THE POINT FEASIBILITY STUDY

Background Report

Prepared for

City of Whitehorse

Planning and Sustainability Services

Whitehorse

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March 2017

In association with

DENISE COOK design

EDI ENVIRONMENTAL DYNAMICS INC.

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1.0 Introduction

The Yukon River corridor has been a focal point for human habitation in the Whitehorse valley for millennia. The seasonal fish camps of the area's original First Nation occupants once lined the river's shores; post-contact and Gold Rush, those subsistence and gathering functions gave way to the industry, transportation and commerce of Whitehorse's non-Indigenous inhabitants. With shifting societal values, awareness and priorities, the final decades of the 20th century saw those land uses evolve yet again towards recreation, scenic enjoyment and environmental protection.

Nowhere is the development pattern of traditional, post-contact and modern-day land uses more evident than "The Point", referred to in the Southern Tutchone dialect as "Dàmäwtän" (Dobrowolsky and , a distinct escarpment feature situated along the Yukon River at its confluence with McIntyre Creek. The area was traditionally an important gathering area, travel corridor, and fish camp for the Southern Tutchone. First Nations people were displaced from the site with the establishment of a dumpsite by the US Army during World War II, a use that persisted into the 1970s. Since the 1990s, the City, and various other groups have participated in a combined effort to reclaim the site, with the majority of progress made between 2005 and 2010 under the stewardship of Ta'an Kwäch'an Council. The site's restoration has created a new suite of opportunities for its future use.

In 2014, the City of Whitehorse completed the Range Road North Neighbourhood Plan, which outlines future land uses and development priorities in the subsequently renamed "Range Point" (encompassing the Northland and Takhini mobile home parks, Mountain View Place, Mountain Air Estates, and Stone Ridge developments, several private properties, and undeveloped Kwanlin Dün First Nation and Yukon government land parcels). One of the Plan's key recommendations was to conduct a site feasibility and safety assessment in support of the potential development of "The Point" as a park due to its value and importance within the neighbourhood and broader community.

The Plan further recommended that:

- The site be considered as part of the larger McIntyre Creek Regional Park and integrated as much as possible with neighbouring Eagle Bay Park in Whistle Bend;
- The area be promoted as a regional park attraction used both by local residents and the broader city as a whole, with guided tours and walks in the area encouraged;
- Feature-specific amenities be constructed; and,
- The park be designed to minimize dangerous and unwanted activities.

The City of Whitehorse initiated a feasibility study into The Point in September 2016 with the objective of confirming park feasibility and – assuming a "yes" - developing preliminary park design and programming concepts to advance in future detailed design and engineering phases. This Background Report highlights the results of the discipline-specific assessments of park development feasibility at The Point and offers a synthesis of their collective implications for potential park design and programming. It is a working draft intended to confirm park feasibility and provide the City with the necessary background context to evaluate and identify the draft park amenity and programming ideas to be further refined and visually communicated in the conceptual design stage. A draft version of the report also helped frame the presentation of high-level options and concepts at a public event held in late November 2016.

1.1 Study Scope, Limitations, and Assumptions

The scope of the feasibility study included an assessment and analysis of the feasibility of developing a park at The Point based on:

- Geotechnical and terrain considerations;
- Hydrogeological conditions;
- Ecological/environmental values, including fisheries and wildlife considerations;
- Heritage values, including traditional uses, culture and history;
- Recreational uses, values and potential;
- Public safety considerations; and,
- The perspectives, ideas, and issues shared by individuals and organizations with an interest in the site.

The analysis is based largely on review of previously gathered data and information pertaining to the study area, supplemented by targeted fieldwork and investigation. The objective was to arrive at a high-level identification of development issues, opportunities, and constraints sufficient to inform a determination of park feasibility.

The Project Team endeavored to make the discipline assessments as comprehensive and accurate as possible based on the time and budget limitations. The potential for variability and margins of error is higher without detailed field investigation, particularly with respect to subsurface geotechnical and hydrogeological conditions. The Team has drawn preliminary conclusions based on the available background information and data and their respective first-hand knowledge of conditions in the area, and/or adjacent and/or similar areas.

1.2 Methodology

1.2.1 Initial Site Visit

The Project Team and City staff (Project Manager, Senior Planner, and Parks and Trails Supervisor) convened for a site visit on September 30, 2016. The group walked throughout the area and shared their knowledge, ideas, concerns and questions. This discussion served as a springboard for the subsequent desktop studies, interviews, and follow-up site visits conducted by each Team discipline.

1.2.2 Desktop Studies

Ecology

The environmental background study included an assessment of vegetation and ecosystems, fish and aquatic life, birds, and terrestrial wildlife. It involved a site visit to The Point Park area, desktop review of existing information, and consultation with government biologists familiar with the area. Existing information for the area was compiled from a variety of sources, including the following:

- Fisheries and Oceans Canada (DFO) Fisheries Information Summary System (FISS) database;
- Environment Yukon Wildlife Key Areas program;
- Energy, Mines and Resources (EMR) library;
- Yukon Conservation Data Centre (CDC);
- Yukon Bird Club publications;
- eBird online databases; and
- Previous project reports from other studies in the area.

Geotechnical and Hydrogeology

The geotechnical and hydrogeological conditions assessment consisted of several site visits and the review of previous geotechnical evaluations and investigations undertaken near the study area, including:

- Whistle Bend subdivision off-site engineering input and construction stage quality control along Range Road, including the new water main and the McIntyre Creek multiplate installation, which helped define geotechnical and hydrogeological conditions throughout the McIntyre Creek drainage course and the transition with the upper escarpment areas along the north and south sides of McIntyre Creek; and,

- A mobile home park project undertaken for Kwanlin Dün First Nation for the C-15B parcel, during which geotechnical and hydrogeological conditions were defined for the area directly south of The Point and along Mountainview Drive.

Heritage

The heritage review for The Point Park was a high-level study based on a view of the site as a complex cultural landscape and application of current practice in conservation planning methodology. The methodology refers to processes and guidelines advocated by the City of Whitehorse Heritage Program, *Heritage Bylaw* 2002-10, and Government of Yukon Historic Sites Unit and includes the following tenets:

Understand the historic place:

The historical context and thematic framework of The Point Park site was developed through research, mainly through existing written material, with some primary source research at Yukon Archives. The September site visit provided the opportunity to explore the site and discuss it with other members of the project team, and to document its cultural landscape features and character.

Community engagement:

Community input from a wide variety of governments, site users, and non-profit organizations was essential for an understanding of the range of heritage values associated with The Point Park site. For the purposes of this heritage review, transcripts of conversations and interviews, email submissions and other input conducted in November 2016 was provided.

Heritage conservation:

Subsequent to the identification of context and values, potential impacts and issues and their mitigation was addressed, in part through heritage conservation practice using the *Standards and Guidelines for the Conservation of Historic Places in Canada*. Consideration was also given to the integration of heritage into the park planning process, along with interpretive principles based on the Ename Charter[1] and the site's values and heritage character, using an approach that includes the stated wish for the natural character of the site to be respected.

Recreation

The recreation assessment included a review of current recreational uses and values, numerous visits to the site to groundtruth existing trails and investigate potential new connections, review of relevant plans, and a brief environmental scan for relevant recreation practices, trends, and delivery gaps. Sources informing the desktop review included:

- City of Whitehorse draft Trail Plan for the Range Point/Whistle Bend/Porter Creek/Takhini neighbourhoods (2016);
- City of Whitehorse Range Road North Neighbourhood Plan and accompanying Background Report (2014);
- City of Whitehorse Parks and Recreation Master Plan and Trail Plan (2007); and,
- Yukon-based social media sites.

These sources were supplemented by interviews and/or enquiries with City of Whitehorse Parks and Recreation staff, First Nations, organizations, stakeholders, and subject matter experts, as well as the

[1] 2008 Charter for the Interpretation and Presentation of Cultural Heritage Sites by the International Council of Monuments and Sites

Project Team's extensive firsthand knowledge of the City parks and recreation delivery context from related work.

Public Safety

The public safety assessment consisted of a fairly extensive groundtruthing of the site over several field visits, interviews with fellow governments and organizations, and a thorough review of several key documents pertaining to site cleanup and contamination. The public safety assessment also drew from the ecological assessment of water quality and contaminants in the study area, the Project Team's previous experience with other brownfield sites, the advice of Yukon Department of Environment staff and secondary research into landfill-to-parks conversions.

Bridge Crossing

The feasibility of a bridge crossing was assessed at a high level utilizing aerial imagery and 1 metre contours.

1.2.3 Interviews

Interviews were held with fellow governments and various with expertise and/or interests in the study area to ensure that both the Project Team and City understood current, historic, and traditional uses and the breadth of issues and opportunities related to the site. One-on-one interviews were held with the following groups (listed in alphabetical order):

- City of Whitehorse Parks and Community Development;
- Friends of McIntyre Creek;
- Kwanlin Dün First Nation;
- Ta'an Kwäch'an Council;
- Yukon Conservation Society; and,
- Yukon Department of Environment.

Notes for these meetings were taken and summaries provided to both the City and interviewee for record-keeping. In some cases, the summary notes provided useful background material for the various Team disciplines to integrate into their desktop and field work. In addition, Project Team members conducted informal interviews and discussions with selected individuals for the purposes of information gathering; these are referenced in the body of the report and sources. The results of the interviews are presented throughout this report.

2.0 Description of the Study Area

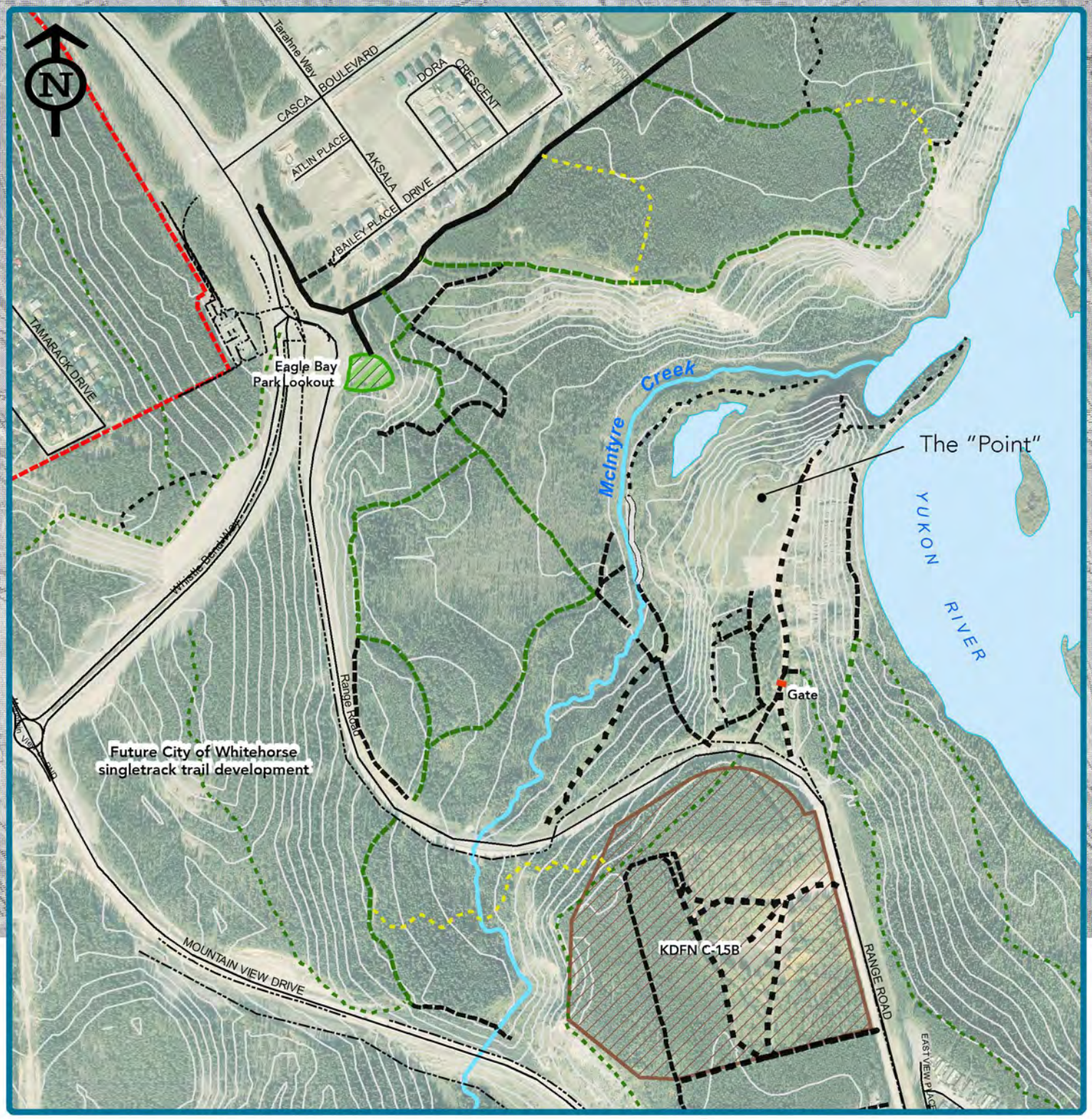
The study area is located within the City of Whitehorse municipal boundaries on the western escarpment of the Yukon River, approximately four kilometres north of Downtown and 700 metres north of the nearest Range Road residential area. The immediate study area and connecting areas are shown in Figures 1 and 2.

Various distinct landscape features can be used to delineate the study area as follows:

- ***The plateau*** – The plateau is an estimated 5.4 hectare triangular shaped area occupying the top of the Yukon River escarpment situated north of Range Road, east and south of McIntyre Creek, and west of the Yukon River. The main access road into the site off Range Road occupies the eastern limit of the plateau. The southern half of the upper plateau is vegetated with predominantly lodgepole pine forest and is criss-crossed with skidder-type roads. Of the remaining unforested portion of the plateau, approximately 1/3 to 1/2 of the area is unvegetated and the remainder is covered with tall grasses.

- ***McIntyre Creek corridor*** – McIntyre Creek is the central feature in this portion of the study area. An approximate 100-metre section of the eastern bank consists of a riprap berm installed in 2014 to reinforce the creek's banks and avoid any creek flow incursion into the former dumpsite. An artificial pond is situated at the toe of the west-facing slope of the site, the result of a creek diversion effort in the late 1960s or early 1970s.

- ***Yukon River corridor*** – The eastern portion of the site is bounded by the Yukon River and includes several islands located about 200-300 metres offshore. A small ATV-width trail parallels



Legend

- Elevation Contour (5 m intervals)
- Transmission Line
- Main Road
- Kwanlin Dun First Nation Settlement Land
- Paved Trail
- Secondary Road
- Single Track Trail
- Double Track Trail
- Berm

Trail Classification (by colour)

- Black = Existing Trail
- Red = Proposed City of Whitehorse Motorized Multi-Use Trail
- Green = Proposed City of Whitehorse Non-Motorized Trail
- Yellow = Proposed City of Whitehorse Non-Motorized Trail - New Construction

Imagery: Yukon government - City of Whitehorse - Natural Resources Canada

Figure 1. Overview of The Point Feasibility Study Area and Adjacent Areas

Date: 7/10/2017	Drawn By: MP	Checked By: JK/PT

Reference Scale: 1:8,000
Coordinate System: NAD 1983 UTM Zone 8N

0 25 50 100 150 200 250

Metres

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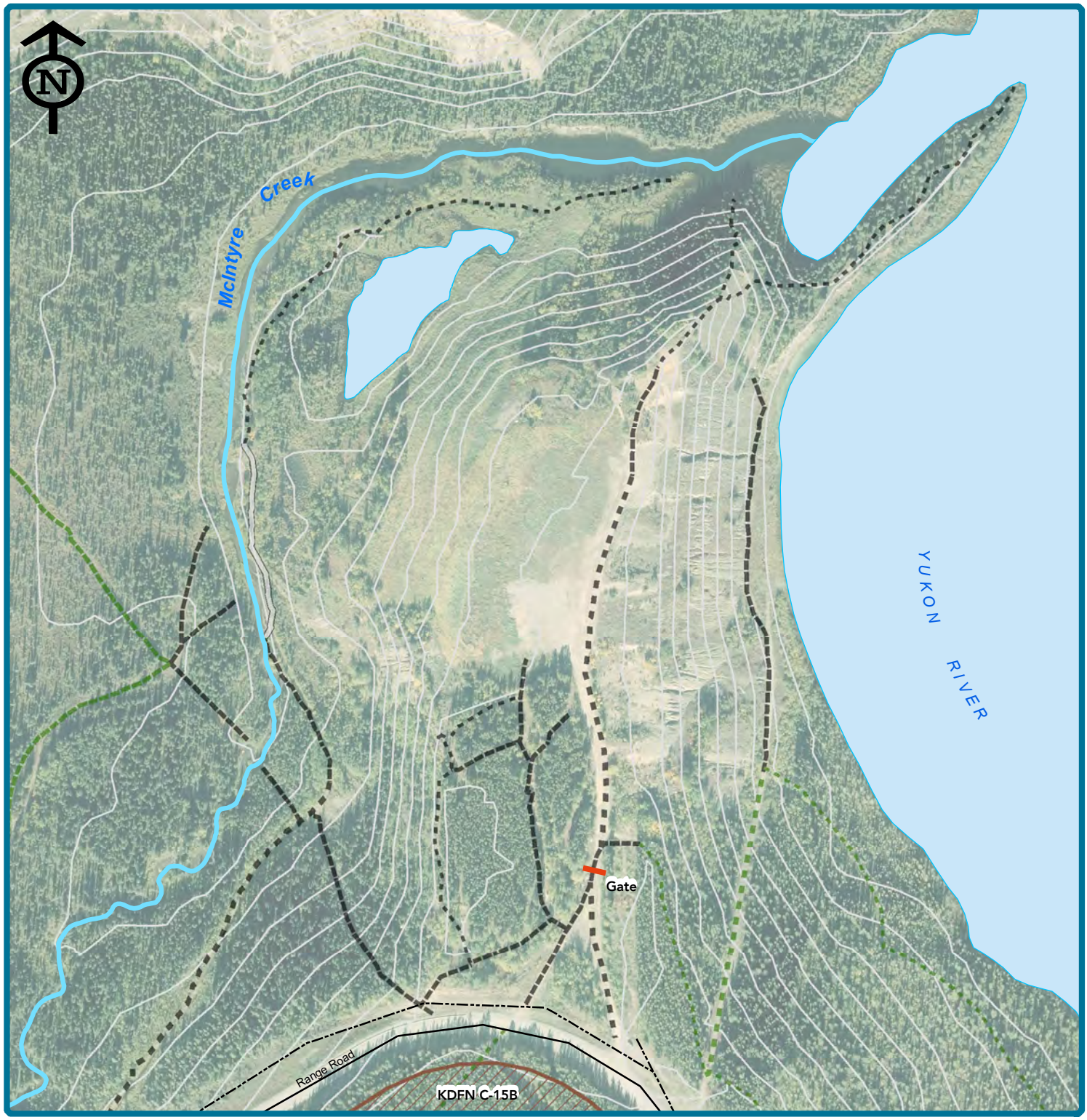

Legend

- Elevation Contour (5 m intervals)
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Trail Classification (by colour)

- Black = Existing Trail
- Green = Proposed City of Whitehorse Non-Motorized Trail

Imagery: Yukon government - City of Whitehorse - Natural Resources Canada

Figure 2. Overview of The Point Feasibility Study Area

Date: 7/10/2017	Drawn By: MP	Checked By: JK/PT

Reference Scale: 1:3,500
Coordinate System: NAD 1983 UTM Zone 8N

0 25 50 75 100 125

Metres

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the shoreline at the bottom of the east-facing slope and terminates about 10 metres south of the toe of the escarpment of a narrow peninsula feature that juts out into the river channel.

