



RESOLUTE BAY, NUNAVUT

# Airport Bird Hazard Risk Assessment

For the Proposed Solid Waste Management Facility

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## Executive Summary

A new solid waste management (SWM) facility has been proposed in Resolute Bay, Nunavut to replace the existing uncontrolled dump site. SWM facilities have the potential to attract a variety of wildlife species, and when located near airports may pose a hazard to the safety of aircraft. Of particular concern to aircraft safety are birds, which have the potential to cause substantial damage or loss upon impact with an aircraft due to the physical characteristics (i.e., size, weight, etc.) and behaviour (i.e., flocking) of some species. Given the proximity of the Proposed Project Site to the Resolute Bay airport and through consultation with regulators including Nav Canada, Transport Canada and the Government of Nunavut, it was determined that an airport bird hazard risk assessment would be required for the construction of a SWM facility at this location.

This report was prepared to examine the bird-related risks associated with the construction of the proposed SWM facility, as per the process outlined in the Transport Canada Airport Bird Hazard Risk-Assessment Process (Transport Canada 2007). The airport bird hazard risk assessment is intended to examine and evaluate the relationship between land use, bird species and aircraft movements in terms of the relative risk to aircraft (Transport Canada 2007). A desktop assessment was conducted to quantify the risks associated with the development of this facility. The desktop assessment was comprised of a review of publicly available environmental information including aerial/ satellite imagery, bird species listings based upon current species ranges, bird species migratory patterns based upon species groups, bird species breeding and foraging behaviour and habitat, Canadian Important Bird Areas (IBAs), Government of Canada Migratory Bird Sanctuaries, Government of Canada National Parks, and Government of Nunavut Territorial Parks and Special Places. In addition, phone interviews were conducted with community members to supplement the information collected and provide local context to this assessment.

Four Bird Hazard Zones (BHZs) are defined by the Transport Canada Airport Bird Hazard Risk-Assessment Process (Transport Canada 2007). These include the Primary Bird Hazard Zone, Secondary Bird Hazard Zone, Category B Event Zone and Special Bird Hazard Zone, in order of highest to lowest risk to aircraft. Only Primary and Secondary BHZs were applicable to this project. SWM facilities are considered high risk land use types by Transport Canada and as such, they are not recommended to occur within Primary or Secondary BHZs. The existing uncontrolled waste dump site (putrescible waste landfill) has been identified as the highest risk land use type within the region. This dump site is located approximately 4 km south of the Resolute Bay Airport runway, aligned with the approach and departure flight paths and within the Primary BHZ. Local knowledge suggests that only the Common Raven and several gull species are known to be attracted to and forage at the existing dump site. No other land use features were identified that frequently attract birds. This existing waste dump site is considered a high risk for Category A and Category B loss events based upon Transport Canada (2007); no mitigation measures are in place to deter birds from this location.

The new SWM facility is proposed at a site approximately 2.8 km west of the Resolute Bay Airport, and is not aligned with the approach and departure flight paths. While it is within the Secondary BHZ, and would likewise be considered a moderate to high risk land use type and attract similar species types, it falls outside of the Primary BHZ. The development of this proposed SWM facility and decommissioning of the old facility is expected to reduce the overall risk posed by waste management facilities in the Resolute Bay area. No bird-related issues or incidents have been reported to date in association with the Resolute Bay Airport and the existing dump site, which suggests that the risk posed by a similar facility outside the Primary BHZ would also be limited based upon the species expected to be present. Nonetheless, a bird deterrence program may be recommended to reduce the potential risk of attracting Hazardous Bird Species to this facility.

## 1.0

# Introduction

## 1.1

## Background

Dillon Consulting Limited (Dillon) was retained by the Government of Nunavut (GN), Department of Community and Government Services (CGS) to conduct a Solid Waste Management Feasibility Study in Resolute Bay, Nunavut. The purpose of this study was to provide a feasibility review of several potential sites and to determine the most favourable location for the development of a new solid waste management (SWM) facility. A site located approximately 2.8 km southwest of the Resolute Bay Airport was selected as the preferred location for the SWM facility (the Proposed Project Site) (**Figure 1**).

SWM facilities have the potential to attract a variety of wildlife species that may pose a hazard to the safety of aircraft. Of particular concern are birds, which have the potential to cause substantial loss upon impact with an aircraft due to the physical characteristics (i.e., size, weight, etc.) and behaviour (i.e., flocking) of some species. Given the proximity of the Proposed Project Site to the airport and through consultation with regulators including Nav Canada, Transport Canada and the GN, it was determined that an airport bird hazard risk assessment would be required for the construction of a SWM facility at this location.

This report was prepared to examine the bird-related risks associated with the construction of the proposed SWM facility, as per the process outlined in Transport Canada (2007).

## 1.2

## Regulatory Overview

## 1.2.1

### Nav Canada

Preliminary approval from Nav Canada was received in a letter dated July 16, 2019, for the development of a landfill and waste diversion facility at the Proposed Project Site. The letter states that “NAV CANADA has evaluated the captioned proposal and has no objection to the project as submitted.” Both the letter, approval and the captioned development proposal submission has been included in **Appendix A**.

## 1.2.2

### Transport Canada

An email was sent to John Mcfee, Civil Aviation Inspector for Aerodromes and Air Navigation from Transport Canada, on April 17, 2019, requesting review and approval of the planned waste facility location Site A. A reply was received that stated “While many airports’ zoning regulations contain clauses restricting land use related to wildlife attractions, Resolute Bay’s zoning regulations do not include any wildlife restrictions. The only restriction at Resolute Bay is for elevation of structures.” A copy of this complete email has been included in **Appendix B**.



**RESOLUTE BAY  
NUNAVUT**  
BIRD HAZARD RISK ASSESSMENT

**PROJECT OVERVIEW**  
FIGURE 1

- Proposed Project Site
- Airport
- Airport Runway Setback (4km)



MAP DRAWING INFORMATION:  
DATA PROVIDED BY DILLON CONSULTING, ESRI  
& NRCAN

MAP CREATED BY: PH  
MAP CHECKED BY: JW  
MAP PROJECTION: NAD 1983 UTM Zone 15N

SCALE 1:50,000

0 0.5 1 2 km



PROJECT: 188896 STATUS: FINAL DATE: 2020-10-01

### 1.2.3 Government of Nunavut

The email correspondence with Transport Canada and the letter received from Nav Canada were sent to Pierre Lamothe, the Manager of Standards and Program Development for the Department of Economic Development and Transportation at the GN. Upon review of the preferred site, it was established that any landfill built within an 8 km radius of the airport will require an airport-bird hazard risk assessment to evaluate the potential risk of the project to aviation safety. As such, the airport bird hazard risk assessment report will be submitted to the Department of Economic Development and Transportation at the GN for approval to proceed with the design process.

### 1.2.4 Airport Zoning Regulations

The Proposed Project Site is located within the 4 km setback that delineates the exclusion zone of the Resolute Bay Airport Zoning Regulations (AZR; Government of Canada 2020) (**Figure 1**). The AZR applies to both land and airspace surrounding the airport runway strip and applies to construction within this area. While Resolute Bay's zoning regulations do not include any wildlife restrictions, a bird hazard risk assessment has been requested by the GN due to the proximity of the Proposed Project Site to the Resolute Bay Airport.

