

						equipment; remote generators and heaters.
Lube and Oils	hazardous	20	100	2000	Liters	Maintenance of mobile equipment.
Paint	hazardous	10	4	40	Liters	Painting steel hardware and miscellaneous components.
Explosives	hazardous	4	10	40	Metric Tons	Quarrying.
Propane	fuel	20	30	600	Liters	Heaters.

AL^{5b} <D^{5b}C>L^{5b}D^{5b}

▷^c▷^c CL^{5b} <D^{5b}C>σ<^{5b}D^{5b}	°b^{5b} ΔΓ^{5b}C°b°C°σ<^{5b}<^c	αP^c ΔΓ^{5b}C°b°C°σ<^{5b}<^c
5	From the existing water supply infrastructure in Resolute Bay. Delivered by water truck if local supply is unable to meet needs.	hamlet reservoir / water system

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

Uplift. Rock types typically comprise sedimentary rocks including limestone, dolostone, dolomite and shale as shown (symbols Sdo1, Scs, and Osa1, Figure 6 2) and siltstone and pebble to boulder grade conglomerate (symbol Dpa1, Figure 6 2). The geotechnical field survey confirmed that both quarry sites south of the community comprise predominantly slightly to highly weathered, frost shattered, limestone. An assessment of ARD and metal leaching (ML) potential was conducted on one rock sample representative of the major rock type from the proposed quarry locations in 2019. ARD/ML testing results indicated basic or alkaline tendency, with very low concentrations of Acid Generating Potential (AGP). Subsequent testing of two (2) rock samples collected from drilling is currently underway. It is likely that the rock is non potentially acid generating (non-PAG).

6.3.3 Surface Features

The community of Resolute Bay and the surrounding area is relatively flat and is part of a series of raised beach terraces. The surface is strewn with patterned ground, which is evidence for ice wedges and gelifluction lobes on slopes surrounding the community. Drainage into Resolute Bay comes from two main sources. Resolute Creek to the west of the community (western side of Resolute Bay) is fed by Resolute Lake and Char Lake as well as other smaller lakes. Mecham River to the south of the community (east side of Resolute Bay) is fed by numerous small lakes and a small creek approximately 300 m south of the community (east side of Resolute Bay). In general, the shoreline comprises mainly medium to coarse sub-rounded to angular gravel in the supratidal zone with various sedimentary lithologies (beach deposits). Within the intertidal zone on the east side of Resolute Bay, surrounding the existing creek, just south of the community, the material is generally fine and comprises fine to medium gravel fining to gravelly sand to sandy gravel near the lower water tidal level. The sands are typically medium to coarse grained, sub-rounded to angular. Moving away from the creek, both to the west and south, the presence of the sand layer at the low water level is absent.

6.3.4 Ground Stability and Permafrost

All of Baffin Island is in the Continuous Permafrost Zone (Osterkamp, 2001), where the ground remains below 0°C for a minimum of two years (International Permafrost Association). As per Journeaux Associates (2012) there is no sub-sea permafrost in Nunavut (Figure 6 2). However, Worley has experienced other projects (Nanisivik and Milne Inlet) where sub-sea permafrost was detected, therefore is likely to be present in Resolute Bay. The permafrost of Baffin Island uplands has been estimated to be 400 to 700 m thick (Aarluk, 2012) with a surface active layer that can vary widely from less than 1 m in wet soils to greater than 5 m in rock outcrop. While melting permafrost could affect the structures, it is unlikely in this case since melting sub-sea permafrost is a relatively slow process (hundreds of years), and it is typically located well below the seabed surface, which in this case is within the stable bedrock.

6.3.5 Hydrology

The freshwater and marine watersheds pertinent to Resolute Bay are displayed in Figure 6 4 and described below.

6.3.5.1 Fresh Water

There are at least 38 lakes and ponds located across Cornwallis Islands, including Char, Strict, and Resolute lakes located near The Project site (Michelutti et al., 2007). There is one creek crossings which would intersect the haul road and foreshore area of the Community Harbour (see Figure 1 2). The creek is small connected to drainage from a small upland lake. There are no concerns about the Project footprint impacting near by lakes (Dynamic Ocean & Worley, 2025b). There are two creeks on the eastern and western shore of Resolute Bay (described in Section 4.4 in the ESEB Report (Dynamic Ocean & Worley, 2025b)). The creek to the west of the community, Resolute Creek, is fed by Resolute and Char lakes as well as other smaller lakes. The mouth of Resolute Creek is located about 1.5 km NW away from the Community Harbour footprint. The creek to the south of the community, Mecham Creek, is fed by numerous small lakes. The mouth of Mecham Creek is 0.2 km S of the Community Harbour footprint (see Figure 7-10 in the ESEB Report (Dynamic Ocean & Worley, 2025b)). There may be some sea run Arctic char (described in Section 6.4.5.1.2) in the lakes (IQ Workshop - Peter Amarualik, 2019), and in the nearby creeks (IQ Workshop - Joadamee Amagoalik) (see Figure 4 1 for locations).