- ***Escarpment*** – The plateau is bordered by a continuous escarpment feature on its western, northern, and eastern sides. The steepest portions of the escarpment are the west-facing portion adjacent to the forested plateau area and the portion overlooking the mouth of McIntyre Creek, where grades approach 80%. Grades are also relatively steep along the eastern escarpment (averaging 50-60%); however, gentler terrain can be found to the west of the unvegetated portion of the plateau, where slopes are in the 25-40% range[2]. Vegetation is established along most of the escarpment, with a few notable exceptions along the eastern slopes where erosion and gullying is evident.

2.1 Land Tenure and Uses

The Point study area consists of predominantly undeveloped Commissioner's lands managed by the City of Whitehorse as green space pursuant to the *Municipal Act* and zoned Environmental Protection (PE) under the Zoning Bylaw (2012). The closest residences to the Point are located approximately 600 metres to the north on Aksala Drive in Whistle Bend and 700 metres to the south in the Mountain View Place development of the Range Point neighbourhood. The entire Whitehorse area falls within the traditional territories of the Kwanlin Dün First Nation and Ta'an Kwäch'an Council, both of whom are self-governing.

The population of the Range Point neighbourhood is approximately 1150 people (Yukon Bureau of Statistics Population Report Second Quarter 2016).

There are two undeveloped parcels in relatively close proximity to the study area:

- Kwanlin Dün First Nation Type 2 settlement parcel C-15B, located immediately south-west of The Point and zoned First Nation-Future Planning (FN-FP); and,
- A 3.6 ha potential development site owned by the Government of Yukon located immediately south of KDFN C-15B and north of Northland Mobile Home Park.

2.2 Site Access and Servicing

The Point Park site is accessed directly off Range Road via two distinct vehicle entrances, the southern one of which appears more heavily used. The accesses are currently unmaintained and unpaved. A power transmission line runs along the eastern side of Range Road and skirts past the entrance to the site. The closest water and sanitary services are located in the developed portion of the Range Point subdivision.

2.3 Geology and Terrain

As presented by Bond, 2003, the Whitehorse map area has a very complex depositional history. During the Late Wisconsinan McConnell glaciation, ice thicknesses exceeding 1350 metres existed over Whitehorse at full glaciation. Deglaciation has been characterized by frontal retreats, dynamic equilibrium and re-advances of the Coast Mountains and Cassiar lobes. This has resulted in the formation of ice dams and a series of pro-glacial lakes that submerged valleys under as much as 300 metres of meltwater. Deglaciation was divided into seven stages, with changing conditions throughout specific portions of the Southern Lakes area and west to Champagne. Fluvial incision of the sediment dam located at the north

[2] This slope was the focus of extensive capping and re-grading efforts during the 2005-2010 cleanup.

end of Glacial Lake Laberge continues at present and the decreasing water levels resulted in the down-cutting of the glaciolacustrine and morainal sediments throughout areas to the south. As the southern shoreline of Lake Laberge receded north, deltaic sand was deposited over the glaciolacustrine silt and subsequently reworked by aeolian processes.

The area's depositional history is described on the Southern Lakes Series Surficial Geology Map series produced by Morison, McKenna and Davies in 1982. Mapping specific to the study area includes two polygons defining the escarpment soil conditions (where down-cutting through the fine grained glaciolacustrine soil created the escarpment landscape) and the conditions along the McIntyre Creek water course where alluvial sediments have been deposited during stages of the down-cutting process.

In summary, the escarpment is part of a glaciolacustrine plain (Champagne Soil Complex) and the surficial aeolian sands that are often encountered over or interbedded with glaciolacustrine silts are consistent with the depositional history of the area and consistent with conditions throughout Whistle Bend and the Takhini subdivision, as well as the Whitehorse International Airport area. Along the existing entrance road to The Point, the surficial sand is evident, but once the old dump site area is reached, the glaciolacustrine soils are present and form the escarpments facing the Yukon River and McIntyre Creek.

Along the lower portion of the McIntyre Creek area, deposition is described as moderately to well-drained old alluvium (Sterlin Soil Complex). The term alluvium is indicative of soils deposited along rivers and streams. Conditions can be quite variable and interbedded (as encountered when the McIntyre Creek multiplate site was drilled and some surficial gravel with underlying lenses of sand and silt was noted).

Soil conditions described above have been verified during geotechnical evaluations completed along Range Road (in the vicinity of the study area) and the KDFN C-15B parcel. In 2007, a geotechnical evaluation that included the excavation of five testpits confirmed the presence of 0.2 and 1.0 metres of fine grained sand with some silt (aeolian) overlying glaciolacustrine silt with 5-7% clay. No groundwater was encountered during the testpitting program but additional reconnaissance around the perimeter of the site noted a seepage zone along the toe of the escarpment at the south side of McIntyre Creek east of Mountainview Drive.

In 2008, four boreholes were drilled along Range Road between the entrance into The Point and beyond the McIntyre Creek multiplate. Very wet to saturated soils were encountered in all boreholes. Subsequent water main construction encountered seepage into the deep utility trench, resulting in challenging conditions for excavation, backfill and compaction.

During site reconnaissance by the Project Team, it was established that there is good potential to construct a pedestrian bridge across McIntyre Creek. Crossing locations that take advantage of the constructed berm and existing access road on the east side of McIntyre Creek will tie into the proposed trail network of the west side of the creek. Much of the area west of McIntyre Creek is low-lying and shaded with wet sections and portions with significant organic ground cover. The conditions are indicative of areas that may have underlying permafrost.

2.4 Hydrogeology

Throughout the area in Whitehorse referred to as the airport plateau, it is not unusual to encounter seepage zones at the interface between the surficial aeolian sand or glaciofluvial gravel and the underlying glaciolacustrine silt. Similar conditions have been encountered throughout the airport property, along Range Road directly north of the airport, throughout the Takhini Subdivision on the west side of Range Road and along Whistle Bend Way close to the southern traffic circle accessing Whistle Bend Subdivision.

Although unconfirmed, it is also possible that recharge is coming from glaciofluvial deposits upgradient of the plateau area. For example, the former White Pass tank farm area north of Hillcrest has groundwater at depth and the hydraulic gradient is towards the escarpment and Takhini South and Takhini North may see some flow from the bedrock surface defining the valley wall on the west side of the Alaska Highway. Recently, drilling at Lot 117 on the corner of Whistle Bend Way and Casca Boulevard encountered groundwater which may be flow from the Porter Creek subdivision area.

As mentioned above, boreholes drilled along Range Road in the vicinity of McIntyre Creek encountered groundwater as did the drilling program for the McIntyre Creek multiplate. A significant and active seepage zone was also noted north of KDFN's C-15B parcel along the escarpment south of McIntyre Creek close to Mountainview Drive.

The presence of seepage zones and artesian conditions can cause soil instability due to increased pore pressure in soils creating potential for slope failure. However, since the sandier sediments have been removed from much of the cleared and regraded portion of The Point Park area there is less potential for seepage zones to be encountered. Site reconnaissance did not result in the identification of any seepage zones at or near surface; as such, it is doubtful that groundwater seepage will contribute to contaminant migration into McIntyre Creek. For comparison purposes, deeper holes drilled throughout the Whistle Bend subdivision for geothermal assessment encountered groundwater at depths in excess of 60 metres and the excavation for the Continuing Care Centre extended beyond 6 metres with no seepage into the excavation noted.

2.4.1 Acid Rock Drainage and Metal Leaching Potential

During site reconnaissance, the Project Team observed evidence of sulphide oxidization of the riprap material placed along the berm on the east side of McIntyre Creek. The rock used appears to be primarily of granitic origin.

The water levels of McIntyre Creek are fairly consistent throughout the year since it is connected to the Fish Lake hydroelectric infrastructure. As such, it is assumed that the riprap will be exposed to air along most of the embankment, and, furthermore, it is unlikely that the McIntyre Creek water levels will ever increase to the extent that the riprap will be submerged. Although the rock type appears to be relatively hard and cohesive, there is significant staining on the rock surfaces that may indicate sulphide weathering. Sulphide weathering is accelerated in materials that are exposed to air, as opposed to being submerged, as the increased oxygen available along with precipitation allows for the minerals to oxidize. Of specific concern is the presence of what

may be copper sulphide oxides. Copper is highly toxic to aquatic organisms both in soils and water (CCME 1999). This could be a concern since McIntyre Creek and the Yukon River in the proposed park area provides habitat for many fish species (EDI 2006).

Information provided by EDI (which managed the erosion control effort) confirmed that the riprap source was Arctic Backhoe Services' McLean Lake Quarry and testing performed on a sample in 2011 (sampling by Tetra Tech and testing by Maxxam Analytics in Burnaby, BC) was for a project where the rock would be placed in submerged conditions. However, current regulatory Mine Environment Neutral Drainage (MEND) guidelines require that three samples be tested per 10,000 m^3 of each identified rock type proposed for use on a specific project and metal leaching analysis be completed along with acid based accounting. The rock has also been placed in an environment differing from the originally recommended placement conditions (exposed to air and rainfall instead of being submerged), warranting some concern.

2.5 Ecology

2.5.1 Site Conditions

The McIntyre Creek–Yukon River confluence is dominated by a complex of shallow open water, marsh and shrub-dominated wetland ecosystems, alongside white spruce (*Picea glauca*) lowland forest. The surrounding upland is generally comprised of lodgepole pine (*Pinus contorta*) and white spruce dominated forests with understories of willow (*Salix* sp.), soapberry (*Shepherdia canadensis*), scrub birch (*Betula glandulosa*) and crowberry (*Empetrum nigrum*) (AEM 1998, 1999, 2000). Most of the forested habitats here are even-aged and less than 100 years old due to a previous wildfire in the area (AEM 2000). North of the McIntyre Creek–Yukon River confluence, steep erodible slopes and grass-sage ecosystems are located along the south- and east-facing slopes above the Yukon River and McIntyre Creek (AEM 1999, 2000). South of the confluence, the old dumpsite is largely in an early successional state with plant communities dominated by deciduous shrubs, grasses and other herbs. Extensive efforts were undertaken between 2005 and 2010 to reclaim the former dumpsite including removal of surficial waste material, re-contouring and capping the site with organic rich fill material, and re-vegetating the area with native shrubs (i.e., willow and balsam poplar (*Populus balsamifera*)) and grasses (EDI 2010).

McIntyre Creek is a tributary of the Yukon River, whose headwaters are located east of Whitehorse, along the slopes of Mount McIntyre. The McIntyre Creek–Yukon River confluence occurs along a section of the Yukon River commonly referred to as "Big Bend" (Yukon River Corridor Plan 1999). This section of the River follows a broad, shallow channel containing the largest island and gravel bar complex within the City of Whitehorse limits (AEM 2000). The amount of land exposed within the island complex varies seasonally with much of the area flooded during peak flows in the summer, and large areas exposed in the spring and fall. Ecosystems within the island complex include a mixture of river, gravel bar, marsh and shrub-dominated wetlands, with forested ecosystems present on some of the permanent islands (AEM 2000).

Previous studies have identified the Lower McIntyre Creek–Yukon River area as a "Significant Wildlife Area" due to its aquatic habitat characteristics (particularly its importance to fish, staging waterfowl, and raptors) and connectivity to areas outside the Yukon River Corridor (AEM 1998, 1999, 2000). Specific wildlife species groups that were associated with the Significant Wildlife Area include avian predators (i.e., raptors), forest birds and neotropical migrants, water birds (i.e., waterfowl, gulls etc.), microtine mammals, ungulates, and fish (AEM 2000). The area was also identified as having several habitats of "High Environmental Sensitivity" including the entire Yukon River island complex and the surrounding shallow waters, McIntyre Creek, the riparian forests along Lower McIntyre Creek, the steep sparsely

vegetated slopes above the Yukon River, and some of the surrounding steep forested slopes (Yukon River Corridor Plan 1999; AEM 2000). However, the same documents also noted that the area currently has relatively high levels of human disturbance.

The Lower McIntyre Creek area is surrounded by residential developments on three sides (Whistle Bend to the north, Range Point to the south and Porter Creek to the west) and the area currently experiences a substantial amount of human visitation. In addition to the old dumpsite, the area around the proposed park currently includes a number of old roads and a high density of trails. A 2011 study of the McIntyre Creek corridor using remote cameras to document wildlife use found that humans were by far the largest users of the corridor (including the Lower McIntyre Creek area). Of the remote camera observations (including wildlife observations) documented during the study, 93% were recreationalists.

2.5.2 Rare Plant Species

According to Yukon Conservation Data Centre (CDC) records there are no rare plant species known within the Lower McIntyre Creek area. However, further up the McIntyre Creek corridor, leafy thistle (*Cirsium foliosum*) has been documented in a couple of locations where it is generally associated with marshy beaver pond habitats (Yukon CDC 2016). The closest known location of leafy thistle is more than 1.5 kilometres upstream of the Range Road–McIntyre Creek crossing; however, given the connectivity to upstream areas, leafy thistle may be present in suitable habitats (marsh/pond habitats) within the proposed Point Park area. Leafy thistle is listed on the Yukon Track List and is ranked as Imperilled (S2) within the Yukon, but is ranked Apparently Secure (N4) in Canada (Yukon CDC 2016).

2.5.3 Water and Sediment Quality

Since the closure of the dump in 1975, concerns have been raised over potential contamination at the site. These concerns have prompted several investigations of surface water, sediments, and groundwater quality. Prior to reclamation work conducted at the site between 2005 and 2010, Environment Canada conducted several studies looking at surface water quality (Environment Canada 1984), sediment sampling for polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT) (Environment Canada 1991) and ground water contamination (Stanley 1992). These studies found that surface water and sediments had elevated concentrations of some metals, as well as elevated levels of ammonia, phosphate, sulphate, and chemical oxygen demand (COD) in areas affected by the dump waste (Environment Canada 1984, 1991). One sample from the pond area at the toe of the west-facing bluff also showed low concentrations of PCBs (Environment Canada 1991). However, groundwater sampling (based on groundwater monitoring wells installed in 1992) found that only sulphate was elevated above guideline levels for the protection of aquatic life and that the effect of waste materials was limited to shallow groundwater samples (Stanley, 1992).

During the 2005-2010 reclamation of the site, additional ground and surface water sampling was conducted to 1) determine whether any additional contamination had occurred since 1992, and 2) monitor the effects of waste removal activities on surface water. The following information on monitoring conducted during this period is summarized from *Range Road Dumpsite Clean-up: Summary of Reclamation Works 2005-2010* (EDI 2010) as follows:

- Groundwater, surface water and sediment sampling was conducted in June, July and November 2007, concurrent with waste removal activities in the Yukon River riparian area. Sampling indicated that surface water in McIntyre Creek, the Yukon River and the pond at the base of the west-facing bluff had very low contaminant loads. Sediments taken from all sampling areas had non-detectable PCB concentrations. Slightly elevated metals concentrations were found in a seep area alongside the Yukon River; however, the large dilution volume provided by the Yukon River was assumed to protect fish and other aquatic organisms from the slightly elevated metal concentrations. Groundwater sampling indicated that contamination levels were lower overall than those found in 1992, with the exception of a few metals, and concentration of all sample parameters were below CCME guidelines for the protection of freshwater aquatic life.

- Surface water sampling at the pond at the toe of the west-facing bluff was conducted in November 2008, concurrent with waste removal activities around the pond. The 2008 sampling indicated that a number of detectable parameters were slightly elevated, as compared to the samples collected in 2007; however the slightly elevated concentrations were deemed to be acceptable given the nature of the clean-up efforts.

- Surface water sampling at the pond was conducted again in June 2009 following completion of the re-vegetation work. The 2009 sampling found that detectable contaminant levels in the surface water of the pond had decreased compared to the 2008 sampling, and were comparable to pre-cleanup levels in the pond determined by the 2007 sampling.

More details on the sampling results can be found in the above-referenced report.

Bioengineering works to enhance riparian habitat values at the site.

2.5.4 Fish

Both the Yukon River and McIntyre Creek (and the associated shallow water wetlands) provide fish habitat in the vicinity of the proposed Point Park. The only other water body within the study area is the pond at the base of the old dump site; however, the pond is shallow and there is no surface connection to McIntyre Creek. Accordingly, there are no fish values associated with this water body.

Twelve fish species have the potential to use the Yukon River within the Project area and six species have been documented in the lower portion of McIntyre Creek (Table 1). The proposed park intersects the Yukon River in a location where the river is wide and braided. A slow moving side channel flows along the edge of the land base and would be best suited to species that prefer slow moving habitat such as northern pike. Chinook salmon migrate through the Yukon River to upstream spawning areas, and small numbers of adult Chinook also have been observed in McIntyre Creek. Juvenile Chinook utilize McIntyre Creek for rearing throughout the study area. As McIntyre Creek is part of the Fish Lake Hydro project, flows in the stream are quite stable throughout the year and overwintering by fish has been documented (AECOM 2010). Please refer to Table 1.

Table 1. Documented Yukon River Fish Species That May Potentially Occur in the Point Park Area (data from DFO 2016); red highlighted species have also been documented in McIntyre Creek (AECOM 2010).

Category	Common Name	Scientific Name
Salmon species	Chinook salmon	*Oncorhynchus tshawytscha*
Freshwater fish species	Arctic grayling	*Thymallus arcticus*
	Rainbow trout [1]	*Oncorhynchus mykiss*
	Broad whitefish	*Coregonus nasus*
	Lake whitefish	*Coregonus clupeaformis*
	Burbot	*Lota lota*
	Northern pike	*Esox lucius*
	Least cisco	*Coregonus sardinella*
	Longnose sucker	*Catostomus catostomus*
	Lake chub	*Couesius plumbeus*
	Slimy sculpin	*Cottus cognatus*
	Round whitefish	*Prosopium cylindraceum*

[1] Introduced species to Jackson/Louise Lake that have now been found downstream in McIntyre Creek and the Yukon River near Whitehorse.

Immediately downstream of Range Road, McIntyre Creek flows through a well forested area for approximately 500 metres that has abundant cover and a diversity of habitat for fish (especially juvenile salmonids). Downstream, adjacent to the former dump location, the riparian is less developed (smaller trees) and the stream is straighter (likely due to past relocation works) with less cover for fish. Near the confluence with the Yukon River, the stream gets back flooded during high flows in the Yukon River and is wide and slow moving.

Angling in the Yukon River likely occurs within the study area, although does not appear to be extensive. While angling occurs in McIntyre Creek upstream of the study area (Foos and Millar, 2011), the shallow nature of stream in most of the study area likely limits angling to the area around the mouth with the Yukon River. The McIntyre Creek Salmon Incubation Facility (MCSIF) is located upstream of the study area, immediately west of the Mountainview Drive culvert. The facility was established by the Department of Fisheries and Oceans in the late 1980s and is now managed by Yukon College in partnership with Ta'an Kwäch'an Council (Yukon College N.D.). Many of the fry are tagged and released into Fox Creek, a tributary of Lake Laberge, and small numbers of adult salmon have begun to return to spawn in the creek (Yukon News 2015).

