



# Resolute Bay Community Harbour

## Project Specific Information Requirements (PSIR) Report

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# Table of Contents

Disclaimer & Limitations of the Report ..... X

Executive Summary ..... xi

Table of Concordance .....xiii

Acronyms and Abbreviations.....xxxviii

**1 General Project Information Requirements ..... 1**

    1.1 Project Location ..... 1

    1.2 Project Overview ..... 2

    1.3 Existing Infrastructure ..... 5

    1.4 Community Harbour Purpose and Vessels (New and Existing)..... 7

    1.5 Community Benefits ..... 7

    1.6 Project Alternatives & Selected Options..... 7

        1.6.1 Community Harbour ..... 8

        1.6.2 Quarry ..... 8

        1.6.3 Haul Road ..... 8

    1.7 Land Tenure..... 11

    1.8 Facility Life ..... 11

    1.9 Public Access ..... 11

    1.10 Climate Change and Harbour Design..... 11

    1.11 Construction Activities..... 14

    1.12 Project Schedule ..... 14

    1.13 Transportation (Mobilization and Demobilization)..... 15

    1.14 Water Sources and Consumption ..... 16

    1.15 Waste Management ..... 16

        1.15.1 Wastewater ..... 16

        1.15.2 Solid Waste ..... 17

    1.16 Materials Use..... 17

        1.16.1 Equipment..... 17

        1.16.2 Fuel..... 19

        1.16.3 Chemicals and Hazardous Materials ..... 20

    1.17 Nearby Communities and Protected Areas ..... 22

1.18	Workforce and Human Resources .....	24
1.19	Proponent Information .....	25
2	Project Specific Information (Works, Undertakings and Activities) .....	26
2.1	Community Harbour (Offshore Infrastructure) .....	26
2.1.1	Components .....	26
2.1.2	Construction Activities .....	27
2.1.3	Area lighting and Electrical .....	29
2.1.4	Operations .....	29
2.1.5	Decommissioning .....	29
2.2	<b>Other Components .....</b>	<b>30</b>
2.2.1	Pits and Quarry .....	30
2.2.2	Haul Road .....	31
2.2.3	Haul Road Water Crossings .....	32
2.2.4	Contractor Laydown Area .....	32
2.2.5	Temporary Rock Platforms .....	33
2.2.6	Materials and Quantities .....	33
2.2.7	Site Services .....	33
2.2.8	Site Offices and other Temporary Structures .....	33
2.2.9	Accommodations .....	34
3	Community Consultation .....	35
3.1	Objectives .....	35
3.2	Communities, Groups and Organizations .....	35
3.3	Overview of Consultation Program .....	36
3.4	Concerns Expressed and Strategies to Address .....	40
3.5	Future Consultation .....	46
4	Inuit Quajimajatuqanjit .....	47
5	Regulatory Compliance .....	50
5.1	Institutions of Public Government .....	50
5.1.1	Nunavut Planning Commission .....	50
5.1.2	Nunavut Impact Review Board .....	50
5.1.3	Nunavut Water Board .....	50
5.1.4	Nunavut Wildlife Management Board .....	51
5.2	Designated Inuit Organizations .....	51

5.2.1	Qikiqtani Inuit Association .....	51
5.2.2	Nunavut Tunngavik Inc. ....	51
<b>5.3</b>	<b>Land Tenure.....</b>	<b>51</b>
5.3.1	Community and Government Services.....	52
5.3.2	Crown-Indigenous Relations and Northern Affairs Canada .....	52
5.3.3	Qikiqtani Inuit Association .....	52
<b>5.4</b>	<b>Government of Nunavut Departments.....</b>	<b>54</b>
5.4.1	Culture and Heritage.....	54
5.4.2	Department of Environment .....	54
<b>5.5</b>	<b>Hamlet.....</b>	<b>54</b>
<b>5.6</b>	<b>Federal Agencies.....</b>	<b>55</b>
5.6.1	Fisheries and Oceans Canada – Fish and Fish Habitat Protection Program .....	55
5.6.2	Transport Canada.....	55
5.6.3	Environment and Climate Change Canada.....	56
5.6.4	Natural Resources Canada.....	56
5.6.5	Canadian Coast Guard and Nav Canada.....	56
<b>5.7</b>	<b>Nunavut Marine Council.....</b>	<b>56</b>
<b>5.8</b>	<b>Regional Wildlife Organizations.....</b>	<b>57</b>
5.8.1	Qikiqtaaluk Wildlife Board .....	57
<b>5.9</b>	<b>Expected Permits.....</b>	<b>57</b>
<b>6</b>	<b>Description of the Existing Environment &amp; Socio-Economic Conditions .....</b>	<b>62</b>
6.1	Valued Ecosystem Component and Valued Socio-Economic Components .....	62
6.2	Study Areas.....	63
6.3	Physical Conditions .....	65
6.3.1	Designated Environmental Areas .....	65
6.3.2	Geological Site Conditions .....	67
6.3.3	Surface Features .....	71
6.3.4	Ground Stability and Permafrost.....	71
6.3.5	Hydrology .....	72
6.3.6	Air Quality .....	75
6.3.7	Noise .....	76
6.3.8	Climate Conditions.....	76
6.3.9	Marine Water Quality.....	77
6.3.10	Coastal Morphology.....	77

6.3.11	Bathymetry .....	78
6.3.12	Tides and Currents .....	79
<b>6.4</b>	<b>Biological Conditions .....</b>	<b>79</b>
6.4.1	Terrestrial Vegetation (Including Rare Plants) .....	79
6.4.2	Terrestrial Wildlife (including Habitat and Migratory Patterns) .....	80
6.4.3	Migratory and Marine Birds (including Habitat and Migratory Patterns) .....	80
6.4.4	Fish Habitat (including Marine Vegetation) .....	81
6.4.5	Fish and Marine Mammals .....	82
6.4.6	Species at Risk .....	87
<b>6.5</b>	<b>Socioeconomic Conditions.....</b>	<b>87</b>
6.5.1	Population and Education.....	87
6.5.2	Employment and Economic Activity.....	88
6.5.3	Land and Resource Use .....	88
6.5.4	Local and Regional Traffic Patterns .....	90
6.5.5	Human Health and Community Wellness .....	90
6.5.6	Housing and Community Infrastructure and Services .....	91
6.5.7	Archaeological and Culturally Significant Sites.....	93
<b>7</b>	<b>Potential Impacts and Proposed Mitigation .....</b>	<b>94</b>
<b>7.1</b>	<b>Construction Phase Impacts and Mitigation.....</b>	<b>96</b>
7.1.1	Physical Components.....	96
7.1.2	Biological Components .....	104
7.1.3	Socio-Economic Components.....	113
<b>7.2</b>	<b>Operations Phase Impacts and Mitigations .....</b>	<b>119</b>
7.2.1	Physical Components.....	119
7.2.2	Biological Components .....	121
7.2.3	Socioeconomic Conditions .....	122
<b>7.3</b>	<b>Residual Effects.....</b>	<b>123</b>
<b>7.4</b>	<b>Cumulative Effects.....</b>	<b>123</b>
<b>7.5</b>	<b>Assessment of Transboundary Effects.....</b>	<b>124</b>
<b>8</b>	<b>Environmental Management and Monitoring Plans .....</b>	<b>125</b>
<b>8.1</b>	<b>Canadian Ambient Air Quality Standards.....</b>	<b>125</b>
<b>8.2</b>	<b>Construction Environmental Management Plan.....</b>	<b>125</b>
<b>8.3</b>	<b>Construction Work Plans .....</b>	<b>125</b>
8.3.1	Contractors Construction Environmental Management Plan.....	125



8.3.2	Contractors Marine Safety Plan.....	125
8.3.3	Contractors Traffic Management Plan .....	126
8.3.4	Contractors Spill Prevention and Response Plan .....	126
8.3.5	Contractors Quarry and Blasting Management Plan .....	126
8.3.6	Contractors Health and Safety and Emergency Response Plan.....	126
8.4	<b>Operations Environmental Management Plan .....</b>	<b>126</b>
9	<b>References.....</b>	<b>128</b>

## List of Tables

Table 1-1:	Construction Activities Associated with the Community Harbour .....	14
Table 1-2:	Anticipated Schedule for the Project.....	14
Table 1-3:	Estimated Solid Waste Production .....	17
Table 1-4:	Anticipated Construction Equipment .....	18
Table 1-5:	Estimated Fuel Consumption During Construction .....	20
Table 1-6:	Chemicals and Hazardous Materials Expected to be Required During Construction.....	21
Table 1-7:	Personnel Numbers per Construction Season and Total for Project.....	24
Table 1-8:	Project Contact Details .....	25
Table 2-1:	Potential Contractor Laydown Areas and Uses .....	32
Table 3-1:	Consultation Overview.....	37
Table 3-2:	Summary of Concerns Expressed and Strategies to Address .....	42
Table 5-1:	Summary of Federal, Territorial and Municipal Permitting Requirements .....	58
Table 6-1:	Definition of Valued Ecosystem Component and Valued Socio-Economic Components as by Nunavut Impact Review Board .....	63
Table 6-2:	Project Study Area Pertinent to Valued Ecosystem Component and Valued Socio-Economic Components.....	64
Table 6-3:	Designated Areas in Proximity to Resolute Bay.....	66



Table 6-4: Standards for Air Quality Objectives in Nunavut .....	76
Table 6-5: Tide Level at Resolute Bay .....	79
Table 6-6: Occurrence of Marine Focal Species.....	82
Table 6-7: Bulk Fuel Storage Capacity for Resolute Bay .....	93
Table 7-1: Screening Assessment Categories.....	94
Table 7-2: Project Specific Information Requirement Environmental Effects Table .....	95

## List of Figures

Figure 1-1: Project Location, Components, and Study Area.....	3
Figure 1-2: Community Harbour Options Assessment. Option 2 is the Chosen Design for the Community Harbour .....	9
Figure 1-3: 30-Year Ice a) Break-up; b) Freeze-up .....	13
Figure 1-4: Resolute Bay, Nearby Communities and Pertinent Water Bodies .....	23
Figure 4-1: Land Use and Occupancy Plan .....	49
Figure 6-1: Resolute Bay – Surficial Geology .....	69
Figure 6-2: Resolute Bay – Bedrock Geology .....	70
Figure 6-3: Distribution of Permafrost in Canada .....	72
Figure 6-4: Water Courses in Proximity to Project Study Area .....	74
Figure 6-5: Resolute Bay Foreshore Bathymetry .....	78
Figure 7-1: Beach Comprising with Medium-Coarse Sand and Gravel to the Southeast of the Community Harbour. The Beach on the West Side is Mainly Gravel Dominated .....	102
Figure 7-2: Google Earth Images Showing Shoreline Changes Around the Mecham River Mouth.....	103
Figure 7-3: Potential Long-Term Sedimentation and Erosion Locations near the Community Harbour in Resolute Bay.....	104
Figure 7-4: National and International Boundaries .....	124



## List of Drawings

Drawing 1-1: Resolute Bay Community Harbour General Arrangement..... 4

Drawing 5-1: Land Tenure and Administrative Control Area..... 53

## List of Photos

Photo 1-1: Existing Boat Launch on the East Shore of Resolute Bay a) Overview; b) Ground View ..... 6

Photo 1-2: Demonstrative Photo Panel of Quarry Options a) Overview Quarry Locations; b) Northern Quarry; c) Southern Quarry ..... 10

Photo 1-3: Representative Construction Equipment a) Drill Rig; b) Excavator; c) Rock Truck; d) Crusher 19

## Appendices

Appendix A: Consultation Log



## Disclaimer & Limitations of the Report

The information presented in this document was compiled and interpreted exclusively for the purposes permitting requirements for the Resolute Bay community harbour. Dynamic Ocean Consulting Ltd. (Dynamic Ocean) in collaboration with Worley Canada Services Ltd. (operating as Worley Consulting) provided this report for the Government of Nunavut – Community and Government Services / Economic Development and Transportation (GN-CGS/EDT) solely for the purpose noted above.

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Any questions concerning the information or its interpretation should be directed to Victoria Burdett-Coutts (Dynamic Ocean) or Chris Meisl (Worley Consulting).



## Executive Summary

Worley Canada Services Ltd., operating as Worley Consulting, has been retained by two departments with the Government of Nunavut (GN), Community and Government Services (GN-CGS) and Economic Development and Transportation (GN-EDT), to support the detailed design of a community harbour in Resolute Bay, Nunavut. Dynamic Ocean Consulting Ltd. (Dynamic Ocean) is supporting Worley Consulting on the permitting requirements for the Project. The Resolute Bay community harbour was a component of an earlier feasibility study, completed by Fisheries and Oceans Canada (DFO) – Small Craft Harbour (SCH) in 2019. This is the Project Specific Information Requirement (PSIR) Report and has been developed to support the screening by the Nunavut Impact Review Board (NIRB) and is supported by the Environmental and Socio-Economic Baseline (ESEB) and Construction Environmental Management Plan (CEMP). Other municipal, territorial, and federal Authorities Having Jurisdiction (AHJs) will be engaged as required based on planned construction activities and their respective mandates.

The Resolute Bay Community Harbour Project (the Project) is located in the community of Resolute Bay, which is approximately 800 km north of the Arctic Circle (74° 41.472'N, 94° 51.549'W). Resolute Bay is on the southern shore of Cornwallis Island in the Qikiqtaaluk Region of Nunavut, and conforms with the North Baffin Regional Land Use Plan (NBRLUP) (NPC, 2000). While Resolute Bay is within the NBRLUP, the Recommended Nunavut Land Use Plan (RNLUP) (NPC, 2023b) will replace the NBRLUP once it is approved. The Project components are both temporary (supporting activities) and permanent (community harbour) components, which are marine and terrestrial in nature. Temporary components are terrestrial and include a quarry (borrow pits) and haul road; the borrow pits to supply rock for construction, and a haul road to transport rock from the quarry (borrow pits) to the community harbour. The permanent component is the community harbour and is primarily marine with small portions that are terrestrial.

Assessment of the existing conditions and effects determination of the environmental and socio-economic conditions in Resolute Bay was undertaken through a combination of desktop review, field surveys and Inuit Quajimajatuqanjit (IQ). Project specific workshops were held with local knowledge holders to identify existing conditions of important environmental and socio-economic resources in and around Resolute Bay. Integrating Inuit and scientific knowledge, advances the understanding of the biological and socio-economic conditions providing a baseline that is not only scientifically sound, but also connected to local values, needs, and priorities. Project Study Area were defined for each of the Project components where the habitat values were generally low to moderate in the marine portions and low in the terrestrial portions. Several Species at Risk (SAR) organisms have the potential to be present in the Study Area, but the Study Area does not provide critical habitat requirements for these species. Overall, environmental effects are considered to be minimal where residual effects are not likely subsequent to the implementation of mitigation and monitoring measures. Overall, socio-economic impacts are considered positive, as there will be a safer location for locals to access and utilize their existing small craft vessels.

The GN-CGS/EDT are conducting a comprehensive consultation program to design the Project to serve the top priorities of the community including hunters, fishers, recreational users, residents, and businesses. The consultation program has been designed to include input from hunters, trappers, fishers, residents, and other community groups and organizations obtained through a variety of



methods and materials. The consultation program has been successful in gathering input from community residents, hunters, fishers, and other users of the community harbour. The input received resulted in design modifications to meet the needs and priorities of the community. The GN-CGS/EDT will continue to engage with the community to maintain the positive rapport and collaborative relationship they have built with the community. The community harbour is a much-needed infrastructure improvement for Resolute Bay as there is currently no adequate location for moorage to existing small craft vessels. Construction is planned to start in the 2026 open-water season and will be operation for the open-water season of 2030.

## Table of Concordance

This table concordance has been developed to support the screening by the Nunavut Impact Review Board (NIRB) and is informed by this Project Specific Information Requirement (PSIR) Report, as well as the Project’s Environmental and Socio-Economic Baseline (ESEB) and Construction Environmental Management Plan (CEMP).

General Project Information Requirements	Report	Section	Comment
<b>Project Coordinates and Maps</b>			
<p>1. The preferred method for submitting project coordinates information is through the use of a Geographic Information System (GIS) compatible digital file. Although an ESRI ArcView 3.x shape file (in decimal degrees) is the preferred interchange format, the NIRB has the capacity to receive over 100 GIS and Computer-Aided Design (CAD) related formats, including MapInfo and AutoCAD, provided proper format and projection metadata is also submitted. The NIRB requires coordinates for the project proposal which reflect the entire project area as defined by:</p> <ul style="list-style-type: none"> <li>a. Area/sites of investigation;</li> <li>b. Boundaries of the foreseen land use permit (LUP)/right-of-way area(s) to be applied for;</li> <li>c. Location of any proposed infrastructure or activity(s); and</li> <li>d. Boundaries of the mineral claim block(s) where proposed activities will be undertaken.</li> </ul>	PSIR	Sections 1.1, 6.2 (Study Areas), Figure 1-1	.kml files has been uploaded to the NIRB portal which depicts the community harbour, haul road, and quarry (burrow pits) boundaries.
	ESEB (Dynamic Ocean & Worley Consulting, 2025c), CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Figure 1-1	
2. Map of the Project site within a regional context indicating the distance to the closest communities.	PSIR	Sections 1.1, 1.17, Figure 1-4	The closest communities to Resolute Bay are Arctic Bay and Grise Fiord which are approximately 352 km southeast and 383 km northeast, respectively.

General Project Information Requirements	Report	Section	Comment
3. Map of any camp site including locations of camp facilities.	PSIR	Section 2.2.9	<p>Due to limited available local accommodations, a construction camp may be required. If additional permits are required (e.g. the Nunavut Water Board [NWB]), these will be the responsibility of the contractor.</p> <p>The location of the construction camp will be determined by the contractor in consultation with the Hamlet and will be within municipal boundaries.</p>
4. Map of the Project site indicating existing and/or proposed infrastructure, proximity to water bodies and proximity to wildlife and wildlife habitat.	PSIR	Drawing 1-1 (schematic layout), Figure 1-4 (marine water bodies), Figure 4-1 (land use), Figure 6-4 (freshwater course)	<p>The Project site is not located in close proximity to sensitive wildlife or wildlife habitat. Fresh water bodies in proximity to the Project site include Resolute and Char Lakes. However, there are no rivers or creeks from the lakes enter the marine environment close to the community harbour.</p> <p>Marine water body in proximity to the Project site is Resolute Bay.</p>
	ESEB (Dynamic Ocean & Worley Consulting, 2025c)	Figure 1-2 (marine water bodies), Figure 2-1 (land use), Figure 7-9 (community harbour habitat map),	

General Project Information Requirements	Report	Section	Comment
		Figure 7-11 (freshwater courses), Figure 8-2 (vegetation communities within the HRQ Study Area), Figure 9-3 (wildlife and wildlife features observed or detected during field survey)	
<b>Project General Information</b>			
5. Discuss the need and purpose of the proposed Project.	PSIR	Section 1.4	The community of Resolute Bay currently does not have a harbour to provide appropriate moorage to existing vessels.
6. Discuss alternatives to the Project and alternative methods of carrying out the Project, including the no-go alternative. Provide justification for the chosen option(s).	PSIR	Section 1.6, Figure 1-2	The Project is being constructed in a naturally sheltered bay and strong community support for this location.
7. Provide a schedule for all project activities.	PSIR	Section 1.12, Table 1-2	Construction is planned to start in the 2026 open-water season and will be in operation for the open-water season of 2030.

General Project Information Requirements	Report	Section	Comment
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 3.3, Table 3-4	
8. List the acts, regulations and guidelines that apply to Project activities.	PSIR	Section 5 (Regulatory Compliance)	Construction of the community harbour will require federal, territorial, and municipal government permits. The Project has engaged with Authorities Having Jurisdiction (AHJ), Inuit boards and the Qikiqtani Inuit Association (QIA) to confirm compliance with relevant legislation, regulation and Best Management Practices (BMPs).
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Sections 2.1, 5.1	
9. List the approvals, permits and licenses required to conduct the Project.	PSIR	Section 5.9, Table 5-1	All Project permits and approvals will be in place prior to the start of construction.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 2.2, Table 2-1	
<b>Transportation</b>			
10. Describe how the Project site will be accessed and how supplies will be brought to site. Provide a map showing access route(s).	PSIR	Section 1.13	It is expected that all supplies will arrive by existing sealift deliveries, therefore a figure of the transit route has not been provided.

General Project Information Requirements	Report	Section	Comment
11. If a previous airstrip is being used, provide a description of the type of airstrip (ice-strip/all-weather), including its location. Describe dust management procedures (if applicable) and provide a map showing location of airstrip.	N/A	N/A	This is not applicable to the Project. If charter flights are used to transport Project personnel or materials, they will utilize the Resolute Bay airport.
12. Describe expected flight altitudes, frequency of flights and anticipated flight routes.	N/A	N/A	
<b>Equipment</b>			
13. Provide a list of equipment required for the Project and discuss the uses for the equipment.	PSIR	Section 1.16.1, Table 1-4	Construction is expected to be performed with land-based equipment, with the potential for marine-based equipment to be determined by the contractor.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 3.5, Table 3-5	
14. If possible, provide digital photos of equipment.	PSIR	Photo 1-3	Construction is expected to be performed with land-based equipment, with the potential for marine-based equipment to be determined by the contractor.
<b>Water</b>			
15. Describe the location of water source(s), the water intake methods, and all methods employed to prevent fish entrapment. Provide a map showing the water intake locations.	PSIR	Section 1.14	No water withdrawal is planned, as water for construction will be obtained from the existing municipal supply. Should that change, the contractor will be responsible for obtaining the NWB authorization.
16. Describe the estimated rate of water consumption (m <sup>3</sup> /day).	PSIR	Section 1.14	Water consumption is estimated to be 5 m <sup>3</sup> per day, for approximately 125 days (per construction season).

General Project Information Requirements	Report	Section	Comment
17. Describe how wastewater will be managed. If relevant, provide detail regarding location of sumps, including capacity of sumps and monitoring.	PSIR	Section 1.15.1	Wastewater will be managed through holding tanks in the in-site sanitary facilities and transported for disposal in the Hamlet's existing sewage lagoon.
18. If applicable, discuss how surface water and underground water will be managed and monitored.	N/A	N/A	This is not applicable to the Project.
<b>Waste Water (Grey water, Sewage, Other)</b>			
19. Describe the quantities, treatment, storage, transportation, and disposal methods for the following (where relevant): <ul style="list-style-type: none"> <li>• Sewage.</li> <li>• Camp grey water.</li> <li>• Combustible solid waste.</li> <li>• Non-combustible solid waste, including bulky items/scrap metal.</li> <li>• Hazardous waste or oil.</li> <li>• Contaminated soils/snow.</li> <li>• Empty barrels/ fuel drums.</li> <li>• Any other waste produced.</li> </ul>	PSIR	Section 1.15, Table 1-3 (waste)  Section 1.16.3, Table 1-6 (Chemicals and Hazardous materials)	Estimated quantities of waste are provided in the relevant report sections. Waste will be managed through the Hamlet or stored for appropriate transport to the south.
20. If the Project proposal includes a landfill or landfarm, indicate the locations on a map, provide the conceptual design parameters, and discuss waste management and contact-water management procedures.	N/A	N/A	This is not applicable to the Project. Waste will be managed through the Hamlet or stored for appropriate transport to the south.
<b>Fuel</b>			
21. Describe the types of fuel, quantities (number of containers, type of containers and capacity of containers), method of storage and containment. Indicate the location on a map where fuel is to be stored, and method of transportation of fuel to Project site.	PSIR	Section 1.16.2, Table 1-5 (fuel)	Appropriate measures for the storage and handling of fuel shall be implemented by the contractor. The location for fuel storage will be provided by the contractor.



General Project Information Requirements	Report	Section	Comment
		(Table 5-26), 5.10.2 (reportable incidents)	
<b>Chemical and Hazardous Materials</b>			
24. Describe the types, quantities (number of containers, the type of container and capacity of containers), method of storage and containment. Indicate the location on a map where material is to be stored, and method of transportation of materials to Project site.	PSIR	Section 1.16.2, Table 1-5 (fuel)  Section 1.16.3, Table 1-6 (Chemicals and Hazardous Materials)	Estimated quantities of waste are provided in the relevant report sections. Waste will be managed through the Hamlet or stored for appropriate transport to the south.
25. Describe any secondary containment measures to be employed, including the type of material or system used.	PSIR	Section 1.16.2	Fuelling will be required near the marine environment during construction, but appropriate measures, including secondary containment, will be in place.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 5.4.24 (Table 5-26)	
26. Describe the method of chemical transfer.	PSIR	Section 1.16.2, Table 1-5 (fuel),  Section 1.16.3, Table 1-6 (Chemicals and	The contractor will confirm chemicals and quantities that are required, but estimates have been provided in this PSIR. The contractor will provide appropriate storage for the chemicals and will describe transfer methods in the Contractors CEMP (CCEMP) (see Section 8.3.1).

General Project Information Requirements	Report	Section	Comment
		Hazardous Materials) Sections 8.3.1 (Contractor CEMP [CCEMP]), 8.3.4 (CSPRP)	
27. Describe spill control measures in place.	PSIR	Section 8.3.4 (CSPRP)	Minimum spill response measures are described in the CEMP, which will form the basis for the contractors CSPRP. Appropriate reporting to pertinent AHJs (e.g., GN-DoE) be undertaken by the contractor's EM.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Sections 5.3.4 (CSPRP), 5.4.24 (Table 5-26)	
<b>Workforce and Human Resources/Socio-Economic Impacts</b>			
28. Discuss opportunities for training and employment of local Inuit beneficiaries.	PSIR	Sections 1.18, Table 3-2 (Employment and Training Opportunities), 7.1.3.1	The Project has provided Inuit Project personnel from Resolute Bay with employment and training opportunities as wildlife monitors, field technicians, ice monitoring specialists, and interpreters/translators since the start of the feasibility phase in 2019.  The Project anticipates the community will see further economic benefits and training opportunities with the hiring of local labour, as well as secondary economic benefits through the Project's expenditures in local businesses.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Sections 5.4.19 (Table 5-19), 5.12	

General Project Information Requirements	Report	Section	Comment
29. Discuss workforce mobilization and schedule, including the duration of work and rotation length, and the transportation of Project personnel to site.	PSIR	Sections 1.12, 1.18, Table 1-2	Mobilization to site is planned for the first sealift of 2026 open water season. The workday will be restricted to 12-hour workdays, and it is expected that construction will be completed in three years with approximately 125 days per season. The Project personnel rotation schedule will be determined by the contractor.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Sections 3.3, 3.4, Table 3-4	
30. Discuss, where relevant, any specific hiring policies for Inuit beneficiaries.	PSIR	Section 1.18, 3.4, Table 3-2 (Employment and Training Opportunities)	The Project will comply fully with the GN's Nunavummi Nangminiqagtunik Ikajuuti (NNI) Policy (01-Apr-17) and will aim to maximize participation of Inuit labour, training and Inuit owned businesses on the Project (GN, 2017).
<b>Public Involvement / Traditional Knowledge</b>			
31. Indicate which communities, groups, or organizations would be affected by this Project proposal.	PSIR	Section 3.2	The Government of Nunavut – Community and Government Services (GN-CGS) and Economic Development and Transportation (GN-EDT) are conducting a comprehensive consultation program to design the Project to serve the top priorities of the community including hunters, fishers, recreational users, residents, and businesses. The consultation program has been designed to include input from hunters, trappers, fishers, residents, and other community groups and
32. Describe any consultation with interested Parties which has occurred regarding the development of the Project proposal.	PSIR	Section 3.3	
33. Provide a summary of public involvement measures, a summary of concerns expressed, and strategies employed to address any concerns.	PSIR	Sections 3.3, 3.4	

General Project Information Requirements	Report	Section	Comment
34. Describe how traditional knowledge was obtained, and how it has been integrated into the Project.	PSIR	Sections 3, 4	organizations obtained through a variety of methods and materials. The consultation program has been successful in gathering input from community residents, hunters, fishers, and other users of the community harbour. The input received resulted in design modifications to meet the needs and priorities of the community. The GN-CGS/EDT will continue to engage with the community to maintain the positive rapport and collaborative relationship they have built with the community.
35. Discuss future consultation plans.	PSIR	Section 3.5	
Section 2: Project Specific Information			
36. The following table identifies the Project types identified in Section 3 of the NIRB, Part 1 Form. Please complete all relevant sections. <ul style="list-style-type: none"> <li>It is the proponent's responsibility to review all sections in addition to the required sections to ensure a complete application form.</li> </ul>			

### Section 2, Table 1: Project Type and Information Required

Project Type	Type of Project Proposal	Information Request
1	All-Weather Road/Access Trail	Section A-1 and Section A-2
6	Pits and Quarries	Section C
7	Offshore Infrastructure(port, break water, dock)	Section D

Section	Report	Section	Comment
<b>Section A: Roads/Trails</b>			
<b>A.1: Project Information</b>			
1. Describe any field investigations and the results of field investigations used in selecting the proposed route (e.g., geotechnical, snow pack).	ESEB (Dynamic Ocean & Worley Consulting, 2025c)	Sections 5 to 10	Field programs were conducted during the feasibility (2019: terrestrial, marine, geology, archaeology, and topographical) and detailed design (2024: geology, archaeology, and topographical) phases of the Project.
2. Provide a conceptual plan of the road, including example road cross-sections and water crossings.	PSIR	Section 2.2.2, Figure 1-1	The haul road will be an existing road with upgrades as required to facilitate the rock trucks. The installation of culverts, if they are required will be the responsibility of the contractor and will be permitted by the NWB.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 3.2, Figure 1-1	
	ESEB (Dynamic Ocean & Worley Consulting, 2025c),	Section 1.3.2, Figure 1-1	
3. Discuss the type and volume of traffic using the road/trail (i.e. type of vehicles and cargo and number of trips annually).	PSIR	Sections 2.2.2, 7.1.3.3	The haul road is an existing road and Project related use will largely be haul trucks moving material from the quarry to the to the community harbour.
4. Discuss public access to the road.	PSIR	Sections 2.2.2, 3.4, Table 3-2	The haul road is an existing road and there will be minimal interruptions to public access. The exception to this is the short durations when there is blasting.
5. Describe maintenance procedures.	PSIR	Section 2.2.2 (haul road)	The contractor will be responsible for the maintenance of the haul road during construction.
6. Describe whether any portion of the road will be located outside of the Nunavut Settlement Area and whether any other	N/A	N/A	The Project is exclusively located in Resolute Bay.