6.3.5.2 Marine

Situated on the eastern shore of McDougall Sound, water from Resolute Bay flows into Parry Channel, which feeds into Baffin Bay on the eastern side. To the northwest, McDougall Sound connects to Wynniatt Bay, where water flows in from the Arctic Ocean.

6.3.6 Air Quality

While air pollution is often thought of as being associated with industrial cities, construction activities taking place in Nunavut can have an impact on local ambient air quality as well. For air quality monitoring within Nunavut, the GN has established the Nunavut Ambient Air Quality Standards (NAAQS), adopted in part from the Canadian Ambient Air Quality Standards (CAAQS). It is noted that the most recent NAAQS are current to 2011, and the CAAQS standards are current to 2020, with new standards being established for 2025 (Government of Nunavut, 2011). A summary of the NAAQS and CAAQS is presented in Table 6 4. The DoE works with ECCC to operate air quality monitoring in Nunavut, which is part of the National Air Pollution Surveillance (NAPS) program. ECCC coordinates the operation of the NAPS program, which operates approximately 600 air-monitoring stations in over 175 locations in Canada. There are currently two active monitoring stations in Nunavut as part of the NAPS Program (current to 2022). These monitoring stations are located in Iqaluit (Water Lab, NAPS ID: 129303) and Alert (NAPS ID: 129401). Between these two, the Water Lab monitoring station has more complete data, current to 2019. Results are summarized in Table 6 4 and are compared to the NAAQS and CAAQS. Regional air quality monitoring was conducted in 2020 for North Baffin Island as part of the Baffinland Project Annual Report on Air Quality, Dustfall and Meteorology (Nunami Stantec Limited, 2021). At the Mary River Mine Site, the annual average sulphur dioxide (SO₂) was measured at 0.12 µg/m³, well below the NAAQS annual standard of 30 µg/m³. The annual average nitrogen dioxide (NO₂) was measured at 18.3 ppb, within the NAAQS of 32 ppb but above the CAAQS of 17 ppb. Ozone, Total Suspended Particles (TSP), and fine particulate matter were not measured as

part of the 2020 Annual Report. The Baffinland Project also released Air Quality Monitoring Results for 2019 (RWDI Air Inc., 2020). The annual average sulphur dioxide (SO₂) was measured at 0.7 µg/m³, far below the NAAQS annual standard of 30 µg/m³. The annual average nitrogen dioxide (NO₂) was measured at 19.2 ppb, within the NAAQS of 32 ppb but above the CAAQS of 17 ppb, the same trend from the 2020 report. Ozone, TSP, and fine particulate matter were again not measured as part of the 2020 Annual Report. Air quality monitoring was conducted in Resolute Bay and Kinngait (formerly Cape Dorset) from 2013-2017. It was determined that waste burn, airport operations and town activities such as vehicle traffic, residential combustion and power generators contributed to Particulate matter less than 2.5 µm (PM_{2.5}) pollution (Aliabadi et al., 2015). SO₂ pollution was affected by airport activities and ships anchoring in position (Aliabadi et al., 2015). The maximum measured SO₂ concentration was 1.05 µg/m³, which is much lower than the Nunavut standards: 450 µg/m³ (1-hour); 150 µg/m³ (24-hour); and 30 µg/m³ (annual). The PM_{2.5} concentration was recorded up to 10 µg/m³, which is lower than the 24-hour standard of 30 µg/m³.

6.3.7 Noise Noise data specific to the Project Study Areas was not available. It is assumed that noise would be generated from several sources including marine vessel traffic, automobiles, aircrafts and ATVs/snowmobiles and general equipment and infrastructure used in the Hamlet. The Project site is adjacent to a busy road which is currently used frequently by trucks and other vehicles accessing the existing breakwater and nearby residential and commercial properties. The area is also frequently used in winter by snowmobiles accessing the ice. The sources described may emit noise for short periods of time and noise effects diminish with distance from a source.

6.3.8 Climate Conditions Typical of high latitude areas, Resolute Bay experiences 24 hours of sunlight from late April to late August, with an average high temperature of 5 °C in July. During the winter, the community experiences 24 hours of darkness, reaching an average low of -32 °C in February (Time and Date, 2024). Precipitation in Resolute Bay typically falls as snow through all twelve months of year, with the greatest rainfall occurring during July and August. Average monthly snowfall ranges from 43 mm in February to 184 mm in October (Government of Canada, 2024a). Snow depth ranges from 180 mm in December to clear of snow from June to August (Government of Canada, 2024a). In general, the strongest winds in Resolute Bay occur in the fall (September to November), ranging between 40 – 43 km/h on average and peaking in October. Annual mean sea ice extent has on average declined since 1979, at a current rate of 13.1% per decade (ECCC, 2021). Depending on the region, Canadian Arctic summer sea ice area has decreased by 5% to 20% per decade from 1968 to 2016 (Derksen et al., 2019). In discussing ice breakup, local residents noted that ice gets pushed up onto the shoreline and piles up above high tide during breakup and around freeze-up time when strong southerly winds occur. Recent years are seeing the effects of climate change and the 30-year averages are not necessarily applicable.