2.5.5 Birds

The Lower McIntyre Creek area and the McIntyre Creek-Yukon River confluence seasonally support a diverse bird community. Based on eBird records and previous reports from the Point Park area, 96 different bird species have been documented in this location including 11 raptor, 20 waterfowl, 9 waterbird, 14 shorebird, 1 gamebird, and 40 passerine species

(Appendix A[3]). During the spring (April-May), the McIntyre Creek mouth and Yukon River provide important spring staging habitat for a variety of swans and other waterfowl. Large groups of waterfowl (i.e., observations of more than 100 birds) are not uncommon here during the spring, including large numbers of trumpeter swan, Canada goose, mallard, gadwell, American wigeon, northern shovellor, northern pintail, and green-winged teal, among others (eBird 2016). Spring mudflats also attract large numbers of shorebirds and gulls (Yukon Bird Club 2015).

During the summer, an assortment of upland bird species can be found nesting in the area, and nesting by raptors, waterfowl, shorebirds and other water bird species is expected in suitable habitats. In the fall, the area is again used by migrating waterfowl, raptors and songbirds, although fall staging is not as prominent as in spring (Eckert, pers. comm., 2016). In the winter, open water areas near the McIntyre Creek mouth and along the Yukon River are used by American dipper and a variety of ducks, while upland areas can attract snow bunting and northern shrike (Eckert, pers. comm., 2016).

The area is known to have relatively high concentrations of raptors. This section of the Yukon River is known to many as "Eagle Bay" due to the usually high number of eagles that can be seen here (AEM 2000). Other raptors that can be viewed here include boreal owl, peregrine falcon, gyrfalcon, northern harrier, red-tailed hawk, sharp-shinned hawk and northern goshawk (AEM 1998; Yukon Bird Club 2015; Eckert, pers. comm., 2016). Ravens are also known to frequently play on the thermal updrafts and wind shears in this area (AEM 1998).

2.5.6 Other Wildlife

Wildlife presence within the proposed Point Park area is expected to be dominated by smaller resident species, such as red squirrel, and those species that do well in an urban environment, such as coyote and red fox. However, while larger wildlife species such as black bear and moose may periodically occur in the area, the Lower McIntyre Creek area is not large enough to support year-round residence by larger mammals. Rather, these species are expected to move through and occasionally use the area for short durations.

A study of wildlife use in the McIntyre Creek corridor (including Lower McIntyre creek) found that most large animal species that occur in the area around Whitehorse can occasionally be found in the McIntyre Creek corridor. The study found that red squirrel and coyote were by far the most abundant wildlife in the area; however, snowshoe hare, porcupine, American marten, Canada lynx, red fox, black bear, mule deer and moose were also detected (EDI 2011). The study also noted that while moose were not commonly documented on remote cameras used during the study, a relatively high occurrence of moose sign (e.g. pellets, tracks, and browse) was noted near the McIntyre Creek – Yukon River confluence. This is consistent with other reports indicating that during the winter, tracks from coyote, moose and other

[3] It is notable that most records to date were collected during the migration season and focused on the aquatic habitats associated with the Yukon River and the mouth of McIntyre Creek. Additional species are expected to occur in the area; in particular, the number of upland bird and passerine species represented in the species list (Appendix A) is believed to be low compared to the species that could be expected in the area based on documented presence within the broader City of Whitehorse (e.g., Yukon Bird Club 2010).

"urban wildlife" can commonly be seen along the riparian habitats in the proposed Point Park area (Eckert, pers. comm., 2016). Other wildlife species that have been reported in the McIntyre Creek corridor and may be found in the Point Park area include water shrew, arctic ground squirrel, common muskrat, American mink, beaver, river otter, wolverine and grizzly bear (FMC and YCS 2011), although the latter two are expected to be uncommon based on their preference for large areas of undisturbed wilderness removed from human presence (COSEWIC 2003, 2012). Members of the Project Team have observed beaver activity in the lower reaches of McIntyre Creek, and there are reports of coyotes denning in this area (FMC and YCS 2011).

In addition to the species listed above, a variety of small mammals (e.g. mice, voles, shrews, bats) are expected to be found in the study area. AEM (1998) noted that during twilight hours, bats, presumably little brown bat, can be seen foraging along the Yukon River and the mouth of McIntyre Creek. Little brown bat is considered an Endangered Species by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and is listed on Schedule 1 of the Species at Risk Act (Environment Canada 2016). Amphibians, presumably wood frog, have also been reported in aquatic habitats within the study area (EDI 2010). Northeast of the proposed park, the dune tachinid fly has been documented along the steep erodible bluffs above the Yukon River. The dune tachinid fly is ranked as a species of COSEWIC and is considered Vulnerable within the Yukon (Yukon CDC 2016).

2.6 Recreation

Its distance from Downtown Whitehorse, somewhat "off the beaten path" location, poor visibility from main roads, and past landfill status may all be contributing factors to the fairly low recreational use of the site relative to its stunning setting and potential to provide high-quality leisure-oriented experiences. The following sections highlight current uses and situate The Point and its potential for park development in the broader context of parks and recreation delivery, trends and existing amenities in adjacent neighbourhoods and Whitehorse.

2.6.1 Solitude, View Seeking and Gathering

Passive enjoyment of the impressive views and natural landscape is the predominant recreational use of The Point at present, or that is perhaps until very recently, when the City installed a new, heavy-duty gate at the entrance to the access road. According to people familiar with the site, its use in recent years has primarily been by people driving to the site seeking solitude and views ("a beautiful spot to eat lunch"), a claim validated by direct Project Team observation.[4] This pattern of use is consistent with other look-outs in Whitehorse - most notably the first pull-out and main viewpoint along Grey Mountain Road and the top of the first hill on the Chadburn Lake Road - although The Point is likely less known by people residing outside of the adjacent neighbourhoods and/or more newly arrived to Whitehorse.

The Point's appeal as a place of relative seclusion also extends to night-time activity at times; some noted its occasional use as a "party spot", with the associated noise extending across McIntyre Creek to Whistle Bend. Interviewees also spoke to informal camping and people living out of their vehicles at the site during the summer months – although the extent to which that has occurred is unknown.

[4] During various visits to the site, Project Team members regularly observed people sitting in and/or standing near vehicles parked on the various promontories overlooking the Yukon River.

2.6.2 Trails

Trails in the immediate study area are fairly limited at present. In a pattern typical of the Yukon River escarpment in Whitehorse, there is a singletrack[5] trail situated along the rim of the forested portion of the west-facing escarpment, as well as a very steep "fall-line" singletrack connecting from the northern tip of the plateau to the peninsula feature, both of which were formed by repeated foot travel. The eastern bank of McIntyre Creek features an intermittent singletrack/doubletrack[6] that transitions into the riprap berm and again into a secondary road connecting to Range Road. A steep doubletrack (old road) climbs up from that secondary access road to the upper plateau and connects to the previously mentioned western escarpment singletrack trail. Please refer to Figure 2.

On the Yukon River side, at the toe of the steep escarpment, is a slowly revegetating "dead-end" doubletrack, likely formed (or re-opened) by machine access to the site during cleanup activities. There is evidence of old cutlines and traces of ad hoc footpaths throughout the site.

The adjacent Range Point neighbourhood is home to a well-used and highly valued network of trails[7]. Trail connections to The Point are good via two highly used escarpment trails, one running north-south along Mountainview Drive and skirting the KDFN C-15B parcel, and the other extending north-south along the Yukon River escarpment, its start/terminus at the Takhini mobile home park. The Yukon River escarpment route even offers a loop option via a lower trail (an old road) that parallels the river.

Trail connections from The Point to Whistle Bend to the north and the Porter Creek/Takhini portion of the McIntyre Creek corridor to the west are comparatively limited. McIntyre Creek forms a natural barrier to the north, while Mountainview Drive, Range Road, and absence of a continuous east-west trail impede direct travel to the "Middle McIntyre" area located west of Mountainview Drive and north of the Yukon College campus.

The portion of the McIntyre Creek wetlands extending between the western shore of the creek and the toe of the Whistle Bend escarpment contains a distinct loop of doubletrack, likely formed by vehicle and/or ATV use. Sections of these trails are characterized by an indistinct tread typical of low-lying, marshy areas, whereas other sections have a more conventional mineral soil tread. These trails are particularly well used in winter. Remote wildlife cameras installed in the McIntyre Creek corridor showed that the most common recreational activities were walking and

[5] Singletrack trails are narrow trails that facilitate single-file travel and usually require oncoming users to yield to one another.

[6] Doubletrack is a trail of sufficient width to allow two users to travel beside one another and/or one user to pass another without having to yield the trail. These are typically old tote roads and more modern trails created by all-terrain vehicles (ATVs).

[7] Trails were frequently cited as "important features and assets" during the 2014 Range Road North neighbourhood planning process.

running (60% and 28% respectively), while cycling and motorized recreation (i.e. ATVs or dirt bikes) were recorded less frequently (8% and 4% respectively (EDI 2011).

Neighbourhood Trail Planning

Pursuant to its 2007 Trail Plan, the City of Whitehorse actively manages trails located within municipal boundaries. Neighbourhood-level trail planning identifies highly valued and/or significant trails for formal City adoption, subsequent incorporation into the City's Trails Maintenance Policy, and ongoing maintenance by the City and/or its partners. A Memorandum of Understanding (MOU) was signed between the City and Kwanlin Dün First Nation (KDFN) in spring 2015 to allow the City to adopt and manage significant trails located on KDFN lands until future development occurs.

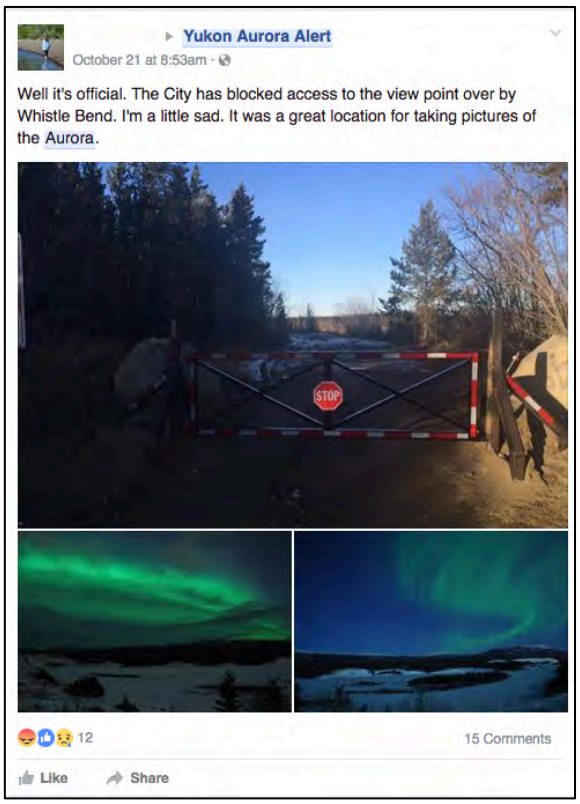
Trail planning was undertaken for the Range Point/Whistle Bend/Takhini/Porter Creek neighbourhoods between January and June 2016 in order to identify candidate City trails, their proposed designations (i.e. non-motorized or motorized multi-use), and potential connections and additions to the proposed City network in the area. The Point area was intentionally excluded from the planning process pending the outcome of the exercise currently underway; however, several trail concepts recommended by the draft Plan have a direct bearing on potential trail connections between the site and adjacent areas. These include the following:

- The designation of both the lower and upper Yukon River escarpment trails extending from the powerline behind Crow Street and Takhini Mobile Home Park, respectively, as non-motorized City trails;
- The resolution of private property encroachment on the upper Yukon River escarpment trail to facilitate continuous travel along the escarpment;
- The designation of the escarpment trail extending along the eastern limit of Mountainview Drive behind Northland Mobile Home Park and connecting to the Point past KDFN C-15B parcel (pending KDFN approval) as a non-motorized City trail;
- The refinement and development of a small network of singletrack trails in the forested micro-terrain located between C-15B, Mountainview Drive, Range Road, and Whistle Bend Way for City non-motorized designation;
- The development of a new formal singletrack trail connection and narrow pedestrian crossing of McIntyre Creek from C-15B escarpment (pending KDFN approval) to replace an ad hoc route and for City non-motorized designation; and,
- The non-motorized designation of the network of informal roads/ATV trails in the wetland area between Eagle Bay Park and McIntyre Creek, with significant investments in trail hardening to make these routes more sustainable and enjoyable year-round.

Assuming the poor connectivity between The Point and areas to the north and west can be addressed, the draft Trail Plan for the broader inter-neighbourhood region theoretically situates a potential Point Park as a convenient start/end point for longer distance trail adventures and loops in the surrounding area. The draft trail plan map is included in Appendix B.

2.6.3 Birding and Aurora Viewing

While most of the recreational activity at The Point in recent years has consisted of informal, spontaneous users enjoying the site for its seclusion and views, there are several recreation groups that frequent the site.



The Point is well used by bird watchers (Eckert, pers. comm., 2016) and is included in Yukon Bird Club publications as one of "10 Great Places to go Birding in Whitehorse" (Yukon Bird Club 2015). The location is an eBird hotspot and is included in the Whitehorse Christmas Bird Count. The Yukon Bird Club also organizes periodic field trips out to this site (Eckert, pers. comm., 2016).

Local aurora watchers and photographers visit the site due to its close proximity to urban areas, river and mountain vistas, and the relative absence of nearby light pollution as compared to other areas easily accessible by vehicle. While the late-night nature of this use makes it difficult to track, one useful indicator of its importance to local aurora watchers is recent discussion on social media around the City's recent gate installation (see sidebar).

While there is no current known use of the site for commercial aurora or wildlife viewing (Reynolds, pers. comm, 2017), the Project Team received anecdotal reports of visiting media being escorted there by local tourism officials to view the aurora and/or Yukon Quest International Sled Dog Race (Hnatiuk, pers. comm, 2017; Reynolds, pers. comm, 2017; Crowe, pers. comm, 2017). Local photographers are known to use the site both as a scenic subject and pleasing backdrop (Crowe, pers. comm, 2017).

The burgeoning aurora viewing tourism market may be a potential user for the site; however, Yukon Tourism staff noted that most tourists want more protection from wind and darker skies and are generally purchasing packages from lodges and bed and breakfasts located outside of the Whitehorse "light pollution zone" (Reynolds, pers. comm, 2017). However, with increasing numbers of Fully Independent Travelers (FITs) visiting the territory along with those purchasing package tours, the value of a highly accessible site that provides even a partial experience of viewing aurora (or simply recreating) in the wilderness close to a primary Yukon urban area should not be dismissed.

2.6.4 Range Point and City Recreation and Planning Context

The City of Whitehorse's Department of Parks and Community Development has primary responsibility for neighbourhood-level recreation amenities such as playgrounds, parks, and trails in Whitehorse. The City of Whitehorse Parks and Recreation Master Plan (2007) establishes a rough hierarchy of green space and parks as follows:

- Shipyards Park
- Rotary Peace Park

- Community parks
- Neighbourhood parks

While not technically referred to as such in the Plan, Shipyards and Rotary Peace parks constitute what are typically referred to as City-wide or City-level parks - ones that serve all residents and have special, destination-type amenities (i.e., the splash park, skating oval, and the Frank Slim building). The Plan doesn't specifically delineate the purpose and intent of the City's existing neighbourhood, community and City-level parks, but their primary focus is of a recreational and social nature and their size and degree of amenities (such as parking, etc.) correspond with their distance from residential areas and/or situation in central urban areas.

The City's 2010 Official Community Plan (OCP) includes a Green Space Network Plan that categorizes The Point area as an "Environmentally Sensitive Area" (ESA) based on parameters including high wildlife value, proximity to watercourses, forested slopes in excess of 30%, exposed slopes, and escarpment hazard areas. The ESA designation is intended to protect natural areas and minimize disturbance and development of them while promoting community enjoyment and limited interpretation. Within an ESA, community enjoyment of the areas is encouraged and activities such as trails, interpretation, signage, viewing platforms, research activities, and educational opportunities are permitted.

Increasingly, municipalities across Canada are providing more natural park settings as an alternative to urban parks, some of which include specific play structures. The City manages a few parkland areas where intrinsic natural values are given prominence, such as Bert Law Park.

Both the 2007 Parks and Recreation Master and 2007 Trail Plan are anchored around four guiding principles:

1. *Diversity* – The City recognizes the wide variety of recreational users and activities and is committed to accommodating a diversity of activities in a healthy, safe and respectful manner.

2. *Accessibility* – The City of Whitehorse recognizes a need to ensure access to recreational and leisure facilities (including trails) and programs for users of all abilities and economic means and is committed to increasing opportunities for its citizens to enjoy the benefits that these resources have to offer.

3. *Sustainability* – The City recognizes the importance of recreational and leisure facilities and programs to the liveability and sustainability of the City in a number of spheres, including active living/wellness, community building, fiscal responsibility, etc.

4. *Inclusiveness* – The City is committed to including the public in determining guidelines for community engagement, facility and program development, use and maintenance.

The evolution of the Range Point neighbourhood as a collection of primarily privately owned parcels has left a gap with respect to public recreational amenities for the neighbourhood. During the Range Point planning process, organizations and residents repeatedly identified the need for a public playground, expanded trail network, and community space or facility (such as a community hall). They also expressed a desire to develop The Point site as a community day-use area.

The resulting Plan recommended the current feasibility study as a step towards realizing those goals, as well as the creation of a linear park along Range Road - anchored by a paved trail – terminating at a proposed community gathering space north of Mountain View Place. While an estimated timeline for the linear park is specified in the Plan's implementation section, there are few specifics around the

community gathering space. Ideally, a park development at The Point and any other geographically or functionally linked Range Road Plan recommendations would be mutually supportive.

The relationship of The Point to McIntyre Creek Regional Park – one of five regional parks established in the 2010 Official Community Plan – also bears consideration here. Boundaries have not yet been formally established for the regional park, but it seems logical that The Point would be incorporated within them due to the fact that McIntyre Creek is a central, nearby feature.

2.7 Heritage

2.7.1 Historical and Cultural Context

The site traditionally known as Dàmäwtän ("high bank" in Southern Tutchone) after a First Nation fishing camp near the confluence of the Yukon River and McIntyre Creek, or "The Point", has a history encompassing several themes related both to Whitehorse and the wider region. McIntyre Creek (or Chasàn Chùa meaning "copper creek") and its associated wetlands and boreal forest is identified as a significant wildlife area.

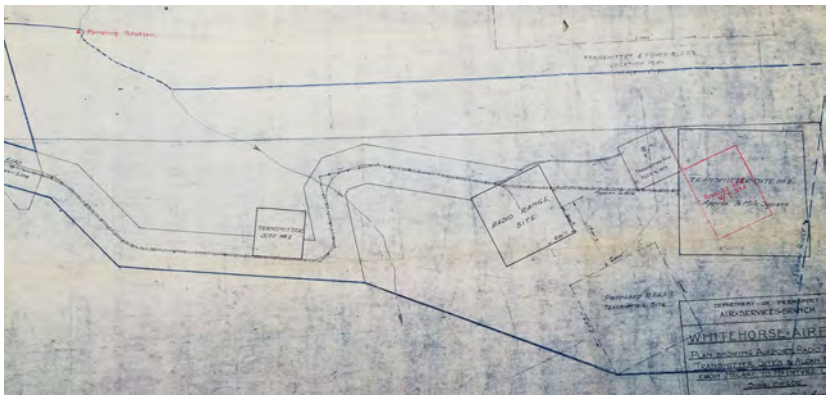
The Point is of particular importance to the two modern-day Whitehorse First Nations, the Ta'an Kwäch'än and Kwanlin Dün. The Ta'an Kwäch'än take their name from Tàa'an Män (Lake Laberge) which lies in the heart of their traditional territory. Ancestral lands extended north to Hootalinqua at the confluence of the Yukon and Teslin Rivers, south to Marsh Lake, west to White Bank Village at the confluence of the Takhini and Little Rivers, and east to Winter Crossing on the Teslin River. For many generations, the Kwanlin Dün people have lived along the Chu Nínkwän (Yukon River). The Ta'an Kwäch'än comprise people of Southern Tutchone, Tagish and Tlingit descent (Kwanlin Dun, N.D.; Ta'an Kwäch'an Council, N.D.). Both First Nations are linguistically affiliated with Southern Tutchone, although TKC has a distinct Lake Laberge dialect of the language (Cooke, pers. comm).