Section	Report	Section	Comment
regulatory requirements must be met (e.g., Impact Assessment Act [IAA]).			
<b>A.2: All-Weather Road/Access Trail</b>			
7. Discuss road design considerations for permafrost.	PSIR	Section 2.2.2	The haul road is an existing road which will have minor localized improvements to accommodate construction traffic. There are no concerns for permafrost.
8. Describe the construction materials (type and sources for materials), and the Acid Rock Drainage (ARD) and metal leaching (ML) characteristics of the construction materials.	PSIR	Section 2.2.1	The haul road is an existing road with minor improvements expected materials for which will be sourced from existing or the new quarry. ARD for the quarry is addressed in Section C No. 16 of this Table of Concordance.
9. Discuss construction techniques, including timing for construction activities.	PSIR	Sections 1.12, 2.2.2, Table 1-2	Upgrades to the road in the form of a locally widened surface will be required prior to the start of construction and are expected to occur in 2026.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Sections 3.1, 5.3, Table 3-2	
10. Indicate on a map the locations of designated refuelling areas, water crossings, culverts, and quarries/borrow sources.	PSIR	Section 8.3.4 (CSPRP)	The haul route is very short (~2.5 km) and fueling on the route will not be required. The contractor will be responsible for determining the location for refueling, and water crossings/culverts, should that be required. Refuelling of equipment will occur at the community harbour, quarry and contractor laydown area.
11. Identify the proposed traffic speed and measures employed to ensure public safety.	PSIR	Section 8.3.3 (Contractors Traffic Management Plan [CTMP])	

Section	Report	Section	Comment
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 5.4.20 (Table 5-20)	A speed limit of 20 km/h will be enforced for the haul road and traffic management measures will be in place for public safety.
12. Describe dust management procedures.	PSIR	Section 8.3.1 (CCEMP)	The contractor will be responsible for developing a Sediment and Erosion Control (SEC) plan as part of the Contractor Marine Safety Plan (CMSP) and will include dust mitigation measures.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 5.4.20.2 (Table 5-21)	
<b>Section C: Pits and Quarries</b>			
1. Describe all activities included in this Project. <ul style="list-style-type: none"> <li>• Pitting.</li> <li>• Quarrying.</li> <li>• Overburden removal.</li> <li>• Road use and/or construction (please complete Section A).</li> <li>• Explosives transportation and storage</li> <li>• Work within navigable waters.</li> <li>• Blasting.</li> <li>• Stockpiling.</li> <li>• Crushing.</li> <li>• Washing.</li> <li>• Other.</li> </ul>	PSIR	Sections 2.2.1 (pits and quarry), 2.2.1.1 (drilling and blasting, crushing and screening and stockpiling)	Construction activities for the permanent components of the Project will include infill and dredging. Temporary construction activities will include drilling, blasting, crushing and stockpiling from the quarry.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 3.1, Table 3-2	

Section	Report	Section	Comment
2. Describe any field investigations and the results of field investigations used in determining new extraction sites.	ESEB (Dynamic Ocean & Worley Consulting, 2025c)	Sections 5 to 10	Field programs were conducted during the feasibility (2019: terrestrial, marine, geology, archaeology, and topographical) and detailed design (2024: geology, archaeology, and topographical) phases of the Project.
3. Identify any carving stone deposits.	PSIR	Section 3.4, Figure 4-1, Table 3-2	The contractor will be required to stockpile sufficient carving stone for local residents to use if discovered.
4. Provide a conceptual design including footprint.	PSIR	Section 2.2.1, Drawing 1-1	The GN-CGS/EDT are in the planning phase for the development of a Quarry Administration Agreement (QAA) with the Hamlet.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Drawing 1-1	
	ESEB (Dynamic Ocean & Worley Consulting, 2025c)	Drawing 1-1	
5. Describe the type and volume of material to be extracted.	PSIR	Sections 2.2.1 (pits and quarries), 2.1.2.1 (aggregates)	A volume of approximately 100, 000 m <sup>3</sup> , of bedrock, over an area of approximately 4 ha., will need to be blasted to support construction of the community harbour.
6. Describe the depth of overburden.	PSIR	Section 6.3.2	Negligible. The quarry is exposed bedrock.
7. Describe any existing and potential for thermokarst development and any thermokarst prevention measures.	PSIR	Sections 6.3.3 (surface features), 6.3.4 (ground stability and permafrost)	The quarry is entirely exposed bedrock and no ice lenses observed in drilling results. Adjacent grassy areas will not have potential for thermokarst development as bedrock is very shallow and the permafrost will not be within what little overburden exists.

Section	Report	Section	Comment
8. Describe any existing or potential for flooding and any flood control measures.	PSIR	Sections 6.3.5, 7.1.1.5	There are no concerns for flooding. The area is positively sloped and well draining.
9. Describe any existing or potential for erosion and any erosion control measures.	PSIR	Sections 7.1.1.5, 7.1.1.6, 7.1.1.9, 8.3.1 (CCEMP)	The contractor will be responsible for the implementation of an appropriate SEC program.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 5.4.9 (Table 5-9)	
10. Describe any existing or potential for sedimentation and any sedimentation control measures.	PSIR	Sections 7.1.1.2, 7.1.1.9	There are no existing sedimentation concerns, the contractor will confirm that appropriate measures are in place for in stockpile, blasting and crushing areas.
11. Describe any existing or potential for slumping and any slump control measures.	PSIR	Sections 6.3.2, 6.3.4	There are no concerns for slumping at the quarry as it is primarily bedrock.
12. Describe the moisture content of the ground.	PSIR	Sections 6.3.3, 6.3.5	There is low moisture content as the quarry is exposed bedrock.
13. Describe any evidence of ice lenses.	PSIR	Sections 6.3.2, 6.3.3	There were no ice lenses observed during the geotechnical drilling program. Substantial ice lenses are not expected in bedrock.
14. If blasting, describe methods employed.	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 3.1, Table 3-2	Not yet known, however appropriate permits will be in place, and measures to protect the environment are outlined in the CEMP. Methodology will be determined by the contractor.
15. Describe the explosive type(s), hazard class, volumes, uses, location of storage (show on map), and method of storage.	PSIR	Section 8.3.5 (Contractor Quarry and Blast Management Plan [CQBMP])	The contractor will be responsible for developing the CQBMP.

Section	Report	Section	Comment
16. Discuss methods used to determine ARD and ML potential and results.	PSIR	Section 6.3.2	Surface samples were collected during the feasibility phase of the Project and from drill cores during the geotechnical drilling program. Lab results from 2019 confirm that aggregates are non potentially acid generating. It is expected that additional laboratory testing collected in 2024 will show the rock is non potentially acid generating.
17. Discuss safety measures for the workforce and the public.	PSIR	Section 3.4, Table 3-2 Sections 8.3.2 (Contractor Marine Safety Plan, (CMSP)), 8.3.3 (CTMP), 8.3.6 (Contractor Health, Safety and Emergency Response Plan (CHSERP))	Appropriate safety measures will be in place during Project construction.
<b>Section D: Offshore Infrastructure</b>			
<b>D.1 Mill (this section refers to the Community Harbour)</b>			
1. Describe any field investigations and the results of field investigations used in selecting the site (i.e., aerial surveys, bathymetric surveys, tidal processes, shoreline erosion processes, and geotechnical foundation conditions).	ESEB (Dynamic Ocean & Worley Consulting, 2025c)	Section 5 – 7 (marine) Section 8 – 10 (terrestrial)	Field surveys were conducted in 2019 and 2024 (terrestrial, geology, archaeology, and topographical). A marine field survey is to take place in the Spring of 2025.
2. Provide a conceptual plan, profile description and drawing(s) a) indicating shoreline, b) facility footprint, c) tidal variations, d) required vessel draft, e) keel offset, f) deck height freeboard.	PSIR	a) and b) Section 2.1, Figure 1-1, Drawing 1-1	The community harbour encompasses a permanent footprint that is approximately 30,000 m <sup>2</sup> . The seaward extent is approximately 170 m from shore (perpendicular) to a depth range of approximately 8.5 m Chart Datum (CD)
		c) Section 6.3.12	
		d) Section 1.4	
		e) and f) N/A	

Section	Report	Section	Comment
3. Discuss how anticipated loads on the seabed foundation and on the offloading platform will be incorporated into the design.	PSIR	Section 2.1.2.2	Slope stability of the breakwaters will be assessed, and any necessary mitigations will be incorporated into the design if required.
4. Describe how vessels will manoeuvre around the facility. (e.g., pull alongside or in front).	PSIR	Section 1.5	The Project has been designed to consider the specific needs of marine users.
5. Discuss the anticipated life of the facility.	PSIR	Section 1.8	The community harbour is expected to be a permanent facility in Resolute Bay with a realistic lifespan of greater than 50 years.
6. Describe whether part of the facility or Project will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g., IAA).	N/A	N/A	The harbour is located in Resolute Bay.

Section	Report	Section	Comment
<b>D.2: Facility Construction</b>			
7. Describe the types of material used for construction (i.e. granular or rock, steel piling or sheet piling, concrete). If material is granular, consider ARD potential, ML potential, percentage of fines, size.	PSIR	Sections 2.2.1, 2.2.6	The construction of the community harbour is expected to require typical harbour materials required for its construction including rocks, steel and electrical components. All materials will be brought from outside of Nunavut other than the rock that will be sourced from the quarry.
8. Describe dredging activities.	PSIR	Section 2.1.2.2	The harbour includes dredging the entrance channel and inner harbour to an elevation of 1.5 m CD. The float area will be dredged to an elevation of 2.5 m CD.
9. Indicate source of granular or rock material used in construction.	PSIR	Section 2.2.1, Figure 1-1	Rock will be obtained from the quarry.
10. List quantities of the various types of material used in construction.	PSIR	Section 2.2.6	Estimates of materials required are provided; however, final quantities will be decided by the contractor.
11. Describe construction method(s).	PSIR	Section 2.1.2	It is expected that construction will be completed using land-based equipment; however, the Contractor may decide to support with marine-based equipment.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Section 3.1, Table 3-1, Table 3-2	
12. Indicate whether a site engineer will be on-site to inspect construction.	-	-	A full-time engineer will be on-site throughout construction.
13. If proposed construction method involves dumping of fill into water, discuss measures for mitigating the release of suspended solids.	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Sections 5.4.8 (Table 5-8) (sediment and water quality), 5.5.5 (Table 5-27) (turbidity)	Infill activity will be performed to support Project construction, and appropriate measures will be in place to manage for potentially negative environmental effects such as turbidity.
<b>D.3: Facility Operation</b>			

Section	Report	Section	Comment
14. Describe maintenance activities associated with the facility (e.g. dredging, maintenance to account for potential settlement of facility).	PSIR	Sections 2.1.4, 8.4	The GN-EDT will be responsible for the operations of the community harbour and will develop and implement plans for all aspects of the harbour operations.
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Sections 3.7, 3.8	
15. Discuss whether the public will have access to the facility(s) and describe public safety measures.	PSIR	Section 1.9	The community harbour is a public facility and will not have access restrictions
16. Describe cargo and container handling, transfer and storage facilities.	N/A	N/A	The community harbour will not be used for sealift delivery. The facility does not have any cargo and/or container handling areas.
17. Indicate whether fuel will be transferred from barges at this site and describe the method of that fuel transfer.	PSIR	Section 1.16.2, Table 1-5	Barges will not use the community harbour.
18. Discuss frequency of use.	PSIR	Section 1.4	The community harbour will be used throughout the open-water season.
<b>D.4: Vessel Use in Offshore Infrastructure</b>			
19. Please complete Section H.			
<b>Section 4.0: Description of the Existing Environment</b>			
38. Describe the existing environment, including physical, biological and socio-economic aspects. Where appropriate, identify local study areas and regional study areas. a. Please note that the detail provided in the description of the existing environment should be appropriate for the type of Project proposal and its scope.	PSIR	Section 6, Figure 1-1	No regional study area was developed for the Project, as it is expected to be reviewed by NIRB as a Part 4 Screening, not a Part 5 Environmental Assessment. The local study area is considered to be the Study Area developed for the Project. There are no impacts outside of the local study area as shipping is not an activity.

Section	Report	Section	Comment
b. The following is intended as a guide only.			
<b>Physical Environment</b>			
<p>39. Please note that a description of the physical environment is intended to cover all components of a Project, including roads/trails, marine routes, etc. that are in existence at present time.</p> <p>a. Proximity to protected areas, including:</p> <ul style="list-style-type: none"> <li>i. designated environmental areas, including parks;</li> <li>ii. heritage sites;</li> <li>iii. sensitive areas, including all sensitive marine habitat areas;</li> <li>iv. recreational areas;</li> <li>v. sport and commercial fishing areas;</li> <li>vi. breeding, spawning and nursery areas;</li> <li>vii. known migration routes of terrestrial and marine species;</li> <li>viii. marine resources;</li> <li>ix. areas of natural beauty, cultural or historical history;</li> <li>x. protected wildlife areas; and</li> <li>xi. other protected areas.</li> </ul> <p>b. Eskers and other unique landscapes (e.g. sand hills, marshes, wetlands, floodplains).</p> <p>c. Evidence of ground, slope or rock instability, seismicity.</p> <p>d. Evidence of thermokarsts.</p> <p>e. Evidence of ice lenses.</p> <p>f. Surface and bedrock geology.</p> <p>g. Topography.</p>	<p>PSIR</p> <p>ESEB (Dynamic Ocean &amp; Worley Consulting, 2025c)</p>	<p>Section 6.3</p> <p>Section 3.2 (designated areas)</p> <p>Sections 4.5-4.10 (oceanography, ice and weather)</p> <p>Section 5 (water and sediment quality)</p>	<p>The Project site is located within the Tallurutiup Imanga National Marine Conservation Area (TI NMCA) designated area and is in close proximity to Important Bird Areas (IBAs) and Ecologically or Biologically Significant Marine Areas (Resolute Passage, Prince Leopold Island, and the Penny Strait [EBSAs]).</p>

Section	Report	Section	Comment
<ul style="list-style-type: none"> <li>h. Permafrost (e.g., stability, depth, thickness, continuity, taliks).</li> <li>i. Sediment and soil quality.</li> <li>j. Hydrology/limnology (e.g., watershed boundaries, lakes, streams, sediment geochemistry, surface water flow, groundwater flow, flood zones).</li> <li>k. Tidal processes and bathymetry in the Project area (if applicable).</li> <li>l. Water quality and quantity.</li> <li>m. Air quality.</li> <li>n. Climate conditions and predicted future climate trends.</li> <li>o. Noise levels.</li> <li>p. Other physical Valued Ecosystem Components (VEC) as determined through community consultation and/or literature review.</li> </ul>			
<b>Biological Environment</b>			
<ul style="list-style-type: none"> <li>• Vegetation (terrestrial as well as freshwater and marine where applicable).</li> <li>• Wildlife, including habitat and migration patterns.</li> <li>• Birds, including habitat and migration patterns.</li> <li>• Species of concern as identified by federal or territorial agencies, including any wildlife species listed under the <i>Species at Risk Act</i> (SARA), its critical habitat or the residences of individuals of the species.</li> <li>• Aquatic (freshwater and marine) species, including habitat and migration/spawning patterns.</li> </ul>	PSIR  ESEB (Dynamic Ocean & Worley Consulting, 2025c)	Section 6.4  Sections 3.1, 6 and 7 (fish and fish habitat, marine mammals), 8 to 10 (terrestrial vegetation and wildlife, migratory birds), Table 3-2 (Species at Risk [SAR])	The habitat values within the Project Study Area were generally low to moderate in the marine portions and low in the terrestrial portions. Several SAR organisms have the potential to be present in the Study Areas, but the Study Areas do not provide critical habitat requirements for these species.

Section	Report	Section	Comment
<ul style="list-style-type: none"> <li>Other biological VECs as determined through community consultation and/or literature review.</li> </ul>			
<b>Socio-economic Environment</b>			
<ul style="list-style-type: none"> <li>Proximity to communities.</li> <li>Archaeological and culturally significant sites (e.g., pingos, soap stone quarries) in the Project (Local Study Area) and adjacent area (Regional Study Area).</li> <li>Paleontological component of surface and bedrock geology.</li> <li>Land and resource use in the area, including subsistence harvesting, tourism, trapping and guiding operations.</li> <li>Local and regional traffic patterns.</li> <li>Human Health, broadly defined as a complete state of wellbeing (including physical, social, psychological, and spiritual aspects).</li> <li>Other Valued Socioeconomic Components (VSEC) as determined through community consultation and/or literature review.</li> </ul>	PSIR  ESEB (Dynamic Ocean & Worley Consulting, 2025c)	Section 6.5  Section 11 (socio-economic environment)	If the southern quarry is used, archaeological buffers may need to be implemented, however no other archaeological sites were recorded within the Project Study Area. Further permitting through GN Department of Culture and Heritage (C&H) may be required if the southern quarry is selected.  Harvesting in Resolute Bay is limited.
<b>Section 5.0. Identification of Impacts and Proposed Mitigation Measures</b>			
40. Please complete the attached Table 1 - Identification of Environmental Impacts, taking into consideration the components/activities and Project phase(s) identified in Section 4 of this document. Identify impacts in Table 1 as either positive (P), negative and mitigable (M), negative and non-mitigable (N), or unknown (U).	PSIR  CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Table 7-1 (assessment categories), Table 7-2 (effects assessment)  Section 4, Table 4-1, Appendix B (Table B-1)	With the exception of the loss of seabed footprint due to the construction of the community harbour there are no residual effects expected subsequent to the implementation of Project mitigation and monitoring measures. A CEMP has been developed that details measure to be implemented to minimize negative environmental and socio-economic effects associated with the construction phase of the Project. While

Section	Report	Section	Comment
41. Discuss the impacts identified in the above table.	PSIR	Section 7.1.1 (physical), 7.1.2 (biological), 7.1.3 (socioeconomic)  0 (operations)	residual effects to the marine environment are not expected this will be further confirmed with Fisheries and Oceans Canada – Fish and Fish Habitat Program (DFO-FFHPP) during the Request for Review (RFR) process.
42. Discuss potential socioeconomic impacts, including human health.	PSIR	Section 7.1.3	
43. Discuss potential for transboundary effects related to the Project.	PSIR	Section 7.5	
44. Identify any potentially adverse effects of the Project proposal on species listed under the SARA and their critical habitats or residences, what measures will be taken to avoid or lessen those effects and how the effects will be monitored.	PSIR	Sections 7.1.2.6 (Construction), 7.2.2.6 (Operations)	
45. Discuss proposed measures to mitigate all identified negative impacts.	PSIR	Section 7	
	CEMP (Dynamic Ocean & Worley Consulting, 2025b)	Sections 5.4 (Mitigation), 5.5 (Monitoring)	
<b>Section 6.0: Cumulative Effects</b>			
46. A cumulative impact (or effect) can be defined as the impact on the environment that results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. Cumulative impacts can also result	PSIR	Section 7.4	At this time, no other projects have been identified to incur cumulative effects with those of the Project.

Section	Report	Section	Comment
<p>from individually minor but collectively significant actions taking place over a period of time.</p> <ul style="list-style-type: none"> <li>• Discuss how the effects of this Project interact with the effects of relevant past, present and reasonably foreseeable projects in a regional context.</li> </ul>			
<b>Section 7.0. Supporting Documents</b>			
<p>47. Supporting Documents:</p> <ul style="list-style-type: none"> <li>• CEMP (Dynamic Ocean &amp; Worley Consulting, 2025b).</li> <li>• ESEB Report (Dynamic Ocean &amp; Worley Consulting, 2025c).</li> <li>• Resolute Bay community harbour Development – Community Consultations (First and Second reports) (Worley Consulting, 2020).</li> <li>• Archaeological Impact Assessment (AIA)(AECOM, 2024).</li> <li>• Community and Stakeholder Consultation Log.</li> </ul>	N/A	N/A	Several documents have been developed to support the detailed design and permitting phase to support the construction and operation of the Resolute Bay community harbour.

## Acronyms and Abbreviations

Acronyms / Abbreviation	Definition
AFA	Application for Authorization
AGP	Acid Generating Potential
AHJ	Authority Having Jurisdiction
AIA	Archaeological Impact Assessment
ARD	Acid Rock Drainage
ARDP	Archaeological Resource Discovery Plan
ATC	Air Traffic Control
ATV	All-Terrain Vehicle
BMPs	Best Management Practices
CAAQS	Canadian Ambient Air Quality Standards
CAF	Canadian Armed Forces
CCEMP	Contractor Construction Environmental Management Plan
CCG	Canadian Coast Guard
CCME	Canadian Council of Ministers of the Environment
CEMP	Construction Environmental Management Plan
CSPRP	Contractors Spill Prevention and Response Plan
CTMP	Contractors Traffic Management Plan
CQBMP	Contractors Quarry and Blast Management Plan
CD	Chart Datum
CEGEP	Collège d'enseignement général et professionnel (Vocational college)
CEMP	Construction Environmental Management Plan
CHS	Canadian Hydrographic Services
CHSERP	Contractors Health and Safety Environmental response Plan
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CMSP	Contractor Marine Safety Plan
CNWA	<i>Canadian Navigable Waters Act</i>
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWP	Construction Work Plans
CWS	Canadian Wildlife Services
DAS	Disposal at Sea
DFO	Fisheries and Oceans Canada
DFCA	Disko Fan Conservation Area
DFO-SCH	DFO-Small Craft Harbours
DFO-FFHPP	DFO-Fish and Fish Habitat Protection Program

Acronyms / Abbreviation	Definition
DIO	Designated Inuit Organization
DoF	Death of Fish
DSCA	Davis Strait Conservation Area
Dynamic Ocean	Dynamic Ocean Consulting Ltd.
ECCC	Environment and Climate Change Canada
ELC	Ecological land classification
EM	Environmental Monitor
ESBA	Ecologically and Biologically Significant Areas
ESEB	Environmental and Socio-Economic Baseline
ESWG	Ecological Stratification Working Group
EZ	Exclusion Zone
FAA	<i>Fisheries Act</i> Authorization
Frontier	Frontier Geosciences Inc.
GBF	Global Biodiversity Framework
GN	Government of Nunavut
GN-C&H	GN-Department of Culture and Heritage
GN-CGS	GN-Community and Government Services
GN-DoE	GN-Department of Environment
GN-EDT	GN-Economic Development and Transportation
GN-PPD	GN-Petroleum Products Division
GN-TIN	GN-Departments of Transportation and Infrastructure
GPS	Global Positioning System
HADD	Harmful Alteration, Disruption or Destruction
HHWLT	Higher High Water Large Tide
HHWMT	Higher High Water Mean Tide
HRQ	Haul Road Quarry
HTA	Hunters and Trappers' Association
HSERP	Health and Safety and Emergency Response Plan
HWL	High Water Line
IAA	<i>Impact Assessment Act</i>
IBA	Important Bird Area
IIBA	Inuit Impact and Benefit Agreement
INAC	Indigenous and Northern Affairs Canada
IOL	Inuit Owned Land
IPCC	Intergovernmental Panel on Climate Change
IQ	Inuit Qaujimajatuqangit

Acronyms / Abbreviation	Definition
IUCN	International Union for Conservation of Nature
LED	Light Emitting Diode
LLWLT	Lower Low Water Large Tide
LLWMT	Lower Low Water Mean Tide
LoA	Letter of Advice
LUP	Land Use Permit
MBS	Migratory Bird Sanctuaries
MCTS	Marine Communications and Traffic Services
ML	Metal Leaching
MMO	Marine Mammal Observers
MoU	Memorandum of Understanding
MPA	Marine Protected Area
MSP	Marine Safety Plan
MWL	Mean Water Level
NAAQS	Nunavut Ambient Air Quality Standards
NAPS	National Air Pollutant Surveillance
Nauttisuqtiit	The Guardians
NAVWARNS	Navigational Warnings
NBRLUP	North Baffin Regional Land Use Plan
NEAS	Nunavut Eastern Arctic Shipping
NHC	Nunavut Housing Corporation
NIRB	Nunavut Impact Review Board
Nunavut Agreement	<i>Nunavut Land Claims Agreement Act</i>
NMC	Nunavut Marine Council
NMCA	National Marine Conservation Area
NNI Policy	Nunavummi Nangminiaqtunik Ikajuuti Policy
NOTAM	Notice to Airmen
NoW	Notice of Works
NO <sub>2</sub>	Nitrogen Dioxide
NPC	Nunavut Planning Commission
NPP	Navigation Protection Program
NRCan	Natural Resources Canada
NSA	Nunavut Settlement Agreement
NSSI	Nunavut Sealink and Supply Inc.
NTI	Nunavut Tunngavik Incorporated
NuPPAA	<i>Nunavut Planning and Project Assessment Act</i>

Acronyms / Abbreviation	Definition
NWB	Nunavut Water Board
NWHS	Nunavut Wildlife Harvest Study
NWMB	Nunavut Wildlife Management Board
NWNSTRTA	<i>Nunavut Waters and Nunavut Surface Rights Tribunal Act</i>
NWT	Northwest Territories
O <sub>3</sub>	Ozone
OEMP	Operations Environmental Management Plan
OHWL	Ordinary High-Water Line
PAG	Potentially Acid Generation
PCSP	Polar Continental Shelf Program
PM <sub>10</sub>	Particulate matter 10 micrometres or less
PM <sub>2.5</sub>	Particulate matter less than 2.5 µm
PSIR	Project Specific Information Requirement
PSPC	Public Services and Procurement
QAA	Quarry Administration Agreement
QEC	Qulliq Energy Corporation
QIA	Qikiqtani Inuit Association
QWB	Qikiqtaaluk Wildlife Board
RCP	Representative Concentration Pathways
RCMP	Royal Canadian Mounted Police
RFR	Request for Review
RIA	Regional Inuit Associations
RNLUP	Recommended Nunavut Land Use Plan
RoW	Right of Way
SAO	Senior Administrative Office
SAR	Species at Risk
SARA	<i>Species at Risk Act</i>
SDR	Screening Decision Report
SEC	Sediment and Erosion Control
SO <sub>2</sub>	Sulphur Dioxide
SPRP	Spill Prevention and Response Plan
TC	Transport Canada
The Project	Resolute Bay Community Harbour Project
TI NMCA	Tallurutiup Imanga National Marine Conservation Area
TSP	Total Suspended Particles
TOC	Total Organic Carbon



Acronyms / Abbreviation	Definition
TSS	Total Suspended Solids
UV	Ultraviolet
VEC	Valued Ecosystem Component
VHF	Very High Frequency
VSEC	Valued Socio-Economic Component
WSSC	Workers' Safety and Compensation Commission



## 1 General Project Information Requirements

This document is the Project Specific Information Requirement (PSIR) supplementary report for the Resolute Bay Community Harbour Project (the Project). The purpose is to support the Nunavut Impact Review Board (NIRB) Screening.

The Tallurutiup Imanga National Marine Conservation Area (TI NMCA) is an important designated area located in the Canadian Arctic, specifically in Lancaster Sound (Tallurutiup Imanga) and its adjacent waterways. This conservation area was established to protect and preserve the unique and ecologically important marine environment for Inuit and all Canadians. Establishment of protected areas within Canada's high Arctic basin, such as the TI NMCA, is a requirement of the Inuit Impact and Benefit Agreement (IIBA). A Memorandum of Understanding (MoU) between the Qikiqtani Inuit Association (QIA), the Government of Nunavut (GN), and the Government of Canada has resulted from the creation of the TI NMCA and was signed in the summer of 2021. The purpose of this agreement is to recognize that marine infrastructure is connected to community wellbeing as well as economic and social development, and to address the marine infrastructure deficit in several communities, including Resolute Bay and Grise Fiord. A portion of the waterfront within the several communities (such as Resolute Bay) that are within the TI NMCA is excluded through Article 4 of the IIBA (IIBA, 2019) to allow for the development of marine infrastructure. This will be accomplished with funding from the Government of Canada for a community harbour in both Resolute Bay and Grise Fiord.

The Project is being managed by the GN, where GN-Community and Government Services (CGS) is the proponent during the construction stage, and ownership will transfer to GN-Economic Development and Transportation (GN-EDT) during the operations stage. The two GN departments are working collaboratively on the Project and are collectively referred to as GN-CGS/EDT as the proponent for the permitting of the Resolute Bay community harbour. Effective 01 April 2025, GN-CGS and GN-EDT, will be merged and referred to as the Departments of Transportation and Infrastructure (GN-TIN) (GN, 2024b).

Worley Canada Services Ltd., operating as Worley Consulting, has been retained by the GN-CGS/EDT to support the detailed design of a community harbour facility in Resolute Bay, Nunavut (Figure 1-1). Dynamic Ocean Consulting Ltd. (Dynamic Ocean) is supporting Worley Consulting on the permitting requirements for the Project. The Resolute Bay community harbour was a component of an earlier feasibility study, completed by Fisheries and Oceans Canada – Small Craft Harbour (DFO-SCH) in 2019.

### 1.1 Project Location

The Project is located at Resolute Bay, a Hamlet on the southern shore of Cornwallis Island in Parry Channel (74° 41.472'N, 94° 51.549'W; Figure 1-1). The community is located in the Qikiqtaaluk Region, and conforms with the North Baffin Regional Land Use Plan (NBRLUP) (Nunavut Planning Commission (NPC, 2000)). While Resolute Bay is within the NBRLUP, the Recommended Nunavut Wide Land Use Plan (RNLP) (NPC, 2023b) will replace the NBRLUP once it is approved.



## 1.2 Project Overview

The Project will improve safety and access to water, functionality of boating activities, and reduce the congestion and environmental risks associated with the current use of the harbour (see Section 1.5).

The permanent components of the Project include the construction of:

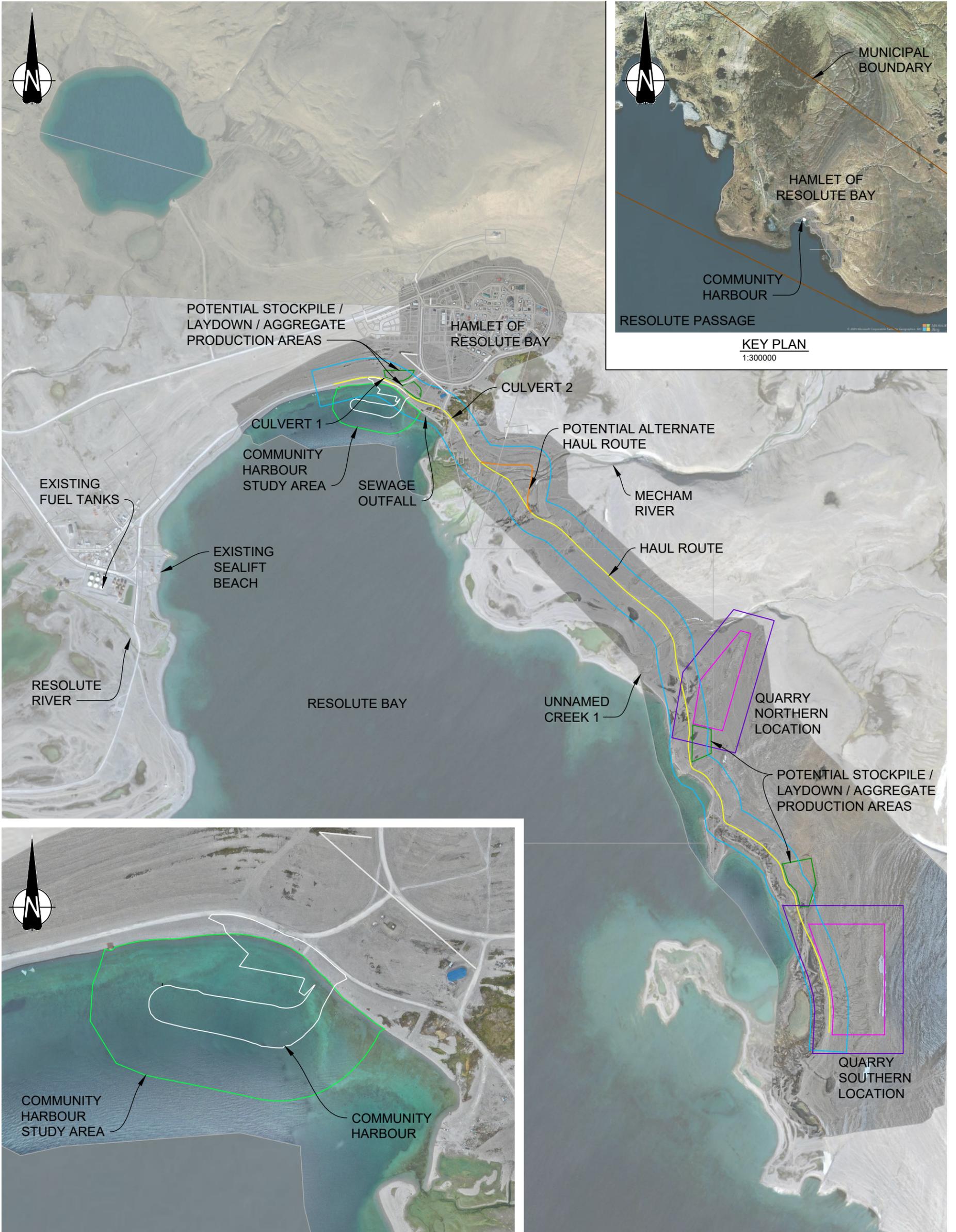
- A new breakwater (to create a protected harbour).
- Boat launch ramp.
- Small craft floating docks to support mooring of small craft vessels.
- Laydown area.
- Navigational aids.
- Harbour lighting.

Dredging is required on the leeward side of the breakwater to form a berth pocket and approach channel allowing larger boats to access (see Section 2.1.2.2). Details of the Project are presented in Section 2.

A General Arrangement of the community harbour is provided in Drawing 1-1. The final arrangement of the community harbour may change through the design development phase of the Project as GN-CGS/EDT plans to continue consulting with the community to refine the Project design; however, any design modifications that do occur, are not expected to change the predicted environmental effects discussed in this PSIR. Temporary components to support construction include a quarry and haul road, with the quarry required to supply rock for construction, and a haul road to transport rock from the quarry to the community harbour. Project components are further described in Section 2.1.1.

Construction is anticipated to require four years and is planned to occur from the open-water seasons of 2026 through to 2029.