6.3.9 Marine Water Quality Marine water quality in Resolute Bay was assessed over one sampling event on 18 August 2019 by an experienced marine scientist and a local Inuit assistant. Water samples were taken from four locations as shown in Figure 5-1 of the ESBS Report (Dynamic Ocean & Worley, 2025b). Sample locations were selected to give a broad overview of water quality in the vicinity of the Community Harbour Study Areas. Marine water quality in Resolute Bay was consistent across sites and depth profiles. Metal concentrations were below respective (CCME, 2003) guidelines for all metals, except cadmium and chromium. Both exceeded Canadian Council of Ministers of the Environment (CCME) guidelines at the same location (RB 4), and for both shallow and deep water. Chromium is a naturally occurring mineral and increased levels can be attributed to industrial waste leakage and disposal (EPA, 2019). Across all sample locations, dissolved metal concentrations were comparable to total concentrations, indicating that metals typically are not bound to solids. pH, hardness, alkalinity, Total Organic Carbon (TOC), Total Suspended Solids (TSS), sulphur and metal concentrations were consistent across shallow and deep samples. Due to the remote nature of Resolute Bay, it is unlikely that the raised levels of chromium are due to industry and are naturally occurring. Fluctuations in mineral levels in Arctic waters are common due to dilution from sea ice melt (Zhang et al., 2019) and this could be responsible for the raised levels of chromium observed. Polycyclic Aromatic Hydrocarbons (PAHs) were all below CCME guidelines, and Polychlorinated Biphenyls (PCBs) were below laboratory Reachable Detectable Limits (RDLs) across all sites. Detailed information regarding the water quality field survey including methods and laboratory analysis, is provided in the Sections 5 of the ESEB Report (Dynamic Ocean & Worley, 2025b).

6.3.10 Coastal Morphology In general, the shoreline comprises mainly medium to coarse sub-rounded to angular gravel in the supratidal zone with various sedimentary lithologies (beach deposits). Within the intertidal zone on the east side of Resolute Bay, surrounding the existing creek, just south of the community, the material is generally finer and comprises fine to medium gravel fining to gravelly sand to sandy gravel near the lower water tidal level. The sands are typically medium to coarse grained, sub-rounded to angular. Moving away from the creek, both to the west and south, the presence of the sand layer at the low water level is absent.

6.3.11 Bathymetry Bathymetric surveys have been completed by Frontier Geosciences Inc (Frontier) during the feasibility (2019) and detailed design (2024) phases of the Project. The 2024 bathymetric survey results were not available at the time of this PSIR development, however Figure 6 5 shows the feasibility phase results. Seabed elevation at the seaward extent of the Community Harbour Study Area is approximately -8.5 m CD.

6.3.12 Tides and Currents Tide levels for Resolute Bay station were obtained from Canadian Tide and Current Tables, Volume 4 (Canadian Hydrographic Services, 2024), and are provided in Table 6 5. There are two major wind-driven currents in the Arctic Ocean, the Beaufort Gyre and the Transpolar Drift Stream. Surface

100% of birds nesting) is from early-June to late-July (ECCC, 2018). No nesting or breeding behaviour was identified, but the survey was conducted at the end of the general nesting season. Therefore, the lack of observed breeding behaviour does not preclude the potential for birds to nest in the area. IQ indicates that migratory birds, including arctic terns, nest in the south quarry location and within about 15 m of the shoreline (IQ Workshop - Joadamee Amagoalik).

6.4.4 Fish Habitat (including Marine Vegetation)

Habitat function and structure is driven by the physical characteristics and assemblage of species that comprise an ecosystem. For most focal species in the Community Harbour of the Project, habitat use is primarily for feeding or migration. For example, the anadromous Arctic char (*Salvelinus alpinus*) utilizes the marine habitat exclusively for feeding, while freshwater environments are required for spawning. However, five focal species found in Resolute Bay – Amphipod, Arctic char, Arctic cod, Arctic sculpin (*Myoxacephalius* spp.) and Truncate softshell clam (*Mya truncata*) – rely on the soft sediment and marine vegetation that make up the benthic habitat of the Community Harbour Study Area for all life history stages (feeding, spawning etc.). Field surveys were conducted in the Community Harbour Study Area in 2019 (August 18 and 19) and 2024 (August 27 to 28) to assess habitat conditions. The intertidal shoreline was primarily consisted of cobble, gravel and sand. Habitat characteristics shifted from largely sandy substrate in 2019, to cobble and gravel dominant in 2024. The tide range was 1.8 m in 2019 and 2.5 m in 2024. In the subtidal habitat, the depth range of the area observed in 2019 was +0.2 m to 6.6 m CD, 2.2m to 68m in 2024. Substrates within the Community Harbour Study Area were primarily soft sediments, including silt and sand, with occasional gravel, cobble, and boulders. In both 2019 and 2024, hard substrates were typically associated with marine vegetation, such as kelp and rockweed. Sugar kelp (*Saccharina latissima*) was the most abundant, observed in multiple transects with cover ranging from trace to abundant. Winged kelp (*Alaria* sp.) and other unidentified kelp were also observed, usually between 0.9m and 7.9m CD. Rockweed (*Fucus* sp.) was also present in trace to moderate densities across several transects, usually associated with hard substrate in shallower depths. Brown filamentous algae (likely *Chordaria* sp.) and green filamentous algae were observed at both hard (boulders) and soft substrates (sand). Overall, the habitat quality within the proposed community harbour site was classified as low in the intertidal zone and moderate in the subtidal areas. The intertidal zone showed minimal marine vegetation and no marine invertebrates, likely due to contamination from a nearby wastewater outfall to the south. Habitat biomass and biodiversity were similar between the proposed site and reference sites in both 2019 and 2024. However, marine vegetation at the proposed site appeared noticeably less healthy compared to the surrounding reference sites. Given the potential impacts from wastewater contamination, the habitat quality of the proposed site may be reclassified as low.

