessments will be conducted in support of regional land use planning
- *Dempster Highway Development Area Regulations* pursuant to the *Area Development Act*
- Yukon Common Oil and Gas Regime Overview
- Dawson Heritage Management Plan
- Dawson Tourism Plan
- Dawson Forest Resources Management Plan
- Local area planning for West Dawson and Sunnysdale
- Regional Economic Planning pursuant to Chapter 22 of the Tr'ondëk Hwëch'in Final Agreement

APPENDIX 2: MAPS



Map 1: Agricultural Interests within the Dawson Regional Planning Area



Note: This sketch is for information purposes only.

K. Davies, February 20, 2019

Map 2: Soil and Soil Suitability information series, 1977, INAAC & AC Agriculture Capability of Dawson-Stewart and Yukon Rivers Area.