During construction, the Project will use the existing scheduled sealift deliveries and scheduled flights, with the potential for use of chartered flights when additional cargo or construction crew capacity is required. Potable water, sanitary and solid waste disposal are anticipated to be provided via existing facilities. Fuel supply may use existing facilities, if there is sufficient capacity and quantity. If the existing facilities are not adequate, the contractor will be required to install temporary fuel storage facilities and/or arrange additional fuel shipments. Construction crew accommodations will be provided by a construction camp to be established by the construction contractor.



**LEGEND**

- HAUL ROAD ON EXISTING ROAD/TRACK
- ALTERNATE/ADDITIONAL HAUL ROUTE
- COMMUNITY STUDY AREA
- QUARRIES STUDY AREA
- EXISTING ROAD STUDY AREA
- STOCKPILE/LAYDOWN AREA
- QUARRY

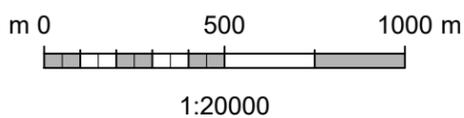
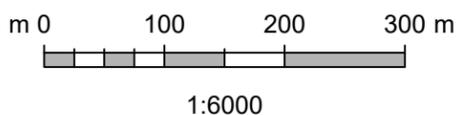


Figure 1-1

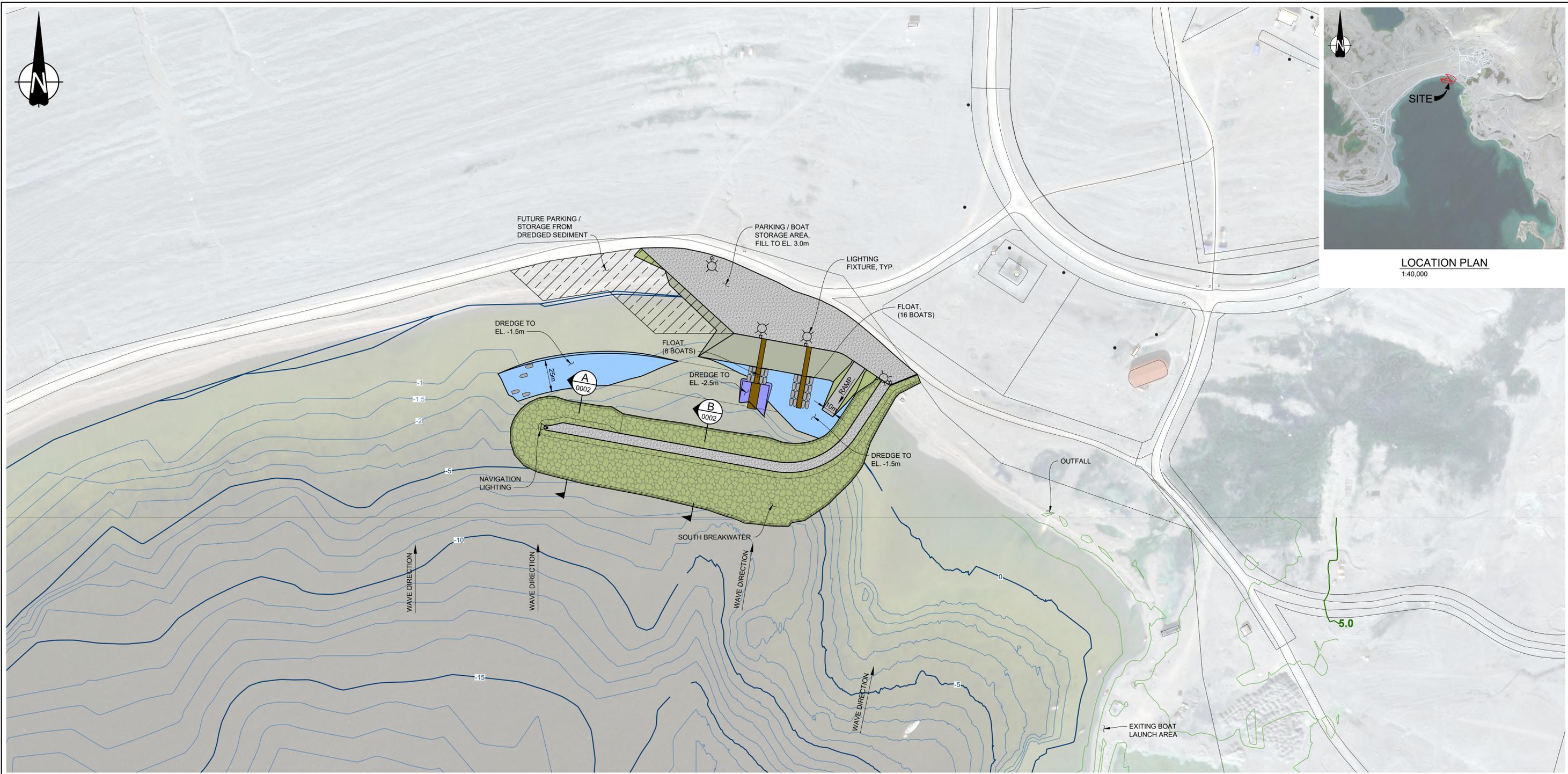
GOVERNMENT OF NUNAVUT  
 RESOLUTE BAY COMMUNITY  
 HARBOUR DEVELOPMENT

**PROJECT COMPONENTS  
 (QUARRY, HAUL ROAD, COMMUNITY HARBOUR)**

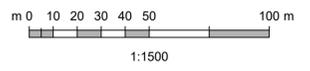
Date: 03-APR-25	Drawn by: JLC	Edited by: JLC	App'd by: CM
Worley Project Number		317086-54175	
DRG No		1	REV 2



This drawing is prepared for the use of the contractual customer of Worley Canada Services Ltd. and Worley Canada Services Ltd. assumes no liability to any other party for any representations contained in this drawing.



**PLAN**  
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**NOTES:**  
1. WATER DEPTHS PROVIDED BY CANADIAN HYDROGRAPHIC SERVICE, DEPARTMENT OF FISHERIES AND OCEANS IN A "LAS" FILE.

REV	DATE	REVISION DESCRIPTION	DRAWN	DRAFT CHK	DESIGNED	ENG CHK	APPROVED	OAR	REF DRAWING No	REFERENCE DRAWING TITLE
C	28-NOV-24	ISSUED FOR CLIENT REVIEW	JLC	BJM	CM	DH	CM	-		
B	26-JUL-24	RE-ISSUED FOR CLIENT REVIEW	JLC	BJM	CM	DH	CM	-		
A	09-JUL-24	ISSUED FOR CLIENT REVIEW	JLC	-	CM	DH	CM	-		

D SHEET	SCALE	SHOWN	ENGINEERING AND PERMIT STAMPS (As Required)
			<div style="border: 1px solid black; padding: 5px;"> <b>PRELIMINARY</b>            DO NOT USE FOR CONSTRUCTION            Last Saved: Nov. 28/24 2:51pm         </div>
WORLEY PROJECT No			
317086-54175			

**CUSTOMER**

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**worley consulting**

Drawing 1-1 **RESOLUTE BAY COMMUNITY HARBOUR GENERAL ARRANGEMENT**

DRG No: 317086-54175-01-MA-DSK-0001

REV: **C**

USER NAME: jennifer.coppendale  
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### 1.3 Existing Infrastructure

The community of Resolute Bay does not currently have a protected harbour, as seen in Photo 1-1, and the only existing infrastructure consists of bollards for the fuel vessel, located near the fuel tank farm (approximately 2 km south-west of the community harbour location). There have been previous attempts at dredging and breakwater construction by residents; however, these efforts were unsuccessful. Residents launch and retrieve their boats from multiple beach locations depending on the weather and ice conditions.

The GN supplied the community with a large twin pontoon float in 2010. As with many communities where similar floats were provided, the floats were found to be awkward to handle and, given their weight and the exposed nature of the site, of limited use. The float was to be part of a harbour basin and basin excavation that was started but never completed.

It is understood that a tide gauge station was constructed on a gravel and metal debris pushout on the west (South Camp) side of the bay in 1957, but the facility has been demolished since about 2012. Remnants of the pushout still exist.

Boats are usually pulled up on the beach in the northeast corner of the bay, which is closest to the townsite, but some boats exist at the South Camp area on the west side.

There are five sets of range lights to guide deep draft vessels into the bay and to the anchorages.



**Photo 1-1: Existing Boat Launch on the East Shore of Resolute Bay a) Overview; b) Ground View**

Source: Dynamic Ocean and Worley Consulting, 2024



#### 1.4 Community Harbour Purpose and Vessels (New and Existing)

The Project is designed to serve existing small boat users, such as hunters, fishers, outfitters, and recreational users, with the objective of improving access and safety for existing and future users. The community of Resolute Bay may also allow the facility to be used by other industries such as cruise ship tenders. The construction of a community harbour in Resolute Bay is being proposed to support safe access to the land and sea in the context of rapid environmental changes in the Arctic and in support of community fish and marine mammal harvesting.

The objective of the Project is to improve access and safety for existing and future users. It is acknowledged that the community will continue to grow, likely resulting in increased boaters and vessel traffic to Resolute Bay.

The type of vessels expected to use the facility are small crafts, which are intended to use floating docks located along the shoreline of the harbour. The small craft floats will be designed based on the average size of local vessels, which are 8 m long with a beam of 3 m. The harbour will have approximately 24 boat slips using two float strings (see Drawing 1-1).

A commercial fishery, should it be developed in the future, is not part of this NIRB screening application.

#### 1.5 Community Benefits

The Project will improve safe access to water and the functionality of boating activities, safety concerns and environmental risks associated with current boating operations, reduce congestion, and provide all tide access in the community. Small craft users, if allowed by the community, will have safer and protected access to the water, such as hunters, fishers, outfitters, recreational users and potentially cruise ship tenders. The new breakwater will provide protection from winds and waves, which was a safety concern expressed during consultation with the community. The new boat launch will provide all tide access and ample manoeuvring space on shore. The Project will also improve day-to-day operations and safety for users by providing a laydown area adjacent to the shoreline. This will allow ample space for parking and provisioning. Further amenities of the design include an improved shoreline (grading and levelling to create a driving surface) and lighting, including navigation lights at the harbour entrance.

#### 1.6 Project Alternatives & Selected Options

The Project components include temporary and permanent components, which are marine and terrestrial. Temporary components are terrestrial and include a quarry and haul road; the quarry to supply rock for construction, and a haul road to transport rock from the quarry to the community harbour. The permanent component is the community harbour and is primarily marine with small portions that are terrestrial (Figure 1-1 (community harbour location and components); Drawing 1-1 (general arrangement of community harbour)). Potential requirements for a contractor laydown area are discussed in Section 2.1.1.2.

The selected locations to be used for the Project components are discussed in this section. Site selection is determined by a variety of variables including harbour usage, environmental, regulatory, socio-



economic, constructability, geological and engineering characteristics, cost, and future maintenance requirements.

#### 1.6.1 Community Harbour

Three options were considered for Resolute Bay, which had been conceptualized in collaboration with DFO-SCH in the early feasibility study in 2019. These generalized arrangements form the basis of this study and were developed based on the local knowledge and feedback received during community consultations in the feasibility (2018) and detailed design (2024) phases. Options 1 and 2 were adjacent to each other on the northeastern side of Resolute Bay, while Option 3 was located on southwestern side of Resolute Bay. Option 2 was selected as the preferred option, since it provides good protection for small craft vessels, is located further from the sewage outfall than Option 1 (Figure 1-2), requires less dredging, requires less ongoing maintenance dredging requirements, and has better constructability. Option 2 was also the preferred choice through community consultation.

#### 1.6.2 Quarry

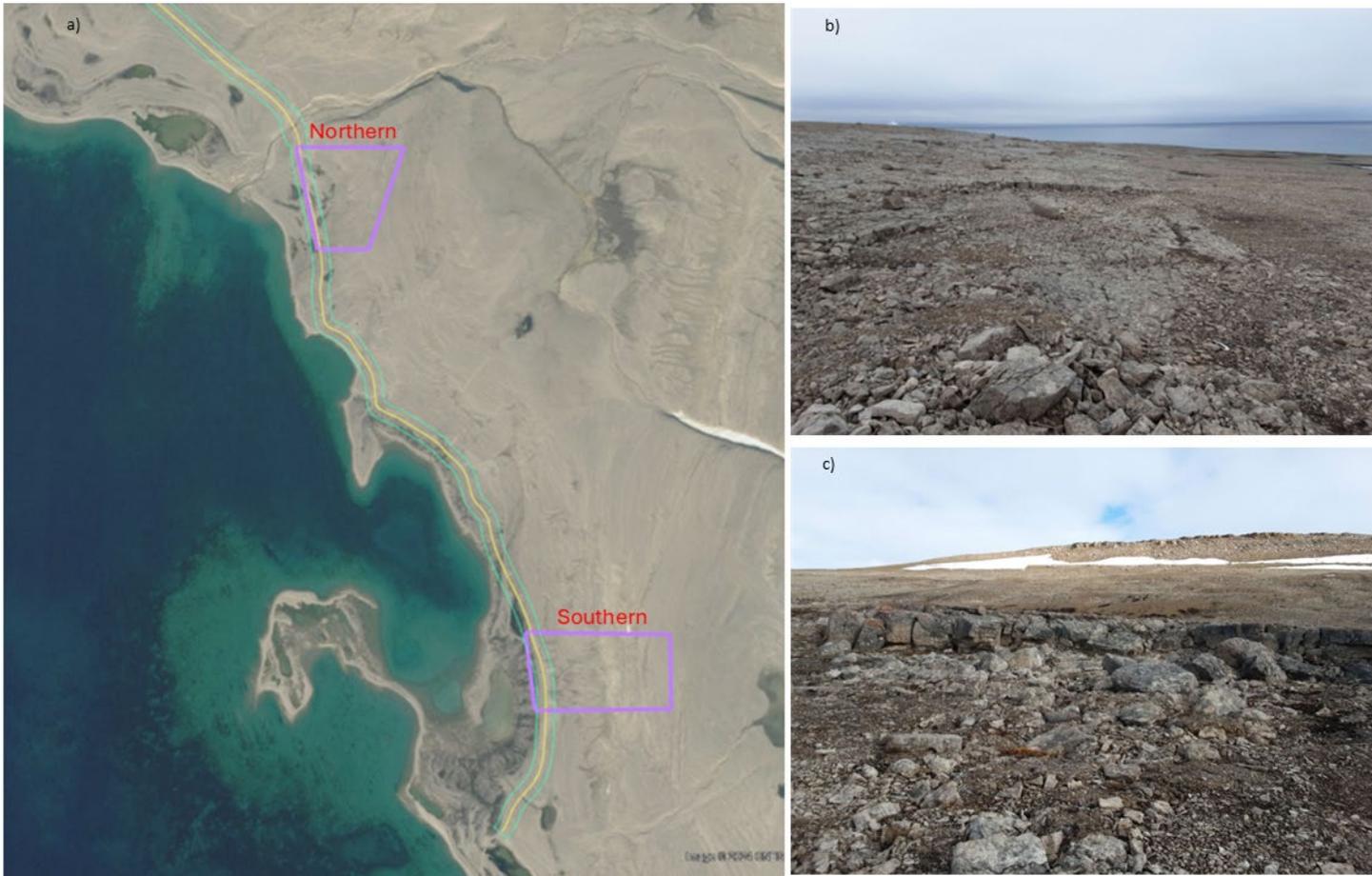
Two quarry locations (northern quarry, southern quarry) are under consideration, which are approximately 2.5 km and 4 km southwest of the community harbour, respectively (see Photo 1-2). Both quarries were assessed at this current phase to confirm all environmental and socio-economic (inclusive of archaeological) concerns were addressed. Only one quarry is required to support construction, and a final decision will be made based on rock quality. If rock quality is suitable, the northern quarry is the preferred location due its proximity to the community harbour. The northern quarry is a further distance from the water and recreational areas and would not require archaeological consideration (see Sections 5.4.1 and 7.1.3.6).

#### 1.6.3 Haul Road

An existing road can be used to access both quarry locations. The entire length of the road/track is constructed out of beach gravels/frost shattered bedrock and is likely in-situ material, which has been graded or constructed using locally available gravel. The road runs parallel to the shoreline along a recent beach terrace (Figure 1-1). Upgrades to the exiting haul road are expected to be required.



**Figure 1-2: Community Harbour Options Assessment. Option 2 is the Chosen Design for the Community Harbour**



**Photo 1-2: Demonstrative Photo Panel of Quarry Options a) Overview Quarry Locations; b) Northern Quarry; c) Southern Quarry**

Source: Worley Consulting, 2024

## 1.7 Land Tenure

The land ownership for what will be the community harbour currently occupies Crown (below high water line [HWL]) and Commissioners Lands. Discussions are underway between the GN-CGS/EDT (proponent), and both the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), and GN lands office for the transfer of administrative control.

On 18 January 2024 the Nunavut Lands and Resources Devolution Agreement was signed by the GN, Nunavut Tunngavik Incorporated (NTI) and the Government of Canada (Government of Canada, 2024c). This landmark agreement will transfer decision-making for land management from the Crown to the Commissioner. The transfer is planned to be complete by 01 January 2027; however, at the time of this report, there is no clear guidance on how the Land Use Permit (LUP) process will change, or if the process will be similar to the current GN LUP process.

For the ownership boundaries see Section 5.3.1 (Drawing 5-1).

## 1.8 Facility Life

The community harbour is expected to be a permanent facility in Resolute Bay with a realistic lifespan of over 50 years. Individual components of the facility will generally be based on services lives from 40 to 75 years, with the exception of the float system that is expected to have a reduced design service life. It is important to note that service life does not imply that maintenance on the structure will not be required during that period. Maintenance and renewal will be required to allow for the continued operation of the community harbour over its lifespan.

## 1.9 Public Access

The community harbour will be a public facility for the community and will not have access restrictions.

## 1.10 Climate Change and Harbour Design

Climate change has been considered in the design of the community harbour, including sea level rise, reduced ice cover, and increased storm intensity. Permafrost and its potential degradation are not expected to affect this facility (see Section 6.3.4).

According to climate models developed by the Intergovernmental Panel on Climate Change (IPCC) for the 6<sup>th</sup> Assessment Report (2023) (IPCC, 2023), global sea levels are anticipated to rise between 0.29 m and 1.1 m by the end of the 21<sup>st</sup> century. The primary source of uncertainty toward the end of the century is the behavior of ice sheets, particularly in Antarctica. Relative sea level change is a combination of sea level change and any vertical land motion (rebound or subsidence). The reviewed literature predicts a range of -0.43 m to 0 m using the Representative Concentration Pathways (RCP) 8.5 model. To mitigate long-term structural issues, projections at half the design life are used. The projected relative sea level change, based on the 95 percentile, is approximately 0 cm (James, 2021) suggesting sea level rise will match land rebound. Dredge and breakwater elevations will take into consideration the effects of climate change over the lifecycle of the Project.



Based on the 30-year average between 1991 to 2020, the typical break-up dates for Resolute Bay are the week of 23 July, and the freeze-up occurs the week of 24 September (Figure 1-3).

The design incorporates climate change considerations by extending the open-water season to December; using a 1-in-50-year storm event for the design storm wave and reflecting increased storm frequency and severity observed since 2000.

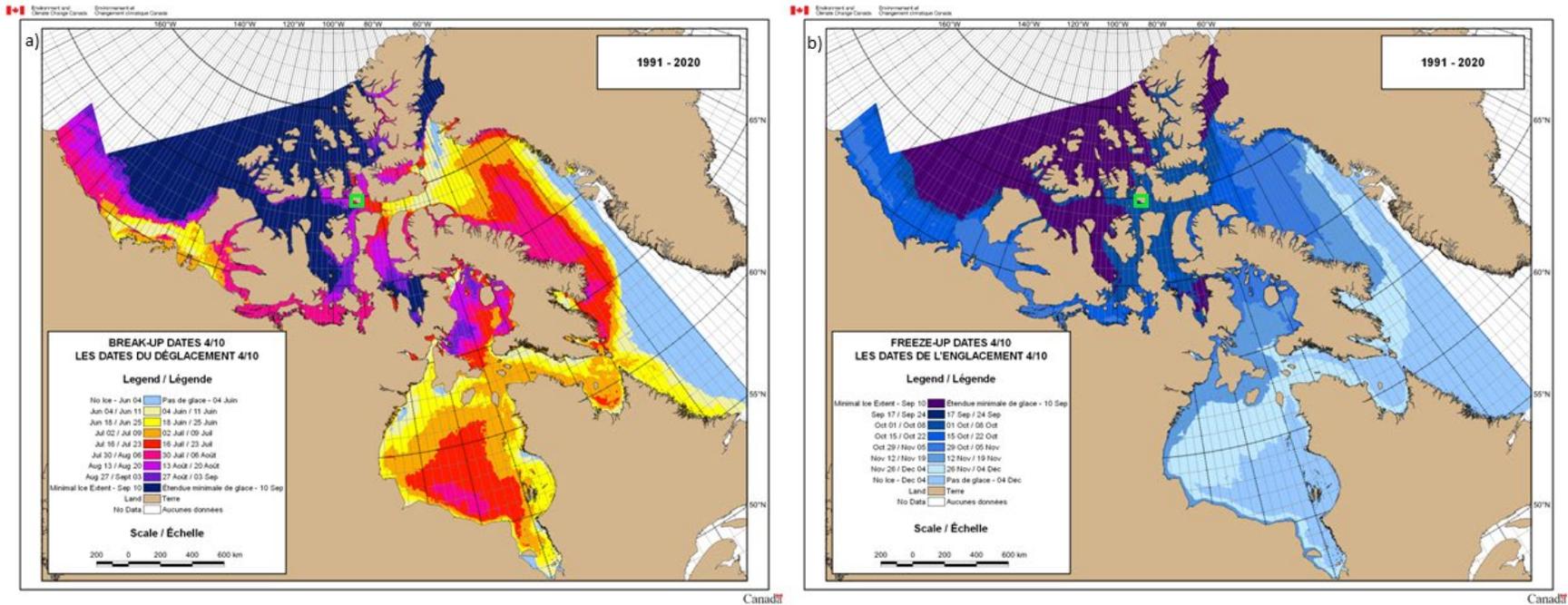


Figure 1-3: 30-Year Ice a) Break-up; b) Freeze-up

Source: Government of Canada (2021)

Note: Green square depicts Resolute Bay location

### 1.11 Construction Activities

Construction activities to be undertaken are summarized in Table 1-1.

**Table 1-1: Construction Activities Associated with the Community Harbour**

Harbour	Pits and Quarry	Haul Road
Infill (laydown area, breakwater, boat ramp, shoreline)	Drilling and Blasting	Construction of new haul road
Installation of small craft floats	Crushing and Screening	Upgrades to existing road
Dredging	Stockpiling	Transportation of rocks
Stockpiling	Operation of equipment	Operation of equipment
Operation of equipment	-	Installation of culverts (potential)
Installation of navigation aids and harbour lighting	-	-

### 1.12 Project Schedule

Construction is scheduled to begin in the 2026 and will conclude in 2029, with works largely occurring in the open-water season. The Project is expected to be operational in the open-water season of 2030.

In the absence of a noise by-law in Resolute Bay, timing restrictions will be agreed upon with the Hamlet. At this time, there will only be one 12-hour shift per day; however, the contractor may wish to complete some, generally non-disruptive, work at night. This may be limited to dredging, incidental low-tide work at the harbour and crushing and/or sorting of rock at the stockpiles/quarry. Such work extensions would proceed only after consulting with the community and obtaining approval from the Hamlet.

**Table 1-2: Anticipated Schedule for the Project**

Task	Timeline
<b>Pre-Construction</b>	
• Permitting, Baseline Surveys and Consultations	Aug-24 to Apr-26
• Schematic Design	Jun-24 to Aug-25
• Geotechnical Investigations	Spring 2025
• Detailed Design and Construction Documents Preparation	Summer 2025 to Dec-25
• Permitting Complete	Mar-26
• Construction Tender Period	Winter 2025 / Spring 2026
• Construction Contract Tender Period	Winter 2025 / Spring 2026

Task	Timeline
<ul style="list-style-type: none"> <li>Award of Construction Contract</li> </ul>	Spring 2026
<b>Construction</b>	
<ul style="list-style-type: none"> <li>Mobilization of equipment and supplies.</li> <li>Set up construction camp and equipment maintenance facilities, as required.</li> <li>Prepare quarry and commence blasting for aggregate production and stockpile pads.</li> <li>Set up crusher and complete test runs.</li> </ul>	2026 Construction season (Jun-26 to Oct-26)
<ul style="list-style-type: none"> <li>Aggregate production.</li> <li>Commence placement of breakwater core.</li> <li>Dredging and onshore disposal.</li> </ul>	2027 Construction season (Jun-27 to Oct-27)
<ul style="list-style-type: none"> <li>Aggregate production.</li> <li>Breakwater core and armour placement.</li> <li>Laydown/boat storage area and ramp fill placement</li> <li>Dredging and onshore disposal.</li> <li>Partial demobilization.</li> </ul>	2028 Construction season (Jun-28 to Oct-28)
<ul style="list-style-type: none"> <li>Complete breakwater armour surfacing.</li> <li>Electrical installations.</li> <li>Community harbour floats, including installation and removal demonstration.</li> <li>Final grading and compaction.</li> <li>Remainder of demobilization.</li> </ul>	2029 Construction season (Jun-29 to Oct-29)
<b>Operations</b>	
<ul style="list-style-type: none"> <li>Community harbour operations</li> </ul>	Spring 2030

### 1.13 Transportation (Mobilization and Demobilization)

Mobilization to site will commence with the sealift of the 2026 season, which typically arrives in Resolute Bay at the end of August or early September. For the first year of construction, mobilization will include equipment mainly for quarrying and earthworks, construction camp (if required) and miscellaneous construction consumables. At the end of the construction seasons, the site will be prepped for overwintering and the main construction equipment is expected to remain on site. Planning must take into consideration the timing of the sealifts and the materials and equipment that will be needed for the upcoming construction seasons. As tasks are completed and equipment is no longer needed, equipment will be demobilized from site and returned to the south via sealift.



Equipment mobilization and demobilization will be undertaken by the contractor. The majority of the materials and equipment required for the construction for the Project will arrive on the annual sealift provided by Nunavut Eastern Arctic Shipping (NEAS) and Nunavut Sealink and Supply Inc. (NSSI).

Project personnel travelling to the site will use air travel and arrive either on regularly scheduled commercial flights or on private charter flights if required.

#### 1.14 Water Sources and Consumption

Water for construction use will be obtained from the existing water supply infrastructure in Resolute Bay. It is anticipated that water will be delivered by a local contracted water truck, or the contractor's own water truck. If the local water supply is unable to meet the water needs of the community, the contractor will be responsible for the appropriate permitting from the Nunavut Water Board (NWB).

Estimated water use during construction is only 5 m<sup>3</sup> per day, for approximately 125 days (per season) during construction. Water for construction use is anticipated to be the following:

- Dust suppression.
- Drinking water and sanitary facilities.
- Earthworks (for compaction if necessary).
- Cleaning of equipment.

Water use for the construction camp will be managed by the contractor either through discussions with the Hamlet for provision from the municipal supply or through a NWB authorization, if the contractor is required to obtain their own supply. If an existing camp facility is used within the main townsite, the community's utilidor will be used for drinking water and sanitation. On average, there is an additional 5 m<sup>3</sup> per day (approximately ) of water usage that supports southern construction crews, whether in a camp, hotel, or local houses.

During operation of the community harbour, there will be no water supply facilities. Water usage by facility users is not expected to vary from the current operations.

#### 1.15 Waste Management

Wastewater management estimated volumes consider the construction sites and the construction camp.

##### 1.15.1 Wastewater

The anticipated total wastewater produced for the Project is expected to be approximately 1,000 m<sup>3</sup>, including both sewage (human waste) and grey water. Wastewater will be managed through holding tanks in the sanitary facilities for the construction site(s) and construction camp. Wastewater will be transported by either the local sewage truck or the contractor's own sewage truck and disposed of in the Hamlet's sewage lagoon. If an existing camp facility is used within the main townsite, the community's utilidor will be used.

During operation of the community harbour, there will be no wastewater reception. Users of the facility will manage wastewater on their boats as per current operations.

### 1.15.2 Solid Waste

Solid waste generated during construction is anticipated to be disposed of using the existing municipal facility in the Hamlet. The estimated solid waste generated during Project construction is described in Table 1-3.

**Table 1-3: Estimated Solid Waste Production**

Type of waste	Anticipated Waste	Projected amount generated	Method of Disposal
Combustible wastes	Food waste, wood crating/packaging, cardboard and paper, plastics.	5 tons	Hamlet landfill.
Non-Combustible wastes	Scrap steel, glass.	1 ton	Hamlet landfill.
Overburden	Organic soil, unsuitable fill material.	Negligible	What little overburden exists at the quarry will be set aside and stockpiled at the quarry location.
Hazardous waste	Waste oil/grease, batteries, antifreeze, contaminated soils.	2,000 litres	Returned to south in sealed drums or lined bags, transported in 20' shipping containers and disposed in accordance with regulatory procedures.

### 1.16 Materials Use

#### 1.16.1 Equipment

It is expected that construction will be completed using land-based equipment; however, the contractor may decide to support with marine-based equipment. Equipment will arrive in Resolute Bay by sealift.

The anticipated construction equipment for the Project is as outlined in Table 1-4 with example equipment in Photo 1-3.

**Table 1-4: Anticipated Construction Equipment**

Equipment Type and Quantity	Size, Dimensions, Type	Proposed Use
Drills (2 to 3)	5 tons	Quarrying.
Excavators (3 to 5)	30 to 40 ton	Quarrying, handling armour stone, loading trucks, excavating, dredging, material placement.
Trucks (3 to 5)	35 to 40 ton articulating	Hauling quarried rock.
Front end loader (2 to 3)	966 to 988	Loading rock and moving cargo/equipment.
Compactor (1)	20 ton	Compacting road surfacing.
Dozer (1)	D8	Leveling placed rock and road surfaces.
Grader (1)	140	Road maintenance.
Spud barge/derrick (1)	20 m x 50 m deck with 150t crane	Dredging, moving/lifting materials and equipment.
Work boats (1 to 2)	Varies, 50 to 500 horsepower	Floating equipment movement and surveys.
Pickup truck (5)	Crew cab, ¾ ton	Crew and supplies movement.
Mini bus (1)	15 passenger	Daily crew mobilization from hotel/accommodation to Project site.
Fuel/service truck (1)	10 ton	Daily refueling and servicing of major mobile equipment, fueled from GN-Petroleum Products Division (PPD) dispensers in Resolute Bay and/or Contractor supplied fuel storage facilities.
Telehandler (1)	5 ton	Moving materials and equipment.
Rough terrain crane (1)	80 ton	Lifting materials.
Rock Crusher (1 to 2)	-	Crushing run of quarry materials.



**Photo 1-3: Representative Construction Equipment a) Drill Rig; b) Excavator; c) Rock Truck; d) Crusher**

Source: Worley Consulting

### 1.16.2 Fuel

Based on recent conversations with the GN-PPD and the Hamlet, the community's current fuel storage capacity and/or fuel resupply schedule is likely insufficient to support the Project's construction fuel needs. The Project is engaging with GN-PPD to confirm if the Project's estimated fuel consumption can be met without impacting the community's fuel requirements. Initial assessments of current capacity and fuel surpluses indicate that there will likely be insufficient fuel to support the construction works. If this is the case, the Project will discuss with GN-PPD the possibility to coordinate multiple fuel shipments to support both community and construction requirements. If multiple fuel shipments become impractical, the contractor will be required to supply temporary code compliant fuel tanks, or other for Project fuel storage during construction.

A Construction Work Plan (CWP) will be in place for the use and storage of fuel, outlined in the Contractors Spill Prevention and Response Plan (CSPRP) (Section 8.3.4). Estimated fuel consumption during construction for the Project is outlined in Table 1-5. Designated fuelling areas will be established in the contractor laydown area. Fuelling will be required near the marine environment as the community harbour is constructed. If construction occurs in the iced season or with marine-based equipment, refuelling will be required on or over water.