The Point played a key role as a First Nations gathering place, with many Southern Tutchone camping there both pre and post-contact. McIntyre Creek functioned as a major travel route between the Lake Laberge area and Fish Lake, which was an important fishing, hunting and camping area. The area around Point Park was the site of numerous fish camps near the mouth of McIntyre Creek and across to Croucher Creek. Another major fish camp was located at the confluence of the Yukon and Takhini Rivers, a reasonable day's travel distance away. Archaeological remains found on high banks at the mouth of McIntyre Creek suggests that this was an important prehistoric look-out and hunting site.

A wide, shallow section of the river just north of The Point, known as "Big Bend" from the sternwheeler era, is an important waterfowl staging area and a traditional First Nations fishing area. There are three known archaeological sites located within the area; however, there may be many other significant archaeological sites in the proposed park site and its environs. Post-contact, First Nations were removed from important fishing sites, often ending up in less productive sites such as the McIntyre Creek wetlands.

Navigation on Yukon's waterways was an essential mode of transportation both during the gold rush and after. The British Yukon Navigation Company (BYNC), a division of the White Pass and Yukon Route railway, controlled sternwheeler traffic on the Yukon River, giving it a virtual monopoly on commercial transportation (Midnight Arts 1999). The *Prospector* was a typical BYNC sternwheeler. Built in 1901, she was a wooden sternwheeler constructed by Emil Stauf, H.E. Ridley and William Meed for the Stewart River Company and later acquired by BYNC.

A typical Yukon River barge, likely similar to the *Carmacks* (Yukon Archives)

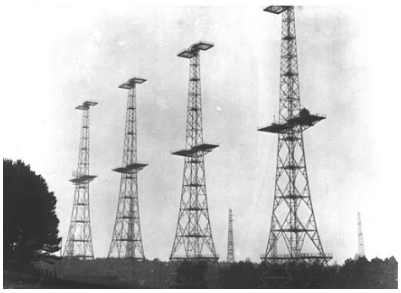


1943 plan showing the location of the radio transmitter sites and the route of McIntyre Creek (Yukon Archives)

Even a large cargo carrying sternwheeler often pushed a barge in order to move sufficient quantities of mining ore, supplies and other freight. Sternwheelers such as the *Prospector* and barges such as the *Carmacks*, two of the many shipwrecked company vessels in the Yukon River, were often subject to grounding and wreckage on sand bars. A wreck site visible from The Point at low water was originally thought to be the *Prospector* but has since been confirmed to be the *Carmacks* (Hare, pers. comm). The site consists of artifacts scattered around the small islands.

Another fascinating chapter in the proposed park site's history involves communications. The Northwest Staging Route for air transport and travel was a major wartime logistical project in northwest Canada, developed through the co-operation of the Canadian and American governments. In 1935, the Canadian Department of Transport initiated a survey of alternate air routes to Alaska that could become part of a circle route to the Orient. Airfields were planned at Grande Prairie, Fort St. John, Fort Nelson, Watson Lake, and Whitehorse.

The Japanese attack on Pearl Harbour in December 1941 precipitated a frantic rush to protect the remote coast of Alaska. During the war, aviation became even more important. The original Whitehorse airport was enlarged and the American army set up their own floatplane base on the waterfront north of town. Construction of the Alaska Highway also revolutionized transportation in Yukon, with the American army using Whitehorse as its headquarters for the highway construction project. The area near The Point was the location of a radio range transmitter site, significant because the adoption and installation of radio beacons made all-weather flight – not just visual navigation – possible during the war.



The former Range Road dump site was established by the United States Army at the present location of the proposed park. The site was originally used as a disposal site by U.S. and Canadian forces during World War II, when little concern was given to environmental waste and pollution. The dump site was closed in 1945 after the demobilization of the U.S. Army, but was subsequently re-opened by the City of Whitehorse as a

municipal landfill in the 1950s. Dumping continued at the site throughout the 1960s. In 1968, a large volume of refuse slid down the west-facing bluff into McIntyre Creek, resulting in the construction of a berm to re-route the affected portion of the creek and isolate it from its original debris-filled stream channel. In 1975, the Yukon Water Board ordered the dump closed, and all dumping operations ceased in November 1975.

The importance of McIntyre Creek and the Point Park area is evident through citizen concern for its future. At least since the early 1990s, numerous groups have organized clean-up work throughout the watershed, including helicopter- assisted removal of large-scale material, often in conjunction with biological assessment work.

Range Road dumpsite circa 1960s (Yukon Archives 85-25-595)

2.7.2 Summary of Heritage Values

The Point area, also identified as Dàmäwtän (High Bank), has cultural, historical, scientific and social significance particularly related to its use by First Nations, cultural traditions, past land uses, cultural traditions, ongoing community stewardship and ecological interconnections.

The value of the place for First Nations extends beyond The Point as an individual site to the larger context of a number of sites that related to the ongoing broader occupation, travel and use of the wider region.

The significance of the proposed park site is found in its role as an important gathering place, traditional fishing and hunting area, and as a fish camp for many Southern Tutchone people, both pre and post-contact, and one of a system of numerous fish camps around the creek mouth and across to Croucher Creek area. Its importance stems from its communal use by people across the broader southern Yukon region. The fish camp was located on McIntyre Creek, a key travel route between Lake Laberge and Fish Lake, and was associated with another major fish camp at the confluence of the Yukon and Takhini Rivers, strategically situated a reasonable day's travel away.

The site was particularly important for its concentration of food sources, including spring waterfowl and abundant fish, a geography that created an important choke point to facilitate game hunting, and suitability as a camp.

The study area's historical significance is found in its archaeological values (both those of recognized sites and potential future sites needing to be identified and recorded) and the wealth of traditional knowledge pertaining to the site. Lithic artifacts found at the site indicate a long history of First Nations use.

The site is important for its evolved historical associations, including Ta'an Kwäch'än and Kwanlin Dün use for hunting, fishing and camps, its relationship to the history of sternwheelers on the Yukon River, and the impact of World War II infrastructure development, including its use as a high point for aircraft radio transmission and the past disregard for the impact of refuse dumping at the site.

The site is representative of the larger story of First Nations culture, land use and land occupation becoming integrated with or displaced by, post-contact land uses. At The Point, these include mining and resource extraction, historical transportation

connections to the sternwheeler era on the section of the Yukon River known as Big Bend, landfill and industrial uses, and the installation of radio range transmitters by the military during World War II. The submerged remains of a Yukon River vessel wrecked on a sand bar in the river below the site is one reminder of these past site uses.

The study area is part of the post-World War II development pattern outside of the Whitehorse city core, in which new modern subdivisions gradually took over lands traditionally used by First Nations people. It is also situated within the broader context of late 20th century land claims in the Yukon and signing of Final and Self-Government Agreements by the Whitehorse-area First Nations in 2002 (TKC) and 2005 (KDFN).

The Point is valued for its teaching potential and educational benefit, particularly for its integrated cultural and natural history values. Its recreational value lies in the aesthetic appeal of its natural features, including the high bluffs, significant views, wetland ecosystems and McIntyre Creek, as well as its solitude and potential for exploration through low-impact trails, and as a site for viewing events such as the Yukon Quest.

The Point has very significant scientific importance on a number of levels, seen in part in the ecological connectivity of the McIntyre Creek wildlife corridor, the extensive wetlands, the Yukon River and surrounding watersheds. These values include wildlife habitat for game animals; its location along a migratory route for birds, with eagles, ravens, bank swallows and other birds in the cliffs around the mouth of McIntyre Creek; early spring waterfowl staging habitat; abundant Chinook salmon and other fish life; and unique plant life. The area is representative of a typical boreal forest and its associated natural history values, vegetation, and wildlife that includes year-round habitat for moose, bear, and other significant mammals. Also ecologically important are the adjacent islands, a feature of the Yukon River found in only a few places in the Whitehorse area.

The site is important for its potential to play a role in the increased natural permeability of the city and wildlife viewing within a relatively urban area. Point Park represents a disturbed site that has the potential to be restored to its previous ecological importance and sensitivity.

Spiritual significance is found in the traditional knowledge of Elders, for both past traditional uses and more recent history.

High social value is found in the continuing clean-up efforts by First Nations governments, Government of Yukon, the City, volunteers and others, and the evidence of community stewardship as part of the modern history of Ta'an Kwäch'än which demonstrates the significance of the site to them and Kwanlin Dün. The strong interest by governments, citizens, organizations and stakeholders to see the site converted to a park emphasizes its importance to both the local a wider community, and its potential to be an area of the river that can be protected in its natural state despite ongoing nearby development.

Point Park has been used for millennia by First Nations, and is currently appreciated for its views, wildlife viewing and contemplation. Its value lies in part in the integrity of the rehabilitating ecology, the commitment of the community to its ongoing clean up, the belief that its past physical disturbance can be mitigated, and its potential to become a significant park open space for the surrounding neighbourhoods and as a destination for the wider city and region.

Please refer to Figure 3 for an overview of The Point's cultural landscape features, the "building blocks" for future interpretation and site-sensitive park development.

Figure 3. The Point Cultural Landscape Features

Natural systems and features

- Geography of high bluffs around McIntyre Creek with level ground at the top
- Boreal forest ecosystem
- System of watersheds: McIntyre Creek, Yukon River and islands, connected streams
- Big Bend
- Wildlife habitat
- Migratory route for birds
- Salmon and fresh water fish habitat
- Wetland ecosystem
- Landfill elements that have become habitat

Spatial organization

- Site surrounded on three sides by water
- Access by Mountain View Drive and Range Road
- Location in proximity to neighbourhoods such as Whistle Bend and Range Point
- Location near area of singletrack trail development

Land use

- Evidence, historical documentation and oral tradition of past land uses
- First Nations gathering and fish camps
- Harvesting sites
- Copper mining and exploration
- World War II military use
- City landfill
- Re-establishing ecosystems
- Community recreational uses – walking, cycling, boating, fishing

Cultural traditions

- Traditional territory and important gathering place of the Ta'an Kwäch'än and Kwanlin Dün First Nations
- Stories of past use of the site by First Nations

Archaeological sites

- Numerous sites in and around the study area
- The underwater Barge Carmacks wreck site
- Artifacts dispersed amongst Yukon River islands
- Numerous potential and as-yet undocumented archaeological sites
- Potential for industrial archaeology

Circulation

- Currently used trails
- Walking route from parking lot to bluff point
- Roadways
- McIntyre Creek as human and wildlife corridor
- Traces of original trail patterns
- Site access roads from highway
- Current entrance gate blocking vehicle access
- Potential bridge crossing over McIntyre Creek
- Route of the Yukon Quest that runs below the site
- Location of sternwheeler route on the Yukon River

Topography

- High escarpments and river-eroded slopes
- Stepped slope from upland down to river foreshore

Vegetation

- Re-established grassland
- vegetation
- Wetland vegetation including sedges, cattail
- Forest including spruce, fir, and pine trees
- Understorey shrubs
- Medicinal and food plants

Buildings and structures

- Location or evidence of disappeared buildings and structures
- Campsites and shelters
- Hunting, fishing, fish processing infrastructure
- Food or material caches

Views and vistas

- Views to the Yukon River and surrounding mountains
- Views to the wetland and up McIntyre Creek
- Views across grassy slopes
- View of point from parking area
- Views of the site and into the forest from the trail system
- Visual connection to Whistle Bend and Eagle Bay Park

Spiritual sites

- Locations of stories and legends (to be verified by Elders)

Small-scale features and artifacts

- Buried landfill material or possible heritage resources
- Ruined vehicles and other larger-scale debris that show the site's past use and deterioration
- Evidence of bank stabilization structures using natural materials

Intangible experiences

- Stories of Ta'an Kwäch'än and Kwanlin Dün (to be verified by Elders)
- Site sounds such as bird life, creeks, wind in the grass

2.8 Public Safety

2.8.1 Dump Operations and Cleanup

The Range Road dumpsite was officially closed in November 1975 after the Yukon Water Board ordered the City to cease operations due to ongoing contamination of McIntyre Creek. Government of Yukon records note that waste was frequently burned and pushed over the bank. A 1992 study concluded that most of the waste was covered with an earthen cover, presumed to be derived from down cutting the top of the bluff/plateau and importing of material to the site (Stanley, 1992). The report estimated that down cutting may have been as extensive as 1-3 metres and that 4-6 metres could be expected near the edge of the bank. The large volume of wastes was observed to have broadened the bluff by 50-100 metres along its east-west axis; furthermore, the soils most likely to be heavily contaminated were presumed to have been down cut and pushed over the Yukon River and McIntyre Creek banks as cover (Ibid).

Cleanup activity was initiated in the 1990s, with nominal efforts to bury waste material hindered by uncertainties over the responsible parties (EDI 2010). Records of grassroots volunteer cleanup efforts by groups such as the Yukon Conservation Society extend back to the early 1990s (YCS 1991) and these efforts were reportedly supported with in-kind staff and equipment donations by the City of Whitehorse (Hnatiuk, pers. comm, 2016). The Government of Yukon record indicates that the site was deemed to not pose an environmental hazard or health risk by the federal government in 1999 (pre-devolution of federal lands to Yukon) and that the debris remaining on site at the time impacted aesthetics only

Ta'an Kwäch'an Council (TKC) initiated further cleanup and protection of the site in 2005 and remained active in this role until 2010. The process is well documented in "Range Road Dumpsite: Summary of Reclamation Works, 2005 to 2010" (EDI, 2010). The first two years were devoted to stabilizing the banks and channel along the south side of McIntyre Creek. Debris was hauled out of riparian areas of both the creek and river in 2006 and 2007 by hand, machinery, and helicopter. Large exposed waste was removed from the western bluff overlooking McIntyre Creek in 2008 and 2009, after which the area was re-contoured, capped with organic rich fill material, and revegetated.

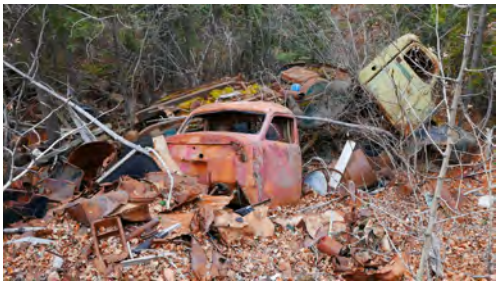
2.8.2 Landfill Debris

Considering the enormity of the challenge, it is little surprise that some debris from the former Range Road landfill remains throughout the site. The debris consists primarily of small assemblages of miscellaneous garbage, tires, scrap metal, and car bodies. While there are minor visual signs of garbage throughout the site, there appear to be four areas of higher debris concentration:

1. *Yukon River shoreline* – a section of shoreline approximately 150 metres long is littered with small items of debris evident even at higher water. At lower water, many tires are visible in the foreshore area.

2. *West-facing escarpment near Range Road* – an assemblage of scrap metal, cans and car bodies is located about 10 metres below the edge of the escarpment trail close to Range Road and occupies about 150 m^2 of the slope. The debris is highly visible from the trail but does not intersect it.

3. *Northwest facing escarpment near mouth of McIntyre Creek* – a mixed deposit of scrap metal, cans and car bodies similar to #1 is located about 10 metres on the steep northwest facing slope of the escarpment closer to the mouth of McIntyre Creek and occupies an estimated area of 130 m^2. The debris is not readily visible from the edge of the upper plateau and there are no trails intersecting with it.



In addition to these pockets of debris concentration, tires can be sporadically seen in the artificial pond and McIntyre Creek mouth areas. Several car bodies are embedded in the escarpment and visible from McIntyre Creek level as well.

With the exception of the Yukon River shoreline issue, these debris concentrations are not readily accessible by the public and pose no legitimate hazard. The plateau and west-facing slope, the only terrain that is conducive to potential integration into a park development (aside from the creek area), have been cleaned up, re-graded, and in the case of the slope – successfully revegetated. There is the possibility of small articles of debris "daylighting" and posing a tripping hazard.

The Project Team was unanimous in its opinion that the site was not adversely compromised by the intermittent appearance of former landfill debris. In fact, Team members felt the visual cues served as an

authentic reminder of the site's past use and that the conventional tendency to "beautify" public park spaces should be curbed somewhat here for the sake of authenticity and education.

2.8.3 Site Contamination

Despite The Point's former landfill function, it does not fall under the *Yukon Solid Waste Regulations*, nor is it designated a contaminated site under the *Yukon Contaminated Site Regulations.* Nonetheless, the Yukon Department of Environment does maintain an electronic and hard copy file pertaining to the site.

Testing of the site appears to have been focused almost exclusively on ground and surface water (please refer to Section 2.5.3) with results yielding no significant concerns. There is no mention of soil sampling having been conducted at the site in either Government of Yukon records or consultant studies.

2.8.4 Safety and Security

Illegal dumping has been an ongoing challenge at The Point site in recent years, with the City and community groups responding with short-term clean-up efforts. The lodgepole pine forested area adjacent to the road effectively screens views to the unvegetated portion of the plateau, providing seclusion and privacy but also compromising safety and security in that portion of the site. The Point's distance from residences means that there is little to no incidental monitoring. The recent installation of a heavy-duty gate at the entrance by the City should significantly curtail, if not altogether eliminate, illegal dumping and partying activity at the site. The reality is that broadly shared and understood values and a positive "culture" are not yet fully established for the site.

3.0 Issues, Constraints, and Mitigation

3.1 "What we Heard"

Interviews conducted with the two First Nation governments, various organizations, and City staff revealed a strong attachment to The Point site and care and concern for its future. These values were affirmed during a public Open House held on November 23, 2016 that attracted about a half dozen neighbourhood residents (please see Appendix C for detailed input). The following section highlights the results of those discussions and the issues and concerns communicated to the Team.