6.4.5 Fish and Marine Mammals

Focal fish and marine mammal species were selected based on several variables which included: their importance to Inuit for subsistence and food security, their geographic ranges which includes the potential to occur in the Project Study Areas, and for their representative role in food chain dynamics. Species identified as focal are listed in Table 6.6. Species categories were defined based on their use of the habitat (e.g. migratory, resident) to understand their potential for occurrence within the Project Study Areas. These definitions are provided in Section 6.5.5.1.

6.4.5.1 Species Spatial Categories

6.4.5.1.1 Fish

Marine fish species that are found in the Arctic occupy the ocean either as residents, migratory species, or anadromous, as defined below:

- Migratory: species that migrate exclusively in the marine environment on an annual or seasonal basis, triggered by local climate, food availability, or for mating reasons.
- Resident: species that occupy the same general area throughout the year.
- Anadromous: species that move between freshwater and marine environments for the purposes of feeding in one environment and spawning.

The coastal marine environment fronting the Community Harbour Study Area may be used by migratory species such as Arctic char and Arctic cod (*Boreogadus saida*). Both species are present predominantly during the open-water season. Arctic char are an important subsistence and commercial fishery species in Nunavut that have both a lacustrine and anadromous life history. Anadromous Arctic char live primarily in fresh water, and migrate to the ocean for a short summer migration (~20 to 45 days) (Bégout et al., 1999; Klemetsen et al., 2003) in order to increase energy reserves, at which time they may double their body mass (Jørgensen et al., 1997). There are not considered to be common in the high Arctic, but they sometimes occur where outflows are substantial enough to ensure a return migration in August (Government of Nunavut, 2010). There is limited documented information on Arctic char community in Resolute Bay. Fishing of Arctic char in Resolute Bay was documented during the IQ Workshop (May 2019), and Priest and Usher (2004) documented that a total of 50 harvesters were fishing for Arctic char during the five-year NWHS Study (June 1996 – May 2001). Arctic cod are a pelagic marine species believed to be the single most important species in the trophic link between plankton, and marine birds and mammals in the Arctic ecosystem (Welch et al., 1992). Arctic cod are not considered as valuable as Arctic char and thus are not a primary subsistence fishery in Nunavut. Arctic cod have been observed in large schools in the vicinity of Resolute Bay during a study that spanned 1985 to 1988 (Welch et al., 1993). There was no mention of Arctic cod harvesting by residents in Resolute Bay during the IQ Workshop. During the NWHS five-year study period (1996-2001) just two harvesters were documented for fishing for Arctic cod (Priest & Usher, 2004). During the field surveys, a school of approximately 300 Arctic cod were observed, along with one sculpin and two unidentifiable fish species. The presence of Arctic cod in Resolute Bay was confirmed during the IQ Workshop (IQ Workshop - Joadamee Amagoalik) while sculpins were not mentioned during IQ Workshop. Marine invertebrates, including amphipods and truncated soft-shell clams, are a common part of the benthic

ecosystem in Nunavut. Amphipods are a key link in the Arctic food web and are a significant food source for marine fish, mammals and bird (Coad, 2017; Oceans North Conservation Society et al., 2018). When amphipods are present in intertidal benthic environment, there is a tendency to be associated with moist habitats, including areas that remain moist during low tide and small tide-pools (pers. obs. Victoria Burdett-Coutts). The truncate soft-shell clam (*Mya truncata*) is an in-faunal species in the Arctic that plays an important role in carbon cycling. Given the sedentary adult life stage of the soft-shell clam, they are a valuable and predictable food source for these higher trophic level species (Highsmith & Coyle, 1990). During field surveys, no amphipods were observed or collected at intertidal and subtidal. Truncate soft-shell clam was observed and estimated to occur in densities that ranged from 5/m² to upwards of 30/m². Clam presence at Resolute Bay was confirmed during IQ Workshop, but were not harvested over concerns due to the wastewater outfall (IQ Workshop - Peter Amarualik, 2019). Truncated soft-shell clams used to be harvested on western side of Resolute Bay and in Allen Bay. Other marine invertebrates observed included: •Brittle stars (*Ophiocten* or *Ophiura* spp.). •Tube worms (*Chone* sp., *Echone papillosa*) •Pelagic tunicate (*Oikopleura labradoriensis*). •Tube dwelling anemones (*Pachycerianthus borealis*). •Anemones (*Hormathia* sp.). •Jelly (*Aglantha digitale*, hydromedusa species, unidentified species) •Comb jelly (*Ctenophora*) •Pteropod (*Clione limacina*, *Limacina helicina*) •Hydroid (species not identified)