## 2.0

## Project Overview

## 2.1

### Community Overview

The Municipality of Resolute Bay is located on the southern end of Cornwallis Island, in the Qikiqtaaluk Region of Nunavut Territory. It is the second most northerly community in Canada, and is currently the permanent home to approximately 198 people, living in approximately 60 homes, as well as approximately 150 additional seasonal and temporary residents. Cornwallis Island is home to the Polar Continental Shelf Research Facility, which is operated by Natural Resources Canada (NRC), and is a tourist destination for visitors wishing to start expeditions further into Canada's Arctic. Canada also operates a military base on Cornwallis Island, which is located near the Municipality. These facilities share the Resolute Bay Airport, as well as local roads.

Waste generated by the community is currently disposed of at an uncontrolled waste dump site, as well as at two additional waste storage locations. The location of the existing waste dump site is approximately 4 km south of the Resolute Bay Airport runway and within the Primary Bird Hazard Zone (see **Section 3.2** for additional details). The additional waste storage locations are used primarily for storage of scrap metal, appliances, bulky waste, fuel and propane tanks, end-of-life vehicles, construction, and demolition waste.

## 2.2

### Conceptual Project Overview

The proposed SWM facility is currently in the conceptual design phase. The current approach to development of the Resolute Bay Landfill is to design a "natural attenuation" facility. This approach relies, in part, on the ability of the natural environment to mitigate impacts through a combination of biodegradation, dilution, freeze back, and other factors.

The proposed facility includes the features described below in **Table 1** and is anticipated to occupy approximately 85,000 m<sup>2</sup> of surface area.

**Table 1 - Facility Components**

| Site Feature                                       | Description                                                                                                              | Dimensions (Where Applicable)                                                                                                                              |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20 Year Lifespan MSW Cell                          | MSW landfill cell complete leachate collection system.                                                                   | <ul style="list-style-type: none"> <li>Interior Dimensions: 85 x 85 m</li> </ul>                                                                           |
| Leachate Evaporation Pond                          | Evaporation pond complete with geomembrane liner sized to accommodate leachate produced by the MSW cell.                 | <ul style="list-style-type: none"> <li>Interior Dimensions: 17.5 x 21 m</li> </ul>                                                                         |
| Driving Surface                                    | Gravel roadway complete with subgrade, granular base, and granular surface course.                                       | <ul style="list-style-type: none"> <li>Approximately 8,000 m<sup>2</sup></li> <li>2% Crossfall</li> <li>10 m wide</li> </ul>                               |
| Gravel Pad for End-of-Life Vehicle Decommissioning | Gravel pad complete with geomembrane liner.                                                                              | <ul style="list-style-type: none"> <li>10 x 20 m</li> </ul>                                                                                                |
| Gravel Pad for Used Oil Storage Tanks              | Gravel pad, underlain with geomembrane liner.                                                                            | <ul style="list-style-type: none"> <li>10 x 20 m</li> </ul>                                                                                                |
| End-of-Life Vehicle (ELV) Storage                  | Allotted area for ELV storage. Required to provide positive drainage.                                                    | <ul style="list-style-type: none"> <li>38 x 60 m</li> </ul>                                                                                                |
| Empty Fuel Tank Storage                            | Allotted area for empty fuel tank storage. Necessary to provide positive drainage.                                       | <ul style="list-style-type: none"> <li>25 x 38 m</li> </ul>                                                                                                |
| Surface Water Run-on Control Ditching              | For purposes of conveying surface water away from new development. Hydroseed or seed blanket typical to prevent erosion. | <ul style="list-style-type: none"> <li>Approx. 1,600 lin.m</li> <li>1 m deep (typical)</li> <li>1m wide (typical)</li> <li>3:1 slopes (typical)</li> </ul> |
| Perimeter Chain Linked Fence                       | Galvanized steel.                                                                                                        | <ul style="list-style-type: none"> <li>1,200 lin.m</li> <li>2 m high</li> </ul>                                                                            |
| Chain Linked Fence Gates                           | Galvanized steel.                                                                                                        | <ul style="list-style-type: none"> <li>10 m length</li> <li>2 m height</li> </ul>                                                                          |
| Site Lighting                                      | Concrete supported steel posts with light fixture.                                                                       | N/A                                                                                                                                                        |
| Sea-Cans                                           | For the collection and storage of diverted waste prior to shipping.                                                      | <ul style="list-style-type: none"> <li>3 x 3 x 12 m</li> </ul>                                                                                             |
| ATCO Office Trailer                                | Custom-built office trailer available from numerous suppliers.                                                           | <ul style="list-style-type: none"> <li>7 x 13 m</li> </ul>                                                                                                 |
| Contaminated Soil Treatment and Storage            | Gravel pad(s) complete with oil-water separator.                                                                         | <ul style="list-style-type: none"> <li>12 x 65 m (treatment)</li> <li>12 x 65 m (storage)</li> </ul>                                                       |
| Truck Storage Building                             | Pre-fabricated membrane-type structure for storage of dump truck and dozer.                                              | <ul style="list-style-type: none"> <li>9 x 20 m</li> </ul>                                                                                                 |

## 3.0 Methods

### 3.1 Desktop Assessment Process

The desktop assessment methods presented below were developed to collect relevant environmental information for the purposes of this assessment and produce a result in accordance with the Transport Canada Airport Bird Hazard Risk-Assessment Process (Transport Canada 2007). Publicly available environmental information was obtained as part of the desktop review, and phone interviews were conducted with community members to supplement the information collected and provide local context to this assessment.

#### 3.1.1 Desktop Review

The desktop review component of this assessment was conducted to determine the potential bird species, land cover, potential bird habitat and typical environmental conditions present within the Project Study Area. The Project Study Area includes the land within a 4 km setback from the Resolute Bay Airport. The following resources were included as part of the review:

- Aerial/ satellite imagery (Bing, DigitalEarth, ESRI, Google);
- Bird species listings based upon current species ranges (Cornell Lab of Ornithology 2020, Lepage 2020);
- Bird species migratory patterns based upon species groups;
- Bird species breeding and foraging behaviour and habitat;
- Canadian Important Bird Areas (IBAs);
- Government of Canada Migratory Bird Sanctuaries;
- Government of Canada National Parks; and
- Government of Nunavut Territorial Parks and Special Places.

#### 3.1.2 Community Member Phone Interviews

Phone interviews were conducted with two community members. The intent of this consultation was to incorporate local and traditional knowledge into this assessment. Questions were focused on bird species and typical airport operations. Questions related to birds included the species of birds present, species behaviour, species occurrence patterns and known attractant habitat. Questions related to airport operations included details about aircraft arrival frequency, departure frequency, flight paths and aircraft models typically used.

A summary of the community members interviewed is presented below in **Table 2**.

**Table 2 - Community Members Interviewed in Support of the Desktop Assessment**

| <b>Name</b>      | <b>Background</b>                   | <b>Date Interviewed</b> |
|------------------|-------------------------------------|-------------------------|
| Susan Salluviniq | Deputy Mayor of Resolute Bay        | 2020-08-24              |
| Tabitha Mullin   | Wildlife Officer and Council Member | 2020-08-25              |

## 3.2 Airport Bird Hazard Risk Assessment Process

The airport bird hazard risk assessment was prepared in accordance with the process outlined in Transport Canada (2007).