THE POINT: KEY VALUES & ATTRIBUTES

The key values and attributes communicated by governments, organizations, and the public to the Study Team include:

- The connection of local First Nations people to the site and its role as a focal point of hunting, gathering, subsistence and intra-regional travel
- Ecological role as an urban migration corridor and habitat for fish, migratory waterfowl, and other birds
- The incredible 360° views
- Uniqueness of the escarpment feature
- A semi-wilderness experience close to urban areas
- A living example of nature's resilience and both human neglect and stewardship of the environment
- Concentration of archaeological, heritage, and historic values

Relationship of First Nation people to the site

- It is important that park development recognizes and teaches others about the long-term occupation of the site by First Nation people
- A new park must avoid repeating the historical pattern of displacement of First Nation people from traditional areas

Ecological protection and health

- Some concerns were raised about residual garbage at the site and contamination still being present
- Some interviewees felt that a park should not be developed in a manner that jeopardizes ecological integrity of the McIntyre Creek corridor; in fact, most stressed that ecological protection and function should be the first priority, and recreation a secondary one
- There were some concerns about interference with wildlife movement through the McIntyre Creek corridor
- It was noted that the migratory waterfowl that utilize the Yukon River shoreline in the study area are particularly sensitive to human presence
- One interviewee noted that this portion of the McIntyre Creek corridor is more sensitive than others and recreational attention may be best focused in "Middle McIntyre"
- Some expressed concern that the steep and unstable slopes are not conducive to recreation.
- Trail development should avoid creating further disturbance and consideration should be given to reclaiming some trails when new ones are developed

Relationship of Point Park to Regional Park planning

- Several interviewees noted that the relationship of The Point to the proposed McIntyre Creek Regional Park has yet to be defined, or even its inclusion within park boundaries confirmed. It was felt that further advancement of the park should wait for this broader planning process to identify where recreational nodes should be located in the McIntyre Creek corridor at a broader scale, and

General notes:

- Intermittent evidence of historic dump debris throughout site
- High potential for archaeological and cultural features
- Creek functions as a wildlife corridor with potential for increased human-wildlife conflicts

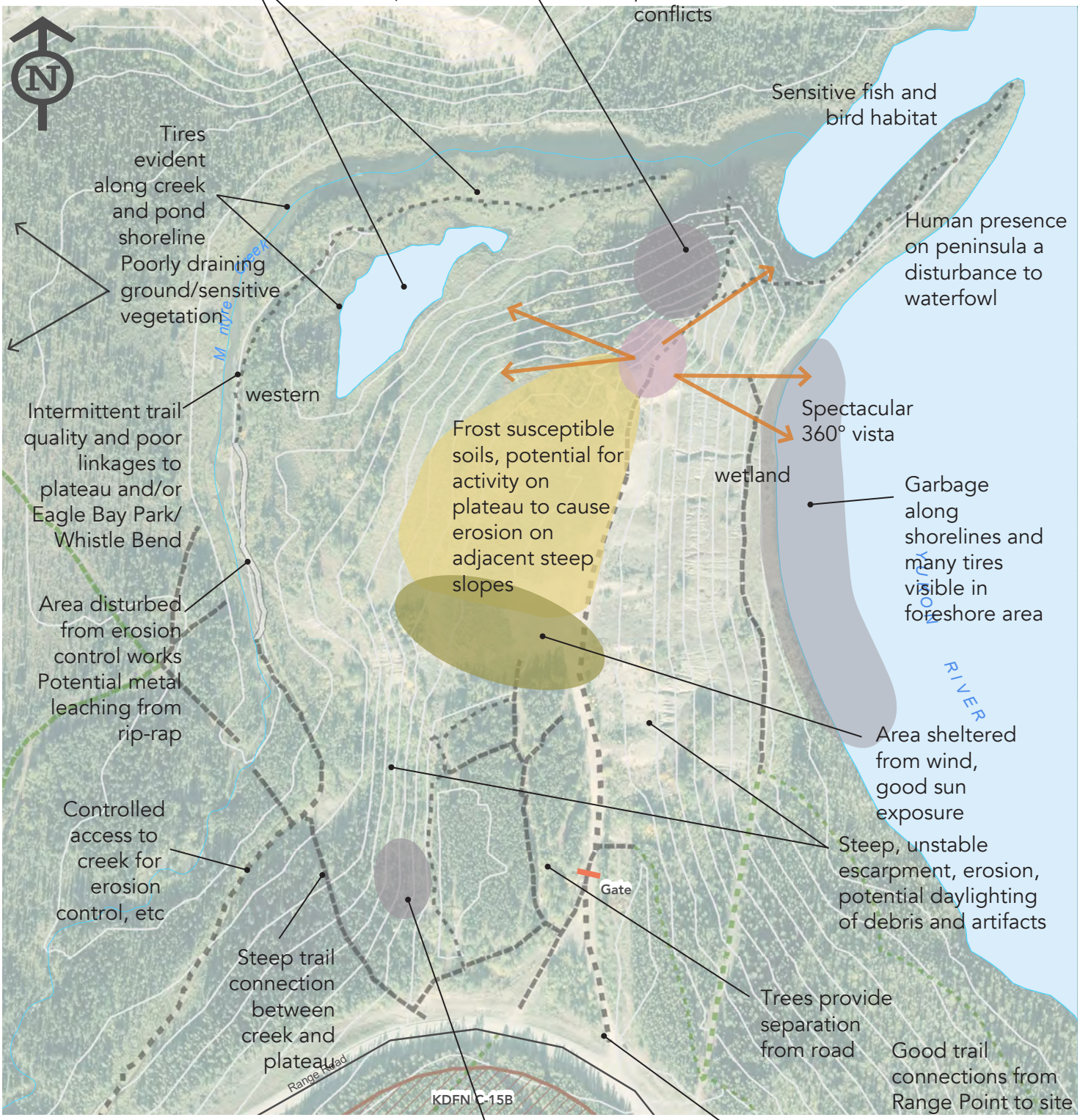


Figure 4.
Site Analysis

by extension – what this specific site can and should offer.

Potential impacts on heritage values

- Concerns were raised about the potentially high concentration of archaeological and heritage features in the area and potential impacts from increased human presence in the area and/or park development
- Some concerns were raised about the potential for historic debris and/or archaeological features to "daylight" from the steep escarpment slopes. The protection and recording of archaeological features is particularly important to the First Nations

Maintaining the site's natural character

- Several interviewees expressed concern that the City would create a typical municipal park at this location that would detract from its ecological values and tranquil character; "don't create a playground in the middle of nowhere"
- When the topic of commercial activity as a park amenity was raised, reactions ranged from hesitation to scepticism. Some felt that commercial development might not be appropriate and could detract from the experience of the place

Site safety, security, and maintenance

- There were some concerns that illegal dumping, vandalism and partying would persist at the site and changing the "culture" would be challenging. Several neighbourhood residents commented on the illegal dumping, as well as other potential illegal activities (i.e. drug deals).
- The City has some concerns about the financial and human resources capacity for ongoing park maintenance and security after dark

Site aesthetics

- One interviewee raised concerns that the site is still too disturbed for development as a park and that the City would be challenged with managing visitor expectations.
- There were several comments about the site being negatively impacted by visible residual debris

3.2 Key Site Constraints and Mitigation

3.2.1 Geotechnical and Terrain

The key terrain and geotechnical development constraints for the Point Park study area are:

- **Escarpment instability caused by the vertical flow of surface water** through the loose sandy sediments and interruption by the low-permeable silt soils. Daylighting of this flow can cause increased rates of erosion and surface sloughing, along with increased potential for slope failure. Along the slope overlooking the Yukon River on the east edge of the study area, numerous erosion gullies and surface sloughs can be observed and seasonal freezing and thawing of the exposed slopes has had an adverse effect. Since the sloughing is usually initiated by the flow of surface water, the soils within the surface sloughs are usually wet, soft and unstable, making construction of paths, access roads and structures problematic;

- The **frost susceptibility of glaciolacustrine soils** throughout the site; and,

- The **"daylighting" of debris** buried during the dump site reclamation is a possibility. Repeated seasonal frost cycles can bring debris to the surface if the depth of burial is minimal. For frost heave to occur, there has to be cold temperatures, frost susceptible soils and excess moisture (which will result in the formation of ice lenses). Since the dump site reclamation work has been successful in not only creating positive drainage off the slope but establishing vegetation along the entire slope overlooking McIntyre Creek, the soils along the slope have a better chance of not becoming saturated; therefore decreasing potential for frost heave and the subsequent daylighting of debris.

Seepage zones causing the slope stability concerns described above should be managed to ensure they don't become a development constraint. This can be accomplished by ensuring the following measures are followed:

- **Proposed development should remain near surface** so any seepage zones along the aeolian sand/glaciofluvial silt interface are not exposed during construction;

- **Avoid disturbing all tree, brush or grass ground cover** along the edges and on the slopes of all escarpment areas;

- **Construction setbacks** (buildings or viewing platforms) on the plateau should also be considered as increased surface water runoff (off roofs and decks) has the potential to destabilize the escarpment;

- **Avoid uncontrolled sideslope excavation** along the escarpment edge; and,

- **Avoid excavations along the toe of the escarpment**, especially along the Yukon River where there is significant evidence of instability.

The geotechnical Study Team member, Tetra Tech, has completed terrain risk studies along the escarpment overlooking downtown Whitehorse, the Northern Urban Containment Boundary area (five proposed bridge crossing locations), and along Wickstrom Road near Long Lake. Typically, Tetra Tech recommends a 60 metre buffer from the crest of the escarpment in areas mapped as high hazard areas (areas where sloughing has occurred or evidence of instability exists as with the portion of the escarpment section of the park site overlooking the Yukon River) and 30 metres in areas mapped as moderate hazard areas. Given the size of the plateau area, applying these setbacks would leave very little room for park development at The Point; as such, the Team feels that these setbacks can be relaxed on the condition that the access road, entrance and parking areas are graded to avoid surface water run-off towards the crest overlooking the Yukon River. Site grading should direct gradual flow towards the vegetated, re-graded western portion of the site, or back towards Range Road where lodgepole pine forest cover suggests the presence of an aeolian sand blanket.

Enhancements to the gentler upper section of the slope facing the Yukon River are also recommended. Proper "track walking" with a tracked excavator to establish cleat tracks that run perpendicular to the slope (excavator must be driven up slope to accomplish this) will re-grade the erosional gullies already formed and help create greater stability along the escarpment slopes. The area can then be reseeded before rills caused by rainfall become new erosional gullies. Since erosion and instability has resulted in sloughing soil deposition along the toe of the escarpment beside the Yukon River, the City of Whitehorse should be prepared to monitor the area and maintain safe conditions.

Along Whitehorse streets where frost heave damage can result in costly repairs and disruption to personal and business travel, Tetra Tech typically recommends 1.7 metres of non-frost susceptible

structure below paved and concrete surfaces. In lower risk areas such as large parking lots for commercial properties or on private property, the cost of this level of construction is not always justified. For these projects, a reduced structure of between 600 mm and 1000 mm (if soft subgrade conditions exist) is often recommended. A similar rationale can be considered for park development. For hard-surfaced areas within the park, the pavement structure should include 75 mm of asphalt, 150 mm of crushed basecourse gravel, and at least 375 mm of sub-base gravel constructed over a properly prepared subgrade surface. If the access road and parking areas are to remain gravel surfaced and designed for light vehicle traffic, 350 mm of sub-base gravel and 150 mm of crushed granular basecourse gravel constructed over a properly prepared subgrade should suffice. From a geotechnical perspective, minimal granular structure (75 mm of crushed basecourse gravel) is suggested where silty subgrades are exposed in order to minimize rutting that may allow the flow of surface water.

If a building is proposed, conventional foundation systems (strip and spread footings, thickened monolithic slab-on-grade, or helical piles) are all considered appropriate foundation options for any potential structures on the site. The main concern will be construction on frost susceptible soils. It is recommended that a drilling program be completed to establish soil conditions throughout the proposed building location to establish bearing resistances for foundation design and insulation requirements to protect the structure's foundation. This process is also recommended for all permanent structures constructed throughout the park, including bases for interpretive signage and other elements that may require concrete foundations. If access to some locations is problematic, conservative recommendations can be provided on the basis of any geotechnical evaluation undertaken for the plateau area.

3.2.2 Wildlife and Ecology

The key wildlife and ecological values associated with The Point, including Lower McIntyre Creek and the McIntyre Creek – Yukon River confluence, include the following:

- **Aquatic habitats:** the Yukon River and McIntyre Creek provide habitat for a number of fish species, including Chinook salmon. These areas also seasonally support large numbers of bird species, in particular, the McIntyre Creek – Yukon River confluence provides important spring staging for swans, ducks, and other water birds. As a result of these seasonally abundant prey species, the area also has a relatively high concentration of raptors, including bald eagles and a variety of hawks, accipiters and falcons.

- **Connectivity through the McIntyre Creek area:** although the area is surrounded by urban development and is intersected by several major roads (e.g. Alaska Highway, Mountain View Drive, Range Road) and numerous trail systems, the McIntyre Creek corridor represents a semi-contiguous stretch of habitat connecting the Yukon River corridor with areas west of the city. Relatively intact natural ecosystems along certain stretches of the corridor, including the area around the proposed park, support a variety of plant and animal life, including both resident wildlife (generally smaller species such as squirrels, birds etc.) and wildlife that move through the area.

While the natural values associated with the proposed park location provide several opportunities for park development, further development of the area does present some concerns for wildlife and ecosystems currently present. Key among these concerns are potential effects to aquatic habitats (leading to effects to fish and other wildlife using these habitats), and disturbance to wildlife using the

area, particularly to staging waterfowl in the spring; and potential wildlife-human conflicts. Specific concerns include:

- **Trail development could affect riparian vegetation**, increase streambank erosion and increase sediment mobilization into waterways (affecting water quality). Bridge footings or piers could affect instream fish habitat;

- **Increased human presence could lead to increased disturbance to staging waterfowl** in the spring. Staging habitats are critical to the successful migration of birds that use these areas to rest and feed before continuing on their migration; and,

- **Increased human presence could also lead to an increased potential for wildlife-human conflicts**. Previous studies have documented the presence of bears, coyotes, foxes and moose in or moving through the McIntyre Creek corridor.

To help minimize negative effects of the potential park development on wildlife and ecosystems within the study area:

- Outside of the main access road and parking area, **the park and any associated trails should be designed for non-motorized use only**. Controlling motorized access, particularly in the lower elevations along McIntyre Creek and the Yukon River, will help minimize wildlife disturbance;

- **Concentrate development on the upper plateau** to minimize habitat loss and potential wildlife interaction;

- **Any trails or bridges should be designed and built in a manner that avoids impacts to fish habitat**. This includes both limiting trail development on stream banks (that could directly affect streambank stability) and proper design in upslope areas (to prevent mobilization of sediment to downslope areas). Trails and other developments should be designed to minimize the potential for erosion, and trail construction should incorporate erosion control measures and run-off capture, where needed. A bridge across McIntyre Creek should be constructed as a clear span bridge to minimize effects to in-stream fish habitat;

- To minimize effects to staging waterfowl, **avoid trail development around the mouth of McIntyre Creek and the narrow peninsula** south of the creek mouth. An informal singletrack trail currently exists in this area; however, it is recommended that park development not attempt to improve this trail or promote access into this area;

- **New trail development should focus on upland areas and limit disturbance to riparian vegetation**. The McIntyre Creek Wildlife Corridor Assessment (EDI 2011) recommended that development (i.e., buildings, roads, etc.) be restricted within a minimum 250 metre wide corridor centered on McIntyre Creek, and that recreational trails within this buffer be limited, to help minimize effects to wildlife moving through the area. Focusing trails on upland habitats will also help limit the potential for human-wildlife conflicts;

- Prior to trail development near marsh or pond habitats, **pre-clearing surveys should be conducted for leafy thistle**. Trail design should avoid these plants to the extent possible; and,

- **Conduct any vegetation clearing outside of the bird nesting season** (1 May to 31 July). If clearing cannot be avoided during this period, pre-clearing nest surveys should be conducted and

any active nests located during the survey must be protected within an appropriate no-disturbance buffer until the young birds have left the nest.

Lastly, the issue of potential metal leaching from riprap in McIntyre Creek should be investigated:

- **Test the riprap rock** for potential to produce acid drainage and leach elevated metals concentrations into McIntyre Creek and the Yukon River.

3.2.3 Recreation

While the development of a park at The Point will increase the accessibility and enjoyment of the site to a broader spectrum of recreational users than the site is currently serving, careful thought must be given to ensuring that current "positive" uses – chief among them scenic enjoyment, quiet contemplation and aurora viewing – are not inadvertently impacted or displaced. One of the biggest challenges will be in balancing the competing needs of night-time access to the site and security. To protect the existing recreational values:

- **Design any security and safety lighting to minimize night-time "light pollution"** for aurora viewers;
- Maintain spaces for people to seek out **semi-private enjoyment of the views**;
- **Site any structures and/or parking so as to not obstruct views**; and,
- Facilitate **winter night-time use with user safety and comfort** in mind and pursue creative options to ensure aurora watchers can either seek shelter with park amenity features and/or have convenient access to their cars.

A park at The Point could help to address the current gap in public recreational amenity space in the Range Point neighbourhood, and any park development scheme should at least partially address local needs and remove potential barriers to use and enjoyment as follows:

- Ensure that a Point Park **fulfills some of the functions of a neighbourhood-level park**; and,
- If possible, integrate the site with the proposed Range Road linear park by **extending the proposed paved pathway running along Range Road to the site**.

While there are good quality trails linking to the site from Range Point from the south, there are only marginal linkages beyond to the north and west. The current trail offer at the site is minimal and attracting visitors to the site (not to mention the growing nearby Whistle Bend population) will inevitably result in self-directed exploration and resulting ad-hoc trail development. Some of the existing trails are informal, while others are sited in poorly draining ground and may not withstand increased use successfully. The glaciolacustrine soils at the site have the potential to hold moisture and result in trail wear-and-tear during the shoulder seasons (particularly on north-facing slopes with less solar exposure). Attracting trail recreationists to the site also has the potential to create conflict between more active (i.e., higher-speed) users who may simply be passing through enroute to other recreational opportunities and visitors whose primary objective is to experience the site itself, likely at a slower pace. To successfully mitigate these issues and constraints:

- **Consider constructing a bridge across McIntyre Creek** and design for non-motorized use only;

- Provide **short/easy and slightly longer/more challenging loop route options** starting/ending from the plateau and promote them with easy-to-read, attractive maps and signage;
- **Construct and upgrade trails in accordance with** the International Mountain Bike Association **best practices**, ensuring proper drainage and outslope and **implement trail hardening measures** to avoid tread degradation in low-lying areas and north-facing slopes; and,
- **Manage multiple user types with signage** emphasizing respect for the natural environment and fellow recreationalists, the **creation of "slow zones"** in the creek area and any connecting trails, and **direct higher-speed "through users" to the periphery** of the site to access the McIntyre Creek bridge.

To assist in the City's consideration of connections between The Point and Whistle Bend/Eagle Bay Park, the Project Team assessed the feasibility of a bridge crossing of McIntyre Creek (please refer to Appendix D). Two potential crossings were reviewed – the first being situated at a high eastern bank and the second approximately 125 metres further upstream along the riprap bank. Please refer to Figure 4.