6.4.5.1.2 Freshwater Fish

There are two creeks on the eastern and western shore of Resolute Bay. The creek to the west of the community, Resolute Creek, is fed by Resolute and Char lakes, and the creek to the south of the community, Mecham Creek, is fed by numerous small lakes. There may be some sea run Arctic char in the lakes (IQ Workshop - Peter Amarualik, 2019), and in the nearby creeks (IQ Workshop - Joadamee Amagoalik) Fishing of Arctic char in Resolute Bay was documented during the IQ Workshop (May 2019), and Priest and Usher (2004) documented that a total of 50 harvesters were fishing for Arctic char during the five-year NWHS Study (June 1996 – May 2001).

6.4.5.1.3 Marine Mammals

Marine mammals that are found in the Arctic were categorized as either Arctic Residents or Seasonal Visitors, as defined below: •Arctic Resident: species that resides in the Arctic year-round. •Seasonal Visitor: species that predictably resides within the Arctic region for a portion of the year, which most typically is the open-water season. Seven species of marine mammals are considered residents of the Resolute Bay area (see Table 6 6). These include three species of cetacean—narwhal (*Monodon monoceros*), beluga (*Delphinapterus leucas*), and bowhead whale (*Balaena mysticetus*)—which seasonally occur during the spring, summer, and early winter months. Beluga whales in this region are part of the Eastern High Arctic population. Resolute Bay, located on Cornwallis Island, lies within their summer range (Arctic Bay Adventures, 2017; Vard Marine Inc., 2016). According to IQ, the habitat and distribution of beluga whales extends along the east coast of Ellesmere Island, where they travel northward as the ice recedes and open water increases, before returning to Jones Inlet as the ice begins to freeze again (QIA, 2018b). IQ also indicates that the presence of beluga whales in the region is influenced by the North Water Polynya, which extends into Jones Sound, enabling belugas to remain in the area year-round (QIA, 2018b). Narwhals primarily encountered near Resolute Bay belong to the Somerset Island population, which is commonly found in the waters around the area (DFO, 2010; Watt et al., 2013). This subpopulation summers in the waters between Cornwallis Island and the fjords of Somerset Island. Large numbers of narwhals from the Somerset subpopulation are also known to feed along the southwest coast of Devon Island (Remnant & Thomas, 1992; Higdon, 2017). Mating and calving areas have been identified around Resolute Bay (Higdon, 2017). According to IQ, narwhals calve in July north of Cornwallis Island, between Bathurst, Cornwallis, and Devon Islands, and they feed in these areas throughout July and August (Carter et al., 2019). Bowhead whales seasonally migrate into the area during the spring, summer, and early fall, following the ice edge and occurring in open bays and straits. While they are occasionally seen in the waters just south of Resolute Bay, sightings are infrequent (Government of Nunavut, 2012c; QIA, 2018c). None of these cetacean species are commonly found within the area, with bowhead whales relying mainly on pelagic food sources such as zooplankton and beluga and narwhal relying on Arctic cod as they migrate through the region. Ringed seals (*Pusa hispida* ssp. *Hispida*), bearded seals (*Erignathus barbatus* ssp. *Barbatus*), and Atlantic walrus (*Odobenus rosmarus* ssp. *Rosmarus*) are resident to the Resolute Bay area, feeding on fish, invertebrates and other benthic prey in shallow coastal environments. Ringed seals are a non-migratory species that remain in Arctic waters year-round and can be found throughout the Arctic year-round and can be found in Lancaster Sound and the contiguous waterways, including Parry Channel and in Resolute Bay (Goodwin, 1990; Kingsley, 1989; Natures Edge, 2015). Resolute Bay is located within the Viscount Melville Sound (DFO, 2011a), near a high-density area of ringed seals (NPC, 2008b). While less is known about the ecology of bearded seals, Resolute Bay and its surrounding waters fall within the species' known spring-summer distribution range (COSEWIC, 2007f). Bearded seals are known to winter in Lancaster Sound and Davis Strait (COSEWIC, 2007e). According to the NPC, Resolute Bay lies just south of a high-density area identified for bearded seals (NPC, 2017c), and they can be seen here year-round, particularly feeding in the waters south of Bathurst Island (Carter et al., 2019). Bearded seals also winter in Lancaster Sound and Davis Strait and are present in these areas throughout the year (DFO, 2015c). Atlantic walrus are year-round residents of the Arctic, though their distribution varies seasonally with changes in ice cover (COSEWIC, 2006a). Resolute Bay is located within Viscount Melville Sound (DFO, 2011a), an area where walrus have been documented at haul-out sites and feeding along the coast (DFO, 2011b). The waters surrounding Resolute Bay fall within the Nirjutiqavvik National Wildlife Area, which provides important