### 3.2.1 Purpose

The airport bird hazard risk assessment is intended to examine and evaluate the relationship between land use, bird species and aircraft movements in terms of the relative risk to aircraft (Transport Canada 2007).

### 3.2.2 Classification of Risk

Classes of risk have been defined by Transport Canada (2007). These are discussed in detail below and include:

- Category A – Catastrophic Loss;
- Category B – Major Damage; and
- Category C – Minor Damage.

#### 3.2.2.1 Category A – Catastrophic Loss

The Category A risk class is defined as catastrophic loss, which includes the complete loss of an aircraft or the loss of more than one life following a bird strike.

#### 3.2.2.2 Category B – Major Damage

The Category B risk class is defined as major damage, which includes significant loss to the airframe, failure of one or more engines/ aircraft systems, serious injury to one or more occupants, or the loss of one life.

#### 3.2.2.3 Category C – Minor Damage

The Category C risk class is defined as minor damage to the airframe, engines or aircraft systems.

### 3.2.3 Elements of Risk

Elements of risk have been defined by Transport Canada (2007). These are discussed in detail below and include:

- Risk Element I – Aircraft Related;

- Risk Element II – Bird Species Related; and
- Risk Element III – Land-Use Related by Hazardous Species.

### 3.2.3.1 Risk Element I – Aircraft Related

This risk element is intended to identify and categorize the potential risk of exposure and the severity of these risks to aircraft. This is accomplished by examining the following aircraft information:

- Categories of aircraft (Federal Aviation Regulations [FAR] airframe and engine certification standards) that currently use, or may use the airport in the future;
- Aircraft flight paths (arrival, departure, transit lateral and transit vertical);
- Aircraft bird strike certification standards; and
- Aircraft flight phases (take-off, initial climb, approach, landing and missed approach).

### 3.2.3.2 Risk Element II – Bird Species Related

This risk element is intended to identify and categorize the bird species that have the potential to occur within proximity to the airport and active flight paths of aircraft. Bird species listings are based upon current species ranges (Cornell Lab of Ornithology 2020, Lepage 2020) and are categorized by level of risk using the Transport Canada Bird Hazard Ranking System presented below in **Table 3**. This risk ranking system is designed to categorize species by the potential severity of an impact with an aircraft based upon weight and behaviour.

**Table 3 - Bird Hazard Ranking System (Transport Canada 2007)**

| Level of Risk             | Characteristics                                                  | Illustrative Species                              |
|---------------------------|------------------------------------------------------------------|---------------------------------------------------|
| Level 1<br>(highest risk) | Very large (>1.8 kg), flocking                                   | Geese spp., Crane spp., Cormorant spp.            |
| Level 2                   | Very large (>1.8 kg), solitary; or<br>Large (1-1.8 kg), flocking | Turkey Vulture, Mallards, Great Black-backed Gull |
| Level 3                   | Large (1-1.8 kg), solitary; or<br>Medium (300-1000 g), flocking  | Red-tailed Hawk, American Crow                    |
| Level 4                   | Medium (300-1000 g), solitary; or<br>Small (50-300 g), flocking  | European Starling                                 |
| Level 5                   | Small (50-300 g), solitary; or<br>Very small (<50 g), flocking   | Eastern Meadowlark, Swallow spp.                  |
| Level 6<br>(least risk)   | Very small (<50 g), solitary                                     | Warbler spp., Vireo spp., Sparrow spp.            |

### 3.2.3.3 Risk Element III – Land-Use Related by Hazardous Species

This risk element is intended to identify and categorize land use related to nesting, feeding, night roosting, daily flight patterns and seasonal flight patterns of hazardous bird species identified in Risk Element II. Hazardous Bird Species are defined as species classified as Level 1, 2, 3 and 4 in the bird hazard ranking system outlined above in **Section 3.2.3.2**.

### 3.2.4 Airport Bird Hazard Zones

Four Bird Hazard Zones (BHZs) are defined by Transport Canada (2007). These are discussed in detail below and include:

- Primary Bird Hazard Zone;
- Secondary Bird Hazard Zone;
- Category B Event Zone; and
- Special Bird Hazard Zone.

#### 3.2.4.1 Primary Bird Hazard Zone

The Primary BHZ is defined as the area that encloses airspace in which aircraft are at or below altitudes of 1,500 feet above ground level (AGL). This zone includes aircraft arrival and departure flight paths and flight phases including take-off, initial climb, approach, landing, and missed approach. Altitudes where these activities occur are the most likely to be occupied by hazardous birds, and at which collisions with birds are most likely to result in a Category A event (catastrophic loss). The method to define the spatial area for the Primary BHZ is outlined in Transport Canada (2007).

#### 3.2.4.2 Secondary Bird Hazard Zone

The Secondary BHZ is composed of a 4 km buffer around the Primary BHZ. This buffer is intended to account for:

- Variables in pilot behaviour and technique;
- Variations in departure and arrival paths that are influenced by environmental conditions, air traffic control (ATC) requirements, instrument flight rules (IFR), visual flight rules (VFR), etc.; and
- Unpredictability of bird behaviour and variations in bird movements around specific land uses.

#### 3.2.4.3 Category B Event Zone

The Category B Event Zone is an area in which collisions with birds are most likely to result in a Category B event (major damage). This zone is typically applied at airports with aircraft that do not use standard flight paths parallel to the runway (e.g., helicopters).

#### 3.2.4.4 Special Bird Hazard Zone

The Special BHZ is an area beyond the Primary, Secondary and Category B zones which contains land uses with a high potential to attract hazardous bird species. This zone was not created for this project as no additional land use features were identified that have the potential to attract birds.