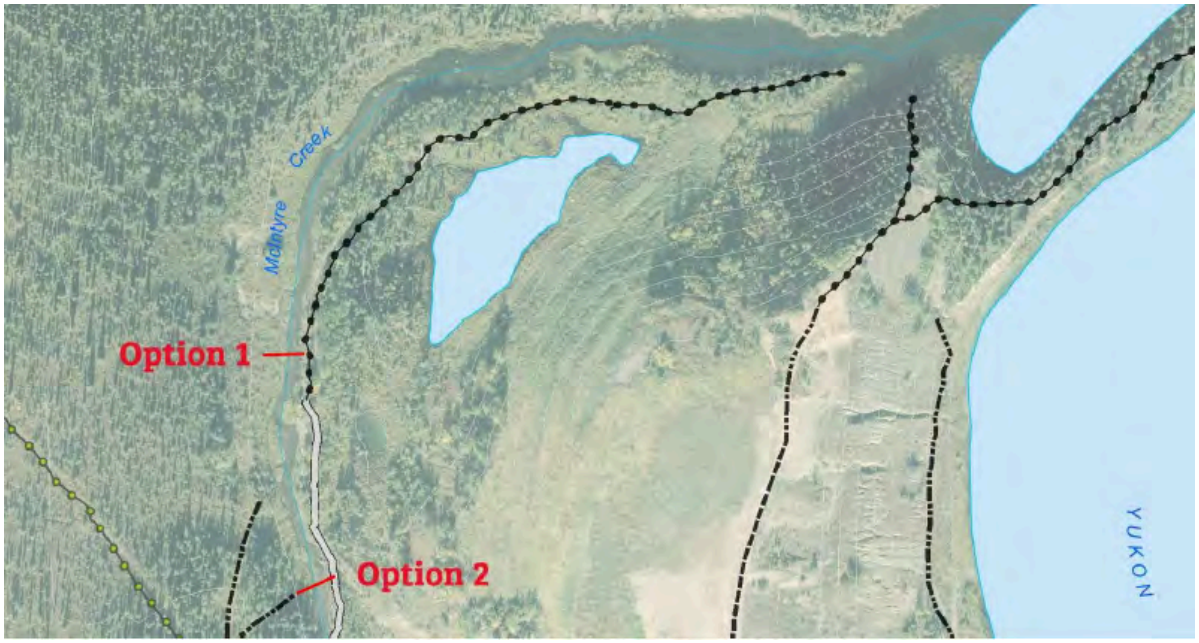


Figure 5. Potential Bridge Crossing Locations at The Point

Both crossing locations were deemed to be suitable of supporting a clear-span truss-style bridge with an estimated span of about 34 metres. A piled foundation was generally recommended, although there may be merit to a spread-footing on top of the riprap berm at Location Option 2. Option 2 is preferred from a connectivity standpoint; however, more detailed geotechnical investigation would be required prior to a final crossing selection and/or detailed bridge design. A very preliminary cost estimate of $500,000 was made on the basis of similar projects in western Canada (Shaper, pers. comm).

The other issue potentially impacting recreational enjoyment of the site is site aesthetics. To mitigate this issue:

- **Continue clean-up efforts in high visibility locations** within the viewscape of key trails, activity nodes and viewpoints; and,
- **Consider opportunities to integrate** difficult-to-remove **large debris** (i.e., cars) **into trail design** to create unique, memorable features.

3.2.4 Heritage

Potential impacts on the site can be mitigated during park development by ensuring that the heritage values and defining cultural landscape characteristics that support those values are fully understood and integrated into planning and design. Application of the *Standards and Guidelines for the Conservation of Historic Places in Canada*, interpreted for the unique situation of The Point, can assist in mitigating impacts at the site and help conserve its heritage values. Particular standards that apply to the site include:

- **Conserve changes** to a historic place that have, over time, become characteristics of the site in their own right;
- Conserve heritage value by adopting an approach calling for **minimal intervention**;
- Recognize each historic place as a record of its own time, place and use, and **do not create a false sense of historical development**;
- Continue to **record and protect archaeological features and values** throughout the site and ensure the long-term use and occupation of the site by Ta'an Kwäch'än Council (TKC) and Kwanlin Dün First Nation (KDFN) is recognized and understood by park visitors;
- **Integrate interpretive features** into the park planning and any design features by **continuing heritage work in the planning and design phases** of the project, and linking to the Whitehorse Waterfront Heritage Project being led by KDFN;
- **Deter vandalism** of archaeological and natural features, park elements and interpretive installations **through education and by encouraging a sense of ownership**, appropriate use and protection; and
- Ensure park planning includes **design elements to manage site visitation to protect cultural landscape elements**, such as discrete fencing, clear trails and trail markings, setbacks from escarpments, and information about sensitive areas.

Care should be taken not to site new trails through archaeological sites that have not been assessed, particularly at the mouth of McIntyre Creek, which is potentially rich in sites. These emerging and deteriorating features should be left in situ and interpreted where safe and appropriate and reclaimed and removed if a hazard exists.

Heritage Resource Impact Assessments (HRIAs) should be conducted for the area prior to proceeding with park development. Should future HRIA work be conducted, all heritage resource sites identified, (whether new or revisited) should be recorded as per the requirements outlined in the *Yukon*

Archaeological Sites Regulation. Once recorded/revisited, specific heritage resource management recommendations should be developed that reflect the potential impacts associated with the proposed development triggering the HRIA.

3.2.5 Public Safety

Given the site's history, the potential development of The Point as a public park warrants due diligence on the part of the City to protect park users from known hazards and risks, including contamination. As the site isn't designated under the *Yukon Contaminated Sites Regulation* nor regulated under the *Yukon Solid Waste Regulations*, the City has the discretion to determine what constitutes a satisfactory approach to protecting human health and safety.

The Project Team sought advice from the Yukon Department of Environment staff and an environmental risk management specialist to pinpoint a reasonable approach for the City moving forward. These discussions highlighted that due diligence involves the confirmation that there are no likely pathways through which humans could become exposed to contaminants should the site be developed as a park. The risk of water-borne contamination is effectively ruled out by test results confirming there are no issues of concern (not to mention the low likelihood of park users consuming creek water). There is, however, some potential for park visitors – particularly young children – to come into contact with soils while on the site, and there is no known confirmation that those soils are contaminant-free.

One approach to managing the risk of soil-borne contamination coming into contact with park users is capping the site with clean soil[8]. Another approach is to investigate the potential or actual presence of contamination via a soil sampling program in the top 0.5-1 metres (Hall and Hogan, pers. comm). The latter approach is recommended for The Point on the basis of its size and the low likelihood of contaminated soils in the plateau area, where most of the park amenities and activity would be situated. A **confirmatory soil sampling program should be carried out** via three sequential steps:

1) An information review to identify areas of highest risk based on preliminary park design concept, site history, and previous reclamation activities;

2) Design and execution of a soil sampling program targeting areas of high contamination potential and/or visitor traffic (including trails), and,

3) Review of results and revision of design concept and/or more detailed follow-up sampling to delineate "hot spots".

This approach leaves the final site design open to revision (where possible) to accommodate potential areas of contamination. For example, a parking lot or structure could intentionally be sited over an area of higher contamination since their construction would cap the contaminants and eliminate the pathway of exposure. Alternately, soil of concern could be excavated and taken off-site. The "trigger" for further investigation or action would be any sampling results indicating contaminants in excess of the generic numerical soil standards for parkland found in Schedule 1 of the *Yukon Contaminated Site Regulation*.

Limiting the potential for park visitors to interact with buried or daylighted landfill debris can be managed via the following ways:

[8] The *Yukon Solid Waste Regulations* require that a minimum of 0.6 metres of compacted material cover a landfill cell prior to official closure.

- **Educate users about the potential risks** of buried landfill debris and how to avoid potential hazards via site signage;
- Strongly **encourage users to stay on designated trails**;
- **Create a child-oriented amenity feature** to discourage unsupervised site exploration; and,
- **Continue clean-up efforts** in high-visibility areas within view of trails and other park amenity nodes, focusing in particular on loose (and sharp/hazardous) scrap metal.

With respect to managing night-time safety and security, vandalism, and nefarious activity, there is no foolproof strategy. The reality is that the City has an enormous inventory of public recreational assets that are vulnerable to these same threats. However, while incidences of small-scale vandalism are relatively common, most of these assets – particularly those associated with a "positive" user culture - remain untouched[9]. To mitigate potential threats to property and individual safety at The Point:

- **Install security lighting and warning signage** at the site, avoiding excess light pollution that would impact aurora watching;
- **Utilize durable, vandalism-resistant materials** for any structures, installations, and/or signage; and,
- Proactively work to **shift the culture** and **facilitate an increase in legitimate uses** with the site through organized programming, special events, and promotion of the park.

[9] One example is the extensive trail signage installed by the City throughout the east side of the Yukon River in 2009/10. There have been a few isolated incidences but the vast majority of this infrastructure has not been damaged or vandalized.

4.0 Ideas and Opportunities

4.1 "What we Heard"

Interviews conducted by the Project Team revealed issues and concerns, but also an equal measure of hopes and ideas for The Point site and its future. These themes were explored further with the public during an Open House on November 23, 2016. The following section highlights the results of the discussions and some of the ideas and opportunities communicated to the Team.

First Nation connections and traditional use

- First Nations people could once again "feel at home" here and have a tangible connection to this place
- The creek and area could be restored to the extent that traditional subsistence activities could be enjoyed again
- The park could be named in accordance with the site's traditional Southern Tutchone name, Dàmäwtän
- First Nation people could be involved in the entire park planning and development process, including design, construction, and ongoing maintenance
- The park could include demonstrations of First Nation traditional, cultural, and subsistence practices

Education and interpretation

- The site could provide individuals and families of all socioeconomic orientations with an accessible experience of the natural environment
- The site could support more youth-oriented, interactive interpretation and aligns with growing interest in backyard wildlife viewing and interpretation
- The park could house a permanent "web of life" or similar ecologically themed game/course for local schools and/or programs to use, with stations set up
- The Point could tell a compelling story of a natural area being reclaimed over time

Destination draw

- The site could be a highly unique, "only in Yukon" park
- Residents living throughout Whitehorse could think of it as a special place to visit

Recreation and gathering

- The park and associated trails could be integrated into a continuous Yukon River corridor trail, potentially extending as far as Downtown and beyond
- Trails and interpretive signs
- Picnic areas (possibly with barbeques), benches
- A McIntyre Creek bridge would help connect trails throughout the area and add value to the investments already made in Eagle Bay Park by drawing more visitors there
- A structure (possibly enclosed) could provide shelter for group activities and Northern lights viewing
- Campsites with views could be provided
- A sense of intimacy could be created with plantings
- Star gazing and scenic viewing could be enhanced with telescopes
- A platform/stage for nature presentations and summertime events could be included
- An off-leash dog park could serve residents from many neighbourhoods
- A suspension bridge could connect The Point with the Whistle Bend-side escarpment

Figure 6. Local Resident's Vision for a Future Park. Credit: Dustin Sheldon

Commercial use

- The site could be a tremendous setting for an architecturally unique view restaurant, etc.

Accessibility

- The park could be accessible to all ages and abilities
- People with mobility challenges could still experience the views, wildlife watching, and recreate

Partnerships and community building

- A park could help shift attitudes and "culture" from dumping to stewardship
- The park could provide a mechanism for the City to engage volunteers and stewards

4.2 Team Synthesis

Drawing from and expanding upon the discipline assessments, interviews, and public input, the Team has identified the following ideas and opportunities as being most central to the development of a successful park space at The Point:

Interpretation and education

The Point's heritage values and historical context present a number of opportunities to protect and reveal information and provide a cultural heritage experience (please refer to Figure 6. Historical Themes). The site provides a unique opportunity for families to connect with an accessible experience of the natural environment. Perhaps most importantly, the site could support possible demonstrations of traditional First Nations values, activities and uses.

An integrated exhibit or lecture room or pavilion with an innovative design that responds to the site's character could be used by community groups, Yukon College, schools and other institutions, as well as the public. Such a feature would align with interpretive programming and education as a key opportunity and with the site's educational values related to past land uses, cultural traditions, scientific significance, community stewardship and ecological interconnections. The site can assist in changing the mind-set and involving non-traditional groups in understanding the harm of illegal dumping and value of ongoing environmental stewardship.

Ecological restoration and stewardship

One of the most significant advantages offered by park development, as compared to leaving the site in its current state, is the ongoing attention and stewardship efforts it can mobilize. The potential temptation to create another "pretty" park should be curbed and a commitment made to enhancing ecological function through park programming and volunteer activities that focus on habitat and riparian enhancements, debris cleanups, etc. It is important the park communicate that stewardship is a continual work in progress – worth doing for its own sake – versus a clearly defined endpoint.

Innovative municipal park approach and design

The City offers many aesthetic and enjoyable neighbourhood-level parks for residents to enjoy, and Rotary and Shipyards parks fulfill a city-wide function as gathering places and special event venues. The Point offers the opportunity for the City to innovate in its parks and recreation offer by creating a park where the primary focus is on nature versus a specific park amenity or the facilitation of human-centered recreational activities (i.e., playfields, etc.). This innovation can extend to new, creative, and organic design elements. The City could create a highly unique, "only in Yukon" municipal park that provides residents and visitors of all abilities and socioeconomic circumstances with a Yukon wilderness experience, mere minutes from Downtown.

Meaningful partnerships and co-management

The broader cultural and governance context for The Point Park is different than the one that other City-level parks were situated within. The increased emphasis on meaningful engagement and reconciliation with First Nations people, which the City has strongly embraced at a corporate level, creates a new dynamic and opportunity. The Point is one of the few formerly occupied Whitehorse waterfront locations from which local First Nations people were displaced where urban development did not follow; here, there is an opportunity to *do things right*. Park design, cultural programming and interpretation could be linked to the Kwanlin Dün First Nation Whitehorse Waterfront Heritage Project currently underway, and Ta'an Kwäch'än Council's role as the site's modern steward can be maintained and strengthened. The park should bear the distinct imprint of Ta'an Kwäch'än and Kwanlin Dün values, and the City should endeavour to create a meaningful hands-on role for their citizens in developing and managing the park.

Cultivating a nature and culture-first recreation ethic

The City is constantly balancing the competing needs of a population that strongly values active outdoor recreation with ecological and cultural heritage protection. This challenge is most pronounced where there are long-standing recreational uses of particular trails or areas. The relatively low recreational use of The Point presents an opportunity to proactively design and develop a space where recreation defers to nature, not vice versa. If communicated successfully, this space can help build an ethos of respect and sharing that will indirectly benefit other City park management efforts.

Figure 7. The Point Historical Themes

Historical themes provide a way of organizing and describing the major forces or processes that have contributed to the history of a place. They provide a context within which the heritage significance of a place or elements can be understood, assessed and compared, uniting actions, events, functions, people and time periods. A thematic framework provides a starting point for an interpretive plan.

Potential themes associated with a park at The Point include:

Gathering and living

Association of The Point - Dàmäwtän area with its past human use, particularly by the Ta'an Kwäch'än and Kwanlin Dün First Nations.

- Collecting the abundant resources of the Yukon River and McIntyre Creek, including fishing sites and duck hunting, and the ability of the site, creek and river to provide sustenance
- The importance of the site as a gathering place for First Nations over millennia
- Wide use of the site for communal living and the maintenance of close family ties
- Fish camps near the mouth of McIntyre Creek and fishing and drying uses and infrastructure
- Temporary settlements and communities
- Current use of the site by neighbourhood and city citizens as a place of contemplation

Navigating and communicating

Association of the Point - Dàmäwtän area with its past history of river and air navigation and communication amongst people and the landscape.

- McIntyre Creek as a travel corridor for First Nations people moving between the river and Fish Lake
- Educating and communicating information about the natural environment
- First Nations stories and attachment to the land
- The role of the British Yukon Navigation Co. in opening up the region post-contact and contribution to its economy.
- Sternwheeler travel and navigation of the Yukon River and the submerged remains of the Carmacks
- Defense, including First Nations battle sites or war memorials
- Use of the site as a range for radio transmission towers during World War II

Sustaining and connecting

Association of The Point - Dàmäwtän area with its natural values, past misuse and current care of the place, and its ability to sustain nature and people.

- Natural environment of the site as a typical northern boreal forest and associated plants, trees and wildlife
- Environment modified and shaped including clearing and timber-harvesting, and later earthworks to assist in creek clean up
- Past use of the site as a former landfill
- Clean up efforts, soil conservation and the reclamation of a disturbed site by natural processes
- Established and new park and recreation trails
- Preservation of open space
- Connecting spaces on either site of the creek
- Visual connection and significant views to the Yukon River and islands
- Community desire to create a park space that came up during the neighbourhood planning process

5.0 Conclusion

The prospect of developing a park at "The Point" raises a number of issues around impacts to the intrinsic and special values of the area, chief among them wildlife, the sensitive McIntyre Creek riparian environment, and heritage and archaeological features. The highly erodible soils of the Yukon River escarpment, the potential for soil contamination from the site's former landfill function, and residual debris pose development challenges as well. However, most of these potential negative impacts can be successfully mitigated and challenges overcome.

The broader McIntyre Creek area is already well used by recreationalists; as such, effects to the local wildlife and ecosystems are already occurring at the site. The proposed development of a park at The Point allows the City of Whitehorse and its partners to implement appropriate management measures, proactively shift behavior away from unwanted uses for this impacted site, and limit the potential effects of a growing nearby residential population on wildlife and ecosystems. A park at The Point will help to address the deficit of community-oriented recreation spaces identified during the Range Point planning process and create a new destination for Whitehorse residents and visitors alike. Furthermore, the traditional significance of the site and its high value to First Nations, local residents, and stakeholder groups presents perhaps the biggest opportunity of all: to co-create, interpret and care for a special place in a manner that reflects both its significant ecological and human-ascribed values.

On the basis of the findings of the discipline-specific assessments, as well as the input gathered from governments, organizations, and residents with a strong interest in the area, the Project Team concludes that the development of a park at The Point site is indeed feasible. It also concludes that the park is best approached through a partnership involving First Nation governments, non-profit groups, and local residents that positions a park as part of an evolution of stewardship and reclamation activities in the area. Both First Nation governments have expressed a desire to advance the park concept only *after* the McIntyre Creek regional park has been planned and there is clarity on how this site fits into the broader picture. The anticipated 2-3 year timeframe for that plan's completion need not be considered a delay but rather an ideal window for preparation.

As the old saying goes, it's best to begin with the end in mind. The Project Team asked governments and stakeholders what a "successful" park would look like to them as a means of ensuring that its initial scoping recommendations were aligned with the collective aspirations of those who care most about The Point. The key themes that emerged were accessibility, learning, ecological protection and stewardship, gathering, a strong sense of First Nation belonging and recognition, and pure, simple enjoyment of the scenery and natural environment. These themes were affirmed by the feedback provided by local residents who attended an Open House in November 2016.

With those "ends" in mind, the Project Team has developed a preliminary suite of potential programming and amenity features for The Point for further elaboration in the future. The final report includes a preliminary design concept for the park and outlines associated priorities and next steps to achieve the vision of a treasured community space for all Whitehorse residents.

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References

AECOM, 2010. Fish Lake Hydroelectric Project: Fisheries and Aquatic Studies 2009. Prepared for Yukon Electrical Company Limited.

Affleck, Edward L. A Century of Paddlewheelers in the Pacific Northwest, Yukon and Alaska.

Applied Ecosystem Management Ltd. (AEM). 1998. Whitehorse Wildlife Inventory, Data Compilation and Gap Analysis. Report prepared for YTG Department of Renewable Resources, Wildlife Viewing Program by Applied Ecosystem Management Ltd. In association with Laberge Environmental Services, Mougeot GeoAnalysis and Gartner Lee Limited. 92 pp + appendices.

Applied Ecosystem Management Ltd. (AEM). 1999. Ecological Resources of the Yukon River Corridor. YRC Technical Report. 32 pp.

Applied Ecosystem Management Ltd. (AEM). 2000. Defining Ecologically-Based Significant Wildlife Areas for the City of Whitehorse: Expanded Ecosystem Mapping Program. Version 2.0. Report prepared for City of Whitehorse Planning Department and YTG Department of Renewable Resources, Wildlife Viewing Program. 50 pp + appendices.

Australian Heritage Commission. *Historic Themes.* Commonwealth of Australia, 2001.

Beaumont, Jody and Michael Edwards. *An Introduction to First Nations Heritage Along the Yukon River*. No date.

City of Whitehorse. 2014. Range Road North Neighbourhood Plan. Available at http://www.whitehorse.ca/home/showdocument?id=7328. Accessed 8 Nov 2016.