**Table 1-5: Estimated Fuel Consumption During Construction**

Fuel	Number of Containers and Capacity	Total Amount of Fuel (in Litres)	Proposed Storage Methods	Proposed Use
Diesel	N/A	1.5 million	Fuel will be dispensed on a daily basis from existing facilities in Resolute Bay and/or Contractor supplied fuel storage facilities.	Mobile equipment; remote generators and heaters.
Gasoline	N/A	15,000	Fuel will be dispensed on a daily basis from existing facilities in Resolute Bay and/or Contractor supplied fuel storage facilities.	Pick-up trucks, small work boats, small generators, and All Terrain Vehicles.
Propane	20 - 50kg tanks	20 to 30 litres per tank	Forklift-able metal cylinder rack.	Heaters.

### 1.16.3 Chemicals and Hazardous Materials

Anticipated chemical or hazardous materials required for the community harbour construction is provided in Table 1-6.

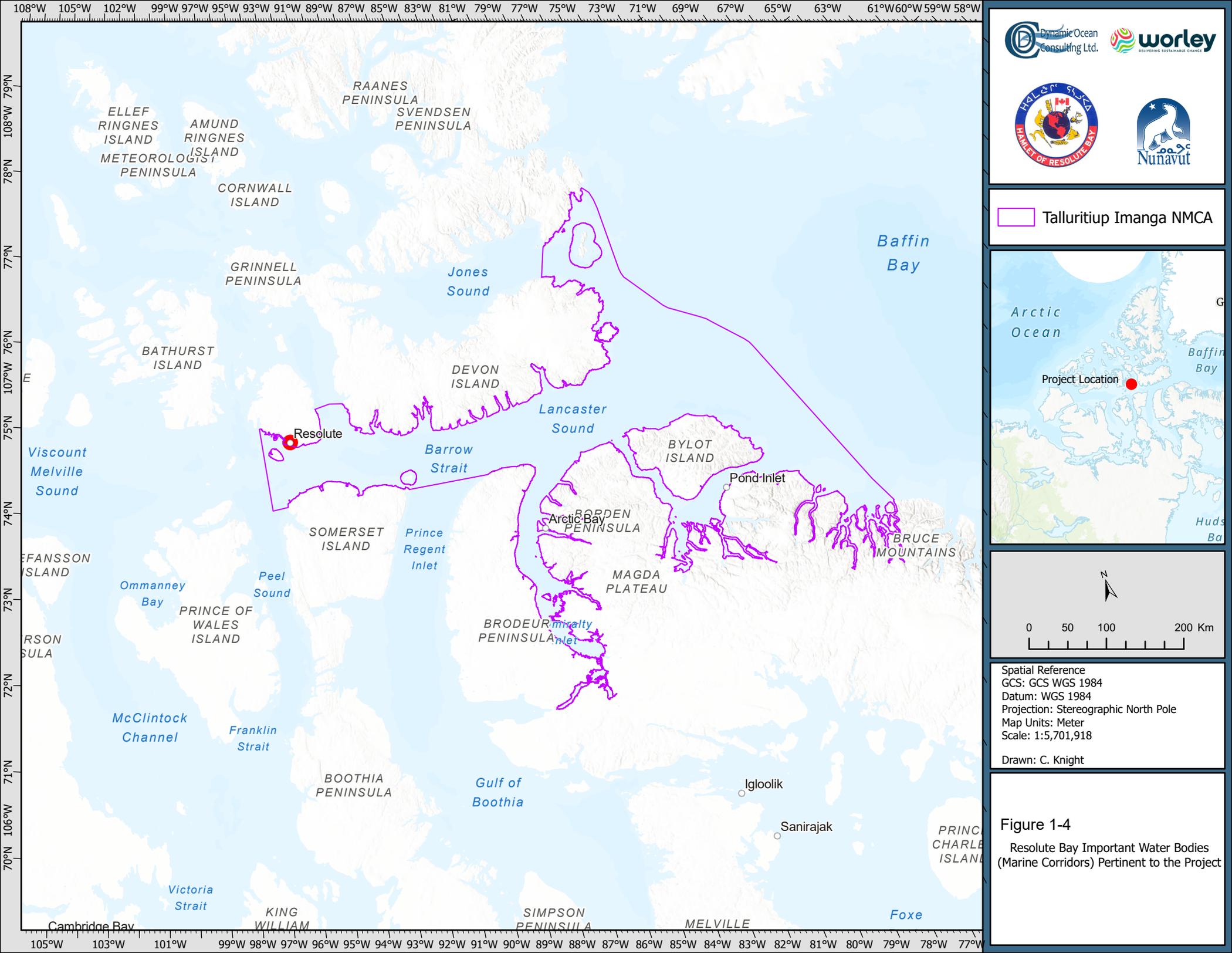
**Table 1-6: Chemicals and Hazardous Materials Expected to be Required During Construction**

Hazardous Materials and Chemicals	Number of Containers and Capacity	Total Amount of Hazardous Materials and Chemicals	Metric	Proposed Storage Methods	Proposed Use
Lube and oils	10 drums, and 10 5-gallon pails	2,000	Litres (L)	Drums on pallets, in lined storage area.	Maintenance of mobile equipment.
Oxy/Acetylene	10 each, 140 cu.ft. cylinders	-	-	Forklift-able metal cylinder rack.	Welding and cutting of steel.
Paint	10 1-gallon cans	40	L	Inside fireproof cabinets, stored inside heated enclosure.	Painting steel hardware and miscellaneous components.
Explosives	Standard explosives and magazines	40	Tonnes (t)	Certified explosives magazine.	Quarrying.

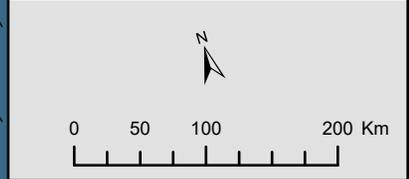


### 1.17 Nearby Communities and Protected Areas

The closest communities to Resolute Bay are Arctic Bay and Grise Fiord which are 352 km southeast and 383 km northeast, respectively (Figure 1-4). Protected areas in Resolute Bay are discussed in Section 6.3.1.



Talluritiup Imanga NMCA



Spatial Reference  
 GCS: GCS WGS 1984  
 Datum: WGS 1984  
 Projection: Stereographic North Pole  
 Map Units: Meter  
 Scale: 1:5,701,918  
 Drawn: C. Knight

**Figure 1-4**  
 Resolute Bay Important Water Bodies  
 (Marine Corridors) Pertinent to the Project



### 1.18 Workforce and Human Resources

Approximately 30 Project personnel are expected to be required. It is expected that each construction season will be 125 days, and four construction seasons will be required to complete the Project (see Table 1-7).

The workforce will be comprised of skilled and semi-skilled labour including the following: heavy equipment operator; truck driver, driller, blaster, crane operator; welder; marine deckhand; tug operator; mechanic; electrician; and general labourers. Work rotations for non-local labour are presently unknown but will be determined by the contractor and will comply with all applicable Workers Safety and Compensation Commission (WSCC) regulations (WSCC, 2021).

The Project will comply fully with the GN’s Nunavummi Nangminiqaqtunik Ikajuuti (NNI) Policy (01 April 2017) and will aim to maximize participation of Inuit labour, training and Inuit owned businesses on the Project.

The Project has provided Inuit Project personnel from Resolute Bay with employment and training opportunities as wildlife monitors, field technicians, ice monitoring specialists, and translators/interpreters since the start of the feasibility phase in 2018.

The Project anticipates the community will see further economic benefits and training opportunities with the hiring of local labour during construction. In addition, there will be secondary economic benefits through the Project’s expenditures in local businesses.

The Project is expected to rely on scheduled flights for personnel but may need to use chartered flights, as required, to avoid the Project filling seats on scheduled flights that the community depends on. Resolute Bay offers several accommodation options within the community. However, if these options are insufficient to support the construction workforce without straining local resources, a construction camp will be established in a location approved by the Hamlet and within municipal boundaries. (see Section 2.2.9).

**Table 1-7: Personnel Numbers per Construction Season and Total for Project**

Shift Type	Total Number of Personnel	Total Number of Days on Site per Season	Total number of Person Days per Season	Number of Seasons	Total Number of Construction Days	Total number of Person days
12-hour	30	125	3750	4	500	15,000



1.19 Proponent Information

Contact information for the proponent and representative are provided in Table 1-8.

**Table 1-8: Project Contact Details**

Contact Category	Details
<b>Proponent: Government of Nunavut</b>	
Applicant's Name	Justin McDonell – Project Manager, Capital Projects
Address	PO Box 1000 Station 200 Community and Government Services Iqaluit, Nunavut X0A 0H0
Telephone / Fax	1-867-975-5114
Email	<a href="mailto:JMcDonell@gov.nu.ca">JMcDonell@gov.nu.ca</a>
<b>Applicant Representative: Dynamic Ocean Consulting Ltd.</b>	
Name	Victoria Burdett-Coutts, MSc, RPBio Senior Marine Scientist and Regulatory Professional
Address	2901 Murray Street Port Moody, British Columbia V3H 1X3
Telephone / Fax	1-778-839-2372
Email	<a href="mailto:Victoria@dynamicocean.ca">Victoria@dynamicocean.ca</a>
<b>Design Engineer: Worley Canada Services Ltd.</b>	
Name	Chris Meisl Project Manager, Marine Engineering Lead
Address	Suite 200, 2930 Virtual Way Vancouver, British Columbia VM5 0A5
Telephone / Fax	1-418-730-2965
Email	<a href="mailto:Chris.Meisl@worley.com">Chris.Meisl@worley.com</a>

## 2 Project Specific Information (Works, Undertakings and Activities)

### 2.1 Community Harbour (Offshore Infrastructure)

The final configuration of the community harbour may evolve during the Project's design development phase, with measurements and quantities subject to adjustment.

The community harbour has a permanent built footprint that is approximately 30,000 m<sup>2</sup> that includes the laydown area, shoreline, and breakwaters. The seaward extent is 170 m from shore (perpendicular) to a depth range of approximately 0 m to 8.5 m Chart Datum (CD) (see General Arrangement in Drawing 1-1).

#### 2.1.1 Components

##### 2.1.1.1 Site Access

The site is accessible by road along the length of the laydown area. The breakwater is accessible at its north end via the laydown area. The shoreline between the breakwater and the laydown area will be filled and graded to create a uniform and level driving surface above high water.

##### 2.1.1.2 Laydown Area

The laydown area is on the landward (northern) extent of the community harbour and will be approximately 0.7 ha in size. During the operational phase, this area will be used for parking, boat and trailer storage, and float storage (in the winter). The area will be constructed in part with dredgeate that is repurposed.

##### 2.1.1.3 Breakwater

A curved breakwater will be constructed, initiating on the western side of the community harbour and extending parallel to shore for approximately 320 m long. The breakwater will have a driving surface to allow for vehicle access along a section its length. A navigation light will be located at the offshore end of the breakwater.

##### 2.1.1.4 Boat Launching Ramp

A boat launch ramp is located adjacent to the breakwater and the laydown area. The ramp will allow for boat launching at all tide levels with adequate space on shore for vehicle and trailer manoeuvrability.

##### 2.1.1.5 Floating Docks

The community harbour allows for the moorage of approximately 24 boats on two strings of floating docks. The floating docks will be held in position with anchors and chains. The floats will be removed prior to freeze-up and stored in the laydown area.

#### 2.1.1.6 Entrance Channel and Dredging

An entrance channel approximately 25 m wide is located on the west side of the Project site, between the shoreline and the breakwater. The access channel and the inner harbour will be dredged to an elevation of 1.5 m CD. Another area (approximately 25 m x 30 m) beneath the end of the western float will be dredged to an elevation of 2.5 m CD to allow for larger draft vessels to moor in the community harbour at all tides.

#### 2.1.1.7 Aids to Navigation

Aids to navigation will include navigational lighting on the end the breakwater.

### 2.1.2 Construction Activities

Construction activities for the community harbour are described in this section, with construction schedule described in Section 1.12 (Table 1-2).

Construction at the community harbour will either be with land- or marine-based equipment, a decision of which will be made by the contractor. If construction is land-based the temporary platforms (see Section 2.2.5), will likely be required. Construction planned during the shoulder seasons will require ice management to confirm ice is not buried under the breakwater construction material.

#### 2.1.2.1 Aggregates and Armour Stone

Aggregates will be produced from material obtained from the quarry (see Section 1.6.2.) The materials will include run-of-quarry (bulk fill), large diameter armour stone, and crushed aggregates for driving surfaces, subbase and filter layers.

##### 2.1.2.1.1 Laydown Area

The primary fill for the laydown area will be dredgeate (see Section 2.1.2.2). Prior to dredging, a containment berm will be constructed to contain the sediments.

The dredged sediments will be placed inside the bermed area, and a crushed granular road structure will be placed on top to provide a suitable driving surface.

##### 2.1.2.1.2 Shoreline

The upland shoreline between the breakwater and the laydown area will be raised and graded to create a level driving surface. The driving surface will be composed of crushed granular aggregates. Along the community harbour basin edge, a coarser crushed aggregate/rockfill will be placed to gently slope to create a landing pad for the floating docks.



#### 2.1.2.1.3 Breakwater

The breakwater core will be comprised of a coarse run-of-quarry and the interior and exterior side slopes will be covered by rock armour. The road along the top of the structure will be finished with a crushed granular aggregate/rock driving surface.

#### 2.1.2.1.4 Boat launch ramp

The boat launch ramp will be comprised of a run-of-quarry fill and will be finished with a crushed coarse granular road surface.

#### 2.1.2.2 Dredging

The community harbour includes dredging of the entrance channel, the inner harbour and the area beneath the larger floating dock. The entrance channel and inner harbour will be dredged to an elevation of 1.5 m CD, and deeper berth pocket at the end of one of the floats will be dredged to an elevation of -2.5 m CD. This will result in the removal of approximately 8,000 m<sup>3</sup> of sediment. Dredgeate will be repurposed as fill for the laydown area.

Dredging will likely be conducted with land-based equipment, but the contractor will determine if some marine-based dredging is necessary. Based on the volume of dredging required and the location of the work, it is expected that dredging will be completed using conventional mechanical equipment such as excavators and clamshell bucket. Material will be dredged from the seabed, raised to the surface and placed either into a rock truck if disposing of the dredgeate on land or onto a sealed scow and brought near shore for land disposal.

#### 2.1.2.3 Installation of Small Craft Floating Docks

The floating docks will be standard float design assembled with the support of the community. The docks will be secured with a chain anchoring system with anchor blocks on the seabed and a recessed concrete abutment at the shoreline. The docks will be removed prior to freeze-up and stored above high water, then redeployed for the open-water season following ice breakup and clearing of the community harbour.

#### 2.1.2.4 Local Drainage

There is an existing sewage outfall southeast of the community harbour that will remain unaffected. Run-off from the adjacent slopes surrounding the laydown area will either drain directly onto the laydown area or via drainage ditches installed around the perimeter of the laydown and drain into the ocean. There is a collapsed culvert in the vicinity of the community harbour that will be reinstated and drained through the community harbour.



### 2.1.3 Area lighting and Electrical

General area lighting will illuminate the laydown area, and boat launch ramp (top only). The area lights and poles will be provided from Quilliq Energy Corporation (QEC).

Navigation lights (solar or hard-wired) will be located at the community harbour entrance, on the south breakwater, supported on its own foundation. These lights are proposed to be Light-Emitting Diode (LED), with a two nautical miles range. Transport Canada (TC) will confirm requirements in the Notice of Works (NoW) Approval (see Table 5-1).

### 2.1.4 Operations

The Operations Plan of the community harbour will be developed by the GN-CGS/EDT in concert with the local community. The community harbour is owned and operated by the GN-CGS/EDT, but responsibility for ongoing maintenance and operations is yet to be determined by the GN-EDT and the community.

The general maintenance and operations activities of the community harbour are expected to include the following:

- Annual inspections of the harbour components.
- Spring clearing of culvert inlets and outlets of drifted snow.
- Deployment and recovery of the floating docks. It is expected that the floating docks will be stored on the laydown area or the shoreline adjacent to the launch ramp.
- Periodic sounding surveys to confirm there are no locations of accumulating sediments or boulders deposited by shifting ice.
- The regular maintenance is expected to be as follows:
  - Re-grading/compaction of the road surfaces and laydown areas.
  - Re-grading/compaction of the boat launch ramp.
  - Periodic replacement of float components, including chains, hinges, sleepers and deck.
  - Periodic re-dressing of riprap surface where rocks may have been plucked by ice.

An Operations Environmental Management Plan (OEMP) will be prepared with further information provided in Section 8.4.

### 2.1.5 Decommissioning

The community harbour is considered a permanent structure with no plans for decommissioning.

## 2.2 Other Components

Other components of the Project include the quarry, the haul route planned for the trucking of aggregates from the quarry to the community harbour, and locations of temporary storage and facilities. A description of the field activities undertaken at the quarry and haul road is provided in the Resolute Bay Environmental and Socio-Economic Baseline (ESEB) Report (Dynamic Ocean & Worley Consulting, 2025c).

### 2.2.1 Pits and Quarry

The northern or southern quarry is required for the construction of the community harbour. Only one of the quarry locations will be used for the Project. The contractor will drill and blast the quarry to create all the rock quantities for the Project. Required quantities and the size of the quarry are discussed in Section 2.2.6. The rock will be sorted, crushed and/or screened and stockpiled to produce the various products. Drilling work and laboratory testing of samples confirm the rock is suitable and highly durable for use in breakwater construction and other uses and is absent of Acid Rock Drainage (ARD) potential.

All quarry activities will be undertaken in accordance with Workers' Safety and Compensation Commission of the Northwest Territories (WSCC) and Nunavut Act and Regulations (WSCC, 2021). The contractor will be required to develop a Contractors Quarry and Blast Management Plan (CQBMP) (see Section 8.3.5). Permitting requirements for explosives storage to be obtained by the contractor are described in Table 5-1.

#### 2.2.1.1 Construction Activities

Planned quarry activities are as follows:

- Overburden and vegetation removal (as necessary, limited removal expected).
- Drilling and blasting.
- Sorting blasted rock to produce run-of-quarry and riprap.
- Crushing/screening of run-of-quarry to produce finer, processed, granular products.

##### 2.2.1.1.1 Drilling and Blasting

Drilling and blasting will be required to develop a quarry.

Appropriate consultation and coordination planning will be conducted with the community to schedule road restrictions, if required. Restrictions will be well-communicated to the community and limited in duration.

##### 2.2.1.1.2 Crushing and Screening

Crushing and screening of blasted rock will be required to produce various granular products. This may occur at the quarry, and/or at stockpile locations.



#### 2.2.1.1.3 Stockpiling

Stockpiling of aggregates will be required, which will largely be performed at / near the quarry. Smaller stockpiles of aggregates will be required at / near the community harbour. Details on the contractor laydown area are in Section 2.2.4.

#### 2.2.1.2 Maintenance

The contractor will be responsible for maintenance requirements at the quarry for the duration of construction which will include safety and environmental protection measures. Safety measures will be described in the CQBMP (Section 8.3.5), and environmental measures will be included in the Contractors Construction Environmental Management Plan (CCEMP) (Section 8.3.1). This will include safety features during the off season before the Project is completed.

#### 2.2.1.3 Decommissioning

If decommissioned, the contractor will include requirements in the CQBMP (see Section 8.3.5). However, it is likely that the quarry will be maintained as a long-term asset by the Hamlet. In this case, the contractor will be responsible for securing the quarry and ensuring public safety measures are in place prior to transfer to the Hamlet.

### 2.2.2 Haul Road

A haul road is required to transport aggregates from the quarry to the community harbour and will use the existing roads.

#### 2.2.2.1 Construction

The length of existing road used for hauling operations will be approximately 2.5 km to 4 km (depending on the quarry selected) with up to approximately 100 m to 200 m of new haul road required to reach the targeted quarry location from the existing road. Improvements to the road will be made to accommodate rock trucks and the combined traffic of local vehicles and construction vehicles. Improvements to the existing road may include widening, alignment adjustment to suite truck traffic, pull outs, grading and appropriate water crossings (see Section 2.2.3). The number of pull outs required and safety measures required will depend on the contractor's implementation plan, including traffic control measures (communications/flaggers), speed, size, and number of trucks.

All haul road activities will be undertaken in accordance with WSCC and Nunavut Acts and Regulations (WSCC, 2021). To manage interactions with the public the contractor will be required to develop a Contractor Traffic Management Plan (CTMP) to confirm health and safety measures that will be undertaken during construction (see Section 8.3.3). The contractor will be required to submit the CTMP to the Hamlet and obtain their approval.



### 2.2.2.2 Maintenance

The contractor will be responsible for the maintenance of the haul road during active construction of the community harbour.

### 2.2.2.3 Decommissioning

The haul road in Resolute Bay is an existing road, and there are no plans for its decommissioning. Improvements made to the road during the Project to accommodate truck traffic will be transferred to the Hamlet and retained.

## 2.2.3 Haul Road Water Crossings

The haul road route crosses through the Mecham River (see Figure 7-11 in the ESEB Report (Dynamic Ocean & Worley Consulting, 2025c), Section 6.3.5.1) and therefore consideration for water crossings will be required. The decision will be led by the contractor but could include:

- Use existing trail that passes directly through the river, as is the current condition for crossing the river.
- Installation of culverts. These may be seasonal (i.e. installed and removed each season).
- Installation of a bridge (not likely to be logistically feasible).

The Nunavut Water Board (NWB) will be engaged, and necessary approvals will be obtained (see Section 5.1.3). Engagement with DFO-FFHPP is not required as the Mecham River is not fish bearing (Section 6.3.5.1).

## 2.2.4 Contractor Laydown Area

Construction materials and equipment for the Project will be stored in a contractor laydown area(s). The location of the contractor laydown area will be a contractor led decision; however, several options were considered to confirm compliance for necessary permits (e.g. archaeological). The contractor will be required to work with the Hamlet and potential GN-CGS (Land Administration Office, if LUPs are required). Two potential locations for a contractor laydown area have been considered and are described in Table 2-1. The contractor will use the laydown area to store construction materials and equipment for the duration of the Project. Stockpiling locations and other laydown areas may be approved by the Hamlet.

**Table 2-1: Potential Contractor Laydown Areas and Uses**

Contractor Laydown Area	Uses
Within and adjacent to the laydown area of the community harbour.	<ul style="list-style-type: none"> <li>• Stockpiling.</li> </ul>
Within and adjacent to quarry footprint.	<ul style="list-style-type: none"> <li>• Sorting larger materials.</li> <li>• Stockpiling.</li> </ul>

Contractor Laydown Area	Uses
	<ul style="list-style-type: none"> <li>• Crushing and Screening.</li> </ul>

### 2.2.5 Temporary Rock Platforms

Temporary rock platforms may be required to support construction if construction is performed with land-based equipment. Temporary infills, if required, are likely to be composed of a rock material and will be restricted to the inner harbour footprints. Once removed, the fill will be repurposed, most likely to be used to complete the laydown area and other permanent components of the Project. The requirement for temporary infills, their composition, and where the fill is repurposed to will be a decision made by the contractor.

### 2.2.6 Materials and Quantities

The construction of the community harbour is expected to require the following construction materials.

- 115,000 m<sup>3</sup> (235,000 tonnes) of rock (final quantities can potentially change by 25 %).
- Small craft floating docks, including principle and finger floats.
- Electrical components including cables, junction boxes and enclosures, wiring devices, lights, and light poles.

All materials will be brought from outside of Nunavut other than the rock that will be sourced from the quarry.

### 2.2.7 Site Services

For construction, the contractor will require additional consumables and site services in the form of water, fuel, electricity, and waste removal. For water, waste removal, and fuel see Sections 1.14 (Water Sources and Consumption ), 1.15 (Waste Management), and 1.16.2 (Fuel).

The contractor will require power at their laydown area and at the site to power site offices, maintenance outbuildings, and equipment. It is expected that the contractor will obtain temporary power from the local grid, via QEC. If some facilities are removed from the Hamlet’s grid, the contractor may elect to run generators.

### 2.2.8 Site Offices and other Temporary Structures

The contractor will require temporary structures to facilitate construction personnel and administrative duties. These will be in the forms of:

- Site offices.
- Garages for vehicle and equipment maintenance.



### 2.2.9 Accommodations

Due to limited available local accommodations, non-local Project personnel may be housed in a combination of local accommodations and a construction camp for up to 30 people. Prefabricated modular accommodation is expected to be brought into the community by the contractor to establish the camp, if there are not sufficient facilities available. The location of a potential camp has not been selected but will likely require up to approximately 0.5 ha. The Hamlet has confirmed that there are existing areas in town suitable for establishing a construction camp, and there are existing accommodation facilities in Resolute Bay that could potentially house construction personnel. The location of the construction camp will be determined in consultation with the community and with approval from the Hamlet. If additional permits are required (e.g., NWB, GN-CGS (Land Administration Office)) in relation to the construction camp, these will be the responsibility of the contractor.

### 3 Community Consultation

The GN-CGS/EDT is conducting a comprehensive consultation program to design a community harbour that addresses the community's top priorities including those of hunters, fishers, recreational users, residents, and businesses.

#### 3.1 Objectives

The consultation program was designed with the following objectives:

- Identify all potentially affected and interested parties as early as possible.
- Establish and maintain a positive relationship with residents, hunters, fishers, local businesses, community groups and others based on mutual respect.
- Provide timely and relevant information pertaining to the nature and scope of the Project, permitting process and engineering design.
- Provide meaningful opportunities for community members and stakeholders to review the proposed Project, ask questions and provide input into its planning and design.
- Collaborate with the community on Project design to meet the top needs of the community while staying within the allotted available funding.
- Integrate community input and mitigate concerns and issues through design modifications and improvements.
- Collaborate with the community to identify Valued Ecosystem Components (VEC) and Valued Socio-Economic Components (VSEC).
- Collaborate with the community to identify potential Project effects and mitigation measures to inform construction management plan procedures.
- Incorporate Inuit Qaujimagatuqangit (IQ) and local knowledge into the Project design, assessment and management planning.
- Confirm the Project doesn't impact Inuit Harvesting Rights.

#### 3.2 Communities, Groups and Organizations

The following community groups and organizations have been identified as being potentially affected by the Project:

- Hamlet of Resolute Bay.
- Resolute Bay Hunters and Trappers' Association (HTA).
- Nauttiqsuqtiit (the Guardians).
- Residents of Resolute Bay.



- QIA.
- Local businesses including store and hotels.
- Resolute Bay Health Centre.
- Tourism operators (outfitters and cruise ships).
- Royal Canadian Mounted Police (RCMP).
- Sealift companies.
- Fuel carriers.

### 3.3 Overview of Consultation Program

The consultation program has been designed to ensure that hunters, trappers, fishers, residents, and other community groups and organizations are actively engaged using a variety of methods and materials. Consultations for the Project began during the feasibility study (Advisian-Ikpiaryuk JV, 2020) and include consultations dating back to 2018. Consultations are on-going and will continue throughout the life of the Project.

The consultation program includes formal and informal meetings, semi-structured interviews, workshops, meetings with cabin owners, and public open houses. The materials used include presentations, pamphlets, community notices, non-technical Project summaries, engineering design drawings, posters and maps. Materials are provided in English and Inuktitut, and all meetings are supported by local interpreters, as required.

To date, the community has been very engaged in the Project and has provided valuable input into design and planning on numerous occasions. The input has been carefully considered, and design modifications have been made based on feedback from design workshops with the HTA and the Guardians, meetings with the Hamlet, residents and cabin owners, land use sessions with hunters and elders, and the community open houses. This collaborative approach has also led to determining Project effects and the joint development of mitigation and management measures that address the concerns of the community.

Key groups engaged as well as the method and dates of engagement are summarized in Table 3-1.

**Table 3-1: Consultation Overview**

Group	Consultation Methodology	Dates
Hamlet of Resolute Bay	<ul style="list-style-type: none"> <li>• Formal meetings with Mayor and Council and Hamlet department leads.</li> <li>• Presentation of Project information, schedule, design concepts, options for quarry locations and haul routes, environmental and geotechnical baseline data collection, field program results, local labour and employment opportunities, Project needs for community services (water, sewage, waste mgmt. fuel, etc.), potential effects and mitigation development and permitting including NIRB screening process, DFO-FFHPP and TC Navigation Protection Program (NPP).</li> <li>• All materials were translated, and interpretation was provided as required.</li> </ul>	<ul style="list-style-type: none"> <li>• Nov-18</li> <li>• Jun-19</li> <li>• Nov-19</li> <li>• Dec-21</li> <li>• May-22</li> <li>• Aug-24</li> <li>• Dec-24</li> </ul>
HTA	<ul style="list-style-type: none"> <li>• Initial introductory meetings and several design workshops during the feasibility phase.</li> <li>• Design and land use workshops jointly with the Guardians during the detailed design, permitting and construction planning phase.</li> <li>• Materials used included maps, photos and engineering design drawings.</li> <li>• Discussions focused on design, quarry and haul route, community needs, potential effects and mitigation, permitting process including NIRB and sharing of local knowledge of site conditions and wildlife, such as: current use of the existing harbour, quarry and haul route areas; boating activities; wind direction; waves and currents; observations of changes due to climate change; ice and water access and travel routes; fish and fish habitat; potential disposal at sea sites if required; navigation lighting; cultural sites; carving stone; camps and recreational areas; parking; nesting sites; and marine mammals.</li> <li>• Discussions on the DFO-FFHPP and potential offset ideas and TC NPP.</li> <li>• Consultation aimed to support the design of the community harbour to meet the top priorities and needs of hunters and fishers and to confirm that Inuit harvesting rights would not be affected by the Project.</li> <li>• All materials were translated, and interpretation was provided as required.</li> </ul>	<ul style="list-style-type: none"> <li>• Nov-18</li> <li>• Jun-19</li> <li>• Nov-19</li> <li>• Dec-21</li> <li>• May-22</li> <li>• Aug-24</li> <li>• Dec-24</li> </ul>

Group	Consultation Methodology	Dates
Residents	<ul style="list-style-type: none"> <li>• Two Open Houses.</li> <li>• Open Houses were advertised on Facebook, posters placed around town (Hamlet, Co-op, health center etc.) and local radio broadcast.</li> <li>• Open House attended by 9 residents in May-22 and by 15 residents in Dec-24.</li> <li>• Presentation of Project information, schedule, design concepts, options for quarry locations and haul routes, results from field programs, Project needs for community services (water, sewage, waste mgmt. fuel, etc.), local labour and business opportunities, potential effects and mitigation development and permitting including NIRB screening process, DFO-FFHPP and TC NPP.</li> <li>• Materials included translated slide show with photos of expected construction equipment and activities from other recent harbour projects in Nunavut, presentation slides, large posters of maps and drawings, one page project summary leaflet.</li> <li>• Interpretation was provided as required to support the presentation and discussions with residents during the Open Houses.</li> </ul>	<ul style="list-style-type: none"> <li>• May-22</li> <li>• Dec-24</li> </ul>
Cabin Owners	<ul style="list-style-type: none"> <li>• One-to-one meetings were held with the two cabin owners near the proposed quarry to discuss the Project, focusing on potential impacts from quarry operations and truck hauling, including traffic safety management, dust, noise, and any other concerns. A Project summary leaflet was provided to cabin owners that included contact info for the Project manager and the lead engineer should they have any additional concerns or questions. Further consultations directly with the cabin owners are planned for 2026 prior to the start of construction.</li> </ul>	<ul style="list-style-type: none"> <li>• Dec-24</li> </ul>
Qikiqtani Inuit Association and the Guardians	<ul style="list-style-type: none"> <li>• Qikiqtani Inuit Association local community representatives have been invited and participated in joint meetings with the Hunters and Trappers’ Association (HTA) and the Hamlet since the beginning of the feasibility phase.</li> <li>• Recently formed Guardians crew has been invited to join meetings with the HTA and the Hamlet since the beginning of the detailed design and permitting phase.</li> <li>• Presentation of Project information, schedule, design concepts, options for quarry locations and haul routes, environmental and geotechnical baseline data collection, field program results, local</li> </ul>	<ul style="list-style-type: none"> <li>• Aug-24</li> <li>• Dec-24</li> </ul>

Group	Consultation Methodology	Dates
	<p>labour and employment opportunities, Project needs for community services (water, sewage, waste mgmt. fuel, etc.), potential effects and mitigation development and permitting including NIRB screening process, DFO-FFHPP and TC NPP.</p> <ul style="list-style-type: none"> <li>All materials were translated, and interpretation was provided as required.</li> </ul>	
RCMP	<ul style="list-style-type: none"> <li>Brief drop-in meetings were conducted to introduce and inform the RCMP of Project information, answer questions, and understand any needs or concerns.</li> </ul>	<ul style="list-style-type: none"> <li>Nov-18</li> <li>Jun-19</li> <li>Dec-24</li> </ul>
Local Businesses	<ul style="list-style-type: none"> <li>Brief drop-in meetings were conducted with outfitters and the Co-op/hotel to provide Project information, answer questions, and understand any needs or concerns.</li> </ul>	<ul style="list-style-type: none"> <li>Nov-18</li> <li>Nov-19</li> <li>Aug-24</li> </ul>
Sealift Carriers	<ul style="list-style-type: none"> <li>Email exchanges to provide Project information, answer questions and understand any concerns.</li> </ul>	<ul style="list-style-type: none"> <li>Feb-25</li> </ul>
Fuel Carriers	<ul style="list-style-type: none"> <li>Email exchanges to provide Project information, answer questions and understand any needs or concerns.</li> </ul>	<ul style="list-style-type: none"> <li>Feb-25</li> </ul>
Cruise Ship Operators	<ul style="list-style-type: none"> <li>Email exchanges to provide Project information, understand if there are any operational needs of cruise ship operators during construction, answer questions and understand any further needs or concerns.</li> </ul>	<ul style="list-style-type: none"> <li>Feb-25</li> </ul>



### 3.4 Concerns Expressed and Strategies to Address

The consultation program has been successful in gathering input from community residents, hunters, fishers, and other users of the community harbour. The input received resulted in design modifications to meet the needs and priorities of the community. Further, the input received provided a basis for the development of mitigation measures to address concerns during construction and operation of the community harbour, including the development of the Construction Environmental Management Plan (CEMP)(Dynamic Ocean & Worley Consulting, 2025b), as described in Section 8.2.