## 4.0

## Results

## 4.1

## Desktop Assessment

## 4.1.1

## Desktop Review

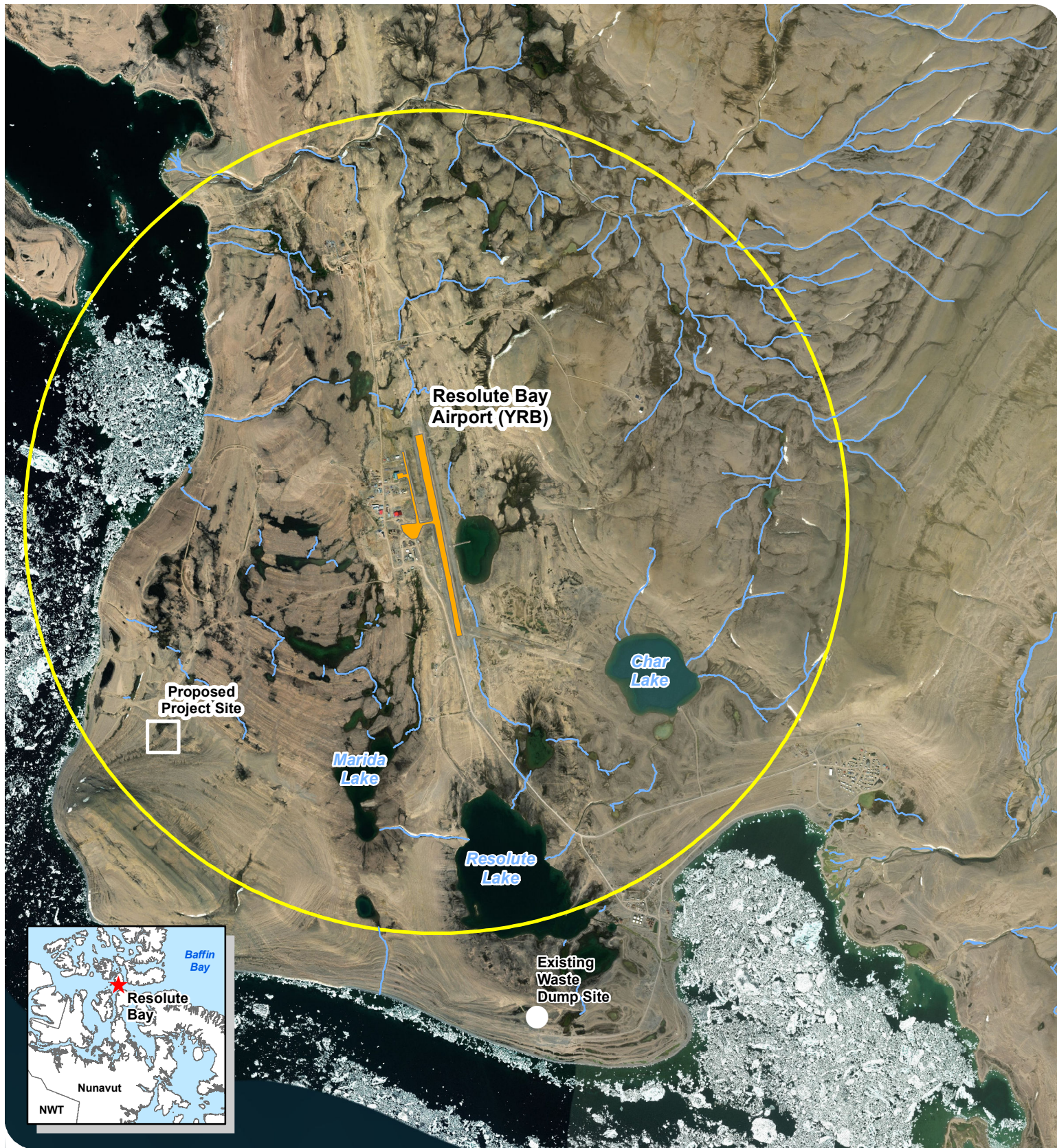
Resolute Bay and the Project Study Area are located within the Parry Islands Plateau ecoregion, Northern Arctic ecozone (Environment and Climate Change Canada 1999). This region experiences a High Arctic ecoclimate and is characterized by sparse and patchy vegetative cover that includes mosses, low-growing herbs, and low-growing shrubs. The Project Study Area primarily consists of rocky terrain with very limited vegetation. Typical species found within this region include arctic poppy (*Papaver radicum*), arctic willow (*Salix arctica*), *Dryas* spp., *Kobresia* spp., purple saxifrage (*Saxifraga oppositifolia*), and sedges (*Carex* spp.).

Typical wildlife within this region includes Arctic Fox (*Vulpes lagopus*), Arctic Hare (*Lepus arcticus*), Caribou (*Rangifer tarandus*), Lemmings (*Lemmini* spp.), Muskox (*Ovibos moschatus*), Polar Bear (*Ursus maritimus*), and a variety of bird species. Specifically, 39 bird species have been identified with the potential to occur within this region. These species are discussed further in **Section 4.2.1.2**.

The Project Study Area primarily consists of terrestrial habitat with a variety of highly seasonal watercourses and waterbodies (**Figure 2**). Three named waterbodies are located south of the Resolute Bay Airport and include Char Lake, Marida Lake, and Resolute Lake. These waterbodies have the potential to provide natural habitat for bird species. The western portion of the Project Study Area includes a stretch of approximately 5.8 km of marine shoreline from Cape Martyr to Allen Bay. This stretch is relatively exposed to oceanic conditions present through the Resolute Passage and is not likely to provide quality habitat for birds (e.g., waterfowl, shorebirds, etc.) that are typically associated with protected bays and inlets. Seabirds, which include many species of gulls, are known to travel and forage along exposed shorelines, such as these.

Tupirvik Territorial Park (campground) is located along the northern boundary of the Project Study Area. This very small Territorial Park have been developed for camping and includes outhouse facilities, tent pads, and fire pits. No unique or notable wildlife habitat is present within the park. The Project Study Area is not located within proximity to Canadian IBAs, Government of Canada Migratory Bird Sanctuaries or Government of Canada National Parks. There are no known colonial bird nesting sites within the Study Area.

The environmental features discussed above are presented below in **Figure 2**.



## RESOLUTE BAY NUNAVUT

BIRD HAZARD RISK ASSESSMENT

## ENVIRONMENTAL FEATURES FIGURE 2

- Existing Waste Dump Site
- Airport
- Watercourses
- Airport Runway Setback (4km)
- Proposed Project Site



MAP DRAWING INFORMATION:  
DATA PROVIDED BY DILLON CONSULTING, ESRI  
& NRCAN

MAP CREATED BY: PH  
MAP CHECKED BY: JW  
MAP PROJECTION: NAD 1983 UTM Zone 15N

SCALE 1:50,000

0 250 500 1,000 Meters



PROJECT: 188896 STATUS: FINAL DATE: 2020-10-01

#### 4.1.2 Community Member Phone Interviews

##### 4.1.2.1 Susan Salluviniq – Deputy Mayor of Resolute Bay

Susan Salluviniq is the Deputy Mayor of Resolute Bay, a Community Liaison for Qikiqtani Inuit Association (QIA), and an experienced hunter and trapper in the community. Susan has been a Community Liaison with QIA since October 2002 and works with the community compassionate travel program, committee enrollment and is on the community advanced resource committee.

During the phone interview Susan indicated that she is not aware of any specific locations where bird species commonly nest or nesting grounds nearby. Birds are not frequently observed within proximity to the community. She explained that Northern Fulmars (*Fulmarus glacialis*) and Black-legged Kittiwakes (*Rissa tridactyla*; a small species of gull) are observed shortly after a whale is harvested and brought to the community for processing. Susan stated that a variety of gull species and Common Ravens (*Corvus corax*) congregate and feed at the existing dump site, but she has not noted any additional locations within the community where birds are commonly observed.

Susan indicated that although the local waterbodies have the potential to provide habitat for waterfowl and shorebird species, birds are not known to congregate in large numbers at these location. She indicated that Snow Geese (*Anser caerulescens*) and Brants (*Branta bernicla*) are present during the summer months. Typically, they arrive in the community starting in June/July and begin migrating south at the end of August and September.

Lastly, Susan indicated that she is not aware of any bird-related issues at the Resolute Bay Airport or concerns associated with aircraft utilizing this facility.

##### 4.1.2.2 Tabitha Mullin – Wildlife Officer and Council Member

Tabitha Mullin is a Wildlife Officer with the Department of Environment at the GN and is on the community Council. As a Wildlife Officer in Resolute Bay, Tabitha is responsible for issuing wildlife tags for muskox, wolf and polar bear, issuing and certifying narwhal tusks, and ensuring that fuel spills are reported and cleaned up, among other tasks. As a member of Council, Tabitha is responsible for approving land leases, making recommendations on research permits, community budget review and approval, and ensuring that the concerns of the community are understood, among other tasks.