or seaweed, and there is no fishing in Resolute Bay (IQ workshops 2019 and 2024). Although belugas are occasionally harvested in the bay during the open water season, the practice is discouraged by the HTA due to community safety concerns (Joadamee Amagoalik. pers. comm. Dec 2019). Seals are also occasionally harvested in the bay between July and August (IQ Workshop 2019- Allie Salluviniq) and in the winter from freeze up to about March along cracks in the ice (IQ Workshop 2019- Simon Idlout) (Figure 4 1). "The seal (ice) cracks have sustained this community since we got here" (IQ Workshop 2019 - Joadamee Amagoalik) Fishing with gillnets occurs at Allen Bay (see Figure 4 1) but there is no fishing in Resolute Bay (IQ workshop 2019 and 2024). Clams and other shellfish, although present in Resolute Bay, are also not harvested due to the outfall. "Sea urchins, whelks and clams are all over, we know they're there from research that's been done here, and from some people harvesting many years ago, but we don't harvest anything in the bay anymore due to the outfall" (IQ Workshop 2019 - Peter Amarualik). Trapping for Arctic fox or any other land animals does not occur anywhere in or around the community (IQ Workshops 2019 and 2024). Knowledge holders stated that there was no sense in marking polar bear sightings in the area because "they are everywhere" and "unlike other communities, we (Resolute Bay residents) see bears here consistently 365 days a year" (IQ Workshop 2019- Joadamee Amagoalik). Polar bear tracks are a common sighting all over town and especially at the dump and near any food left out (IQ Workshop 2019 and 2024). Harvesting of plants or berries does not occur in or around the Study Areas. Plants in the area are considered too sparse for picking (IQ Workshops 2019 and 2024). Additionally, seaweed and kelp, although present in Resolute Bay, are not harvested anywhere near the community due to the outfall (IQ workshops 2019 and 2024).

6.5.3.2 Access and Navigation

Boats and skidoos are critical for subsistence harvesting in the Arctic. The majority of hunting and fishing activities are conducted far from Resolute Bay and require boats and skidoos for access. The community does not currently have a protected boat harbour and the only existing marine infrastructure consists of bollards for the fuel vessel. There have been previous attempts to construct breakwaters and dredge the bay, however, these efforts were unsuccessful. Most boats are pulled up on the beach in the northeast corner of the bay, which is closest to the townsite, although some boats are also stored in the industrial area on the west side of the bay. Dry cargo from the sealift is lightered to shore in the conventional manner, that is, using small tugs and barges that are carried on board the arriving ship. The barges are brought into the western beach adjacent the industrial part of the community. Sealift is therefore segregated from boat activities that occur on the eastern shore nearest the community.

6.5.3.3 Tourism

Resolute Bay offers a unique tourist destination. It is a place of historic interest because it served as a crucial junction along the infamous Northwest Passage in the 18th and 19th centuries. Resolute Bay was named after the British ship, HMS Resolute, which was abandoned in 1850 while searching for the Northwest Passage and the lost Franklin expedition. Resolute Bay has since become the major stopover point for extreme adventure expeditions to the North Pole and to Ellesmere Island (Quttinirataq) National Park. The main outfitters in town are Polar Ice Adventures and Outfitting run by Randy Nungaq and Devon Manik providing dog sledding expeditions. The HTA can also arrange for local Inuit guides for various trips in the region. Cruise ship visitation to the community has increased steadily in the last couple of years since the 2-year ban on cruising during the global pandemic. According to the SAO, at least 20 cruise ships visited in 2024 and an even higher number of cruise ship visits are expected in 2025. Currently, tender boats carry passengers from the anchored cruise ships to landing locations provided in Figure 3-1, including Dynamite Beach (HTA members. pers. comm. Nov 2018, June 2019, and Aug 2024). According to the HTA, there has also been an increase in sail boats and pleasure craft (including very large yachts) visiting the community in recent years.

6.5.4 Local and Regional Traffic Patterns

Resolute Bay is serviced daily by scheduled commercial flights provided by Canadian North via Iqaluit. The ATCO South Camp Inn and airport hotel offer free airport shuttles. As the hub for Arctic research (Polar Continental Shelf Program [PCSP]) and military training operations (Canadian Armed Forces Air Traffic Control [CAF ATC]), Resolute Bay has a much more extensive road system compared to other communities in Nunavut. The roads in Resolute Bay are gravel surface with no walkways. Pedestrians, All Terrain Vehicles (ATVs), snow machines, cars and trucks all share the road. The Hamlet is responsible for snow clearing and dust suppression on roads; however, maintaining Resolute Bay's extensive road network remains challenging with the current resources. Spring runoff, which frequently washes out sections of the roads, poses a significant issue (Ian Dudla, SAO. pers. comm. Dec 2024).