The community is eagerly anticipating the Project as Resolute Bay currently lacks an established harbour. The absence of proper facilities has led to public safety risks and damage to boats and equipment.

*“Our community has been waiting years for a harbour to improve our boating... to keep our hunters and our boats safe” – Hamlet councillor*

The Project has full support from the Hamlet, HTA, Guardians and residents who will benefit from improved safety and boat access from the community harbour.

*“We get so many projects, equipment, and personnel here from different organizations like the military and research, but our community still lacks the most basic infrastructure needed to safely access hunting and fishing areas” – HTA board member*

*“After decades and decades of waiting, elders are hoping to live long enough to see this become a reality.” – Guardians crew member*

Resolute Bay Hunters and Trappers’ Association board members, Guardians, and residents do not anticipate any major effects on wildlife from noise and construction activities. They have observed that animals and marine life that avoid areas during construction return once projects are completed. The effects on wildlife from the Project will be minimal and temporary.

*“The bay has endured a lot of abuse over the years. We have sewage dumping into it. Any temporary disruption over two or three construction seasons to build a harbour is well worth it.” – HTA board member*

*“We have no concerns over location of the quarry as long as the harbour construction gets started as soon as possible.” – HTA board member*

The community expressed no concerns over the loss of seabed due to construction of the community harbour. Impacts to Fish and Fish Habitat have been discussed with the community several times since the feasibility study and no concerns have ever been expressed. There is no harvesting of any kind near the Project site due to the sewage outfall and hunters do not anticipate that construction will have any significant impacts on wildlife or their ability to continue subsistence activities such as hunting, fishing, trapping and gathering.



Table 3-2 provides a summary of the concerns expressed by the community during consultation to date and a summary of the strategies employed to address these concerns. A comprehensive record of all consultation events and feedback received to date is available in the initial Feasibility Study Consultation Summary Report for Resolute Bay (Worley Consulting, 2020) and subsequent Community Consultation Summary Reports (Worley Consulting, 2025). A consultation log detailing community feedback and Project responses since the start of the detailed design and permitting phase is also provided in Appendix A.

**Table 3-2: Summary of Concerns Expressed and Strategies to Address**

Topic	Concerns Expressed	Strategies to Address
Public Safety	<ul style="list-style-type: none"> <li>Concerns about traffic management along the haul road and access for residents.</li> </ul>	<ul style="list-style-type: none"> <li>Given the volume of truck traffic expected and the fact that roads are shared by many users including All-Terrain Vehicles (ATVs), snow machines, trucks, cyclists, and pedestrians, a Traffic Management Plan (TMP) will be implemented by the contractor in order to minimize the risk of accidents.</li> <li>Public safety measures will include: flag people/spotters at intersections and near any homes or buildings, limiting vehicle speeds to 20 km/hr, ensuring all trucks have proper braking systems to handle the conditions of the road, equipment kept properly maintained to avoid accidents with equipment failure, community notices and a traffic awareness campaign concerning road safety, particularly for children and teens (e.g. traffic safety and awareness talks in local schools and public events/community centres, posters distributed and posted around town, radio shows etc.)</li> </ul>
Employment and Training Opportunities	<ul style="list-style-type: none"> <li>Community expects local labour and training to be maximized during construction of the Project.</li> </ul>	<ul style="list-style-type: none"> <li>The Project will comply fully with the Government of Nunavut's Nunavummi Nangminiqagtunik Ikajuuti Policy (01-April-17) and will aim to maximize participation of Inuit labour, training and Inuit owned businesses on the Project.</li> <li>The Project has provided Inuit Project personnel from Resolute Bay with employment and training opportunities as wildlife monitors, field technicians, ice</li> </ul>

Topic	Concerns Expressed	Strategies to Address
<p>Quarry and Haul Road</p>	<ul style="list-style-type: none"> <li>Concerns that there are numerous archaeological sites and nesting areas for terns near the Prospect Point “southern” quarry.</li> <li>Concerns about the current condition of the road and improvements needed to manage challenging river crossings.</li> <li>Concerns about blasting noise, public safety and property damage caused by blasting (vibrations and flying rock).</li> <li>Concerns about vegetation loss around closest cabin to quarry due to quarry operations.</li> <li>Concern that the Project may not proceed if blasting is unable to produce suitably sized rock.</li> </ul>	<p>monitoring specialists, and interpreters/translators since the start of the feasibility phase in 2018.</p> <ul style="list-style-type: none"> <li>During the 2024 field program, the Project’s geologists identified a new site, now referred to as the northern quarry. This site has no archaeological sites and is located farther away from nesting areas.</li> <li>The haul road and river crossings will be improved by the contractor to allow for safe travel of large rock trucks. The contractor will be responsible for maintaining the haul road in good condition.</li> <li>A CQBMP (see Section 8.3.5) will be developed by the contractor that will include site safety and security measures as well as protocols for quarry development, operation, maintenance, and monitoring. The CQBMP will incorporate measures to mitigate these risks, such as controlled blasting techniques, distance considerations, and the use of protective barriers. The contractor will be responsible for protecting the cabin during construction. While property damage is not anticipated, the contractor will be responsible for any damage that may occur.</li> <li>Limit Daily Road Closures – ~30 mins/day once a day to maintain access for residents to Prospect Point.</li> <li>Flag People and warning system to protect residents from blast zone.</li> </ul>

Topic	Concerns Expressed	Strategies to Address
		<ul style="list-style-type: none"> <li>• Daily Blasting Notices – radio, social media, hamlet, posted on bulletin boards, and on Very High Frequency (VHF) radio.</li> <li>• Blasting usually at the same time every day so residents can plan accordingly.</li> <li>• Vegetation around the cabin is outside quarry area. Dust would occur and will be managed by the contractor using approved dust suppressants or water.</li> <li>• The community harbour could still be constructed, but engineering would need to adjust the design to flatten angles on the breakwater and incorporate additional materials. While the harbour would be functional, this modification would result in the need for more frequent repair and maintenance during operations.</li> </ul>
Dust	<ul style="list-style-type: none"> <li>• Concerns about increased dust caused by trucking and quarry operations.</li> <li>• Concern about the use of dust suppressants such as calcium chloride (CaCl) rather than fresh water.</li> </ul>	<ul style="list-style-type: none"> <li>• As part of the construction environmental management plan, the contractor will be required to control for dust. The maximum speeds will be kept low (20km/hr) and dust suppression will be used (water or other approved dust suppressant).</li> <li>• The Project has suggested conducting a trial using a dust suppressant with the option to switch to water if the community does not approve of the suppressant.</li> </ul>
Fuel	<ul style="list-style-type: none"> <li>• Fuel supply in the community may not be sufficient to support construction needs without burdening community's already strained supply.</li> </ul>	<ul style="list-style-type: none"> <li>• The Project is coordinating with GN-PPD, who may arrange multiple fuel shipments to support both community and construction requirements. If this becomes impractical, the contractor will be required to bring in temporary double-wall fuel tanks for Project fuel</li> </ul>

Topic	Concerns Expressed	Strategies to Address
	<ul style="list-style-type: none"> <li>Concern about the Project impacting residents by using the gas station. Request that there be designated times the contractor can use the gas station, so it doesn't impact residents. The gas station is only open from 4-5pm for the community.</li> </ul>	<p>storage during construction so as not to impact the community's fuel supply. The CSPRP will detail fueling practices (see Section 8.3.4)</p> <ul style="list-style-type: none"> <li>The contractor will be responsible for fueling at times that will not impact residents.</li> </ul>
Marine Mammals	<ul style="list-style-type: none"> <li>Concerns about marine mammals coming into the area during construction.</li> </ul>	<ul style="list-style-type: none"> <li>Local Marine Mammal Observers will be hired to implement necessary acoustic monitoring requirements, establishment of Exclusion Zones and documentation of marine mammals observed.</li> <li>Construction vessels will maintain vigilance for marine mammals: minimum approach distances and best practices as outlined in the Marine Mammal Regulations must be adhered to, and protected areas as outlined within the most recent Notice to Mariners published by the Canadian Coast Guard (CCG) at the time of construction will be followed.</li> </ul>
Water and Ice Access	<ul style="list-style-type: none"> <li>Inquiries about maintaining access of the beach road for residents during construction.</li> <li>There are many alternate locations for boaters to launch their boats. Access to the water during construction will not be an issue.</li> <li>Access to the ice is easy along the shoreline. No concerns were expressed about the Project affecting ice access.</li> </ul>	<ul style="list-style-type: none"> <li>Access to the beach road will be maintained for residents.</li> <li>Access to water and ice will be maintained at all times during construction.</li> </ul>



### 3.5 Future Consultation

The GN-CGS/EDT will continue to engage with the Hamlet, the HTA, QIA, Guardians, residents and key stakeholders. The GN-CGS/EDT will provide Project updates and continue to maintain the positive rapport they have built with the community. Specifically, the GN-CGS/EDT will continue to solicit feedback and engage in collaborative problem solving with respect to:

- Engineering design.
- Permits, approvals, and licences.
- Construction schedule and sequencing of activities.
- Quarry development and haul route.
- Environmental and socio-economic effects, including Project effects on fish and fish habitat, and marine mammals.
- Marine traffic and navigation.
- CCEMP and CTMP (see Sections 8.3.1, 8.3.3).
- Employment and training opportunities.
- Operations planning including maintenance of the floating docs and facilities.

Consultation will be ongoing throughout the life of the Project. Further community consultation visits are planned during the current phase of the Project, including meetings with the Hamlet, HTA, Guardians, information tables at the Co-op store and another community open house ahead of the start of construction.

Once a contractor is engaged to construct the community harbour, further consultation with the community will take place. This engagement will include timing and methodology of construction activities and traffic management as well as emergency response plans, community service delivery, security of the construction site, public safety, environmental management measures, construction communications (blasting notices, road closures etc.) and equipment and material storage. Additionally, the contractor will work with the community to maximize local labour force and business opportunities.

## 4 Inuit Quajimajatuqanjit

IQ, although often translated as Inuit Traditional Knowledge, also includes important Inuit values, principles, cultural beliefs and behaviours. Its literal translation is, “that which has long been known by Inuit”. There are many different definitions of IQ that aim to describe its holistic nature. The QIA’s following description has guided our understanding of IQ (QIA, 2018):

*“Inuit Quajimajatuqanjit is a morality that is the base for Inuit existence. It is the belief system at the core of Inuit identity and governs Inuit society. It is born through a collective effort to survive in extreme conditions where no one else could and there is no other way to do so but together. Within this ideal lives a great life-affirming admiration to the land and animals. It is about living through helping each other. It is the Inuit way.”*

IQ, as we understand it, is not merely a collection of information about the land and wildlife, but also an approach and set of principles to conducting research and project development that is based in respect and collaboration. The local knowledge holders we worked jointly with were also actively guiding decisions on the concept designs and early planning of the community harbour for Resolute Bay. Our IQ program therefore aimed to gather local Inuit knowledge of marine habitat, wildlife, land use, year-round access for harvesting, and areas of cultural value in and around the proposed Project to support, early Project decision-making and planning, and to inform the permitting process.

We are grateful to the residents of Resolute Bay who graciously shared their time, knowledge and thoughtful feedback during our workshops.

IQ was gathered during the feasibility phase of the Project during the following engagements:

- Five design meetings in November 2018, May 2019, November 2019, December 2021 and May 2022 with HTA board members and local hunters.
- One land use and wildlife focused workshop with active Inuit hunters and fishers (knowledge holders) in May 2019.
- Verification with knowledge holders in November 2019.

To date, IQ has been gathered during the detailed design and permitting phase of the Project during the following engagements:

- Two design meetings in August 2024 and December 2024 with the HTA board and the Guardians.
- Land use and wildlife focused interviews in August 2024 with local knowledge holders.
- Verification with knowledge holders in December 2024.

Local interpreters were hired as required to support workshops and interviews. Before the start of the IQ workshops and interviews, knowledge holders were asked to read a Project information sheet and consent form, and then to complete and sign the form before the start of the meetings. The consent form was provided in English and Inuktitut, and described the workshop’s objectives, methods, and uses



for the information, which allowed the knowledge holder to specify where a copy of the transcript and map should be sent, and whether the knowledge holder wished to be acknowledged by name for their contribution.

To better understand the potential interactions between harvesting rights and anticipated Project activities, discussions during the workshops and interviews focused on: current boating conditions; harvest locations; water and ice access; local site conditions such as winds, waves, currents, rivers and creeks, sedimentation etc.; fishing; marine and land mammals; birds and other wildlife; carving stone; camps and other culturally important areas; and the potential locations of the community harbour, quarry and haul routes in relation to land use activities (e.g. fishing, hunting, gathering and trapping).

Land use and areas of cultural or ecological value were marked on maps and later digitized. Maps were verified by knowledge holders in December 2024 to confirm that the information gathered during the IQ program was interpreted and presented in the intended manner. Knowledge holders consented to their knowledge being shared with the team and for the purpose of informing the ESEB Report (Dynamic Ocean & Worley Consulting, 2025c), the archaeological assessment, and the overall Project design and construction planning. Consent was also provided by the knowledge holders to have their knowledge presented as noted in the Land Use and Occupancy map (see Figure 4-1).

A review of existing and accessible IQ research relevant to the Project site was also conducted to provide valuable regional context to the baseline study. The Project team has attempted to join IQ with results from the scientific studies to allow the Project, in collaboration with community members, to make informed decisions on the design and construction planning of the community harbour that reflects local peoples' needs, priorities and values. However, the IQ findings are based on a small number of workshops and a selection of readily available literature, and do not represent the full intensity and extent of Inuit use and occupancy of either the Project Study Area or the surrounding region.





## 5 Regulatory Compliance

Construction and operation of the community harbour in Resolute Bay will require securing permits and approvals from: federal, territorial, and municipal governments; Inuit boards; and the QIA. The Project has engaged with Authority Having Jurisdictions (AHJs), Inuit boards and the QIA to confirm compliance with relevant legislation (and regulations), policies, protocols and Best Management Practices (BMPs) will be in place. Several interested stakeholders will be engaged through the respective permitting processes of NIRB and DFO-FFHPP.

A summary of permits expected to be required for the Project is provided in Table 5-1, the majority of which will be held by GN-CGS/EDT, although several will be the responsibility of the contractor.

### 5.1 Institutions of Public Government

#### 5.1.1 Nunavut Planning Commission

The NPC is the ‘gate keeper’ for all project determinations within the Nunavut Settlement Area (NSA) and referrals to NIRB, as stipulated in the *Nunavut Planning and Project Assessment Act* (NuPPAA). The NPC communicates the referral through a Conformity Determination. NPC will take the decision for referral and include pertinent Federal and Territorial regulators, most of whom are encompassed in Table 5-1. The NPC application was submitted on 25 October 2024 (NPC, 2024c) (NPC No. 150555), accepted as complete on 19 November 2024 (NPC, 2024b), and the conformity determination was issued on 15 December 2024 (NPC, 2024a).

#### 5.1.2 Nunavut Impact Review Board

The Project proposal was referred to the NIRB on 15 December 2024, with a request for additional information issued on 14 January 2025 (No. 24XN058) (NIRB, 2025; NPC, 2024a). The application was submitted on 03 March 2025, and the completeness check was underway at the time of this report. The Project anticipates further required screening under Nunavut Agreement Part 4 by the NIRB (Screening). Screenings are conducted over 45 to 60 days inclusive of a 21-day consultation period. Consultation consists of a public comment period via the NIRB’s online registry and a NIRB determined distribution list. The distribution list includes pertinent AHJs, hamlets / municipalities, the HTA, Regional Inuit Associations (RIA), such as the QIA, and non-government organizations.

#### 5.1.3 Nunavut Water Board

The NWB has the mandate to protect, manage and regulate freshwater courses in Nunavut. NWB has a public registry where projects submitted to NWB will be publicly posted. For the Project, an NWB Type B license will be required if the haul road requires water crossings (e.g. culverts, see Section 2.2.3) or if creek alteration is required for the Project. As the creek along the east of the community harbour is not a major water course it is expected that a Type B permit will be acceptable, whether the alterations are temporary or permanent. NWB compliance requirements will be the responsibility of the contractor. If the contractor requires a water license for water withdrawal, it is expected an Authorization will be sufficient as daily withdrawal needs are significantly less than the 50 m<sup>3</sup> daily threshold (NWB, 2019).



#### 5.1.4 Nunavut Wildlife Management Board

The Nunavut Wildlife Management Board (NWMB) was established in accordance with the Nunavut Agreement (NWMB, 2020). The NWMB's mandate is to regulate and manage the access to wildlife within the NSA. Further to this, they can advise the NPC regarding works within wildlife management zones and provide recommendations to the NIRB or other agencies for mitigation measures or compensations related to impacts from commercial or industrial developments on wildlife habitat. The local HTO are created under the NWMB and therefore must be involved in consultation and engagement. The NWMB's mandate will likely be met through the HTA but may be engaged by NIRB and DFO-FFHPP through their respective permitting processes.

### 5.2 Designated Inuit Organizations

#### 5.2.1 Qikiqtani Inuit Association

The QIA is a Designated Inuit Organization (DIO) under the Nunavut Agreement (QIA, 2020) established to protect, promote and advance the rights and benefits of Inuit of the Qikiqtani region in Nunavut. It is also one of three RIAs affiliated with Nunavut Tunngavik Incorporated (NTI) and manages the Inuit Owned Lands (IOL) in the Qikiqtani Region. When aspects of the Project (community harbour, haul road, quarry) are located on IOL, a Right of Way (RoW) Agreement will be required, which would be issued by the QIA. At this time, no part of the Project is within IOL. If this changes, a Right of Way Agreement will need to be obtained from the QIA, which is expected to be the responsibility of the contractor. Given its mandate to protect Inuit rights and benefits, the QIA will be interested in ensuring that Inuit harvesting rights are not impacted by the Project.

The QIA has been engaged on the Project since the feasibility phase and has participated in both joint meetings with the Hamlet and HTA during the design phase. The QIA will continue to be engaged throughout the life of the Project. The QIA will also be consulted by NPC, NIRB, and DFO-FFHPP.

#### 5.2.2 Nunavut Tunngavik Inc.

The Nunavut Tunngavik Inc (NTI) is a designated Inuit organization responsible for ensuring, coordinating and managing the rights and responsibilities set out in the Nunavut Agreement are respected by federal and territorial governments (NTI, 2024b). The NTI Board of Directors is composed of eight elected members registered under the Nunavut Agreement. The executive committee is comprised of the president and vice-president of the NTI, and the three presidents from each RIA (NTI, 2024a).

The NTI will not be issuing a permit for the Project and are technically already being engaged through communications with the QIA.

### 5.3 Land Tenure

Land in Nunavut is classified as either Crown land, Commissioner's land, Municipal land, or Inuit Owned Land (IOL) (Government of Canada, 2022a), as per the Nunavut Agreement, and is overseen by pertinent AHJs. Crown land is administered through either the CIRNAC or Public Services and Procurement Canada



(PSPC). Commissioner's land is administered through the GN-CGS (Land Administration Office). IOL is administered through the NTI, who delegate responsibilities to the RIAs (Government of Canada, 2022a)), and thus QIA.

### 5.3.1 Community and Government Services

The GN-CGS (Land Administration Office) will be engaged for requirements on LUPs during the construction phase for the quarry, stockpile areas, and the foreshore components of the community harbour. Should the contractor require stockpiling outside of the quarry (see proposed potential stockpile areas in (Figure 1-1), an LUP may be required. The contractor will be responsible for the acquisition of any other LUPs from GN-CGS (Lands Administration Office).

In terms of the transfer of administrative control, GN-EDT will confirm with the GN-CGS (Lands Administration Office) for if Commissioner tenured land is required to be transferred. Further, depending on the status of devolution at the time of the transfer of administrative control for land below the Ordinary High Water Line (OHWL) may also occur through GN-CGS (Lands Administration Office) (see Sections 1.7, 5.3.2, Drawing 5-1).

### 5.3.2 Crown-Indigenous Relations and Northern Affairs Canada

The GN-CGS/EDT is working with CIRNAC to confirm the transfer of administrative control of the water lot prior to construction. Depending on the status of devolution at the time of the land transfer, the GN-CGS (Lands Administration Office) may hold this responsibility.

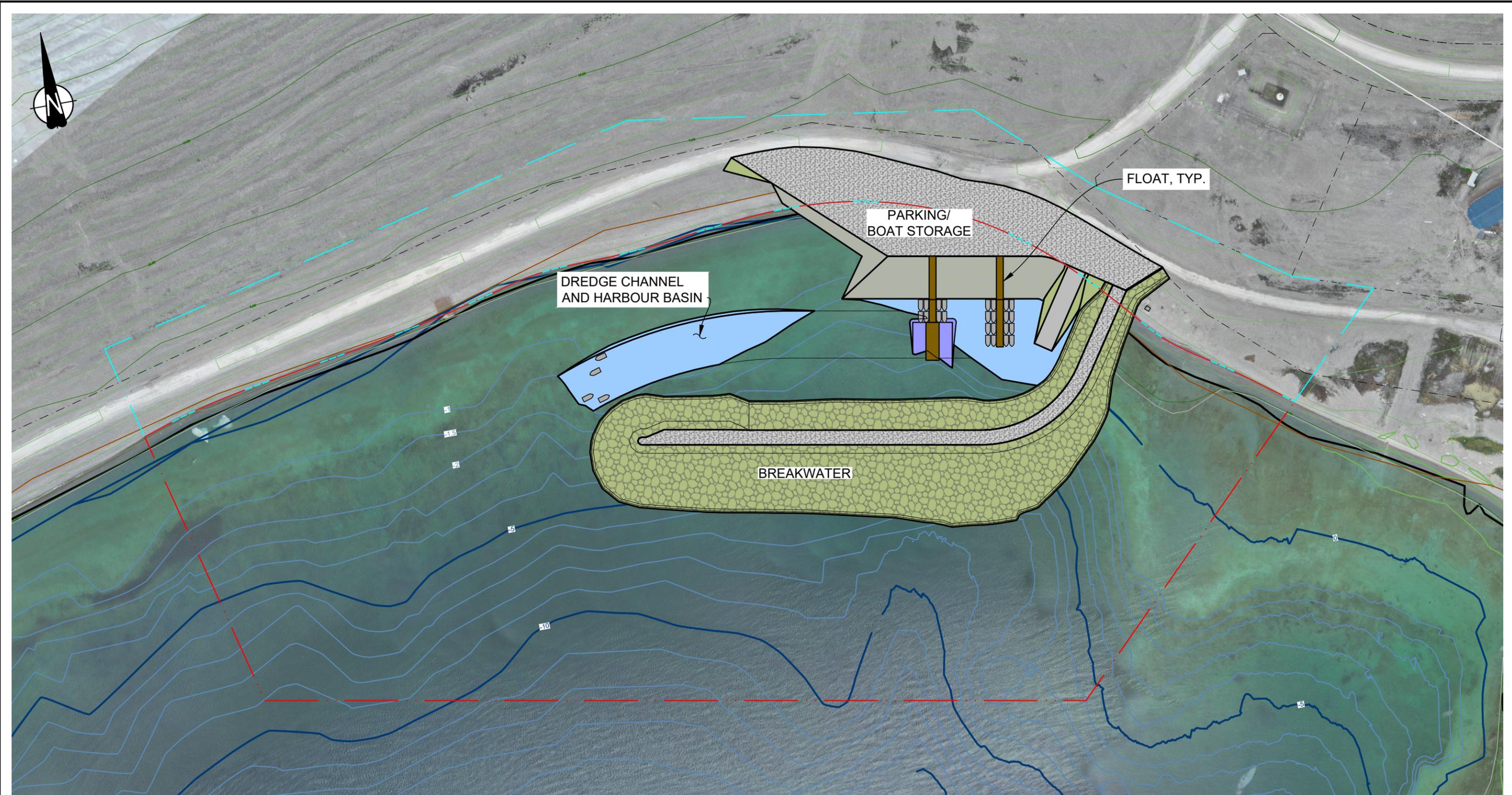
The construction required for the community harbour includes works that are above or below the HWL. The HWL is separate from the OHWL, as the HWL changes as the Project construction is pushed seaward.

CIRNAC will be engaged for requirements on LUPs during the construction phase for lands below the OHWL for the community harbour.

In terms of the transfer of administrative control, GN-EDT will confirm with the GN-CGS (Lands Administration Office) and with CIRNAC for the requirements related to 'crown land' administrative control transfer, depending on the status of devolution for land below the OHWM (see Sections 1.7, 5.3.2, Drawing 5-1).

### 5.3.3 Qikiqtani Inuit Association

See Section 5.2.1.

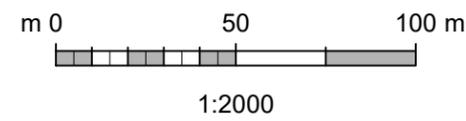


**LEGEND:**

- BATHYMETRIC CONTOUR (1m INTERVALS)
- BATHYMETRIC CONTOUR (0.5m INTERVALS)
- TOPO CONTOUR (1m INTERVALS)
- TOPO CONTOUR (0.5m INTERVAL)
- - - CGS LOT BOUNDARIES
- · - · - CIRNAC LAND TRANSFER BOUNDARY
- · - · - GN-CGS LAND TRANSFER BOUNDARY
- DREDGE -1.5m
- DREDGE -2.5m

**PLAN**  
1:2000

BOUNDARIES TO BE CONFIRMED ONCE TOPOGRAPHIC AND BATHYMETRIC SURVEY HAS BEEN FINALIZED



Drawing 5-1  
**GOVERNMENT OF NUNAVUT  
 RESOLUTE BAY COMMUNITY  
 HARBOUR DEVELOPMENT**

<b>LAND TENURE AREAS PLAN</b>			
Date: 04-MAR-25	Drawn by: JLC	Edited by: JLC	App'd by: CM
		Worley Project No. <b>317086-54175</b>	
FIG No. <b>1</b>		REV <b>A</b>	

\*This drawing is prepared for the use of our customer as specified in the accompanying report. Worley Canada Services Ltd. assumes no liability to any other party for any representations contained in this drawing.



## 5.4 Government of Nunavut Departments

### 5.4.1 Culture and Heritage

Two Archaeological Impact Assessments (AIAs) (AECOM, 2024; Lifeways of Canada Limited, 2019) have been conducted under Class 2 Archaeologist Permit (2019-53A, 2024-59A) in support of the Project, in 2019 and 2024. If the southern quarry is used, archaeological buffers may need to be implemented; however, no other archaeological sites were recorded within the Project Study Area. Further permitting through GN Department of Culture and Heritage (GN-C&H) may be required if the southern quarry is selected.

### 5.4.2 Department of Environment

No permits are expected from the GN Department of Environment (DoE); however, the topics as below may need to be discussed with the GN-DoE:

- During construction, the contractor will be required to report accidental spills as per territorial requirements. The minimum requirements for spill reporting will be identified in the CEMP (Section 5.4.24, Table 5-27, (Dynamic Ocean & Worley Consulting, 2025b)) and a CSPRP will reiterate spill reporting requirements (see Section 8.3.4). Reporting requirements are also summarized in Section 5.10.2.2 of the CEMP (Dynamic Ocean & Worley Consulting, 2025b).
- Proximity of the community harbour to the hamlet's sewage outfall. The GN-DoE will be engaged by GN CGS/EDT to confirm if additional approvals are required once the NIRB Screening Decision Report (SDR) has been issued.

## 5.5 Hamlet

Several approvals or a LUP may be required from the Hamlet as summarized below:

- Quarry: Acquisition of rock for the quarry will need to be approved through the Hamlet. The contractor will be responsible for obtaining a quarry permit from the Hamlet.
- Hazardous Goods: Approval will be required from the Hamlet for the use of explosives. The contractor will be responsible for obtaining this approval for the use of explosives from the Hamlet.
- Construction Camp: construction of a camp and utilization of laydown areas may require approval from the Hamlet. The contractor will be responsible for obtaining this permit from the Hamlet.
- Community Harbour: the component of the community harbour that is above the HWL may require approval from the Hamlet. The contractor will be responsible for obtaining this permit from the Hamlet.



Additionally, approval is required from the Hamlet for the Project to access community services to support construction such as water, sewage, and waste management services. The Project will adhere to any pertinent Hamlet by-laws.

Locations for use as laydown or other construction related uses will be required to be approved by the Hamlet. The Hamlet will also be required to approve the CTMP (see Section 8.3.3).

## 5.6 Federal Agencies

### 5.6.1 Fisheries and Oceans Canada – Fish and Fish Habitat Protection Program

The DFO-FFHPP is the AHJ who administers Section 35 and 34.4 of the *Fisheries Act*, which prohibits causing the Harmful Alteration, Disruption or Destruction (HADD) of fish habitat and Death of Fish (DoF), respectively. To ensure compliance with the *Fisheries Act*, it is recommended that proponents submit projects to DFO-FFHPP for review. DFO-FFHPP will subsequently review the Project, through the Request for Review (RFR) process. If DFO-FFHPP recognizes the Project impacts can be mitigated, a Letter of Advice (LoA) will be issued to the Proponent. If DFO-FFHPP identifies a potential for the Project to result in a prohibition, an Application for Authorization (AFA) will be required to be submitted for the Project. Other regulatory tools such as the Interim Code of Practice notifications (DFO, 2024c), can be used to remain in compliance with the *Fisheries Act*.

The DFO-FFHPP will be engaged to confirm if the loss of seabed habitat from the construction of the permanent facility components requires a Fisheries Act Authorization (FAA). If an FAA is required, the AFA will be submitted to DFO-FFHPP once the NIRB SDR is received.

### 5.6.2 Transport Canada

The *Canadian Navigable Waters Act* (CNWA) is administered through the NPP where TC is the AHJ. The CNWA protects marine safety by regulating works in navigable waters. Works include the placement of any structure, device or thing, whether temporary or permanent. Transport Canada will require a NoW approval and navigational commitments will be followed during the construction and operation of the community harbour. The CEMP (Dynamic Ocean & Worley Consulting, 2025b) will require the contractor to comply with established navigational communication procedures.

A Request for Pre-Submission Services was delivered to TC on 24 October 2024 to facilitate early engagement with TC on the Project (Dynamic Ocean, 2024) and a meeting was held with Transport Canada on 27 November 2024 to discuss the Project. Transport Canada confirmed that initial completeness check and review of the Project application can be initiated in parallel with the NIRBs review process; however, no permit will be issued until the NIRB SDR is issued. Collaboration with the community and the HTA will be continuous in order to confirm that any potential navigational interferences are well understood, particularly with subsistence harvesting.