During the phone interview Tabitha stated that Common Ravens, a variety of gull species, Brants, Snow Geese, Gyrfalcons (*Falco rusticolus*), Ptarmigans, Snow Buntings (*Plectrophenax nivalis*), Sanderlings (*Calidris alba*) and occasionally Rough-legged Hawks (*Buteo lagopus*), are observed in and around the community of Resolute Bay. Most of these species are observed in and around the community; however, Tabitha indicated that Brants and Snow Geese generally avoid the community and occur to the north. The majority of these species are seasonal residents of this region and migrate to Resolute in the spring and return to wintering ranges in the fall. Only Common Ravens and Ptarmigans have been

identified as year-round residents. During a short window in the fall, juvenile Snowy Owls (*Bubo scandiacus*) and Gyrfalcons have been observed within proximity to the community, but are not observed at any other time during in the year.

Tabitha stated that there is a hill located behind the community that offers nesting habitat for gull species and Common Ravens; however, use of this location varies year-to-year. In the last two years several gull species have also been observed nesting in Resolute Lake; however, she is not aware of any other bird nesting locations near the community.

Similar to other community members, Tabitha also indicated that Common Ravens and gull species are often observed at the local waste dump site.

As far as Tabitha is aware, there are no bird-related issues at the local airport and birds strikes have not been reported with aircraft. When migrating north, Brants have been observed using a natural land use stopover area northwest of the airstrip for a few days; however, Tabitha explained that the Brants remain far enough away that they do not interfere with planes taking off or landing. Community employees are also involved in reporting birds observed near the airstrip, even if they are not causing any immediate issues. This community-based mitigation strategy allows airport staff to identify bird-related risks early and often.

Although not related to birds, Tabitha also indicated that from September to December, Polar Bears (*Ursus maritimus*) are observed at the local waste dump site because it is not fenced off and are known to cause issues within the community.

## 4.2 Airport Bird Hazard Risk Assessment

The airport bird hazard risk assessment was completed using the information compiled during the desktop review and community member phone interviews. This information was considered in relation to the BHZs.

### 4.2.1 Elements of Risk

#### 4.2.1.1 Risk Element I – Aircraft Related

Aircraft typically utilizing the Resolute Bay Airport are classified under the FAR 23 category (Normal Category Commuter Aircraft) and FAR 25 category (Transport Category Aircraft). As per Transport Canada (2007), Category A or B losses are possible in the event of a bird strike.

A maximum of six total flights per day (three arriving and three departing flights) was assumed based upon personal communication with community members and available scheduled flight information (Flight Aware 2020). This results in an estimated maximum of 42 flights per week.

A single gravel runway is currently in use at the Resolute Bay Airport and it is oriented in a north/northwest – south/southeast direction. Flight paths for take-off, initial climb, approach, landing and missed approach also follow this orientation.

#### 4.2.1.2 Risk Element II – Bird Species Related

A total of 39 bird species were identified during the desktop review with the potential to occur within the Project Study Area. The full list of bird species with ranges known to occur within this region is provided in **Table 4**. Of the species identified, 34 have been classified as Hazardous Bird Species (Risk Levels 1 to 4).

Of the birds identified as Hazardous Bird Species:

- Four species have been classified under risk level 1 (highest risk), including Brant, Common Eider (*Somateria mollissima*), Sandhill Crane (*Antigone Canadensis*) and Snow Goose.
- Seven species have been classified under risk level 2, including Glaucous Gull (*Larus hyperboreus*), Herring Gull (*Larus argentatus*), King Eider (*Somateria spectabilis*), Long-tailed Duck (*Clangula hyemalis*), Pacific Loon (*Gavia pacifica*), Red-throated Loon (*Gavia stellata*) and Snowy Owl.
- Ten species have been classified under risk level 3, including Black Guillemot (*Cepphus grylle*), Black-legged Kittiwake, Common Raven, Gyrfalcon, Iceland Gull (*Larus glaucoides*), Ivory Gull (*Pagophila eburnea*), Northern Fulmar (*Fulmarus glacialis*), Rock Ptarmigan (*Lagopus muta*), Thick-billed Murre (*Uria lomvia*) and Willow Ptarmigan (*Lagopus lagopus*).
- Thirteen species have been classified under risk level 4, including Arctic Tern (*Sterna paradisaea*), Dovekie (*Alle alle*), Long-tailed Jaeger (*Stercorarius longicaudus*), Parasitic Jaeger (*Stercorarius parasiticus*), Pomarine Jaeger (*Stercorarius pomarinus*), Purple Sandpiper (*Calidris maritima*), Red Knot (*Calidris canutus*), Red Phalarope (*Phalaropus fulicarius*), Ross's Gull (*Rhodostethia rosea*), Rough-legged Hawk (*Buteo lagopus*), Ruddy Turnstone (*Arenaria interpres*), Sabine's Gull (*Xema sabini*) and Sanderling (*Calidris alba*).

**Table 4 - Bird Species with the Potential to Occur within the Project Study Area**

| Common Name                     | Scientific Name              | Risk Level |
|---------------------------------|------------------------------|------------|
| <b>ANSERIFORMES: Anatidae</b>   |                              |            |
| Brant                           | <i>Branta bernicla</i>       | 1          |
| Common Eider                    | <i>Somateria mollissima</i>  | 1          |
| King Eider                      | <i>Somateria spectabilis</i> | 2          |
| Long-tailed Duck                | <i>Clangula hyemalis</i>     | 2          |
| Snow Goose                      | <i>Anser caerulescens</i>    | 1          |
| <b>GALLIFORMES: Phasianidae</b> |                              |            |
| Rock Ptarmigan                  | <i>Lagopus muta</i>          | 3          |
| Willow Ptarmigan                | <i>Lagopus lagopus</i>       | 3          |
| <b>GRUIFORMES: Gruidae</b>      |                              |            |

| Common Name                              | Scientific Name                 | Risk Level |
|------------------------------------------|---------------------------------|------------|
| Sandhill Crane                           | <i>Antigone canadensis</i>      | 1          |
| <b>CHARADRIIFORMES: Scolopacidae</b>     |                                 |            |
| Baird's Sandpiper                        | <i>Calidris bairdii</i>         | 5          |
| Purple Sandpiper                         | <i>Calidris maritima</i>        | 4          |
| Red Knot                                 | <i>Calidris canutus</i>         | 4          |
| Red Phalarope                            | <i>Phalaropus fulicarius</i>    | 4          |
| Ruddy Turnstone                          | <i>Arenaria interpres</i>       | 4          |
| Sanderling                               | <i>Calidris alba</i>            | 4          |
| White-rumped Sandpiper                   | <i>Calidris fuscicollis</i>     | 5          |
| <b>CHARADRIIFORMES: Stercorariidae</b>   |                                 |            |
| Long-tailed Jaeger                       | <i>Stercorarius longicaudus</i> | 4          |
| Parasitic Jaeger                         | <i>Stercorarius parasiticus</i> | 4          |
| Pomarine Jaeger                          | <i>Stercorarius pomarinus</i>   | 4          |
| <b>CHARADRIIFORMES: Alcidae</b>          |                                 |            |
| Black Guillemot                          | <i>Cephus grylle</i>            | 3          |
| Dovekie                                  | <i>Alle alle</i>                | 4          |
| Thick-billed Murre                       | <i>Uria lomvia</i>              | 3          |
| <b>CHARADRIIFORMES: Laridae</b>          |                                 |            |
| Arctic Tern                              | <i>Sterna paradisaea</i>        | 4          |
| Black-legged Kittiwake                   | <i>Rissa tridactyla</i>         | 3          |
| Glaucous Gull                            | <i>Larus hyperboreus</i>        | 2          |
| Herring Gull                             | <i>Larus argentatus</i>         | 2          |
| Iceland Gull                             | <i>Larus glaucoideus</i>        | 3          |
| Ivory Gull                               | <i>Pagophila eburnea</i>        | 3          |
| Ross's Gull                              | <i>Rhodostethia rosea</i>       | 4          |
| Sabine's Gull                            | <i>Xema sabini</i>              | 4          |
| <b>GAVIIFORMES: Gaviidae</b>             |                                 |            |
| Pacific Loon                             | <i>Gavia pacifica</i>           | 2          |
| Red-throated Loon                        | <i>Gavia stellata</i>           | 2          |
| <b>PROCELLARIIFORMES: Procellariidae</b> |                                 |            |
| Northern Fulmar                          | <i>Fulmarus glacialis</i>       | 3          |
| <b>ACCIPITRIFORMES: Accipitridae</b>     |                                 |            |
| Rough-legged Hawk                        | <i>Buteo lagopus</i>            | 4          |
| <b>STRIGIFORMES: Strigidae</b>           |                                 |            |
| Snowy Owl                                | <i>Bubo scandiacus</i>          | 2          |
| <b>FALCONIFORMES: Falconidae</b>         |                                 |            |
| Gyr Falcon                               | <i>Falco rusticolus</i>         | 3          |
| <b>PASSERIFORMES: Corvidae</b>           |                                 |            |
| Common Raven                             | <i>Corvus corax</i>             | 3          |