City of Whitehorse Heritage Advisory Committee. *Heritage Evaluation Criteria*.

City of Whitehorse. *Heritage Bylaw 2002-10*.

City of Whitehorse. 2015. *Use of Parks and Paved Trails Policy*.

City of Whitehorse. *Zoning Bylaw 2012-12*.

Coates, K and WR Morrison. "The Federal Government and Urban Development in Northern Canada After World War II: Whitehorse and Dawson City, Yukon Territory." *BC Studies* No. 104, Winter 1994.

COSEWIC. 2003. COSEWIC Assessment and Update Status Report on the Wolverine, *Gulo gulo*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 41 pp.

COSEWIC. 2012. COSEWIC Assessment and Status Report on the Grizzly Bear, *Ursus arctos*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 84 pp.

Crawford Lake Park. http://www.conservationhalton.ca/park- details?park=crawford-lake

EDI Environmental Dynamics Inc. (EDI). 2010. Range Road Dumpsite Clean-up: Summary of Reclamation Works 2005-2010. Report prepared for the Ta'an Kwach'an Council. Whitehorse, Yukon. 26 pp + appendices.

EDI Environmental Dynamics Inc. (EDI). 2011. McIntyre Creek Wildlife Corridor Assessment. Report prepared for the City of Whitehorse. Whitehorse, Yukon. 25 pp + appendices.

Environment Canada. 1984. An Inventory and History of Waste Disposal Sites in the Whitehorse Area. Environmental Protection Service, Pacific Region, Yukon Branch. August, 1984.

Environment Canada. 1991 Inspection Report: Range Road Dump Inspections, September 1990. Environmental Protection Service, Pacific Region, Yukon Branch. File #4982-84/12-1.

Environment Canada. 2013. Bird conservation strategy for bird conservation region 4 in Canada: northwestern interior forest. Canadian Wildlife Service, Environment Canada. Whitehorse, Yukon. Pp 138. + appendices.

Environment Canada. 2016. Species at risk public registry. Government of Canada, Environment Canada Available: http://www.sararegistry.gc.ca/approach/act/default_e.cfm. Accessed November 2016.

Fisheries and Oceans Canada (DFO) 2016. Fisheries Information Summary System (FISS). Available at: http://cmnmaps.ca/fiss_yukon/. Accessed 21 Oct 2016.

Foos, A. and N. Millar. 2011. Angler Harvest Survey – McIntyre Creek 2004. Prepared by Yukon Environment. 34 pp.

Friends of McIntyre Creek and Yukon Conservation Society (FMC and YCS). 2011. Middle McIntyre Creek Workshop Report: an Initial Assessment of Wildlife and Habitat in the Middle McIntyre Creek Area. 23 pp.

Government of Yukon. Archaeological Sites Regulation. O.I.C. 2003/73

Government of Yukon. Contaminated Sites Regulations. O.I.C. 2002/171

Government of Yukon. Solid Waste Regulations. O.I.C. 2000/11

Joannou, Ashley. October 23, 2015. "Hatchery Seeks to Supersize Fry Numbers." Retrieved from: http://www.yukon-news.com/business/hatchery-seeks-to-supersize-fry-numbers

Kwanlin Dün First Nation, Heritage, Lands and Resources Department. *City of Whitehorse: Heritage and Ecosystem Conservation Design Proposal*, 2010.

Kwanlin Dün First Nation. Kwanlin "Water Running Through a Narrow Place." 2010.

Kwanlin Dün First Nation. Waterfront Heritage Project information brochure. www.kwanlindun.com/images/uploads/ Waterfront_Heritage_project_update_July_2015.pdf

Matrix Research Ltd. 2010. *Heritage Resources Inventory of the McIntyre Creek Study Area Conducted Under Permit 09-04ASR*.

Parks Canada. 2010. *Standards and Guidelines for the Conservation of Historic Places in Canada*. Second edition.

Parks Canada. N.D. *National Historic Sites of Canada System Plan*. http://www.pc.gc.ca/docs/r/system-reseau/sec2.aspx

Schonewille, B. 2006. Bird Investigation of McIntyre Creek. Letter to Emmie Fairclough, Ta'an Kwachan Council. 3 pp.

Stanley Associates Engineering Ltd. 1992. Detailed Subsurface Investigation Range Road Dump. Prepared for Public Works Canada, Whitehorse, Yukon.

Ta'an Kwäch'än Council. "A Short History of the Ta'an Kwach'an." taan.ca/history/

Ta'an Kwäch'än Council, Lands Resources and Heritage Department and EDI Environmental. *Range Road Dump Site Clean-up: Summary of Reclamation Works*. 2010.

Yukon Bird Club. 2010. Checklist of the Birds of Whitehorse Yukon. Brochure prepared by the Yukon Bird Club, in association with the Canadian Wildlife Service and Environment Yukon. 2 pp.

Yukon Bird Club. 2015. 10 Great Places to go Birding in Whitehorse. Brochure prepared by the Yukon Bird Club, in association with the Yukon Birdathon and Environment Yukon. 2 pp.

Yukon Conservation Data Centre (CDC). 2015a. Yukon Conservation Data Centre's animal track list: updated June 2015. Environment Yukon. Available: http://www.env.gov.yk.ca/animals-habitat/cdc.php. Accessed November 2016.

Yukon Conservation Data Centre (CDC). 2015b. Yukon Conservation Data Centre's animal watch list: updated June 2015. Environment Yukon. Available: http://www.env.gov.yk.ca/animals-habitat/cdc.php. Accessed November 2016.

Yukon Conservation Data Centre (CDC). 2016. Rare Species Database. Yukon Department of Environment, Whitehorse, Yukon.

"Yukon First Nations Heritage Values and Heritage Resources." *Intellectual Property Issues in Cultural Heritage*. Simon Fraser University.

Yukon River Corridor Plan. 1999. Unpublished report for City of Whitehorse. Report prepared by Gartner Lee Limited, UMA Engineering Limited, Applied Ecosystem Management, Midnight Arts, Mougeot GeoAnalysis, Julie Paul and Associates, and Aboriginal Public Relations and Consulting Services. vii + 69 pp.

Yukon Tourism and Culture. 2007. *Handbook for the Identification of Heritage Sites and Features*.

Personal Communication

Cooke, D. 2016. Ta'an Kwäch'än Council. E-mail to City of Whitehorse. December 19, 2016.

Crowe, D. 2016. Derek Crowe Photography. Conversation with Jane Koepke. November 2016.

Eckert, C. 2016. Conservation Biologist with Yukon Parks & President of the Yukon Bird Club. Meeting with A. MacLeod (EDI), November 2016.

Hall, R. 2017. Conversation with Jane Koepke. January 2017.

Hare, G. 2017. Conversation with Denise Cook. November 2016.

Hogan, K. 2017. Aperture Consulting. Meeting with Jane Koepke. January 2017.

McLelland, C. 2016. Wildlife Viewing Biologist with Environment Yukon. Meeting with J. Koepke (Jane of all Trades) and A. MacLeod (EDI). November 2016.

Reynolds, S. 2016. Yukon Department of Tourism and Culture. E-mail correspondence with Jane Koepke. November 2016.

Appendix A

Point Park Bird Species List

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Bird Species Documented at the Proposed Point Park [1, 2]

Common Name	Latin Name	COSEWIC, SARA [3]	Yukon Conservation Data Centre [3]		BCR 4 Priority Species [3]
			Tracklist	Watchlist	
Common Loon	*Gavia immer*				✓
Horned Grebe	*Podiceps auratus*	Special Concern, Not Listed		✓	✓
Red-necked Grebe	*Podiceps grisegena*				✓
Greater White-fronted Goose	*Anser albifrons*				✓
Snow Goose	*Chen caerulescens*		✓		
Canada Goose	*Branta candensis*				✓
Trumpeter Swan	*Cygnus buccinator*		✓		✓
Tundra Swan	*Cygnus columbianus*		✓		✓
Gadwall	*Anas strepera*				
American Wigeon	*Anas americana*				✓
Mallard	*Anas platyrhynchos*				✓
Blue-winged Teal	*Anas discors*				✓
Northern Shoveler	*Anas clypeata*				✓
Northern Pintail	*Anas acuta*				✓
Green-winged Teal	*Anas crecca*				✓
Canvasback	*Aythya valisineria*				✓
Ring-necked Duck	*Aythya collaris*				
Lesser Scaup	*Aythya affinis*			✓	✓
Bufflehead	*Bucephala albeola*			✓	✓
Common Goldeneye	*Bucephala clangula*				✓
Barrow's Goldeneye	*Bucephala islandica*				✓
Common Merganser	*Mergus merganser*				
Red-breasted Merganser	*Mergus serrator*				
Bald Eagle	*Haliaeetus leucocephalus*				
Northern Harrier	*Circus cyaneus*				
Sharp-shinned Hawk	*Accipiter striatus*				
Northern Goshawk	*Accipiter gentilis*				✓
Red-tailed Hawk	*Buteo jamaicensis*				
Rough-legged Hawk	*Buteo lagopus*				
Golden Eagle	*Aquila chrysaetos*			✓	✓
American Kestrel	*Falco sparverius*		✓		✓
Gyrfalcon	*Falco rusticolus*			✓	
Peregrine Falcon	*Falco peregrinus*	Special Concern, Schedule 1	✓		✓
Ruffed Grouse	*Bonasa umbellus*				

Common Name	Latin Name	COSEWIC, SARA [3]	Yukon Conservation Data Centre [3]		BCR 4 Priority Species [3]
			Tracklist	Watchlist	
American Golden-Plover	*Pluvialis dominica*			✓	✓
Semipalmated Plover	*Charadrius semipalmatus*				
Dunlin	*Calidris alpina*				
Baird's Sandpiper	*Calidris bairdii*				
Least Sandpiper	*Calidris minutilla*				
Pectoral Sandpiper	*Calidris melanotos*				
Semipalmated Sandpiper	*Calidris pusilla*			✓	✓
Long-billed Dowitcher	*Limnodromus scolopaceus*			✓	
Short-billed Dowitcher	*Limnodromus griseus*				✓
Greater Yellowlegs	*Tringa melanoleuca*			✓	
Lesser Yellowlegs	*Tringa flavipes*			✓	✓
Solitary Sandpiper	*Tringa solitaria*				✓
Spotted Sandpiper	*Actitis macularius*				✓
Wilson's Snipe	*Gallinago delicata*				✓
Bonaparte's Gull	*Larus philadelphia*				✓
Mew Gull	*Marus canus*				✓
Herring Gull	*Larus argentus*				✓
Glaucous Gull	*Larus hyperboreus*		✓		
Glaucous-winged Gull	*Larus glaucescens*				
Arctic Tern	*Sterna paradisaea*				✓
Short-eared Owl	*Asio flammeus*	Special Concern, Schedule 1	✓		✓
Boreal Owl	*Aegolius funerus*				✓
Belted Kingfisher	*Ceryle alcyon*			✓	
Northern Flicker	*Colaptes auratus*				
Say's Phoebe	*Sayornis saya*				
Northern Shrike	*Lanius excubitor*			✓	✓
Gray Jay	*Perisoreus canadensis*				✓
Black-billed Magpie	*Pica hudsonia*				
Common Raven	*Corvus corax*				
Horned Lark	*Eremophila alpestris*				
Tree Swallow	*Tachycineta bicolor*				
Violet-green Swallow	*Tachycineta thalassina*				
Cliff Swallow	*Petrochelidon pyrrhonota*				
Black-capped Chickadee	*Poecile atricapillus*				
Boreal Chickadee	*Poecile hudsonica*				✓
American Dipper	*Cinclus mexicanus*				
Ruby-crowned Kinglet	*Regulus calendula*				
Mountain Bluebird	*Sialia currocoides*			✓	

Common Name	Latin Name	COSEWIC, SARA [3]	Yukon Conservation Data Centre [3]		BCR 4 Priority Species [3]
			Tracklist	Watchlist	
Townsend's Solitaire	*Myadestes townsendi*				
Hermit Thrush	*Catharus guttatus*				
American Robin	*Turdus migratorius*				
Varied Thrush	*Ixoreus naevius*				✓
European Starling	*Sturnus vulgaris*				
American Pipit	*Anthus rubescens*				
Bohemian Waxwing	*Bombycilla garrulus*				✓
Lapland Longspur	*Calcarius lapponicus*				
Snow Bunting	*Plectrophenax nivalis*				
Orange-crowned Warbler	*Oreothlypis celata*				
Yellow-rumped (Myrtle) Warbler	*Setophaga coronata*				
American Tree Sparrow	*Spizella arborea*				
Savannah Sparrow	*Passerculus sandwichensis*				
Fox Sparrow	*Passerella iliaca*				
Lincoln's Sparrow	*Melospiza lincolnii*				
White-crowned Sparrow	*Zonotrichia leucophyrs*				✓
Golden-crowned Sparrow	*Zonotrichia atricapilla*				✓
Slate-colored Junco	*Junco hyemalis*				
Rusty Blackbird	*Euphagus carolinus*	Special Concern, Schedule 1	✓		✓
Pine Grosbeak	*Pinicola enucleator*				✓
Purple Finch	*Carpodacus purpureus*				
White-winged Crossbill	*Loxia leucoptera*				✓
Common Redpoll	*Acanthis flammea*				
Pine Siskin	*Spinus pinus*				

[1] Species list compiled from online eBird records (eBird 2016) and previous reports for the area (AEM 1998; Schonewille 2006; Yukon Bird Club 2015).

[2] It is notable that most records to date were collected during the migration season and focused on the aquatic habitats associated with the Yukon River and the mouth of McIntyre Creek. Additional species are expected to occur in the area; in particular, the number of upland bird and passerine species represented in the species list is believed to be low compared to the species that could be expected in the area based on documented presence within the broader City of Whitehorse (e.g., Yukon Bird Club 2010). Many of the species included here are present seasonally during migration but are not expected to nest in the area.

[2] Species rankings from Yukon CDC 2015a, 2015b; Environment Canada 2013; Environment Canada 2016.

Appendix B

City of Whitehorse Draft Trail Plan for Porter Creek/Whistle Bend/Range Point/Takhini

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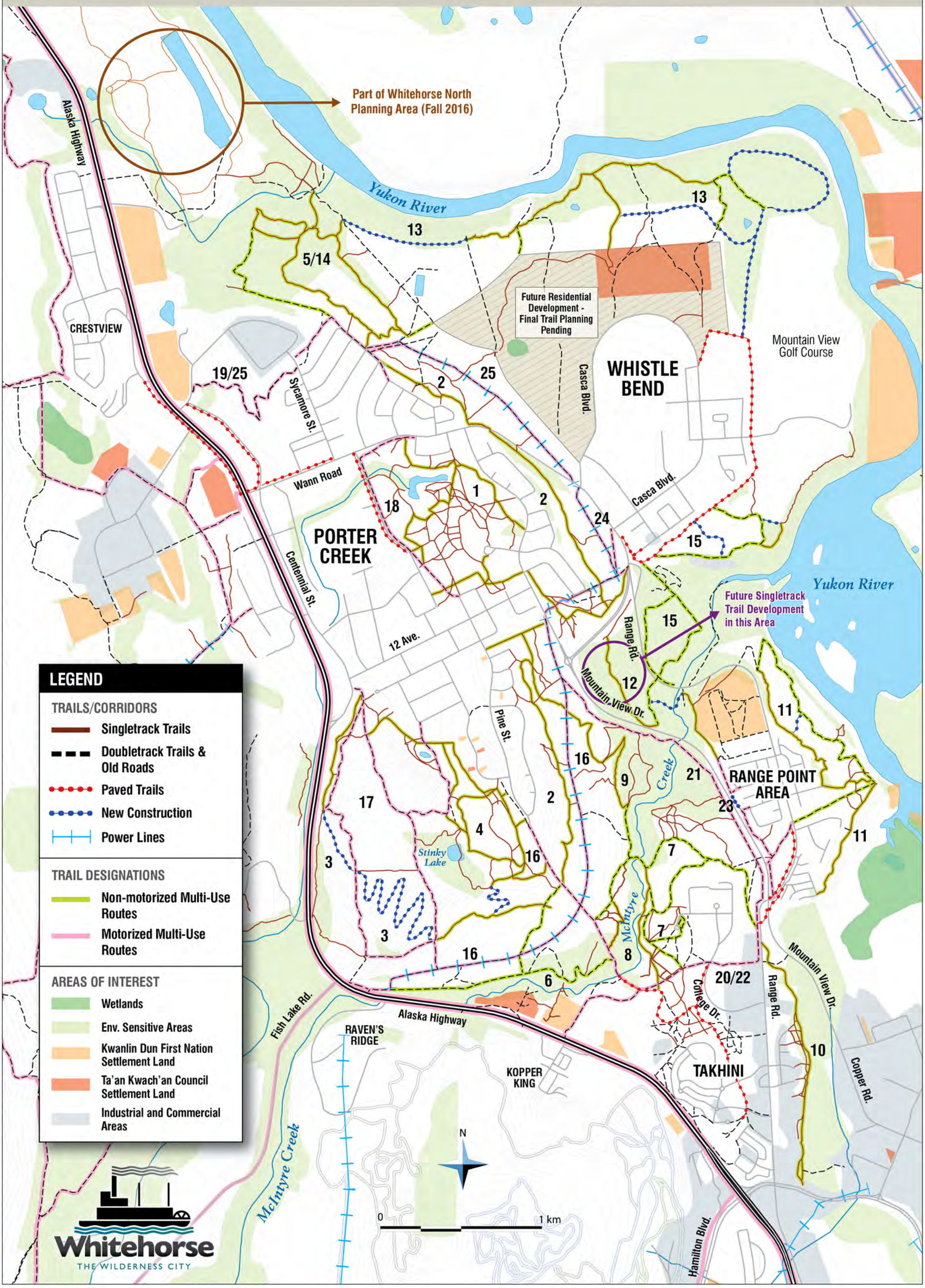
City of Whitehorse Trail Plan - June 2016

DRAFT

PORTER CREEK • TAKHINI • WHISTLE BEND • RANGE POINT

Including Key Areas: First Nation Settlement Lands, and Environmentally Sensitive Areas



Appendix C

Public Meeting Survey Results

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RANGE POINT NEIGHBOURHOOD PLAN

Whitehorse
THE WILDERNESS CITY

The Point Park Public Meeting – Comment Form Results

Q1: Do you currently use the site (The Point Park)? How often do you use or visit it? What do you like to do there?

- *I live in the area and use the site frequently when I walk my dog (especially in the spring and summer months. Typically I use the site to enjoy it's scenic value, and enjoy nature.*
- *Yes, it is one of my 'release' tension spots and thinking place. Me and my children walk there, for family evening walks in summer. Since the gate been up, we haven't been going there. I like to scream, yell, cry, laugh, echo, sit quietly, hang out on the edge, occasionally hit golf balls, quading, star gaze, bird watching, dancing,…*
- *Yes, I use it at least once a week. I walk there from my house in Northland, via the trails running along Mountainview and then I cut through the forest north of Northland and across the road to the point.*
- *I like to lookout, feel the breeze, smell the cleanest air in the world. It really brings me a sense of peace.*
- *Yes! I go there to photograph the aurora borealis and take visitors there for excellent scenery*
- *No, I did not know where it was. Now that I do, I plan to go there. My parents lived there here in the late 1950's and I have film footage home movies of the dump as it was a wildlife viewing place/lookout point back then but when I moved here in the 1990's I couldn't find it. I'm excited it will become a park.*

Q2: What do you currently like best about the site? What do you like least about it?