### 5.6.3 Environment and Climate Change Canada

Environment and Climate Change Canada (ECCC) is the AHJ for Section 36 of the *Fisheries Act*, and to meet this requirement, the CEMP has measures in place to confirm that there are deleterious substances in the marine environment due to the Project (Dynamic Ocean & Worley Consulting, 2025b). Furthermore, ECCC, through the Canadian Wildlife Service (CWS), administers the *Migratory Birds Convention Act* (1994) and associated Migratory Birds Regulations (2022) to protect and conserve migratory birds in Canada. ECCC is likely to be engaged by the NIRB during their public consultation process.

### 5.6.4 Natural Resources Canada

A permit from Natural Resource Canada (NRCan) is required for storage of explosives during the construction phase of the Project. Compliance requirements with NRCan regarding explosives will be the responsibility of the contractor. Transportation permits are also required for the explosives, which will be handled by the contractor or by the sealift companies they engage to transport the materials.

### 5.6.5 Canadian Coast Guard and Nav Canada

A Notice to Airmen (NOTAM) is a notice distributed via telecommunication to personnel concerned with flight operations of information that concerns the establishment, condition or change to any aeronautical facility (NavCan, 2024). A NOTAM for blasting operations that are not published may be issued. Important details that are required in a NOTAM for blasting operations are maximum height of debris and the air blast. A NOTAM is required when an aerodrome is 5 nautical miles from a blast site and will have a maximum duration of 14 days (NavCan, 2024).

If a NOTAM is required, the contractor will be responsible for engaging with NavCan a minimum of 30 days prior to blasting to confirm proper procedural requirements. The contractor will be responsible for communications with the CCG Marine Communications and Traffic Services Centre (MCTS) to file appropriate Navigational Warnings (NAVWARNs) so that marine construction activities can be communicated to mariners. NAVWARNs are required regardless of construction being performed with marine- or land-based equipment for all construction that occurs below the HWL.

### 5.7 Nunavut Marine Council

The Nunavut Marine Council (NMC) was established through the Nunavut Land Claims Agreement (NLCA) as a means of advancing the initiatives set forth by the Nunavut Wildlife Management Board (NWMB), the NPC, the NIRB and the NWB. The NMC is composed of the staff and board members of these organizations to advise and make recommendations on the effects and implications of marine issues in the NSA. As a focus they review existing, or proposed regulatory, policy, research, development, management planning initiatives that affect or may affect marine areas in the future (NMC, 2020). The NMC will not issue any permits for the Project but may be engaged through the NIRB or DFO-FFHPP permitting processes.



## 5.8 Regional Wildlife Organizations

### 5.8.1 Qikiqtaaluk Wildlife Board

The Qikiqtaaluk Wildlife Board (QWB) is composed of Chairmen from each HTA within the Qikiataaluk Region, and was established for the following reasons (QWB, 2020):

- To regulate and manage the harvesting practices of HTA members.
- Oversee the allocation and enforcement of regional basic needs and adjusted basic need levels among HTAs within the region.

The QWB will not issue any permits for the Project but may be engaged through the NIRB and DFO-FFHPP permitting processes. The interests of the QWB are met through engagement and consultation with the HTAs of specific communities. In Resolute Bay the HTA has been involved since the feasibility phase of the Project.

## 5.9 Expected Permits

See Table 5-1 for a summary of Project permits.

Table 5-1: Summary of Federal, Territorial and Municipal Permitting Requirements

Legislation	Authority Having Jurisdiction	Construction Activity	Permit or Approval	Recommended Permit Timelines	Key Documentation	Responsibility of
<b>Municipal (Hamlet)</b>						
<ul style="list-style-type: none"> <li><i>Nunavut Land Claims Agreement</i> (Nunavut Agreement, or NA), Article 14 (Planning and Lands Section) <a href="https://www.tunngavik.com/documents/publications/LAND_CLAIMS_AGREEMENT_NUNAVUT.pdf">https://www.tunngavik.com/documents/publications/LAND_CLAIMS_AGREEMENT_NUNAVUT.pdf</a></li> </ul>	Hamlet	Quarry (stockpiling, blasting, etc.)	Quarry permit	4 to 6 months (but very specific Hamlet to Hamlet)	<ul style="list-style-type: none"> <li>Hamlet application form.</li> <li>Map depicting quarry boundaries and jurisdictional tenures.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> </ul>
Municipal By-Laws: <ul style="list-style-type: none"> <li>By-Law 31 Land Administration. <a href="https://cgs-pals.ca/downloads/land-admin-bylaws/">https://cgs-pals.ca/downloads/land-admin-bylaws/</a></li> <li>By-Law 63 Community Plan. <a href="https://downloads.cgs-pals.ca/resolute_bay/community_plans/cp_bylaw.pdf">https://downloads.cgs-pals.ca/resolute_bay/community_plans/cp_bylaw.pdf</a></li> <li>By-Law 64 Zoning. <a href="https://resolutebay.diligent.community/document/b0e295dc-628b-4b0a-b8b2-cc5fa1528cc6/?modified=2022-05-11T19:09:56.06">https://resolutebay.diligent.community/document/b0e295dc-628b-4b0a-b8b2-cc5fa1528cc6/?modified=2022-05-11T19:09:56.06</a></li> </ul>	Hamlet	Construction camp and laydown areas.	Development and other occupancy permit	4 to 6 months (but very specific Hamlet to Hamlet)	<ul style="list-style-type: none"> <li>Hamlet application form.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> </ul>
		Community harbour components that are above the HWL.				<ul style="list-style-type: none"> <li>GN CGS/EDT</li> </ul>
<b>Territorial Requirements</b>						
<b>Institutions of Public Government</b>						
<ul style="list-style-type: none"> <li><i>Nunavut Land Claims Agreement Act</i>, Article 11 <a href="https://laws-lois.justice.gc.ca/eng/acts/N-28.7/FullText.html">https://laws-lois.justice.gc.ca/eng/acts/N-28.7/FullText.html</a></li> <li><i>NuPPAA</i> <a href="https://laws-lois.justice.gc.ca/eng/acts/N-28.75/">https://laws-lois.justice.gc.ca/eng/acts/N-28.75/</a></li> </ul>	NPC	Development of land and water resources within Nunavut.  All aspects of Project construction.	Conformity Determination (NPC File No. 150555) (referral to NIRB)	1 to 2 months	<ul style="list-style-type: none"> <li>Online application.</li> <li>Project description and map.</li> </ul>	<ul style="list-style-type: none"> <li>GN CGS/EDT</li> </ul>

Legislation	Authority Having Jurisdiction	Construction Activity	Permit or Approval	Recommended Permit Timelines	Key Documentation	Responsibility of
<ul style="list-style-type: none"> <li>Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSTRTA) <a href="https://laws-lois.justice.gc.ca/eng/acts/N-28.8/FullText.html">https://laws-lois.justice.gc.ca/eng/acts/N-28.8/FullText.html</a></li> <li>Nunavut Water Regulations <a href="https://laws-lois.justice.gc.ca/eng/regulations/SOR-2013-69/index.html">https://laws-lois.justice.gc.ca/eng/regulations/SOR-2013-69/index.html</a></li> </ul>						
<ul style="list-style-type: none"> <li>NuPPAA <a href="https://laws-lois.justice.gc.ca/eng/acts/N-28.75/">https://laws-lois.justice.gc.ca/eng/acts/N-28.75/</a></li> </ul>	NIRB	Any development of land and water resources within Nunavut as determined by NPC's Conformity Determination (NPC File No. 150555) All aspects of Project construction.	SDR (under review) (NIRB File No. 24XN058)	4 to 6 months	<ul style="list-style-type: none"> <li>Online application.</li> <li>PSIR Report.</li> <li>CEMP.</li> <li>IQ and Consultation to inform baseline conditions and effects assessment.</li> </ul>	<ul style="list-style-type: none"> <li>GN CGS/EDT</li> </ul>
<ul style="list-style-type: none"> <li>NWNSTRTA <a href="https://laws-lois.justice.gc.ca/eng/acts/N-28.8/FullText.html">https://laws-lois.justice.gc.ca/eng/acts/N-28.8/FullText.html</a></li> <li>Nunavut Water Regulations <a href="https://laws-lois.justice.gc.ca/eng/regulations/SOR-2013-69/index.html">https://laws-lois.justice.gc.ca/eng/regulations/SOR-2013-69/index.html</a></li> </ul>	NWB	Potential for withdrawal of freshwater or the need to cross freshwater crossings for haul road construction.	Type B Water License	1 to 2 months	<ul style="list-style-type: none"> <li>Application Form.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> </ul>
<b>Designated Inuit Organisation</b>						
<ul style="list-style-type: none"> <li>Nunavut Agreement <a href="https://www.tunnigavik.com/documents/publications/LAND_CLAIMS_AGREEMENT_NUNAVUT.pdf">https://www.tunnigavik.com/documents/publications/LAND_CLAIMS_AGREEMENT_NUNAVUT.pdf</a></li> </ul>	QIA	Project work on IOL.  No Project components sit on IOL and thus a permit from the QIA is not expected to be required.	RoW Agreement	2 months	<ul style="list-style-type: none"> <li>Application Form.</li> <li>Online Portal.</li> <li>To be obtained by contractor.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> </ul>
<b>Government of Nunavut Departments</b>						
<ul style="list-style-type: none"> <li>Territorial Lands Act</li> </ul>	GN-CGS/EDT	Construction of Project component above OHWL for land tenure under Commissioners or Untitled Municipal lands.	LUP	2 months		<ul style="list-style-type: none"> <li>GN CGS/EDT</li> </ul>

Legislation	Authority Having Jurisdiction	Construction Activity	Permit or Approval	Recommended Permit Timelines	Key Documentation	Responsibility of
<a href="https://www.laws-lois.justice.gc.ca/eng/acts/T-7/index.html">https://www.laws-lois.justice.gc.ca/eng/acts/T-7/index.html</a> <ul style="list-style-type: none"> <li>Land Use Territorial Regulations <a href="https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._1524/index.html">https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._1524/index.html</a></li> </ul>		Construction facilities outside of Project components (e.g. camps, laydowns, stockpile, and quarry, etc.) above OHWL for land tenure under Commissioners or Untitled Municipal lands.			<ul style="list-style-type: none"> <li>See CIRNAC description below.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> </ul>
<ul style="list-style-type: none"> <li><i>Nunavut Environmental Protection Act</i> <a href="https://www.justice.gov.nt.ca/en/files/legislation/environmental-protection/environmental-protection.a.pdf">https://www.justice.gov.nt.ca/en/files/legislation/environmental-protection/environmental-protection.a.pdf</a></li> </ul>	GN-DoE	<p>If upland disposal (instead of re-use) of dredged sediment is needed, GN-DoE will need to be engaged to confirm the strategies in place to minimize negative environmental effects.</p> <p>There is potential for upland dispose (as opposed to re-use) given the amount of dredging required. Although sediment quality characteristics are the primary driver of its useability.</p>	No approval	N/A, no approval, but engagement as early as possible is recommended to minimize disruption the NIRB process.	<ul style="list-style-type: none"> <li>Detailed plan for sediment disposal.</li> </ul>	<ul style="list-style-type: none"> <li>GN CGS/EDT</li> </ul>
<b>Federal</b>						
<ul style="list-style-type: none"> <li><i>Fisheries Act</i> <a href="https://laws-lois.justice.gc.ca/PDF/F-14.pdf">https://laws-lois.justice.gc.ca/PDF/F-14.pdf</a></li> </ul>	DFO	<p>In-water or near-water works associated with the construction of the community harbour that have the ability to result in the HADD to fish or fish habitat, as defined under the <i>Fisheries Act</i>.</p> <p>Typically, when it is determined a HADD will occur (residual effects), it is primarily due to the Project footprint (areas of seabed that are no longer available to fish).</p>	Section 35(2) FAA or LoA	<p>Legislative timelines are 60 and 90 days. The Minister has 60 days from the date of submission of an application to confirm the application is complete and 90 days to issue the FAA (DFO, 2024a).</p> <p>However, 18 to 24 months is recommended for planning as DFO- FFHPP will stop the clock as required to request response to fill information gaps.</p>	<ul style="list-style-type: none"> <li>Effects assessment.</li> <li>CEMP.</li> <li>Description of HADD footprint.</li> <li>Indigenous consultation and IQ to confirm baseline conditions, potential effects and offset ideas.</li> <li>Offsetting Plan.</li> </ul>	<ul style="list-style-type: none"> <li>GN CGS/EDT</li> </ul>
<ul style="list-style-type: none"> <li><i>CNWA</i> <a href="http://laws-lois.justice.gc.ca/PDF/N-22.pdf">http://laws-lois.justice.gc.ca/PDF/N-22.pdf</a></li> </ul>	TC	In-water works associated with the construction and operations of the community harbour that have the potential to interfere with navigation.	NoW Application for Approval	6 to 12 months	<ul style="list-style-type: none"> <li>Online application.</li> <li>CEMP.</li> <li>Plan and side profile drawings.</li> <li>Schematic layout.</li> </ul>	<ul style="list-style-type: none"> <li>GN CGS/EDT</li> </ul>

Legislation	Authority Having Jurisdiction	Construction Activity	Permit or Approval	Recommended Permit Timelines	Key Documentation	Responsibility of
					<ul style="list-style-type: none"> <li>Identify potential navigational interferences.</li> </ul>	
<ul style="list-style-type: none"> <li>Territorial Land Use Regulations <a href="https://laws-lois.justice.gc.ca/eng/Regulations/C.R.C.,_c._1524/index.html">https://laws-lois.justice.gc.ca/eng/Regulations/C.R.C.,_c._1524/index.html</a></li> </ul>	CIRNAC	In-water works relative to the use of the seabed (areas below the OHWL (and thus considered Crown Land).	Class A LUP	2 to 4 months	<ul style="list-style-type: none"> <li>Details surrounding ownership of land above and below the HWL of the Project footprint.</li> <li>CEMP.</li> <li>Application form.</li> </ul>	<ul style="list-style-type: none"> <li>GN CGS/EDT</li> </ul>
<ul style="list-style-type: none"> <li><i>Explosives Act</i> (Section 7): <a href="https://laws-lois.justice.gc.ca/PDF/E-17.pdf">https://laws-lois.justice.gc.ca/PDF/E-17.pdf</a></li> <li>Explosives Regulations (2013): <a href="https://laws.justice.gc.ca/PDF/SOR-2013-211.pdf">https://laws.justice.gc.ca/PDF/SOR-2013-211.pdf</a></li> </ul>	NRCAN	Blasting – For any industrial explosive that is to be imported into or manufactured, transported, possessed or used in Canada. Transport, storage and acquisition of explosives.	Authorization of Explosives Magazine Licence Application	3 months	<ul style="list-style-type: none"> <li>Application form.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> </ul>

## 6 Description of the Existing Environment & Socio-Economic Conditions

An ESEB Study was conducted during the feasibility (2019) (Advisian-Ikpiaryuk JV, 2020) and detailed design (2024) (Dynamic Ocean & Worley Consulting, 2025c) phases to determine the existing environmental and socio-economic conditions at the Project site. Information on the physical, biological, socio-economic, and archaeological environment was gathered from a combination of desktop review, field programs, and IQ. Desktop review and field survey methodologies are provided in the ESEB Report with high-level summaries provided in the respective sections below (Dynamic Ocean & Worley Consulting, 2025c).

### 6.1 Valued Ecosystem Component and Valued Socio-Economic Components

The VECs and VSECs were determined from collaboration with the community and key stakeholders, while being guided by NIRB's Proponent Guidance document (NIRB, 2020). Assessment of the potential environmental and socio-economic effects of the Project include the anticipated impacts on VECs and VSECs of residents and community harbour users.

The scope of the ESEB Report encompassed a potential effects assessment in support of the regulatory process (Dynamic Ocean & Worley Consulting, 2025c). The following VECs and VSECs were included (see Table 6-1 for definition):

- Physical:
  - Designated Environmental Areas.
  - Geological Site Conditions.
  - Surface Features.
  - Ground Stability and Permafrost.
  - Hydrology.
  - Air Quality.
  - Noise.
  - Climate Conditions.
  - Marine Sediment and Water Quality.
  - Coastal Morphology.
  - Bathymetry.
  - Tides and Current.
- Biological:
  - Terrestrial Vegetation (including rare plants).
  - Terrestrial Wildlife (including habitat and migratory patterns).

- Migratory and Marine Birds (including habitat and migratory patterns).
- Fish Habitat (including marine vegetation).
- Fish and Marine Mammals.
- Species at Risk.
- Socio-Economic:
  - Employment, Training and Business Opportunities.
  - Land and Resource Use.
  - Local and Regional Traffic Patterns.
  - Human Health and Community Wellness.
  - Community Infrastructure and Services.
  - Archaeological and Culturally Significant Sites.

**Table 6-1: Definition of Valued Ecosystem Component and Valued Socio-Economic Components as by Nunavut Impact Review Board**

Valued Ecosystem Components	Valued Socio-Economic Components
<p>Those aspects of the environment considered to be of vital importance to a particular region or community, including:</p> <ol style="list-style-type: none"> <li>1. Resources that are either legally, politically, publicly or professionally recognized as important, such as parks, land selections, and historical sites.</li> <li>2. Resources that have ecological importance.</li> <li>3. Resources that have social importance.</li> </ol>	<p>Those aspects of the socio-economic environment considered to be of vital importance to a particular region or community, including components relating to the local economy, health, demographics, traditional way of life, cultural well-being, social life, archaeological resources, existing services and infrastructure, and community and local government organizations.</p>

Source: NIRB (2007)

## 6.2 Study Areas

Study Areas were developed for the Project components and were determined based on potential temporary and permanent footprints and alignment with existing quarry, road, and shoreline access infrastructure (Figure 1-1).

Environmental (Physical, Biological) Study Areas for the haul road, quarry and community harbour are considered the footprint plus a 100 m buffer. This is to account for potential environmental effects during construction and to be inclusive of any archaeological buffers; however, based in the AIAs performed in 2019 and 2024, none are expected to be required (see Sections 5.4.1, 6.5.7). When the

haul road and quarry are collectively discussed, it will be referred to as the HRQ Study Area, and when all Environmental Study Areas are collectively discussed, they will be referred to as the Project Study Area.

During the operations phase, the Community Harbour Study Area is the only one to consider as the quarry and haul road are only required during the construction phase to support the development of the community harbour.

Study Areas pertinent to the VECs/VSECs when discussing existing conditions, potential effects and proposed mitigation/monitoring measures are identified in Table 6-2.

**Table 6-2: Project Study Area Pertinent to Valued Ecosystem Component and Valued Socio-Economic Components**

VEC/VSEC	Study Area
<b>Physical</b>	
Designated Environmental Areas	Project
Geological Site Conditions	Community Harbour, Quarry
Surface Features	Community Harbour, Quarry
Ground Stability and Permafrost	Project
Hydrology	Community Harbour
Air Quality	Project
Noise	Project
Climate Conditions	Project
Marine Sediment and Water Quality	Community Harbour
Coastal Morphology	Community Harbour
Bathymetry	Community Harbour
Tides and Currents	Community Harbour
<b>Biological</b>	
Terrestrial Vegetation (Including Rare Plants)	HRQ
Terrestrial Wildlife (Including Habitat and Migratory Patterns)	HRQ
Migratory and Marine Birds (Including Habitat and Migratory Patterns)	Project
Fish Habitat (Including Marine Vegetation)	Community Harbour
Fish and Marine Mammals	Project
SAR	Project

VEC/VSEC	Study Area
<b>Socio-Economic Conditions</b>	
Population, Education and Employment	Socio-Economic Study Area
Land and Resource Use	
Local and Regional Traffic Patterns	
Human Health and Community Wellness	
Housing and Community Infrastructure and Services	
Archaeological and Culturally Significant Sites	Project (Community harbour limited to intertidal extent)

### 6.3 Physical Conditions

Resolute Bay, located on the southern shore of Cornwallis Islands in Parry Channel, experiences long, cold winters and short ice-free periods in the open-water season. Marine and tundra environments with exposed valley walls, talus slopes, and steep cliff faces rising above the ocean are characteristic of the area.

#### 6.3.1 Designated Environmental Areas

Designated areas in Canada meet the International Union for Conservation of Nature (IUCN) definition of protected area, which states protected areas are “a clearly defined geographic space, recognized, dedicated and managed through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural value” (ECCC, 2016). The United Nations *Convention on Biological Diversity* known as Aichi Target 11 (Convention on Biological Diversity, 2010), committed countries, including Canada, to conserving 10% of coastal and marine areas and 17% of terrestrial areas and inland waters by 2020. In December 2022, The United Nations *Convention on Biological Diversity* adopted the Kunming-Montreal Global Biodiversity Framework (GBF), which ensure that committed countries, including Canada, must enable that at least 30% of terrestrial and inland water areas, and of marine and coastal areas are conserved through governed systems of protected areas and other effective area-based conservation measures, as outlined in Target 3 (Convention on Biological Diversity, 2022; DFO, 2021). As of 2022, terrestrial protected areas covered over 213,000 km<sup>2</sup> (10.2%) of Nunavut, achieving the 2020 target, but falling short of the 2030 targets for terrestrial and inland waters (ECCC, 2023).

The RNLUP (NPC, 2023b) has also presented existing and proposed protected areas, some of which are included in the NMCA described in Section 7.1.1.1. While Resolute Bay is within the NBRLUP (NPC, 2000), it will be replaced with the RNLUP (NPC, 2023b) once it is approved. For the purposes of this Report, the

RNLUP has been used. Interactive maps from 2014, 2016, 2021 and 2023 are available on Interactive Maps website of the NPC<sup>1</sup> (NPC, 2023a).

The designated areas were considered in the existing conditions and effects review are summarized in Table 6-3, with a more detailed description provided in Section 3.2 (Figures 3-1, 3-2) of the ESEB Report (Dynamic Ocean & Worley Consulting, 2025c).

**Table 6-3: Designated Areas in Proximity to Resolute Bay**

Designated Habitat	Distance and Direction from Resolute Bay	Section in ESEB Report
National Marine Conservation Areas (NMCAs)	Talluritiup Imanga (TI) NMCA, located in Lancaster Sound and Baffin Bay. Resolute Bay is within the TI NMCA, however, a portion of the waterfront within the community is excluded through Article 4 of the IIBA (IIBA, 2019) to allow for the development of the community harbour.	3.2.1
Marine Protected Areas (MPAs)	Sarvarjuaq MPA (not designated but under discussion with DFO), approximately 375 km northeast.	3.2.2
	Tuvaijuittuq MPA, located on the northwest Ellesmere Island, approximately 570 km north.	
Other Effective Area-Based Conservation Measures (OECMs) [Marine Refuges]	Davis Strait Conservation Area (DSCA) and Disko Fan Conservation Area (DFCA) within the Eastern Arctic Bioregion of Baffin Bay near Davis Strait and are approximately 1,700 km and 1,500 km southeast respectively.	3.2.3
Ecologically and Biologically Significant Areas (EBSAs)	Resolute Passage: Resolute Bay is within it.	3.2.4
	Prince Leopold Island, approximately 150 km southeast.	
	Peel Sound, approximately 100 km south.	
	Penny Strait, approximately 100 km north.	
Polynyas	Pikialasorsuaq/North Water Polynya, located approximately 375 km northeast.	3.2.5

<sup>1</sup> Interactive Maps website of the NPC available at: <https://www.nunavut.ca/land-use-planning/interactive-maps>

Designated Habitat	Distance and Direction from Resolute Bay	Section in ESEB Report
Floe Edges	The entrance to Resolute Bay is within a floe edge, extending from Cornwallis Island to Somerset Island, and intersected by Griffith Island (NPC, 2023b).	3.2.6
National Wildlife Areas	Polar Bear Pass ( <i>Nanuit Itillinga</i> ) NWA. The Polar Bear Pass NWA is located on Bathurst Island approximately 100 km northwest.	3.2.7
Important Bird Areas (IBAs)	Cape Liddon, approximately 100 km east.	3.2.8
	Prince Leopold Island, approximately 150 km southeast.	
	Washington Point, approximately 115 km north.	
	Cheyne Islands, approximately 190 km north.	
Migratory Bird Sanctuaries (MBS)	Prince Leopold Island, approximately 150 km southeast.	3.2.9
National Parks	Sirmilik National Park, approximately 500 km east of Resolute Bay, on North Baffin Island.	3.4
	Qausuittuq (Bathurst Island) National Park, approximately 150 km northwest from Resolute Bay, on northern Bathurst Island and smaller surrounding islands.	
	Quttinirpaaq National Park, on northern Ellesmere Island, approximately 950 km northeast of Resolute Bay.	
Territorial Parks	Tamaarvik Territorial Park, approximately 560 km southeast.	3.5

### 6.3.2 Geological Site Conditions

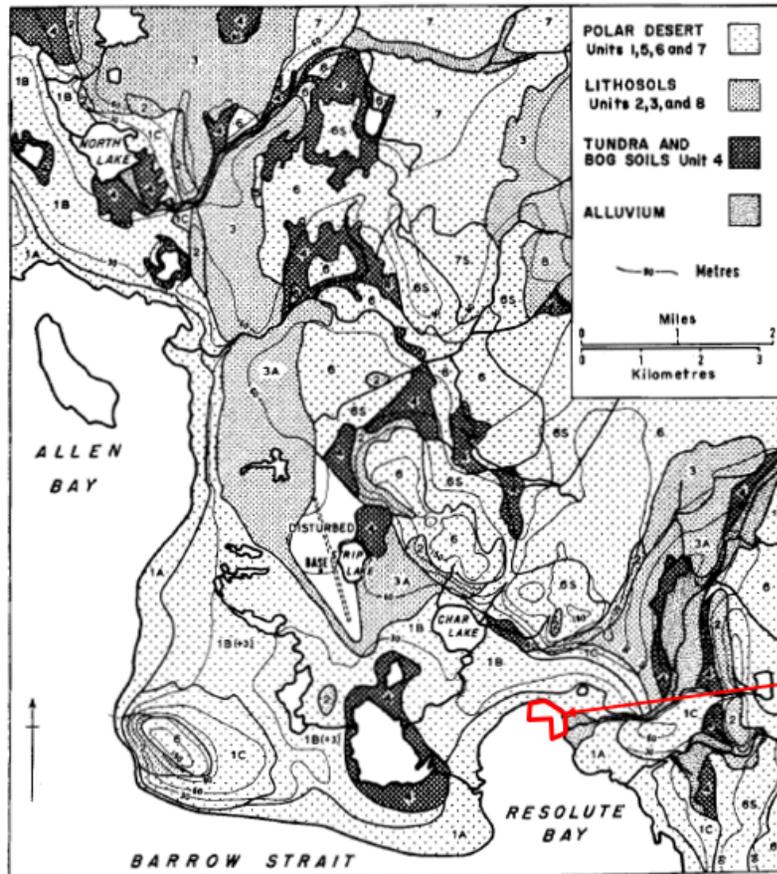
The surficial geology surrounding the community of Resolute Bay is discussed in “Soils and Terrain Units Around Resolute, Cornwallis Island” (Cruickshank 1971), as shown on the map extract on Figure 6-1. As shown on the surficial geology map, the shoreline has been classified as polar desert (symbols 1A and 1B) as well as alluvium. Polar desert deposits include active beach (1A (1)) with recent marine deposits, stones, ice push features, and unsorted materials up to 3 m above mean sea level (symbol 1A) and raised marine features with fresh form (1A (2)), usually with rounded or subangular stones, shelly and fine sand materials, patterned and sorted on level areas up to 18 m above mean sea level. Higher marine terrace features (1B) are found between 70 m to 90 m above mean sea level and include stones of variable roundness, sandy fine material, sorted and patterned ground, and solifluction modification on slopes. Alluvial deposits are found along and at the mouth of active streams and creeks feeding into Resolute Bay. Raised marine terraces are present up to 120 m above present sea level (Cruickshank, 1971) due to isostatic uplift following deglaciation.



Bedrock in the Resolute Bay area is taken from Canadian Geoscience Map 33, Geology, Tectonic Assemblage Map of Wellington Channel, Cornwallis and Western Devon Islands, Nunavut (Harrison *et al.*, 2014) and an extract is provided in Figure 6-2. Bedrock is within the Douro, Cape Storm and Allen Bay groups which are Ordovician to Silurian in age (416 to 488 million years ago) and part of the Franklinian Shelf. To the north of the community, bedrock also includes the Prince Alfred group which are Early Devonian in age (Devonian period occurred 358 to 416 million years ago) and are part of the Boothia 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. Both 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 (PAG).



*Unit 1*

**Raised marine shorelines**

**1A (1):** lowest level, active beach, recent marine deposits, stones angular or sub-angular, ice push features, unsorted material, height range to 10 to 12 feet (3 m.) above mean sea-level.

**1A (2):** raised marine features with fresh form, usually with rounded or sub-angular stones, shelly and fine sand materials, patterned and sorted on level areas, no plants, height range up to 50 to 60 feet (18 m.) above mean sea-level.

**1B:** higher marine terrace features, stones of variable roundness, sandy fine material, sorted and patterned ground, sporadic lichen and moss plants, solifluction modification on slopes, height range 50 to 300 feet (17 to 90 m.).

**1C:** raised marine materials and terraces merging with solifluction material from higher slopes, includes scree and solifluction material, frost shattered debris, sorted and patterned ground, <5 per cent plant cover, 200 to 400 feet (60 to 120 m.) above mean sea-level.

*Unit 4*

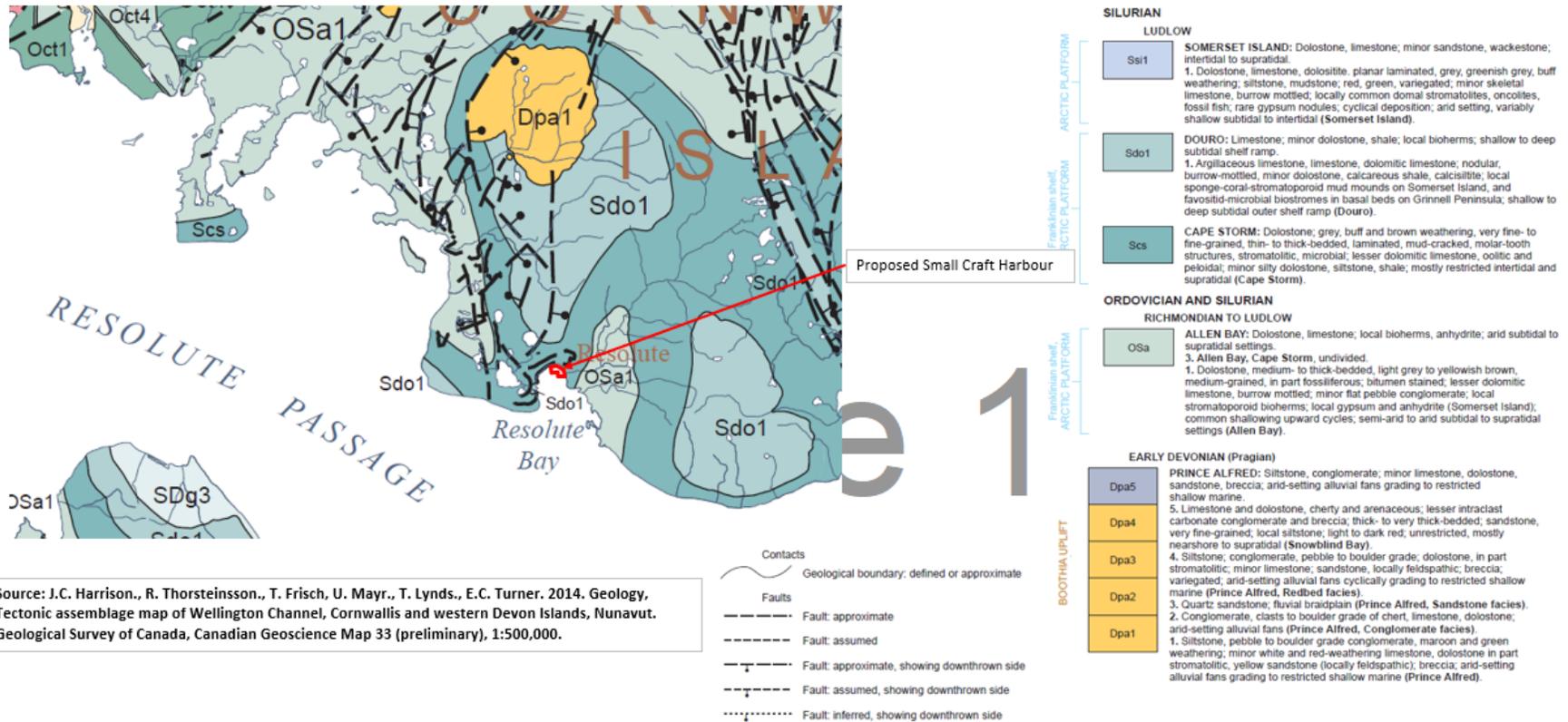
Seepage areas with shallow active layer, usually less than 10 inches (25 cm.). Organic surface horizon Ao 2" or less, and surface colonized by black lichens and mosses. Occurs on sloping sites and frequently develops on solifluction lobes, and soil stripes. High proportion of material is fine sand size.