| Common Name                      | Scientific Name              | Risk Level |
|----------------------------------|------------------------------|------------|
| <b>PASSERIFORMES: Alaudidae</b>  |                              |            |
| Horned Lark                      | <i>Eremophila alpestris</i>  | 5          |
| <b>PASSERIFORMES: Calcaridae</b> |                              |            |
| Lapland Longspur                 | <i>Calcarius lapponicus</i>  | 5          |
| Snow Bunting                     | <i>Plectrophenax nivalis</i> | 5          |

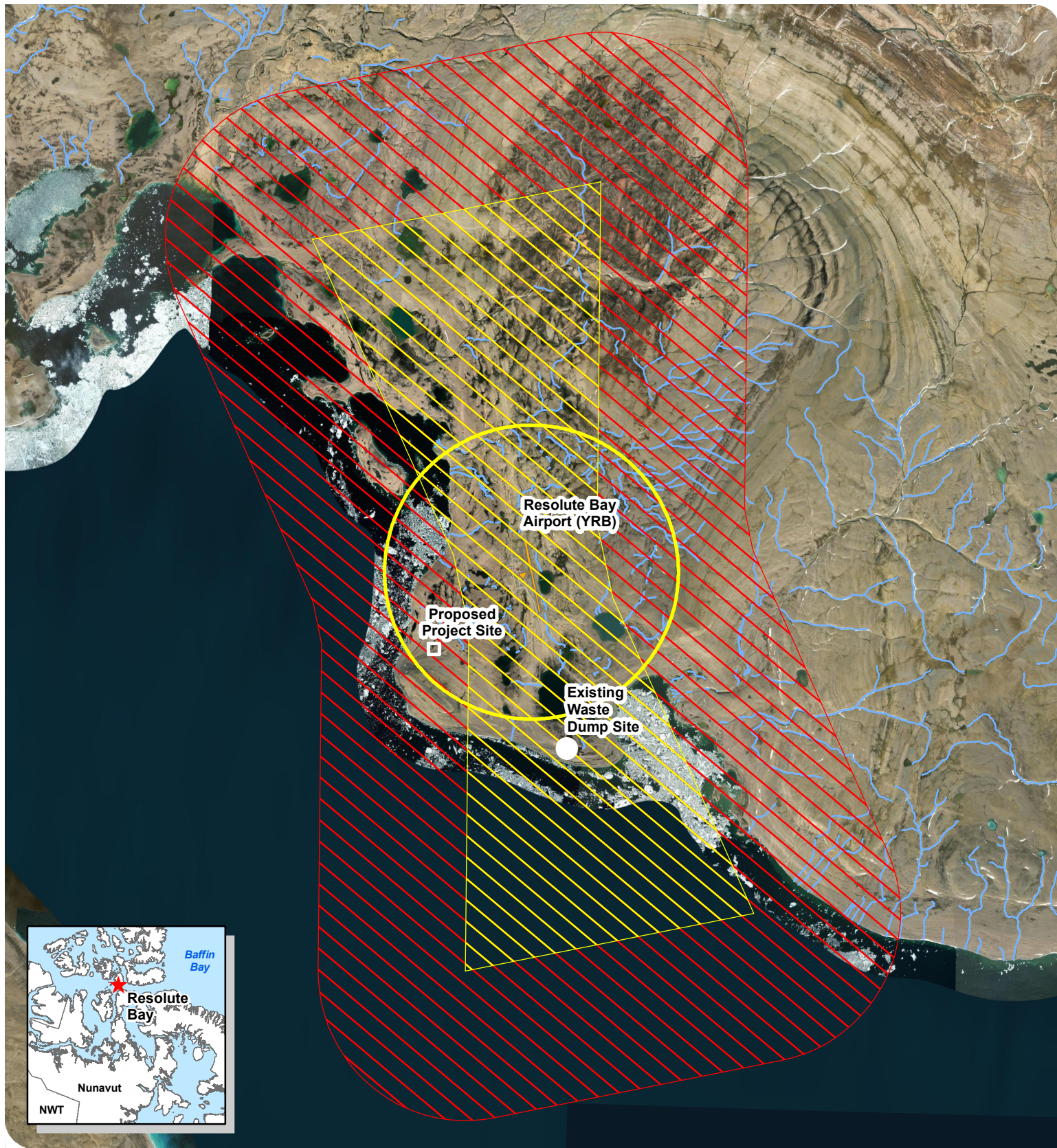
## 4.2.1.3

**Risk Element III – Land-Use Related by Hazardous Species**

Several land use types are present within the Project Study Area that have the potential to act as an attractant to some of the 34 Hazardous Bird Species. As such, Primary and Secondary BHZs were created for the Resolute Bay Airport. The BHZs are presented below in **Figure 3**.

The highest risk land use type within the Project Study Area is the existing dump site. This uncontrolled waste dump site is located approximately 4 km south of the Resolute Bay Airport runway, aligned with the approach and departure flight paths and within the Primary BHZ. Local knowledge suggests that Common Raven and several gull species are known to forage at this location. The proposed SWM facility will also be considered a high risk land use type and is expected to attract a similar variety of bird species. This facility would be sited approximately 2.8 km west of the Resolute Bay Airport, not aligned with the approach and departure flight path, within the Secondary BHZ. As SWM facilities are considered high risk land use types by Transport Canada (2007), they are not recommended to occur within Primary or Secondary BHZs. As such, a bird deterrence program may be recommended to reduce the potential risk of attracting Hazardous Bird Species to this facility.

Land uses with limited risks include the commercial and residential infrastructure associated with the community of Resolute Bay and natural habitats including waterbodies and watercourses. However, local knowledge does not suggest that bird species congregate at or regularly use these features.