- *I think the views are amazing and I enjoy the unique ecosystem with the creek and the river.*
- *On the negative side, illegal dumping has been an ongoing issue, and sometimes my time there is not as enjoyable due to the amount of garbage. It also can be a bit of a party place in the evening.*
- *It is somewhat secluded, it has excellent views of nature and wildlife (waterfowl particularly)*
- *The rough unlevel road sucks*
- *I like the individual pull in sites as well*
- *I also like the soft dusty sand/clay there*
- *I like the view, that you can see the whole combination of the river, sky, wildlife, and mountains.*
- *I like seeing how nature works and how the landscape is similar to what it might have been hundreds of years ago (minus the dump history).*
- *I don't like the wide gravel roads, the dumping of garbage, and maybe seeing drug deals.*
- *I like that it is natural and rugged looking with amazing views*
- *I hate that people dump garbage out there*
- *I'm looking forward to checking it out! Views look spectacular.*

Q3: What features do you think would encourage nearby residents in Range Point and other neighbourhoods to use and enjoy this area?

- *It does seem like it is a hidden secret in Whitehorse, so if it did become a park, more people may be able to access it.*
- *Limiting vehicle access and enforcing illegal dumping would make the park more enjoyable to visit I believe.*
- *Build a small pub on the Range Road/Mountainview Bapist property!*
- *A nice big children's park*
- *Viewing telescopes*
- *Stargazing telescopes in winter and/or small facility*

- *Benches, interpretive signs, nice plants/trees (native ones) that keep it "natural looking" and not overly landscaped.*
- *Maybe birdfeeders*
- *Keep the view*
- *Maybe a little platform/stage for nature presentations, acoustic music event in summertime.*
- *Outdoor fitness park (like the one along the Millennium Trail)*
- *Picnic tables*
- *Recycling and garbage bins for those enjoying the site*
- *An off-leash dog park!! So many people from Takhini-Kopper King/Porter Creek/Crestview are driving daily all the way downtown for the park. It is immensely popular and very low maintenance*
- *I like the idea of a viewing platform. Marked trails would also be nice.*

Q4: What do you think of the team's proposed ideas and opportunities for The Point Park? Which do you feel would enhance your enjoyment of the site? Are there any that would compromise your enjoyment of the site?

- *May be the commercialization of such a park might increase enjoyment if done right.*
- *If any development chased away the swans or other water fowl*
- *I like them.*
- *I am new to the area so it was a lot of information and ideas to take in.*
- *I like the idea of having connecting trails to the other neighbourhoods.*
- *Being able to go out my backdoor and just walk and walk for hours without ever having to get in my car is great – so I am in favour of more of this.*
- *I love the range of ideas! Parking available, fire pits, picnic tables, observation platform, all wonderful ideas*
- *Looks good! I do have some concerns that increased traffic to the area (on foot and vehicle) could disrupt wildlife.*

Q5: Does the proposed trail development concept for The Point Park and broader area Trail Plan provide enough recreational opportunities for you?

- *Probably but an ATV trail needs be kept or built to connect Whistle Bend tho.*
- *A zipline from golf course side to Point would also be awesome*
- *Yes, especially paving a path to be able to bike beside Mountainview rd. instead of on Mountainview (in both directions North to Whistle Bend and Porter Creek, as well as to downtown)*
- *Yes*
- *Yes, looks good!*

Q6: Is there a role for nearby residents to play in looking after the park? If so, what might that be?

- *Garbage cans that are close and easily accessible (I now pick garbage up at the pull in sites I go to)*
- *I have drive the garbage to the bus turnaround spot*
- *Maybe community patrol re: illegal dumping, drug deals, parties as well as litter pick up*
- *Watching for garbage dumpers!!*
- *Keeping it clean – might be a good site for the spring fundraising clean-up available to non-profits. Would also be good if there are garbage cans and poop pick up bags available.*
- *Nice work on the presentation! Thanks to City and consultants!*

Appendix D

Bridge Feasibility Assessment Memo

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Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

Date:	December 13, 2016	**File:**	20162875.E03.00
To:	Jane Koepke		
From:	Craig Schaper, P.Eng.; Steven Bartsch, P.Eng.		
Project:	**Point Park Feasibility Assessment**		
Subject:	**McIntyre Creek Pedestrian Bridge**		

MEMO

We have conducted a high-level feasibility assessment of a proposed bridge crossing over McIntyre Creek in Point Park.

1 CREEK CROSSING LOCATION

Potential crossing locations have been proposed by the project team to take advantage of the constructed berm and existing access road on the east side of McIntyre Creek, and to tie into the proposed trail network of the west side of the creek. Two potential crossing locations are indicated in the study area diagram (extract shown in Figure 1 below). [1]

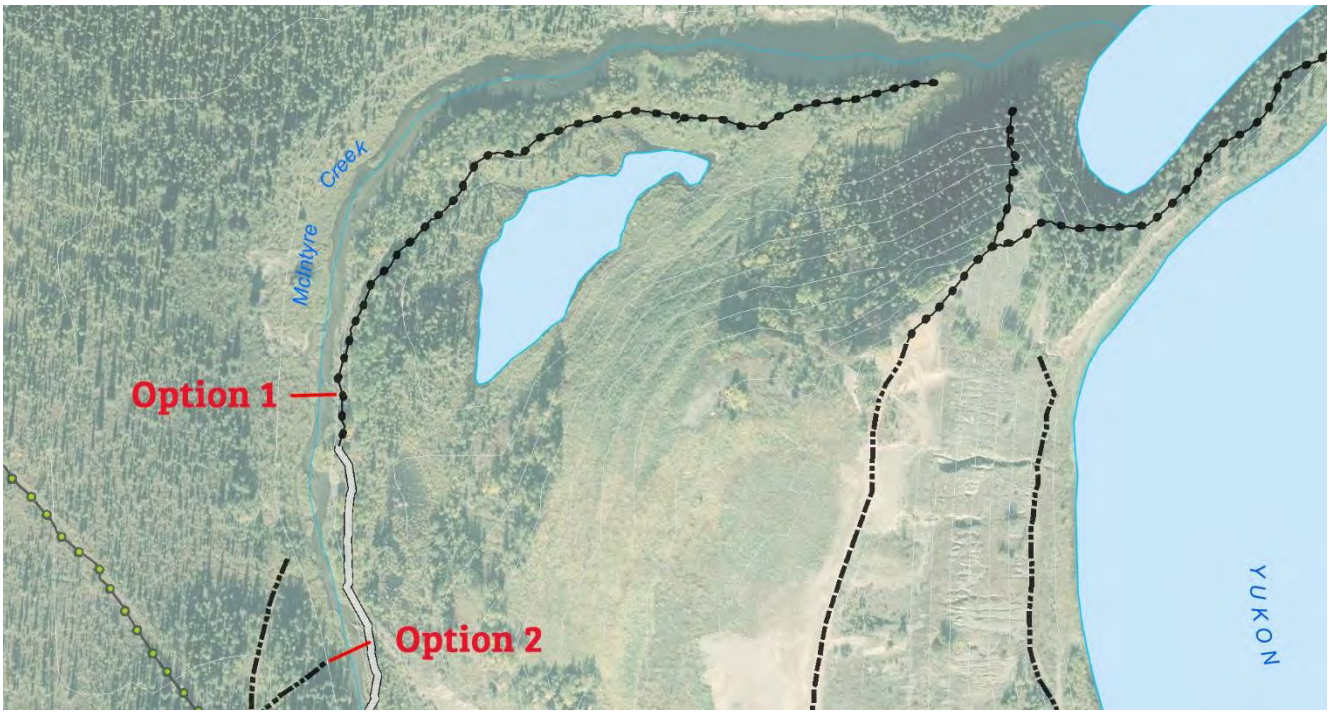

Figure 1 –McIntyre Creek Proposed Crossing Locations

2 DESIGN CONSIDERATIONS:

We have reviewed the reports of the other design disciplines and provide a summary of their recommendations relating to the bridge design.

2.1 Geotechnical Recommendations

Our team's geotechnical engineer, Tetra Tech has made the following recommendations:

2.1.1 Terrain and Geotechnical Constraints:

- The escarpment west and north of McIntyre Creek has historically shown instability, due to vertical flow of surface water through the loose sandy sediments being interrupted by the low-permeable silt layers. The daylighting of water flow above the silt layers causes increased rates of erosion and surface sloughing, along with increased potential for slope failure. The escarpment area should be avoided where possible.
- Seasonal frost heave should be considered in construction detailing.
- Areas of surface sloughs are usually wet, soft and unstable, making construction of paths, access roads and structures problematic.
- Frost-susceptible glaciolacustrine soils are present. Consideration of permafrost effects will require appropriate construction detailing, especially at the Option 2 location.
- There is potential for daylighting of debris that remain after the dump site reclamation.

2.1.2 Hydrogeological Constraints

- Seepage zones pose slope stability concerns, which should be managed using the following measures:
  - Structure should remain near surface so that seepage zones are not encountered during construction.
  - Limit disturbance of tree, brush or grass along the edges and on the slopes of the escarpment.
  - Construction setbacks behind the escarpment should be considered.
  - Avoid side slope excavation along the escarpment edge.
  - Avoid excavations along the toe of the escarpment.

2.1.3 Bridge Abutment Construction

- Prior to detailed design, a drilling program and detailed geotechnical evaluation at the proposed abutment locations will be necessary, including a borehole or test pit on both sides of the creek.
- The detailed geotechnical evaluation will establish bearing resistances for foundation design and insulation requirements to protect the bridge foundation.

2.2 Environmental Recommendations

As stated by our team's environmental consultant, EDI Environmental Dynamics Inc., to help minimize negative effects of the proposed bridge crossing on wildlife and ecosystems within the study area:

- Any trails or bridge development should be designed and built in a manner that does not change fish habitat at the site. This includes both limiting trail development on stream banks (that could directly affect bank stability) and proper design in upslope areas (to prevent mobilization of sediment to downslope areas). Trails and other developments should be designed to minimize the potential for erosion, and trail construction should incorporate erosion control measures and run-off capture, where needed.
- A bridge across McIntyre Creek should be a clear span bridge to minimize effects to instream fish habitat.

2.3 Heritage Recommendations

As stated by our team's heritage consultant, Denise Cook Design, to help preserve and enhance the heritage values within the study area, the following design considerations may be considered for the bridge crossing design:

- Encourage site exploration and emphasize low-impact recreational uses while making hiking, walking, fishing, wildlife viewing, photography, sketching and interactive activities embedded into the natural landscape a rich and revealing experience. This could potentially be achieved in part by the view points on the bridge or it's approaches.
- Protect Ta'an Kwäch'än and Kwanlin Dün heritage and cultural values. Potential impacts on the site can be mitigated during park development by ensuring that the heritage values and defining cultural landscape characteristics are integrated into planning and design.
- The site should be left relatively undeveloped, with motorized activities restricted from the area. Care should be taken not to avoid archaeological sites that have not been assessed, particularly at the mouth of McIntyre Creek which is potentially rich in sites.
- Consider potential for buried garbage and/or heritage resources on the site, such as metal objects, wire, and tires that were partially visible during the site visit.

3 BRIDGE FEASIBILITY AND CONCEPT

A summary of the main objectives and our recommended design approach for a bridge crossing at the site is as follows:

- Use a clear-span bridge to achieve minimal environmental impact. This achieves the objective of protecting fish habitat, as well as minimizing impacts to wildlife and ecosystems within the study area.
- Mitigate slope instability:
  - Structure foundations should remain near surface to avoid seepage zones.
  - Avoid side slope excavation along the escarpment edge.
  - Minimize surcharge loads onto top of slope. This can be achieved by supporting the abutment on a piled foundation, for example using H-piles. Furthermore, if an approach ramp fill height is assessed to cause instability, it is feasible to provide a lightweight boardwalk type structure on stub columns / piles.
  - Provide rip rap slope protection around the bridge abutment locally as necessary.
- Mitigate frost heave effects and permafrost effects:
  - Consider insulation of foundations.
  - Consider a perched abutment (i.e. mostly at ground surface with minimal excavation) with sleeved piles to mitigate frost jacking.
- Mitigate influence of buried garbage and/or heritage resources on the site:
  - Pile foundation has advantage of bypassing material unsuitable for founding the bridge.
  - Pilecap can be enlarged if necessary to accommodate pile relocation to bypass hidden obstacles.
  - There remains a potential need to locally excavate to extract hidden subsurface obstacles that cannot realistically be bypassed. The City should recognize this as a remaining risk carried by the City.
- Protect Ta'an Kwäch'än and Kwanlin Dün heritage and cultural values:
  - Potential to embed imprints of Ta'an Kwäch'än and Kwanlin Dün culture into the public art on the approach ramps to the bridge
  - Potential to incorporate heritage patterns into the designs of elements of the bridge. Examples may include ornaments or patterns along the railings, or a stamped concrete deck.
  - The bridge will be a natural viewing point for users of the park to appreciate the surroundings.

Using this design approach, we have assessed the feasibility of crossing McIntyre Creek at the two proposed locations using the aerial photo and plan contours provided by the City of Whitehorse [2]. These locations result in very similar crossing lengths of approximately 34 m as seen in the Figure 2. We have developed longitudinal cross sections at the two crossing locations, as seen in Figure 3 and Figure 5, which show an example of a suitable bridge type to provide the required 34 m clear-span. Figure 4 shows a typical section for this pony-truss type pedestrian bridge, which is one option among other potential bridge types for this site. We have shown piles for each bridge location option, and installation in the area of the riprap berm would require local removal of the riprap to install piles. However, at crossing option 2 there may be potential for the east abutment to be supported on a spread-footing on top of the existing riprap berm; this would require detailed geotechnical data to confirm adequate bearing pressures in the subgrade below the rock. Data from a detailed geotechnical investigation is necessary before being able to confirm foundation types.

Figure 2 – Pedestrian Bridge Plan at Crossing Locations

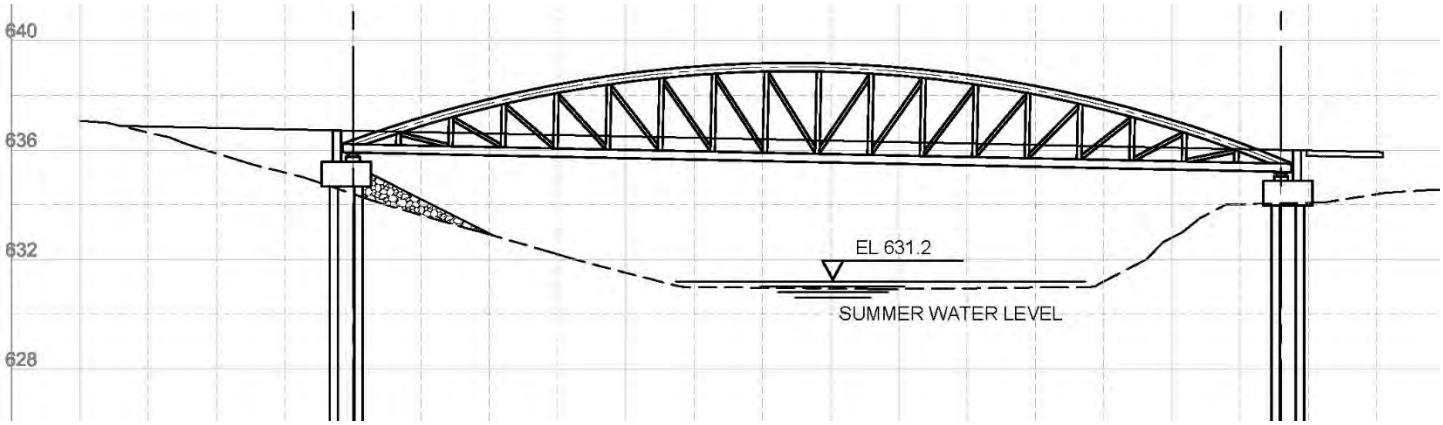

Figure 3 – Pedestrian Bridge Elevation Section at Location 1

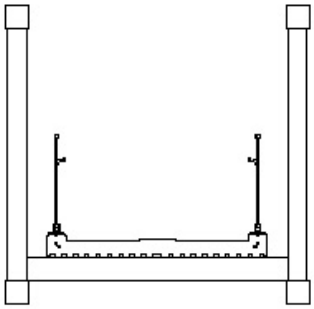

Figure 4 – Pedestrian Bridge Cross-Section

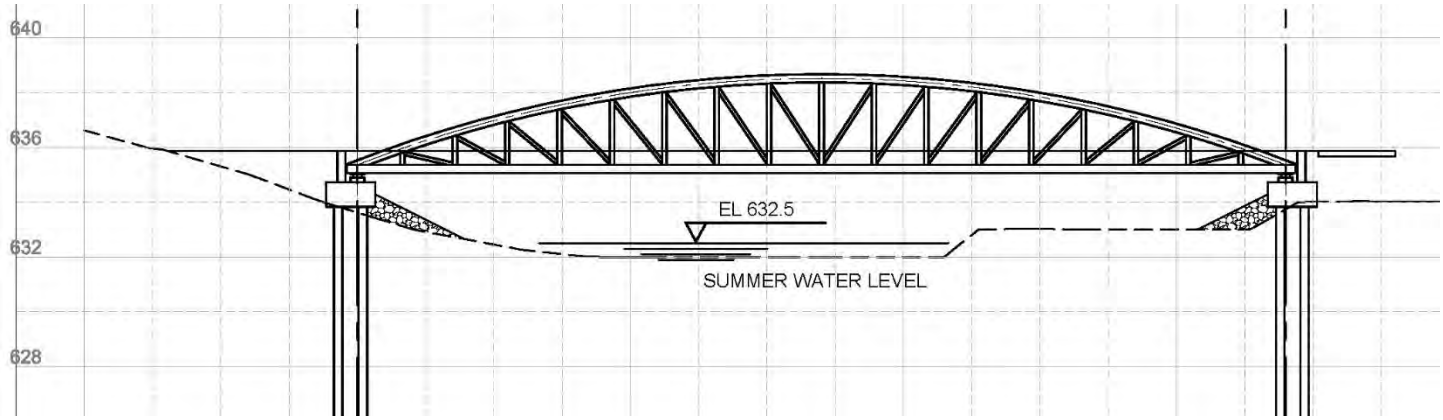

Figure 5 – Pedestrian Bridge Elevation Section at Location 2

4 CLOSING

Based on the available data, our initial assessment shows that a **Bridge Crossing over McIntyre Creek in Point Park** is feasible at either of the proposed locations. We have provided an example of a suitable clear-span bridge, which is an option to consider among other potential bridge types during the preliminary / detailed design phase of the project.

Please contact us if there is any item in the report that needs clarification or discussion. Thank you for the opportunity to assist JOAT with the **Point Park Feasibility Assessment** for the **City of Whitehorse**.

Respectfully submitted,

Prepared by:

PROFESSIONAL ENGINEER YUKON TERRITORY CRAIG SCHAPER 13 Dec 2016

Craig Schaper, C.Eng., P.Eng., MIStructE.
Project Manager / Senior Bridge Engineer

Reviewed by:

Steven Bartsch, P.Eng.
Area Manager, Yukon & NWT

CS/SB

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Date Dec 16/16
PERMIT NUMBER PP080
Association of Professional Engineers of Yukon

References:

1. JOAT file "bridge crossings.jpg" dated November 15, 2016.
2. City of Whitehorse aerial file "WH-108.jpg" dated December 8, 2014, and CAD file "Point Park Ortho and Contours.dwg" dated December 5, 2016.