Proposed Small Craft Harbour

Source: J.G. Cruickshank. 1971. Soils and Terrain Units Around Resolute, Cornwallis Island

**Figure 6-1: Resolute Bay – Surficial Geology**

Source: Cruickshank (1971)



**Figure 6-2: Resolute Bay – Bedrock Geology**



### 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 River 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 Mecham River, 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 river, 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 6-3). However, Worley Consulting 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.



**Figure 6-3: Distribution of Permafrost in Canada**

Source: Figure 1 in Ahlenius (2016)

### 6.3.5 Hydrology

The freshwater and marine watersheds pertinent to Resolute Bay are displayed in Figure 1-4 and described below.

#### 6.3.5.1 Fresh Water

In proximity of the community harbour, there are two lakes (Char Lake and Resolute Lake; see Figure 4-1) and three waterways (Creek No. 1 (unnamed), Mecham River and Resolute River; see Figure 1-1). Two waterway crossings, Creek No. 1 and Mecham River, intersect the haul road, and are non-fish bearing. Resolute River is on the opposite side of Resolute Bay to the community harbour and is fish bearing with potential for anadromous Arctic char (described in Section 4.4 of the ESEB Report (Dynamic Ocean & Worley Consulting, 2025c)).

- Creek No. 1 (unnamed), located approximately 2 km southeast of the community harbour, and 0.3 km north of the northern quarry. An existing damaged set of culverts are present at the existing haul road crossing.



- Mecham River, located 0.8 km southeast of the community harbour footprint. There are no culverts present at the river near the existing haul road alignment; locals currently drive through the shallow river.
- Resolute River, located about 1.5 km northwest of the community harbour on the western shore of Resolute Bay, and is fed mainly by Resolute Lake and Char Lake (see Figure 4-1 for lake locations).
- Two drainage paths with culvert crossings are located in proximity to the community harbour (Culvert Nos. 1 and 2, see Figure 6-4 for culvert locations).
  - Culvert No. 1: on the foreshore of the community harbour. This culvert is damaged and discharges run-off from the adjacent slope.
  - Culvert No. 2: approximately 0.3 km east of the community harbour.

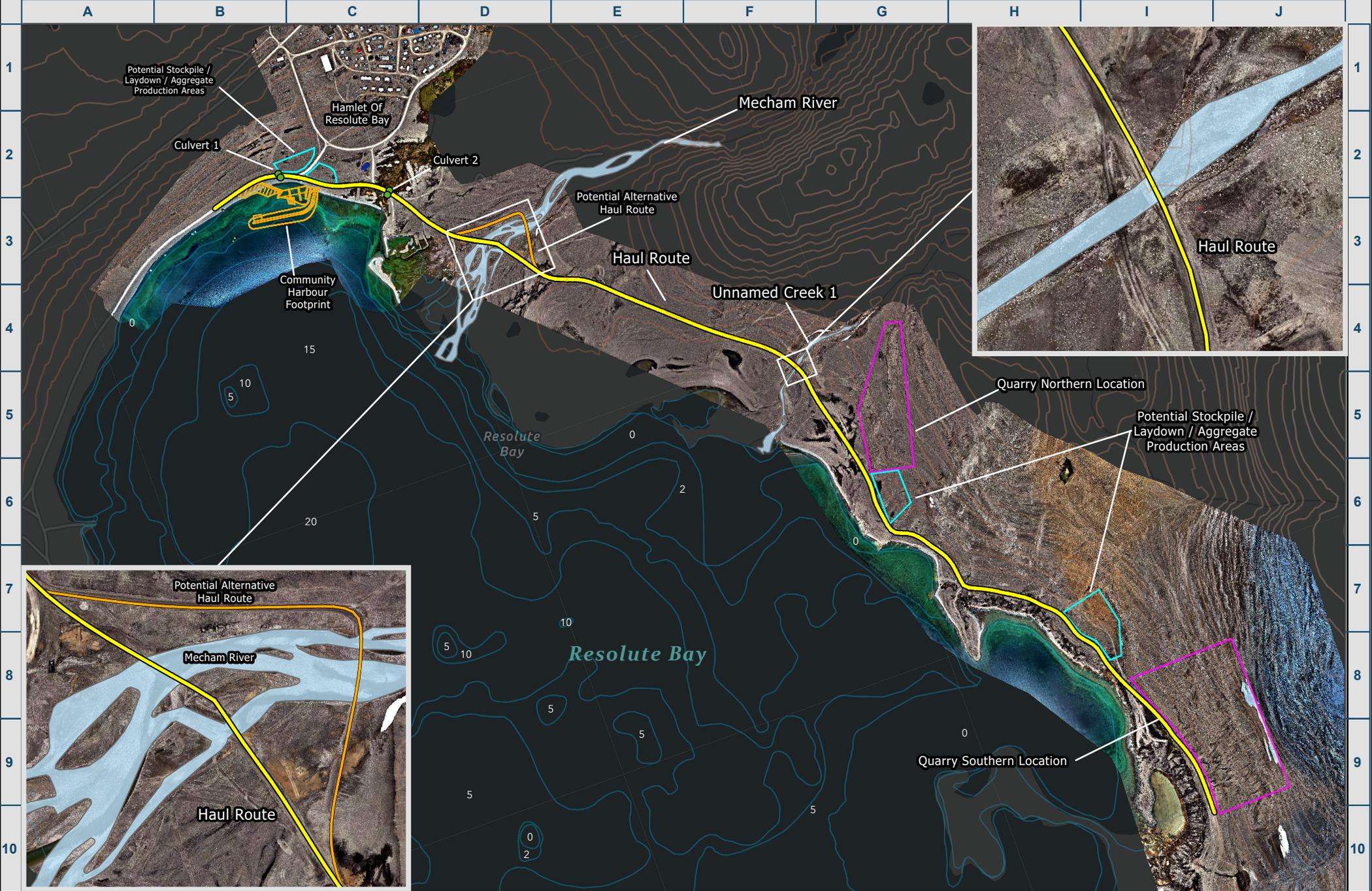
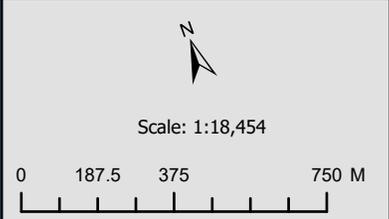


Figure 6-4  
Water Courses In Proximity  
to Project Study Areas



Spatial Reference  
PCS: NAD 1983 CSRS UTM Zone 15N  
Datum: North American 1983 CSRS  
Projection: Transverse Mercator  
Map Units: Meter

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### 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 (see Figure 1-4).

### 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 (GN, 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 (SO<sub>2</sub>) was measured at 0.12 µg/m<sup>3</sup>, well below the NAAQS annual standard of 30 µg/m<sup>3</sup>. The annual average nitrogen dioxide (NO<sub>2</sub>) was measured at 18.3 ppb, within the NAAQS of 32 ppb but above the CAAQS of 17 ppb. Ozone (O<sub>3</sub>), 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 SO<sub>2</sub> was measured at 0.7 µg/m<sup>3</sup>, far below the NAAQS annual standard of 30 µg/m<sup>3</sup>. The annual average NO<sub>2</sub> 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. O<sub>3</sub>, 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<sub>2.5</sub>) pollution (Aliabadi *et al.*, 2015). SO<sub>2</sub> pollution was affected by airport activities and ships anchoring in position (Aliabadi *et al.*, 2015). The maximum measured SO<sub>2</sub> concentration was 1.05 µg/m<sup>3</sup>, which is much lower than the Nunavut standards: 450 µg/m<sup>3</sup> (1-hour); 150 µg/m<sup>3</sup> (24-hour); and 30 µg/m<sup>3</sup> (annual). The PM<sub>2.5</sub> concentration was recorded up to 10 µg/m<sup>3</sup>, which is lower than the 24-hour standard of 30 µg/m<sup>3</sup>.

**Table 6-4: Standards for Air Quality Objectives in Nunavut**

Measured Pollutant	Averaging Time	Concentrations ( $\mu\text{g}/\text{m}^3$ ) unless otherwise specified			
		NAPS Data - Iqaluit (2019)	NAAQS (2011)	CAAQS (2020)	CAAQS (2025)
PM <sub>2.5</sub>	24-hour	20	30	27	-
	Annual	-	-	8	-
NO <sub>2</sub>	1-hour	79	400	60 ppb	42 ppb
	24-hour	56	200	-	-
	Annual	6	60	17 ppb	12 ppb
SO <sub>2</sub>	1-hour	8	450	70 ppb	65 ppb
	24-hour	3	150	-	-
	Annual	0.5	30	5 ppb	4 ppb
O <sub>3</sub>	8-hour	38 ppb	65 ppb	62 ppb	60 ppb
TSP	24-hour	-	120	-	-
	Annual	-	60	-	-

Source: GN (2011)

### 6.3.7 Noise

Noise data specific to the Project Study Area 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 road which is currently used frequently by trucks and other vehicles traveling along the foreshore. 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). 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 7-4 of the ESEB Report (Dynamic Ocean & Worley Consulting, 2025c). 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 Consulting, 2025c).

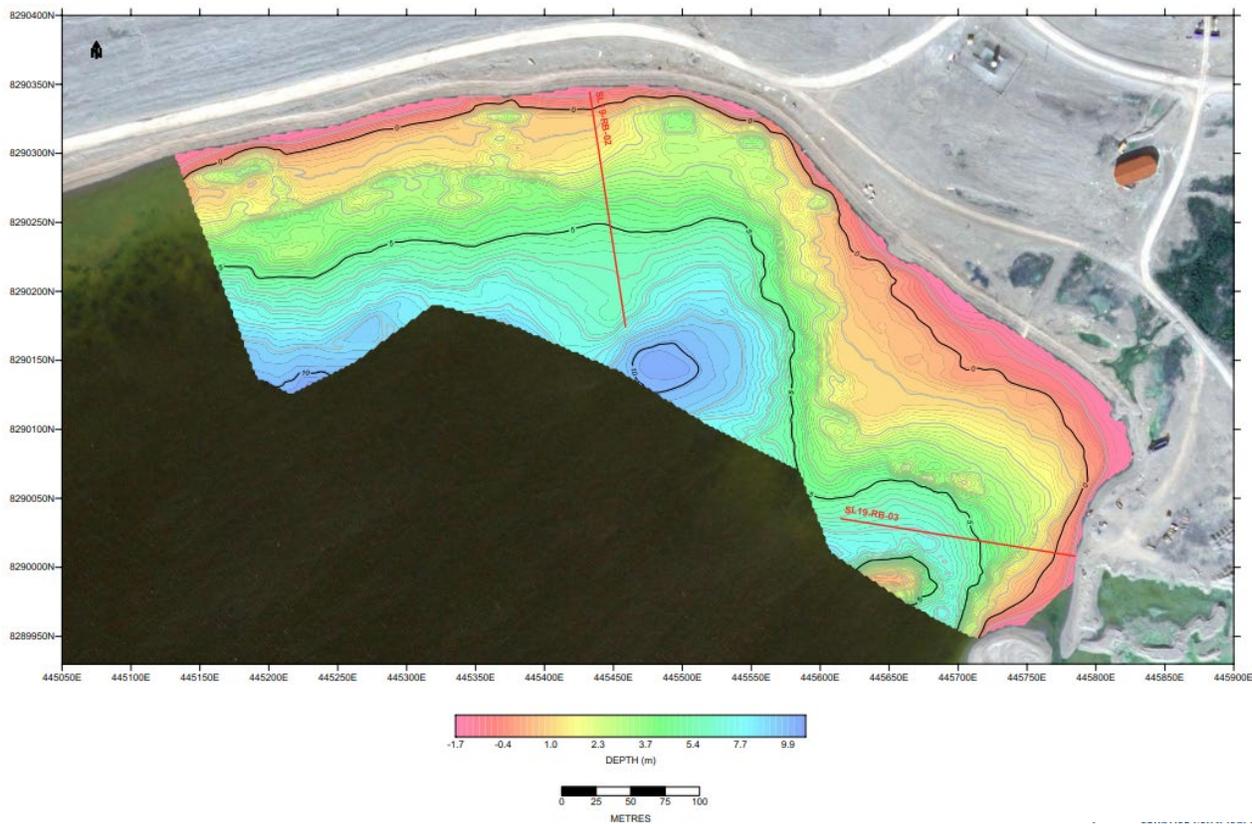
### 6.3.10 Coastal Morphology

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 Mecham River, 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 river, 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.



**Figure 6-5: Resolute Bay Foreshore Bathymetry**

Source: Figure 29 in Frontier Geosciences Inc. (2019)

### 6.3.12 Tides and Currents

Tide levels for Resolute Bay station were obtained from Canadian Hydrographic Services (CHS) Canadian Tide and Current Tables, Volume 4 (CHS, 2025), 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 water circulates clockwise from east to west. The Arctic Ocean connects to the Atlantic Ocean through the Baffin Island Current, a combination of the West Greenland current inflow, and Arctic outflow from channels of the Canadian Arctic Archipelago (Britannica & The Editors of Encyclopaedia, 1998).

In 2024, surface current data was collected in Resolute Bay using a drogue (a surface float with a Global Positioning System [GPS] tracker). The drogue was visually monitored using binoculars to track its location. Current data was collected for approximately one hour. The average and maximum current speed were 0.73 km/h and 4.10 km/h, respectively, with a net displacement towards the southeast (Section 4.6 of the ESEB Report (Dynamic Ocean & Worley Consulting, 2025c).

**Table 6-5: Tide Level at Resolute Bay**

Tide	Elevation (m, CD)
Highest High Water (HHW)	2.3
Higher High Water Large Tide (HHWLT)	2.0
Higher High Water Mean Tide (HHWMT)	1.6
Mean Water Level (MWL)	1.0
Lower Low Water Mean Tide (LLWMT)	0.4
Lower Low Water Large Tide (LLWLT)	0.0
Lowest Low Water (LLW)	-0.4

Source: Resolute Station (05560) in CHS (2025)

## 6.4 Biological Conditions

Given the harsh climates of the region, biological diversity surrounding Resolute Bay are mostly limited to treeless landscapes, migratory birds, and marine ecosystems.

### 6.4.1 Terrestrial Vegetation (Including Rare Plants)

Most of Nunavut, including the Project area, is situated within the Tundra Biome and Northern Arctic Ecozone (Ecological Stratification Working Group [ESWG] 1995). This ecozone is characterized by cold, dry landscapes with high winds and shallow soils, resulting in sparse, low-growing plant life. Dominant vegetation includes herb and lichen communities, with lichens found in rocky upland areas and herbs in wetter, sheltered valleys and along streams. The Project is specifically located within Ecoregion 12 –

Parry Islands Plateau, where vegetation is sparse and discontinuous, dominated by mosses, low-growing herbs, and shrubs such as arctic willow (*Salix arctica* Pall.) and sedges (*Carex* spp.).

Vegetation surveys of the terrestrial environment in the HRQ Study Area were conducted from 17 to 19 August 2019 by an experienced vegetation ecologist. An ecological land classification (ELC) field survey was completed to classify vegetation communities. All vascular and non-vascular species encountered were inventoried. Specimens of unknown species were collected and identified by a taxa expert.

Five distinct vegetation communities were identified including Upland Lichen Barren, Wetland Moss Lowland, Coastal Shoreline and Flats, Disturbed Human-Caused, and Open Water. The HRQ Study Area was covered predominantly by the Upland Lichen Barren community, which mostly consisted of barren shales and talus slopes with crustose lichens on rock surfaces. There were 46 vegetation species identified, including four shrub, six graminoid, 12 forb, 16 bryophyte, and eight lichen species. No rare plants or invasive plants were identified during field surveys.

There 46 vegetation species were identified, including four shrub, six graminoid, 12 forb, 16 bryophyte, and eight lichen species. No rare plants or invasive plants were identified during field surveys. The Upland Lichen Barren predominantly consisted of lichens, along with shrubs and forbs. Meanwhile, the Wetland Moss Lowland community was dominated by moss, followed by graminoids.

#### 6.4.2 Terrestrial Wildlife (including Habitat and Migratory Patterns)

In general, habitat near the Community Harbour Study Area is heavily disturbed and offers limited value for terrestrial wildlife. The human development in the Hamlet extends to the ocean's edge, with the beach area featuring structures, roads, and boats. Dogs along the shoreline likely deter wildlife, although buildings may provide cover for small mammals and weasels. The intertidal zone offers some foraging opportunities at low tide, but overall, the habitat quality is low due to frequent human activity and disturbance.

Within the HRQ Study Area, habitats available for wildlife are of low quality. The terrain is mostly barren rock with minimal vegetation, primarily crustose lichens, and some small lowland areas with graminoids and mosses. These areas provide limited cover or foraging opportunities for terrestrial wildlife. Security, escape, and thermal cover for small mammals are scarce across the HRQ Study Area.

A general reconnaissance survey of the HRQ Study Area was the focus of the wildlife fieldwork, which was conducted in conjunction with the vegetation survey. Incidental observations made outside the HRQ Study Area were included as part of the survey because some terrestrial wildlife are migratory or nomadic and travel long distances and have large home ranges. Terrestrial wildlife species identified or detected included arctic fox (*Vulpes lagopus*) and polar bear (*Ursus maritimus*). No other land mammals or terrestrial wildlife features (e.g. dens, burrows, diggings) were observed during the field survey.

#### 6.4.3 Migratory and Marine Birds (including Habitat and Migratory Patterns)

Habitat in the Community Harbour Study Area is of limited value to migratory and marine birds due to extensive human development, including structures, boats, and dogs along its length. Species that may

breed here are those tolerant of human disturbance, such as snow buntings (*Plectrophenax nivalis*) and common ravens (*Corvus corax*), which typically nest on bare ground or gravel. However, human presence and dogs likely discourage nesting. The intertidal zone offers foraging opportunities only for species tolerant of human activity, such as gulls and ravens. In contrast, the HRQ Study Area provides more natural habitats, including wet, dry, and barren areas, offering some value for nesting birds. No bird species are expected to nest in the DAS Study Area.

The field survey focused on the Community Harbour and HRQ Study Areas, but incidental observations were also recorded outside this area, which included the DAS Study Area. Eleven bird species were identified during the field survey including flocks of arctic terns (*Sterna paradisaea*), brants (*Branta bernicla*), glaucous gulls (*Larus hyperboreus*), parasitic jaegers (*Stercorarius parasiticus*), and snow buntings within the HRQ Study Area. In addition, a flock of snow geese (*Anser caerulescens*) were observed approximately 500 metres offshore and a flock of Baird's sandpiper (*Calidris bairdii*) were identified southwest and outside the Project Study Area. IQ indicates that eider ducks (*Somateria* spp.), gulls (*Larus* spp.), sandpipers (*Calidris* spp.), and northern fulmars (*Fulmarus glacialis*) are active during August and September, and ptarmigan (*Lagopus* spp.) are usually found more near ponds and lakes (IQ Workshop 2019 - Joadamee Amagoalik).

According to ECCC, the general nesting season for the region (N10: Arctic Plains and Mountains, Bird Conservation Region 3) is between late-May and mid-August, and the primary season (61-100% 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 (*Sterna paradisaea*), nest in the south quarry location and within about 15 m of the shoreline (IQ Workshop 2019 - 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 (18 to 19 August 2019) and 2024 (27 to 28 August 2024) 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 68 m 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 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 community harbour site and reference sites in both 2019 and 2024. However, marine vegetation at the community harbour site appeared noticeably less healthy compared to the surrounding reference sites. Given the potential impacts from wastewater contamination, the habitat quality of the community harbour 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 Area, 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 Area. These definitions are provided in Section 6.4.5.1.

**Table 6-6: Occurrence of Marine Focal Species**

Species (Common Name)	Species (Latin Name)	Species Spatial Category	Type	Seasonal Occurrence
amphipod	<i>Gammarus</i> sp.	Resident	Benthic invertebrate	Year-round
Arctic char	<i>Salvelinus alpinus</i>	Anadromous	Pelagic fish	Open-water season
Arctic cod	<i>Boreogadus saida</i>	Visitor	Pelagic fish	Open-water season
bearded seal	<i>Erignathus barbatus</i> <i>ssp. Barbatus</i>	Resident	Pinniped	Summer, Fall, Other seasons indicated by harvest data
beluga whale	<i>Delphinapterus leucas</i>	Resident	Cetacean	Spring, Summer, Fall

Species (Common Name)	Species (Latin Name)	Species Spatial Category	Type	Seasonal Occurrence
bowhead whale	<i>Balaena mysticetus</i>	Resident	Cetacean	Summer
harp seal	<i>Pagophilus groenlandicus</i>	Visitor	Pinniped	Summer, Fall, Other seasons indicated by harvest data
hooded seal	<i>Cystophora cristata</i>	Visitor	Pinniped	Summer, Fall. Spring and Winter ice dependent
killer whale	<i>Orcinus orca</i>	Visitor	Cetacean	Spring, Summer, Fall
narwhal	<i>Monodon Monoceros</i>	Resident	Cetacean	Summer
polar bear	<i>Ursus maritimus</i>	Resident	Fissiped	Spring, Summer, Fall
ringed seal	<i>Pusa hispida ssp. Hispida</i>	Resident	Pinniped	Spring, Summer, Fall, Winter
sculpin	<i>Myoxocephalus Scorpius</i> (shorthorn) <i>Gymnocanthus tricuspis</i> (Arctic staghorn)	Resident	Bottom dwelling fish	Year-round
truncate soft-shell clam	<i>Mya truncate</i>	Resident	Bivalve invertebrate	Year-round
walrus	<i>Odobenus rosmarus ssp. Rosmarus</i>	Resident	Pinniped	Summer, Fall

#### 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). They 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 (GN, 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 Nunavut Wildlife Harvest Study (NWHS) (June 1996 to 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 to 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 & Reist, 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/m<sup>2</sup> to upwards of 30/m<sup>2</sup>. Clam presence at Resolute Bay was confirmed during IQ Workshop, but were not harvested over concerns due to the wastewater outfall (IQ Workshop 2019 - Peter Amarualik). 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 limacine*, *Limacina helicina*).
- Hydroid (species not identified).

#### 6.4.5.1.2 Freshwater Fish

Resolute River is located on the western shore of Resolute Bay and fed by Resolute and Char lakes (Figure 7-11 in the ESEB Report (Dynamic Ocean & Worley Consulting, 2025c)). Resolute Creek may facilitate sea run Arctic char into the connecting lakes (see Figure 4-1) (IQ Workshop 2019 - Peter Amarualik), and into nearby creeks (IQ Workshop 2019 - 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 to 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 (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, 2018). 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, 2018). 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 (Higdon, 2017; Remnant R.A. & Thomas, 1992). 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 (GN, 2018a; QIA, 2018). 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 (COSEWIC, 2019; Goodwin, 1990; Natures Edge, 2015). Resolute Bay is located within the Viscount Melville Sound (DFO, 2011a), near a high-density area of ringed seals (NPC, 2008). 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, 2019). Bearded seals are known to winter in Lancaster Sound and Davis Strait (COSEWIC, 2007). According to the NPC, Resolute Bay lies just south of a high-density area identified for bearded seals (NPC, 2017), 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, 2011b). Atlantic walrus are year-round residents of the Arctic, though their distribution varies seasonally with changes in ice cover (COSEWIC, 2017). 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, 2018). The waters surrounding Resolute Bay fall within the Nirjutiqavvik National Wildlife Area, which provides important feeding grounds for walrus (Government of Canada, 2022b). Additional summer haul-out sites have been reported throughout Ellesmere Island and Devon Island (Government of Nunavut, 2012c).

Polar bears (*Ursus maritimus*) are found throughout the high Arctic, preferring shallow, ice-covered areas with productive upwelling. Globally classified as Vulnerable by the IUCN, there are 19 recognized subpopulations of polar bears, 14 of which are found in Canada (COSEWIC, 2018). The Lancaster Sound subpopulation (Lancaster Sound Management Unit) overlaps with the Resolute Bay area, while the Grise Fiord, Norwegian Bay, and Kane Basin subpopulations are nearby (Government of Canada, 2023). Polar bear life history is closely tied to that of the ringed seal, their primary prey species (QIA, 2018). Polar bears give birth before ringed seals do and hunt ringed seal pups either in their dens or out on open ice (QIA, 2018). Coburg Island and its surrounding waters are part of the Nirjutiqavvik National Wildlife Area, which provides critical feeding grounds for polar bears (Government of Canada, 2024b).

Though resident to the region, each of these marine mammals are often passing through the area, utilizing pelagic and benthic habitats primarily for feeding during migration. It is likely that habitat

surrounding the Project site can support the lower trophic species that marine mammals feed on, and thus there are minimal impacts expected from the Project construction on resident marine mammals.

#### 6.4.6 Species at Risk

Species discussed in this section have been assessed by international (IUCN), federal (Committee on the Status of Endangered Wildlife in Canada [COSEWIC] and *Species at Risk Act* [SARA]), territorial agencies (GN-DoE), and the Draft Nunavut LUP (NPC, 2000). A list of at-risk marine fish, mammals, and terrestrial species potentially occurring in the Project Study Area, and their likelihood of occurrence, is provided in Table 3-1 of the ESEB Report (Dynamic Ocean & Worley Consulting, 2025c) Threatened or Endangered species may occur, but none were identified during field program (see applicable sections for more information).

No relevant species are identified for Resolute Bay from the DFO Aquatic SAR map (DFO, 2024b).

#### 6.5 Socioeconomic Conditions

The Hamlet of Resolute or Resolute Bay, also known locally as Quaasuittuq meaning “the place with no dawn” in Inuktitut, is located on the southern coast of Cornwallis Island. It is the second most northern community in Nunavut, after Grise Fiord. Due to its northern location, Resolute Bay is a gateway for expeditions to the North Pole and Quttinirpaaq (Ellesmere Island) National Park.

The nearest communities are Grise Fiord, Arctic Bay, and Pond Inlet (see Section 1.17, Figure 1-4).

##### 6.5.1 Population and Education

According to 2021 census data from Statistics Canada, the total population of Resolute Bay is 183, representing a decrease of 7.6% since 2016. The population is young, with children aged 0-14 years representing just under a third of the total population (60 individuals) and a median age of 25.8 years for the total population.

The total self-declared Inuit population is 165 or 91.7% of the total population according to Statistics Canada 2021 census data.

In 2021, of the total population 15 years old and over in Resolute Bay: 20% (25 individuals) held a secondary school diploma (or equivalent) as their highest educational attainment and an additional 25 individuals held a postsecondary certificate, diploma or degree. Of the 25 individuals with postsecondary accreditations, 10 individuals (40%) held apprenticeship or trades certificates; and 15 individuals (60%) graduated with a Vocational College, Collège d'enseignement général et professionnel (CEGEP), or other non-university certificate or diploma. Of the total population 15 years old and over, 70 individuals (61.5%) held no certificate, diploma or degree.

According to the 2021 census, 47.2 % of respondents identified English as their mother tongue, 38.9% identified Inuktitut, and 13.9 % reported both languages. This reflects the community's bilingual nature,



with English and Inuktitut as the primary languages spoken. Among employed residents in Resolute Bay, English was reported as the language most often used in work settings.

### 6.5.2 Employment and Economic Activity

Resolute Bay has a higher participation rate, and a lower unemployment rate compared to Nunavut as a whole according to 2021 census data. The participation rate in Resolute Bay was reported as 64.0 % compared to 58.6 % for Nunavut and the unemployment rate was reported as 12.5 % in Resolute Bay compared to 16.8 % for Nunavut. The employment rate was 56% for Resolute Bay vs. 48.7 % for the territory.

The economy in Resolute Bay can be characterized as a combination of traditional subsistence activities (including hunting, fishing, trapping and gathering) and wage based economic activities. The main employers in Resolute Bay are the Hamlet, GN, ATCO, the Tudjaat Co-op and the airport. Many residents continue to rely heavily on fish, seal and whale hunting, both for subsistence and as a cultural activity, including customary resource sharing practices.

### 6.5.3 Land and Resource Use

#### 6.5.3.1 Harvesting and Food Security

Hunting remains essential to life in Resolute Bay. Harvesting of ringed seal, Arctic char, narwhal, and caribou are of particular importance. The availability of traditionally harvested foods in Resolute Bay is crucial because it lowers the demand for imported food which is expensive and most often less nutritious. Additionally, the harvesting, preparation, and sharing of meat and skins offers important opportunities for community members to maintain Inuit cultural practices. Residents also buy food at the Co-Op and order food via the sealift. However, *“Low incomes and high food prices mean most Inuit households can afford less than half the cost of a healthy food basket, while very low-income households can afford only 6–13% of the cost of a healthy food basket”* (ITK, 2021).

Harvesting locations identified during the IQ program have been provided in the Land Use and Occupancy map (Figure 4-1).

Apart from the occasional marine mammal, harvesting does not occur in Resolute Bay due to the wastewater outfall (IQ Workshops 2019 and 2024). There is no harvesting for clams or other bivalves, kelp 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. December 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 Senior Administrative Office (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. November 2018, June 2019, and August 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 complementary hotel 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, 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. December 2024).

The sealift is a vital link for all communities in Nunavut. Details on the sealift operations are provided in Section 1.2.

#### 6.5.5 Human Health and Community Wellness

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. December 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 (GN, 2018b).

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 Frontec Ltd. (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, 2023).

The NHC'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 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. November 2024).

The GN contracts ATCO 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, 1999). As the system was designed for 1500 people, there was insufficient flow, leading to numerous freeze-ups and failures within the system. 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 high-density polyethylene pipe. The new treatment plant houses first-stage multi-media filters (gravel, sand and anthracite), second-stage cartridge filters, ultraviolet (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. November 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 75 m north of the existing bulk metals disposal site. The community harbour site was originally built in 2001 as a waste disposal site but was never licenced or used (GN, 2024a). The site has an existing perimeter fence with an entrance gate and an approximate area of 50,000 m<sup>2</sup> (GN, 2024a). Funding for the solid waste site upgrades was approved by Infrastructure Canada in 2017 with an expected completion by 2027 (Infrastructure Canada, accessed November 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. December 2024).



**Table 6-7: Bulk Fuel Storage Capacity for Resolute Bay**

Total Diesel (L)	Total Gasoline (L)	Total Jet A-1 (L)
13,663,313	4,049,707	12,949,287

Source: Nunavut Maligaliurvia (2023)

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 that enough firefighters are in town at any given time to respond should one occur.

The RCMP detachment office is staffed with two full time officers.

Landline, mobile, and internet services are provided by NorthwesTel/Bell Mobility and Qiniq. The local community radio has recently started broadcasting again, although it currently operates without a host.

### 6.5.7 Archaeological and Culturally Significant Sites

Two AIAs were conducted in support of the Project, in 2019 and 2024. The 2024 AIA program was conducted under NU Permit 2024-59 and focused on areas that were not included in the previous AIA and may be impacted by the development, including two proposed quarry areas and access road corridor.

The 2024 AIA was completed between 23 and 25 August and 01 September 2024 consisting of pedestrian survey of all areas that may be impacted by the development of the Project. This includes areas that were not included in the 2019 survey for portions of the small craft harbour, potential borrow sites and access roads.

Five previously recorded sites were revisited, and four new sites were documented. No archaeological or paleontological sites were identified within the proposed northern quarry study area or along the haul route. In contrast, the alternative Southern Quarry area contains up to five sites that would require mitigation.

## 7 Potential Impacts and Proposed Mitigation

Potential impacts were considered relative to the proposed construction activities (described in Section 1.11) for the Project Study Area (described in Section 6.2) and specific to each of the VECs and VSECs. Impacts were considered for their potential to affect the baseline environmental and socio-economic conditions, as well as by the criteria NIRB uses for screening decisions:

- Could the Project have significant adverse effects on the environment, and Inuit harvesting?
- Could the Project have significant adverse effects on the well-being of northerners?
- Does the Project cause significant public concern?
- Does the proposal involve new technologies with unknown effects?