**RESOLUTE BAY  
NUNAVUT**  
BIRD HAZARD RISK ASSESSMENT

**PRIMARY AND SECONDARY  
BIRD HAZARD ZONES**  
FIGURE 3

- |                                                                                                              |                                                                                                                  |                                                                                                 |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|  Existing Waste Dump Site |  Airport                      | <b>Bird Hazard Zones</b>                                                                        |
|  Watercourses             |  Airport Runway Setback (4km) |  Primary   |
|  Proposed Project Site    |                                                                                                                  |  Secondary |



MAP DRAWING INFORMATION:  
DATA PROVIDED BY DILLON CONSULTING, ESRI  
& NRCAN

MAP CREATED BY: PH  
MAP CHECKED BY: JW  
MAP PROJECTION: NAD 1983 UTM Zone 15N

SCALE 1:140,000

0 1 2 4 Kilometers



PROJECT: 188896 STATUS: FINAL DATE: 2020-10-01

## 4.3

## Assessment Summary

Although a total of 39 bird species (34 species classified as Hazardous Bird Species) were identified with the potential to occur within the region during the desktop review, local knowledge suggests that a smaller number of bird species and relatively small number of individuals typically occur within the Project Study Area. Of the birds identified as Hazardous Bird Species, the highest risk (risk level 1) includes Brant, Common Eider, Sandhill Crane and Snow Goose. Of these species, only Brant and Snow Goose have been noted to occur by local residents. These species are typically associated with natural features including wetlands and waterbodies, which are considered limited risk features. As the proposed project will not be developing a land use that is anticipated to attract these species, we anticipate that the bird strike risk associated with these high risk species will not be impacted by the development of this SWM facility. Similarly, the majority of the moderate risk species were not noted to occur within the Project Study Area by local residents.

The existing uncontrolled waste dump site has been identified as the highest risk land use type within the Project Study Area. This waste dump site is located approximately 4 km south of the Resolute Bay Airport runway, aligned with the approach and departure flight paths and within the Primary BHZ. Local knowledge suggests that only the Common Raven and several gull species are known to be attracted to and forage at the existing dump site. No other land use features were identified that frequently attract birds. This existing dump site would be considered a high risk for Category A and Category B loss events based upon the Transport Canada Airport Bird Hazard Risk-Assessment Process (Transport Canada 2007) and no mitigation measures are in place to deter birds from this location. However, no bird-related issues or incidents have been reported in association with the Resolute Bay Airport. This suggests that the risk posed by a similar waste disposal site would also be limited based upon the species likely to be present.

The proposed SWM facility is expected to attract a similar variety of bird species as the existing dump site. The proposed project location is approximately 2.8 km west of the Resolute Bay Airport, not aligned with the approach and departure flight paths, within the Secondary BHZ and outside of the Primary BHZ. The risk of this facility should be considered lower than the risk of the existing dump site given this location. A bird deterrence program may also be considered to further reduce the potential risk of attracting Hazardous Bird Species to this facility.

The proposed development of a SWM facility is expected to result in a moderate to high risk for bird strike events, including Category A and Category B loss events, with no mitigation measures implemented. However, the development of a new engineered landfill is expected to reduce the overall risk of bird interactions as a result of improved solid waste management practices, compared to the current waste dump site. Decommissioning of the current dump site is recommended to further decrease the risk of interactions, as the current dumpsite is located within the primary BHZ, and current waste management practices are not conducive to reducing bird attractions.

## 5.0

## Mitigation Measure Review

As noted in Transport Canada (2007), purposeful mitigation measures can reduce the potential risk of development to aircraft operations. The Transport Canada Bird Control at Airports (Transport Canada 2010) document provides an overview of recommended bird control and deterrence techniques. With respect to the proposed project, active and passive mitigation measures were reviewed to reduce the risk of bird collisions with aircraft. In addition, an option without mitigation measures should be considered given the more limited risk that the development of this facility is likely to pose relative to the existing dump site location.

Developing mitigation strategies related to birds is challenging because of the difficulty predicting bird numbers and movement patterns year-to-year. Based upon this uncertainty, passive management techniques are typically an effective option to reduce this risk. These passive techniques may include habitat manipulation and exclusion techniques. However, the manipulation or removal of habitat/attractant land uses is not always possible, therefore it is important to evaluate methods to make these sites unattractive or inaccessible to birds. These passive techniques, while potentially costly, can be a long term solution. Active mitigation techniques are also potential solutions and include noise deterrence and active response to the arrival or presence of congregations of birds. However, these techniques would require regular staffing and are not necessarily a long term or feasible solution for the community.

Potential management techniques include:

- **Exclusion Fencing/ Overhead Exclusion System:** Exclusion systems can be designed from a variety of materials but are costly to maintain in remote communities and have varying degrees of success depending upon the size of the landfill.
- **Visual Deterrents:** This may include scarecrows or bird deterrence flagging. This technique is subject to potential habituation and may require active management (e.g., changing decoy types and locations) to reduce habituation.
- **Noise Deterrents:** The benefits include initial effectiveness at dispersing congregations of birds and the ability to be deployed day and night (i.e., gas cannons). This technique is subject to potential bird habituation and may cause disturbance to the surrounding community.

The level of effectiveness of these measures depend on several factors including the type of species, weather conditions and time of year. Installation, maintenance and cost must be considered, given the challenges of operating in northern communities. These factors will impact which, if any, of the potential management techniques could be implemented to reduce the presence of the targeted bird species. Potential mitigation techniques should be discussed in consultation with relevant regulatory agencies.

## 6.0

## Conclusion

In conclusion, the Transport Canada Airport Bird Hazard Risk-Assessment Process (Transport Canada 2007) suggests that the proposed development of a SWM facility has the potential to result in a moderate to high risk to aircraft, including Category A and Category B loss events, with no mitigation measures implemented. However, local knowledge suggests that a small number of bird species and individuals typically occur within the Project Study Area. In addition, the majority of bird species that were identified in the desktop review are only present in the region for several months each summer before migrating back to their respective wintering ranges. This limits the potential exposure of aircraft to these species and further reduces the risk. In addition, the airport has a small number of flights per day, which further reduces the risk of exposure.

The development of a new engineered landfill is expected to reduce the overall risk of bird interactions as a result of improved solid waste management practices, compared to the current waste dump site. The existing dump site is located within the Primary BHZ and although bird-related issues or incidents were not noted during the desktop review and community member phone interviews, decommissioning of the current dump site is recommended. This is intended to further decrease the risk of bird-related interactions, as the location of the current dumpsite and waste management practices are not conducive to reducing bird attractions. In addition, mitigation measures could be implemented to reduce the potential risk of a bird collision further. Lastly, the appropriateness and effectiveness of mitigation measures that may be implemented can be regularly evaluated, modified and discussed with relevant regulatory agencies, when required.

## Appendix A

### *Nav Canada Preliminary Approval Letter*



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July 16, 2019

Your file  
18-8896, N/A  
Our file  
19-2442

Ms. Kimberley Young  
Municipality of Resolute Bay  
PO Box 60  
Resolute Bay, NU  
X0A 0V0

**RE: Development Proposal/Plans: Landfill - Resolute Bay, NU**  
**(N74° 42' 05.78" W95° 3' 23.60" / 65.6168' AGL / 170.6037' AMSL)**

Ms. Young,

NAV CANADA has evaluated the captioned proposal and has no objection to the project as submitted.