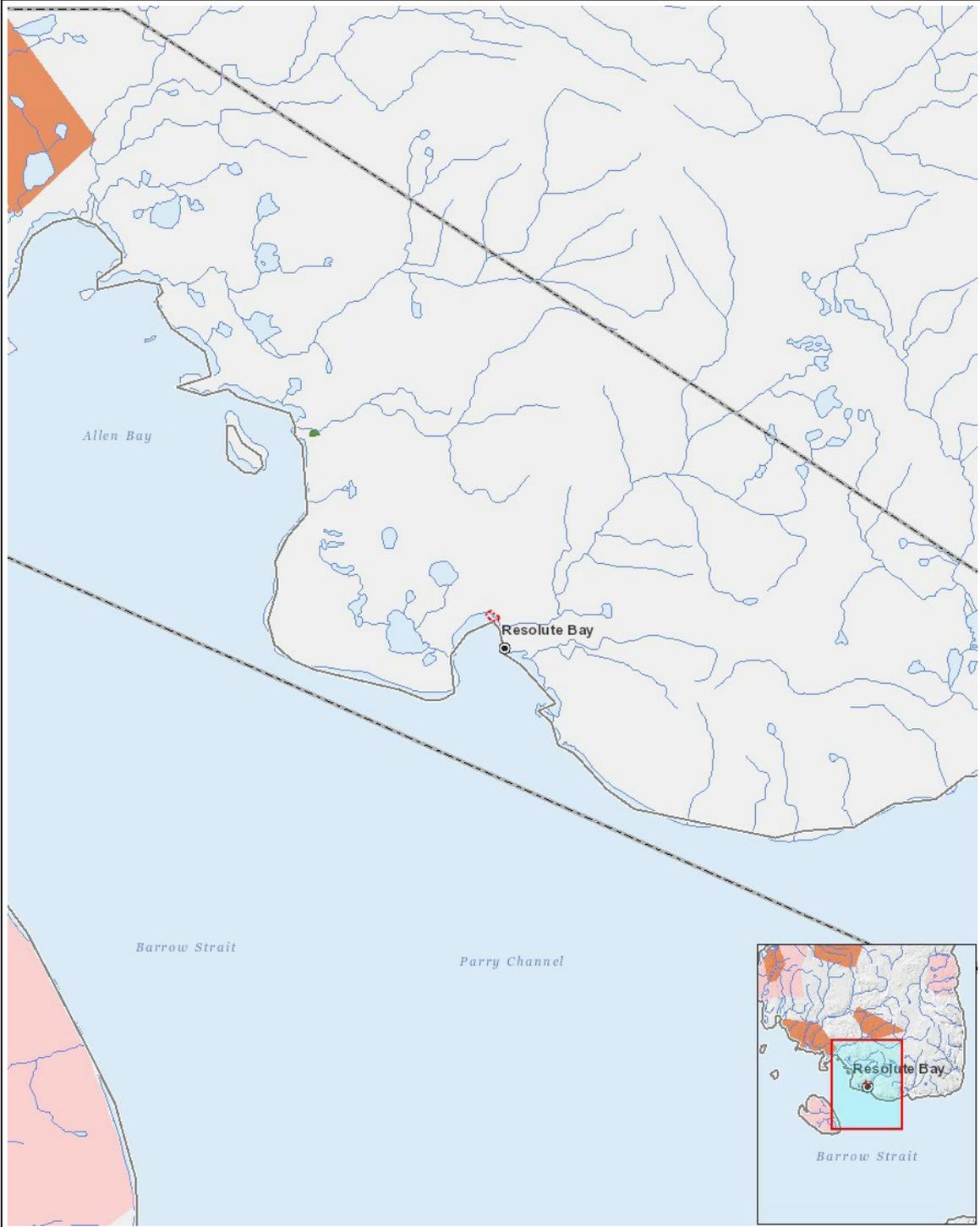
6.5.5 Human Health and Community Wellness

The sealift is a vital link for all communities in Nunavut. Details on the sealift operations are provided in Section 1.2.6.5. The Resolute Bay Health Centre is nearly 50 years old and in need of major structural repairs. The 2024-2025 Infrastructure Plan for Resolute Bay indicates that the Health Centre needs to be replaced. The Health Centre is staffed by two to three nurses: a supervising nurse and support nurse(s). It has limited laboratory facilities and can provide basic X-rays (Supervising nurse. pers. comm. Dec 2024). The nurses are equipped to provide plaster casts and splints but not circumferential casts. They deal with basic infections and are authorized to prescribe and dispense medications. The Health Centre is not equipped to allow overnight stays and patients are stabilized and then evacuated by medevac services to hospital in Iqaluit. There are visiting specialists who fly into the community and Resolute Bay also uses tele-med services. The Health Centre delivers community health programs that include Pre-natal and Post-natal Care, Well Adult, Well Child and Chronic Disease Clinics. According to the most recent data available, the Resolute Bay Health Centre had a total of 2,279 visits in 2016 and 10.9 visits per capita (Government of Nunavut, 2018). The nursing team

reported that the Health Centre is adequately staffed and equipped to address the community's current health care needs. They noted that the clinic accepts workers from the south requiring medical attention beyond the capabilities of ATCO or other companies working in the community. The nurses have the capacity to address these medical needs effectively. Based on prior experience with ATCO, the team indicated that the expected construction workforce for the community harbour should not place significant strain on the Health Centre, provided that workers are fit-for-work and in good health. However, they advised that workers requiring prescriptions bring sufficient medication with them, as Resolute Bay does not maintain a fully stocked pharmacy. Beyond public health programs and the health centre, Inuit traditional activities such as harvesting, preserving food, preparing skins and resource sharing contribute greatly to familial and cultural cohesion which are critical to community wellness. In addition, social activities such as sports, Inuit games, dog sledding competitions, storytelling, arts and crafts and land-based programs are important factors in promoting community health and personal well-being in Resolute Bay.