In the interest of aviation safety, it is incumbent on NAV CANADA to maintain up-to-date aeronautical publications and issue NOTAM as required. To assist us in that end, we ask that you notify us at least 10 business days prior to the start of construction. This notification requirement can be satisfactorily met by returning a completed, signed copy of the attached form by e-mail at [landuse@navcanada.ca](mailto:landuse@navcanada.ca) or fax at 613-248-4094. In the event that you should decide not to proceed with this project or if the structure is dismantled, please advise us accordingly so that we may formally close the file.

If you have any questions, contact the Land Use Department by telephone at 1-866-577-0247 or e-mail at [landuse@navcanada.ca](mailto:landuse@navcanada.ca).

NAV CANADA's land use evaluation is valid for a period of 12 months. Our assessment is limited to the impact of the proposed physical structure on the air navigation system and installations; it neither constitutes nor replaces any approvals or permits required by Transport Canada, other Federal Government departments, Provincial or Municipal land use authorities or any other agency from which approval is required. Innovation, Science and Economic Development Canada addresses any spectrum management issues that may arise from your proposal and consults with NAV CANADA engineering as deemed necessary.

This document contains information proprietary to NAV CANADA. Any disclosure or use of this information or any reproduction of this document for other than the specific purpose for which it is intended is expressly prohibited except as NAV CANADA may otherwise agree in writing.

A handwritten signature in blue ink, appearing to read "Olivier Meier".

**Olivier Meier | NAV CANADA**  
Manager – AIM Land Use

cc      NOPR - Northern and Prairie Region, Transport Canada  
         CYRB - RESOLUTE BAY

## Appendix B

### *Transport Canada Email Correspondence*

----- Forwarded message -----

From: **McFee, John** <[john.mcfee@tc.gc.ca](mailto:john.mcfee@tc.gc.ca)>

Date: Wed, 17 Apr 2019 at 07:10

Subject: RE: Landfill Siting for Resolute, NU

To: Bertrand, Jeannie <[jbertrand@dillon.ca](mailto:jbertrand@dillon.ca)>

Cc: [jmakpah@gov.nu.ca](mailto:jmakpah@gov.nu.ca) <[jmakpah@gov.nu.ca](mailto:jmakpah@gov.nu.ca)>, Bartley, Kelly <[Kelly.Bartley@tc.gc.ca](mailto:Kelly.Bartley@tc.gc.ca)>, Harris, Devon <[devon.harris@tc.gc.ca](mailto:devon.harris@tc.gc.ca)>

Good Morning Jeannie,

I've had a look at the Resolute Bay Airport Zoning Regulations.

While many airports' zoning regulations contain clauses restricting land use related to wildlife attractions, Resolute Bay's zoning regulations do not include any wildlife restrictions. The only restriction at Resolute Bay is for elevation of structures.

There is no exemption from the Aeronautics Act required for this project.

Some thoughts:

- While there are no zoning issues, a landfill in the vicinity of an airport may pose a safety hazard due to attraction of birds and other wildlife.
- I've attached Transport Canada's publication on land use in the vicinity of aerodromes. There is general information and recommendations that may be relevant to the project.
- While there is no requirement to submit anything else to Transport Canada Civil Aviation, there may be other local, territorial, or federal notifications or authorizations required.
- Obtaining a NavCanada land-use assessment and requesting input from Nunavut Airports would be prudent.

Hopefully this helps. Please let me know if you have additional questions.

Regards

John McFee

Civil Aviation Safety Inspector – Aerodromes and Air Navigation

Transport Canada / Government of Canada

[john.mcfee@tc.gc.ca](mailto:john.mcfee@tc.gc.ca) / Tel: 204-983-2284 / Fax: 800-824-4442 / TTY: 1-888-675-6863

Inspecteurs de la sécurité de l'aviation civil – Aérodrômes et navigation aérienne

Transports Canada / Gouvernement du Canada

[john.mcfee@tc.gc.ca](mailto:john.mcfee@tc.gc.ca) / Tél. : 204-983-2284 / Fax : 800-824-4442 / ATS : 1-888-675-6863

**\*\*\* NOTICE / AVIS \*\*\***

For all airport operators - Please send all operational requests to the following email: [CASPNR-SACRPN@tc.gc.ca](mailto:CASPNR-SACRPN@tc.gc.ca)

Pour tout opérateurs d'aéroports - S'il vous plait envoyez toutes demandes opérationels au courriel suivant: [CASPNR-SACRPN@tc.gc.ca](mailto:CASPNR-SACRPN@tc.gc.ca)

**From:** Bertrand, Jeannie [mailto:[jbertrand@dillon.ca](mailto:jbertrand@dillon.ca)]

**Sent:** Tuesday, April 16, 2019 4:40 PM

**To:** McFee, John <[john.mcfee@tc.gc.ca](mailto:john.mcfee@tc.gc.ca)>

**Cc:** [jmakpah@gov.nu.ca](mailto:jmakpah@gov.nu.ca); Bartley, Kelly <[Kelly.Bartley@tc.gc.ca](mailto:Kelly.Bartley@tc.gc.ca)>

**Subject:** Landfill Siting for Resolute, NU

Hi John,

I spoke with you a few weeks ago regarding our landfill siting project for Resolute.

The community is looking to develop a new landfill site, and has identified the two locations on this map as their first choices. The current site is marked with a red box, and is basically just a location where garbage is being burned. They don't have a true landfill site currently, where waste is buried.

We are wondering what the next steps are to be considered for a development exemption. Will you please let em know what information will be required, as well as what kind of timeline we would be looking at?

We will likely have a couple more of these, but we'll start with this one for now.

Thank you very much for your help,

## References

- Cornell Lab of Ornithology. 2020. Birds of the World –Online. Retrieved from: <https://birdsoftheworld.org/bow/home> [Accessed 13/08/2020].
- Environment and Climate Change Canada. 1999. National Ecological Framework – Ecozones and Ecoregions. Retrieved from: <http://sis.agr.gc.ca/cansis/nsdb/ecostrat/index.html> [Accessed 13/08/2020].
- Flight Aware. 2020. Flight Aware Historic Arrival and Departure Data – Resolute Bay Airport (Resolute, Nunavut - CYRB). Retrieved from: <http://www.flightaware.com/live/airport/CYRB> [Accessed 13/08/2020].
- Government of Canada. 2020. Resolute Bay Airport Zoning Regulations. C.R.C., c. 106. Retrieved from: [https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,\\_c.\\_106/index.html](https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._106/index.html) [Accessed 17/08/2020].
- Lepage, D. 2020. Checklist of the birds of Cornwallis Island. Avibase, the world bird database. Retrieved from: <https://avibase.bsc-eoc.org/checklist.jsp?lang=EN&region=canucn&list=clements&format=2> [Accessed 13/08/2020].
- Transport Canada. 2007. Transport Canada Airport Bird Hazard Risk-Assessment Process. Airport Wildlife Management Bulletin (TP 8240) No. 39 - Fall 2007. Retrieved from: <https://tc.canada.ca/en/aviation/publications/airport-wildlife-management-bulletin-tp-8240-no-39> [Accessed 06/07/2020].
- Transport Canada. 2010. Transport Canada Bird Control at Airports. Airport Wildlife Management Bulletin (TP 13029). Retrieved from: <https://tc.canada.ca/en/aviation/publications/bird-control-airports> [Accessed 13/08/2020].