6.5.6 Housing and Community Infrastructure and Services

The 2021 census reported Resolute Bay having a total of 65 occupied private dwellings of which 60 dwellings were rented. Of the 60 rented dwellings, 83.3% were public (subsidized) housing. Over half (53.8%) of occupied dwellings were also in need of major repairs (Statistics Canada, 2023X). The Nunavut Housing Corporation's Annual report for 2023-2024 listed Resolute Bay's housing stock at 34.0%, indicating a high need for housing as compared to other communities in Nunavut (NHC, 2024). Temporary accommodation in Resolute Bay is currently provided by the ATCO Frontec Ltd. (ATCO) South Camp Inn with 28 rooms and a total capacity for 52 guests and the Airport Hotel with 21 rooms and a total capacity for 32 guests (ATCO hotel manager. pers. comm. Nov 2024). The Government of Nunavut contracts ATCO Frontec Ltd. to maintain the water and wastewater services in Resolute Bay, supplied through the Utilidor System. The Utilidor System, constructed in the 1970s, was originally designed for an anticipated population of 1500; however, the expected growth was not realized, and the current population is just under 200 (Dillon 1998). As the system was designed for 1500 people, there was insufficient flow, leading to numerous freeze-ups and failures within the system (Capital Programs letter 2003). Significant upgrades to the system including a new intake system, pump station and water treatment plant have recently been completed. The upgrades include a new 720 L/min pump station with three intakes, three boilers and a backup power generator. Water is supplied to the treatment plant from Char Lake via 2.7 km of electrically heat-traced insulated HDPE pipe. The new treatment plant houses first-stage multi-media filters (gravel, sand and anthracite), second-stage cartridge filters, UV disinfection and new chlorination equipment. The water supply is integrated with the Hamlet's sewage collection system through the utilidor. Water in the utilidor is continuously supplied, circulated, and heated to prevent pipes from freezing. The Hamlet is served entirely by the Utilidor system with the exception of the RCMP building, the airport site and the PCSP, which rely on water truck delivery (Ian Dudla, SAO. pers. comm. Nov 2024). Sewage and municipal wastewater are collected through the Utilidor system, macerated and discharged to the ocean. The system uses bleed water from the water mains to provide freeze protection to the sewer mains, which also serves to dilute the wastewater prior to discharge. The effluent discharge occurs just above the low tide mark. The effluent is discharged continually into the ocean at high tide and on land at low tide. The airport site has a separate sewage lagoon system. The GN is expected to build a new sewage treatment plant for the community in the near future. The municipal waste facilities include a domestic waste site located 4 Km south-west of the Hamlet, on the shoreline of the Arctic Ocean and a metal wastes and hazardous goods site within the Hamlet. The domestic waste site is not lined or contained, and the facility is managed by the burn and cover procedure. The metal waste and hazardous goods site is located within the Hamlet. This site receives all the metal wastes without any segregation. The hazardous waste is segregated in a berm-like structure that is at maximum capacity. The current landfill is nearing capacity and requires new double fencing. The Hamlet has proposed to construct a new municipal waste site at a location approximately 75m north of the existing bulk metals disposal site. The proposed site was originally built in 2001 as a waste disposal site but was never licenced or used (Nunavut 2016). The site has an existing perimeter fence with an entrance gate and an approximate area of 50,000 m² (Nunavut 2016). Funding for the solid waste site upgrades was approved by Infrastructure Canada in 2017 with an expected completion by 2027 (Infrastructure Canada, accessed Nov 2024). Electricity is provided via diesel generators that are owned and operated by the Qulliq Energy Corporation, a territorial corporation 100% owned by the Government of Nunavut. Qulliq Energy is the only generator, transmitter and distributor of electrical energy in Nunavut. Both power and heat in Nunavut are entirely derived from an estimated 55 million litres of diesel shipped annually to each of the 25 remote communities during the summer months (open water season). Each community relies entirely on their own QEC operated diesel plant. Fuel in Resolute Bay is stored at a tank farm located in the industrial area approximately 3 km south-west of the centre of town with some volume stored at the airport for jet fuel. There have been no significant issues with fuel delivery or storage capacity in the community in recent years, except for a jet fuel shortage in 2022. Table 6 7 outlined bulk fuel storage capacity for Resolute Bay. The current fuel storage capacity adequately meets the community's needs, and no shortages have been reported since (Ian Dudla, SAO. pers. comm. Dec 2024). Fire protection is the responsibility of the Hamlet and currently relies on 8 volunteer firefighters. The Hamlet has a pumper fire truck and firefighters are trained to hook up to the fire hydrants for fire suppression. Although the Hamlet reports that no fires have occurred over the past year, it is a constant struggle for the community to ensure



List of Project Geometries

1	polyline	Resolute Bay Community Harbour
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