Potential impacts were categorized by the terms in Table 7-1 and are summarized in Table 7-2. For the construction phase, the Project Study Area were all considered (described in Section 6.2), however during the operations phase, the consideration is exclusive to the Community Harbour Study Area. The descriptions pertinent to the construction and operations phases are summarized in Sections 7.1 and 0.

All impacts were considered either “Positive” or “Negative and Mitigatable” and thus no residual effects are expected subsequent to implementation of mitigation and monitoring measures.

Mitigation and monitoring measures will be implemented for the construction phase to minimize negative effects. These measures are summarized in the subsections below and detailed in the CEMP (Dynamic Ocean & Worley Consulting, 2025b). Further, the contractor will be required to develop Construction Work Plans (CWP) that will detail the methodology for implementing mitigation and monitoring measures (Sections 8.3).

**Table 7-1: Screening Assessment Categories**

Category	Term in Table 7-2	Definition
Positive	P	Net gain in functionality after construction or during operations
Negative, non-mitigatable	N	Negative and will remain as a residual effect, after construction or during operations
Negative, mitigatable	M	Negative, but measures can be put in place to minimize or eliminate the effect
Unknown	U	Information is not available to confirm what effects will be
No impact	Blank	There is a no effect, and thus considered neutral

Note: see Table 7-2 or VECs and VSECs categories

Table 7-2: Project Specific Information Requirement Environmental Effects Table

	Physical	Designated Environmental Areas	Geological Site Conditions	Surface Features	Ground Stability and Permafrost	Hydrology	Air Quality	Noise	Climate Conditions	Marine Sediment and Water Quality	Coastal Morphology and Bathymetry	Tides and Currents	Biological	Vegetation (Terrestrial)	Wildlife	Birds (Migratory and Marine)	Marine Fish Habitat	Fish and Marine Mammals	Species at Risk	Socio-Economic	Employment, training and business opportunities	Land and resource use	Tourism	Local and regional traffic patterns	Community Health and Wellness	Community Infrastructure and services	Archaeological and culturally significant sites	
<b>Construction</b>																												
Infill							M	M		M	M			M	M	M	M	M	M		P	M	M	M	M	M		
Dredging							M	M		M	M					M	M	M	M		P	M	M	M	M	M		
Installation of Floating docks							M	M		M							M	M	M		P	M	M	M	M	M		
Drilling and Blasting					M		M	M		M					M		M	M	M		P	M	M	M	M	M	M	M <sup>1</sup>
Crushing and Screening							M	M							M				M		P	M	M	M	M	M	M	M <sup>1</sup>
Stockpiling																			M		P	M	M	M	M	M	M	M <sup>1</sup>
Haul Road Upgrades														M	M	M					P	M	M	M	M	M	M	M <sup>1</sup>
Drainage for quarry or haul roads (culverts)					M										M	M					P	M	M	M	M	M		
Mobilization/Demobilization of equipment							M	M						M					M		P	M	M	M	M	M		
Construction equipment (marine, land based)							M	M		M				M	M	M	M	M	M		P	M	M	M	M	M		
Light (illumination of Project site)														M	M	M		M	M		P	M	M	M	M	M		
Fuel storage, refueling, accidental spills							M	M		M				M	M	M	M	M	M		P	M	M	M	M	M		
Construction workforce							M	M													P	M	M	M	M	M		
<b>Operation</b>																												
Marine Access							M	M													P	P	P	P	P	P		
Road access							M	M							M	M												
Fuel storage, refueling, accidental spills							M	M						M	M	M											M	
Cargo delivery (sealift operations)																												
Boat launching																					P	P	P	P	P	P		
<b>Decommissioning</b>																												
Not applicable.																												

Note: See Table 7-1 for screening categories

1. Only if the southern quarry is used

## 7.1 Construction Phase Impacts and Mitigation

Regulatory compliance requirements will be identified in the CEMP (Dynamic Ocean & Worley Consulting, 2025b), in CWPs, and in permits and approvals issued by pertinent AHJs. The contractor will be responsible for the design and implementation of a compliance monitoring program, which will be overseen by GN-CGS. Roles and responsibilities pertinent to the regulatory compliance program are described in the CEMP (Dynamic Ocean & Worley Consulting, 2025b).

### 7.1.1 Physical Components

Construction activities as described in Section 1.18. that have the potential to impact the physical VECs identified are summarized in Table 7-2 and detailed below.

#### 7.1.1.1 Designated Environmental Areas

There will be no impact to the designated environmental areas due to the construction of community harbour, quarry, and haul road.

#### 7.1.1.2 Geological Site Conditions

Regarding the PAG of the quarry rock material, an assessment of ARD and ML potential was conducted on one rock sample representative of the major rock type from the proposed quarry locations in 2019. Acid Rock Drainage/metal leaching testing results indicated basic or alkaline tendency, with very low concentrations of AGP. Subsequent testing of two (2) rock samples collected from drilling is currently underway.

Certain sulphide minerals in bedrock can be problematic from an ARD perspective. Unstable sulphides can react when exposed to air causing acid generation and ML. If left in the natural state, sulphide minerals remain benign.

It is unlikely that the proposed rock quarry sources contain PAG, however, the additional laboratory testing will confirm this.

#### 7.1.1.3 Surface Features

Impacts on surface features due to construction of the quarry and community harbour are expected to be minimal and limited to the footprint of the quarry, community harbour and haul road.

#### 7.1.1.4 Ground Stability and Permafrost

No impacts to ground stability pertaining to permafrost thaw in the intertidal zone within the Community Harbour Study Area are anticipated during construction; however, this is to be confirmed based on the results of the upcoming site investigation in April 2025. Permafrost is not likely to affect slopes after blasting at the quarry for rock production; however, slopes and drainage will need to be monitored / drained effectively.

Any construction or maintenance activities for the haul road can cause ground disturbance and/or change in the ground/air temperature balance. This would cause an increase in the active layer thickness and permafrost degradation. Any thawing of permafrost may lead to differential settlement problems that may lead to ponding of surface water, erosion and cause failure of the proposed structure. Any construction in low lying areas that are ice rich and have poor drainage would require that the granular working surface (embankment) is constructed to a suitable thickness (at least 1 m to 1.5 m) before any surface course is applied to limit any disturbance to the thermal regime that would induce thawing.

While no impacts due to ground stability and permafrost are expected, the following measures will be required:

- Retain suitable embankments thickness to limit disturbance to thermal regime.
- Road usage would only be used for relatively short period of time with heavy equipment.
- Monitoring the road for stability concerns.
- Design of the haul road improvements will allow for pullouts for resident vehicles and rock trucks to pass one another and to soften tight turns. This will be determined by the contractor.

#### 7.1.1.5 Hydrology

It is not expected that there will be impacts to hydrology due to the construction of the community harbour. Construction will not impact ice cover in Resolute Bay or Lancaster Sound. The ice in the community harbour is anticipated to thaw later and freeze up earlier than the existing nearshore conditions, reducing the overall accessibility period of boats in the shoulder season. The community is aware of and accepting of this inevitable limitation. The diversion of the small drainage ditches / culverts at / near the community harbour will have no negative effects as the drainage will be maintained and is not expected to be in place for a significant period. The streams that flow into the community harbour are known to be non-fish bearing watercourses.

Along the quarry and haul road, the contractor will construct appropriately designed culverts if required during upgrades to the haul road. Further, the contractor will be required to implement appropriate drainage at the quarry site, if necessary. Drainage at the proposed quarry locations flows west to southwest towards the bay.

Impacts to hydrology are not anticipated, but the following measures will be implemented for best practices:

- Work site boundaries will be flagged to prevent inadvertent loss or alteration of habitat.
- Water flow will be maintained in lowland areas by installing culverts and/or other drainage techniques during road construction as deemed appropriate.
- Installation of appropriate SEC measures implemented as required.

#### 7.1.1.6 Air Quality

Impacts to air quality are considered negative but mitigatable. Minimum compliance requirements to manage and respond to concerns are detailed in Section 5.4.6 (Table 5-6) of the CEMP (Dynamic Ocean & Worley Consulting, 2025b). Where relevant, CWP's will be developed by the contractor to manage specific concerns (Section 8.3.1).

There is the potential for increase of air contaminants such as NO<sub>2</sub> and SO<sub>2</sub> to the atmosphere from diesel- and gas-powered vehicles which will be operating at the community harbour, along the haul road and at the quarry. The primary potential impact to air quality from the Project is expected be dust generated from blasting and crushing at the quarry, rock transfer, stockpile wind erosion, and rock hauling.

The following measures are designed to mitigate potential negative impacts to air quality (further detailed in the CEMP (Dynamic Ocean & Worley Consulting, 2025b):

- The contractor will have an appropriate inspection and maintenance program in place for all construction equipment and vehicles.
- Appropriate measures will be included in the CTMP (Section 8.3.3) to identify speed limits or other actions equipment operators need to consider minimizing dust, wildlife mortality, and other negative effects. The maximum speed limit will be 20 km/hr.
- Selection of appropriate construction material for any road construction that will not require significant dust management efforts.
- Use of approved dust suppressants and/or watering to reduce dust generation. Dust suppressants will be in accordance with the GN, Department of Sustainable Development, Environmental Protection Service, and Environmental Guideline for Dust Suppression (GN, 2002).
- Proactive maintenance to address problem areas of the haul route which may produce significant dust.
- Implementation of a CQBMP (see Section 8.3.5).

#### 7.1.1.7 Noise

Impacts to noise are considered negative but mitigatable.

Nearly all Project construction activities and components have the potential to affect noise levels (Table 7-2). The community harbour is over 400m from the nearest residences. The use of heavy equipment and machinery during construction will be comparable to existing equipment used in the Hamlet.

The planned quarry is located outside the residential portion of the Hamlet. There are two cabins near the proposed quarry. The closet cabin is approximately 100 m north of the proposed north quarry, and the other is 300m south. The greatest source of increased noise at the quarry will result from blasting,

screening and crushing activities. Similarly with the community harbour, the use of other heavy equipment and machinery at the quarry will be comparable to existing equipment used in the area.

In the absence of a noise by-law in Resolute Bay, timing restrictions will be agreed with the Hamlet. It is currently envisaged that there will only be one 12-hour shift per day. Specific activities such as blasting may require further timing restrictions. Non-disruptive construction activities that may be required outside of the 12-hour workday will proceed only after consulting with the community and obtaining approval from the Hamlet.

The following measures are designed to mitigate potential negative impacts to noise (further detailed in the CEMP (Dynamic Ocean & Worley Consulting, 2025b)):

- The contractor will have an appropriate inspection and maintenance program in place for all construction equipment and vehicles.
- Implement control technologies such as the installation of silencers and mufflers on equipment where appropriate, limitations on engine revving where applicable.
- Locating and orientating equipment to minimize propagation of noise in critical directions of receptors.
- Limit revving of engines on mobile or stationary machines.
- As there is no applicable noise by-law, timing restrictions will be agreed through discussion with the Hamlet.
- A notification protocol with input from the Hamlet and residents for advance notification of planned noise-causing activities, such as blasting.

Potential impacts of noise on biological receptors is discussed in other sections for terrestrial wildlife (Section 7.1.2.2), migratory and marine birds (Section 7.1.2.3) and fish and marine mammals (Section 7.1.2.5).

#### 7.1.1.8 Climate Conditions

There will be no impacts to climate conditions due to the construction of the community harbour.

#### 7.1.1.9 Marine Sediment and Water Quality

Impacts to marine sediment and water quality are considered negative but mitigatable. Minimum compliance requirements to manage and respond to concerns are detailed in the CEMP (Dynamic Ocean & Worley Consulting, 2025b). Where relevant, CWPs will be developed by the contractor to manage specific concerns (Section 8.3).

Potential impacts to marine sediment and water quality are summarized below.

#### 7.1.1.9.1 Decreased Water Quality Due to Sediment Mobilization

During construction, there is the potential for mobilization or introduction of sediment into the marine environment. A compliance monitoring program will be in place to confirm sediment plumes do not exceed CCME turbidity thresholds.

Further to that, appropriate SEC measures will be required to confirm that land-based activities do not result in excessive sediment being introduced to the marine environment.

#### 7.1.1.9.2 Decreased Water Quality Due to the Deleterious Substances

Use of construction equipment on (e.g. barge, ice) or near the marine environment during the Project has potential for accidental spills of deleterious substances. A CSPRP (see Section 8.3.4) will be developed and implemented by the contractor to confirm appropriate measures are in place to respond to accidental spills of deleterious substances. The CSPRP will include standard preventative measures (e.g. use of secondary containment (spill trays), spill response protocols).

The following measures are designed to mitigate potential negative impacts to marine sediment and water quality (further detailed within the CEMP (Dynamic Ocean & Worley Consulting, 2025b)).

- A qualified Environmental Monitor (EM) will be present during construction activities.
- A documentation and reporting process will be managed by the contractor to confirm disturbance, injury or death of any land or marine wildlife due to Project construction.
- The contractor will have an appropriate inspection and maintenance program in place for all construction equipment and vehicles (including brake checks).
- A turbidity monitoring program will be in place to confirm appropriate measures are in place for works in or near water that have the potential for sediment mobilization (see Section 5.5.4 of the CEMP (Dynamic Ocean & Worley Consulting, 2025b)).
- The EM will confirm appropriate SEC monitoring measures are in place to confirm that land-based activities do not result in sediment or other deleterious substances entering aquatic environments (marine, freshwater). Where appropriate equipment installations will be undertaken (e.g. turbidity curtain, silt fences).
- The CSPRP will detail response procedures to be implemented in the event of an accidental release; and refuelling and storage practices for operation of equipment over or near water (see Section 8.3.4).
- Fuel storage and transfer measures will be detailed in the CSPRP (see Section 8.3.4) and include appropriate measures for fuelling near or over water. At no time will storage of fuel be less than 31 m from aquatic watercourses (marine, freshwater).
- Stockpiling and storage of material must occur in upland designated areas and controlled in a way that debris and sediment will not enter the marine or freshwater environment.

- Actions to prevent and respond to accidental release of deleterious substances into the marine environment will be undertaken by the EM. Minimum measures will be detailed in the Contractors CEMP (CCEMP) (Section 8.3.1) and CSPRP (see Section 8.3.4).

#### 7.1.1.10 Coastal Morphology

The impacts to coastal morphology are minimal and localized to the Project footprint.

Shoreline erosion is restricted to the open water months when the shorelines are not protected by ice. Warming oceanwaters along with longer open water seasons will allow for greater storm surge and shoreline erosion. Reduced land-fast ice, which normally provides protection from erosion, will expose new areas to flooding and erosion. The existing beach in the vicinity of the community harbour is prone to wave attack in storms, causing changes to the nearshore shoreline.

Examination of historical Google Earth images shows that the shoreline morphology in Resolute Bay is relatively active. The interplay of river inputs and storm driven littoral currents are the key reasons for the nearshore processes. It is also understood that human interferences have played a role in recent shoreline changes. There are pronounced morphological changes on the east shoreline. According to residents, previous local attempts at developing this area have failed due to infilling. The west shoreline is less active, but signs of sediment movement are evident.

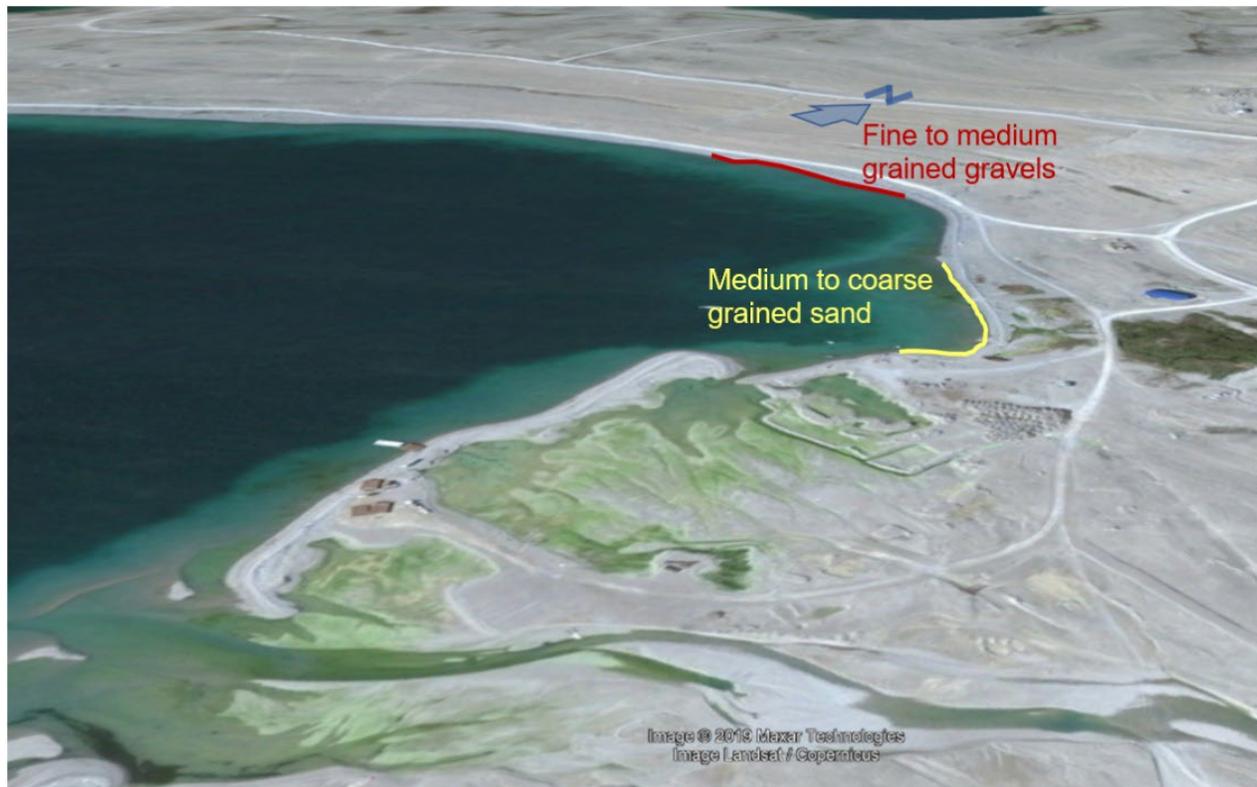
Due to the shoreline orientation relative to dominant southerly storms, net sediment movement along the east and west shorelines is expected to be northward. Local knowledge indicates that the beach on the west side is eroding and that there is net filling on the east side.

Sediment movement analysis for the near shore areas is technically challenging and results are often associated with a high degree of uncertainty, because the nearshore processes are complex interplays of wave-current and spatial and temporal variability of sediment composition. Such uncertainty can be reduced with enough historical and field observation of sediment properties and morphology.

It was evident from the information and data collected during the 2019 and 2024 field program that the surficial materials are largely compact and comprised of larger material in Resolute Bay. The intertidal and nearshore zones are mostly comprised of gravel and cobbles with pockets of finer material. The results of seismic refraction testing are also consistent with the findings of the beach material assessment. It was not successful to use a Ponar grab sampler in 2019, which is a sampling device used on marine vessels to collect undisturbed sample of bottom materials, to collect surface sediment samples, due to the compact nature of the seabed, further samples will be gathered in the 2025 geotechnical investigation program. In this context, the sediment transport analysis for Resolute Bay was performed mainly based on the following information and data:

- Anecdotal information.
- Shoreline photographs and images.
- Simulated wave and littoral current during a peak storm.

The shoreline on the east side of the bay is characterized by the deltaic features along the shore which is fed by three streams. A gravel spit which is evolving with the coastal processes and human interference at the mouth of the Mecham River (see Figure 7-1). Such spits are typically constructed by waves reworking sediments delivered to the mouth bar from the river via ebb currents (Bhattacharya & Giosan, 2003).



**Figure 7-1: Beach Comprising with Medium-Coarse Sand and Gravel to the Southeast of the Community Harbour. The Beach on the West Side is Mainly Gravel Dominated**

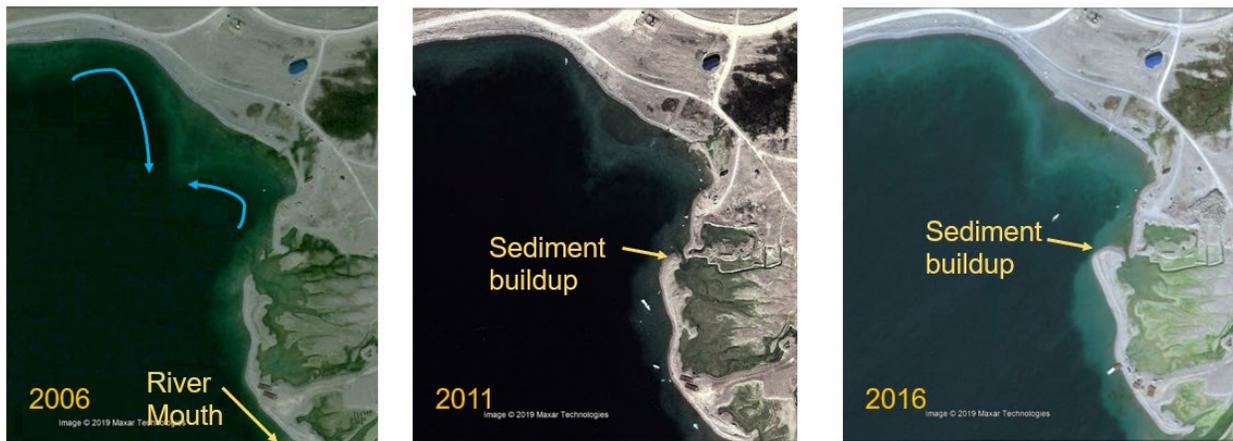
The beach profiles of Resolute Bay have a 6 % to 10 % slope in general.

On the west shore, effects of longshore transport and consequent morphological changes are also evident on google earth images (see Figure 7-2). The trend in morphology at the structure in the sequence of images shows that the protruding shoreline feature traps sediment on its up-drift (south) side and shifts the shoreline by more than 20 m over the period of 10 years.

The site photographs around the river mouth area on the east shoreline show that the beach surface within the intertidal zone consists mainly of medium to coarse sized sand (0.2 mm to 2.0 mm) with a mix of fine and midsized gravels (>2 mm) (see Figure 7-1).

Historical satellite images on Google Earth were examined to assess the pattern of shoreline change mainly near the community harbour development sites (see Figure 7-2). The key observations over a period of 10 years are as follows:

- The growth of the spit at the river mouth (see Figure 7-2) is apparently a result of sediment supply from the river and the action of southerly waves. Anecdotal information from ATCO indicates that subtidal depths are being reduced, as they require more barge hulls to extend into deep enough water to allow boats to tie up and refuel.
- The spit is largely gravel and there is no indication of accumulation or dispersion of finer materials which could potentially be transported longer distances.
- It is reported that the shape of this deltaic zone is also affected by human activities and some signs of that are visible.
- A triangular broad shallow zone at the northeast corner of the bay might have been formed by opposing littoral currents during storms and consequent sediment deposition. While this is also the location of the sewage outfall, it is believed that the formation is mainly natural sediments.
- The growth of river flow driven morphological features of the west shoreline (see Figure 7-2).



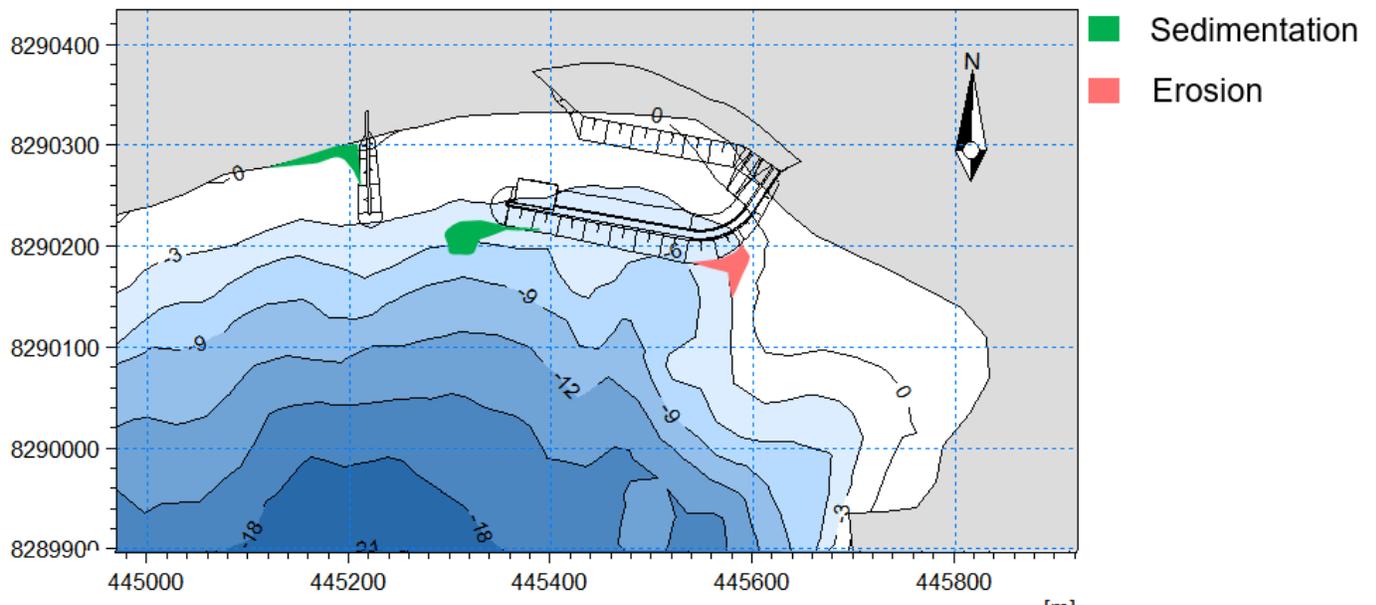
**Figure 7-2: Google Earth Images Showing Shoreline Changes Around the Mecham River Mouth**

Along the north shoreline of the bay, there is no noticeable sign of active shoreline change.

It is not possible to estimate the actual rate of sediment accumulation in the community harbour based on these images due to the lack of additional information such as historical beach profile data and dredge volumes.

In the vicinity of the community harbour, the longshore current may bring in sediments during peak storms if there is enough supply of movable sediments on the east shoreline to the south of the community harbour site. Preliminary modeling estimates that there will be some erosion on the eastern side of the breakwater, and accumulation of sedimentation at the western end of the southern

breakwater (refer to Figure 7-3). Note that Figure 7-3 shows an additional breakwater to the west of the dredge channel that is no longer being considered in the design. Further modeling and assessments will be made during subsequent design phases.



**Figure 7-3: Potential Long-Term Sedimentation and Erosion Locations near the Community Harbour in Resolute Bay**

#### 7.1.1.11 Bathymetry

The impacts to bathymetry are minimal and localized to the Project footprint. Dredging will be executed within the community harbour and the entrance approaching the south breakwater. The entrance and inner harbour will be dredged to an elevation of 1.5 m CD. A section beneath the easternmost small craft float will be dredged to an elevation of 2.5 m CD.

#### 7.1.1.12 Tides and Currents

There will be minimal impacts to currents within the Project Study Area. The presence of a new and larger breakwater will affect localized tidal induced currents. The tidal currents are already minimal in the area; therefore, the effect of the new breakwater will be negligible.

There will be no impact to tides due to the Project.

### 7.1.2 Biological Components

Construction activities as described in Section 2 that have the potential to effect the biological VECs identified are summarized in Table 7-2 and detailed below.

#### 7.1.2.1 Terrestrial Vegetation (Including Rare Plants)

Impacts to vegetation are considered negative but mitigable and significant adverse effects are not expected. Mitigation measures will be in place to manage and minimize negative effects. Where relevant, CWP's will be developed by the contractor to manage specific concerns (Sections 8.3).

Potential impacts to vegetation are summarized below.

##### 7.1.2.1.1 Removal of terrestrial vegetation within the Project footprint

There is no terrestrial vegetation in the community harbour footprint therefore there are no impacts to terrestrial vegetation in the community harbour footprint. Surface clearing will be minimal and limited to the quarry and haul road upgrade footprints. Vegetation is sparse where present. The quarry is dominated by bedrock with lichen cover, as well as perennial Arctic plant species. Project impacts to vegetation are mitigatable in the long term as it is expected that lichen and other hardy Arctic plants will recolonize portions of the area following removal. In addition, the availability of bedrock for lichen growth is not limited in the area. Disturbances to plant harvesting sites is considered minimal because berry picking generally occurs outside of the HRQ Study Area (IQ Workshop 2019 - Allie Salluviniq).

##### 7.1.2.1.2 Impacts to vegetation health resulting from dust deposition and/or contaminant spills

There is potential for dust deposition resulting from rock blasting and vehicle traffic during construction. Dust can negatively impact vegetation by affecting important processes (photosynthesis, respiration, and transpiration) of the plant (Farmer, 1993). Impacts include decreased vegetative productivity, and vegetation community shifts towards species which are adapted to mineral rich environments and those that are more dust tolerant (Walker & Everett, 1987). Vegetation with mat and prostrate growth forms, which are common in Nunavut, have high susceptibility to dust coverage as their form traps dust (Walker & Everett, 1987). Dust control mitigation measures will be implemented as outlined in the CTMP (Section 8.3.3).

Spills could directly affect vegetation through contact and physical damage and indirectly via contaminant assimilation from soil or water subsequent to a spill. The contractor will be responsible for the development and implementation of an CSPRP that will minimize or eliminate potential effects to terrestrial vegetation (see Section 8.3.4).

##### 7.1.2.1.3 Potential introduction of invasive plant species

There are 14 plant species known to be human-introduced in Nunavut (GN & ECCC, 2022). Although there are currently no known plant species that are classified as terrestrially invasive in Nunavut, the potential for seeds and plant propagules to be transported via shipping and movement of equipment northward increases with greater human activity and development (Lassuy & Lewis, 2013). The warming of the global climate further gives more opportunities for invasive species to establish (Lassuy & Lewis, 2013). Mitigation and monitoring measures will be implemented to reduce the chance of spreading non-native plant seeds and plant propagules.

The following measures are designed to mitigate potential negative impacts to terrestrial vegetation (further detailed in the CEMP (Dynamic Ocean & Worley Consulting, 2025b)):

- A qualified EM will be present during construction activities.
- A documentation and reporting process will be managed by the contractor to confirm disturbance, injury or death of any land or marine wildlife due to Project construction.
- Inclusion of decommissioning procedures to be in the CQBMP prior to the closure of the quarry, if required (Section 8.3.5).
- The EM will confirm appropriate SEC monitoring measures are in place to confirm that land-based activities do not result in sediment or other deleterious substances entering aquatic environments (marine, freshwater). Where appropriate, equipment installations will be undertaken (e.g., turbidity curtain, silt fences).
- Water flow will be maintained in lowland areas by installing culverts and/or other drainage techniques during road construction as deemed appropriate.
- Use of approved dust suppressants and/or watering to reduce dust generation on roadways, stockpiles, and any other construction activity that generates dust. Dust suppressants will be in accordance with the GN, Department of Sustainable Development, Environmental Protection Service, and Environmental Guideline for Dust Suppression (GN, 2002).
- Confirm Project equipment mobilized to the Hamlet is inspected to be clean and free of soil that may introduce invasive species to the area.
- Stockpiling and storage of material must occur in upland designated areas and controlled in a way that debris and sediment will not enter the aquatic environments (marine, freshwater).
- The contractor will have an appropriate inspection and maintenance program in place for all construction equipment and vehicles.

#### 7.1.2.2 Wildlife (including Habitat and Migratory Patterns)

Impacts to wildlife (including habitat and migratory patterns) are considered negative but mitigable and significant adverse effects are not expected. Mitigation measures will be in place to manage and minimize negative effects. Where relevant, CWPs will be developed by the contractor to manage specific concerns (see Sections 8.3).

Potential impacts to wildlife are summarized below.

##### 7.1.2.2.1 Loss or alteration of habitat

Given the level of existing human development and activity within the Project Study Area, the Project is not expected to remove or alter habitat of consequence, and any loss or alteration is unlikely to be adverse for most species. Existing infrastructure exists within the Project Study Area and will be upgraded, and the low to moderate value habitat does not appear to be limiting. Large mammals are unlikely to occupy the Project Study Area and most large mammals (e.g., Arctic wolves and caribou)

have large home ranges, are wide ranging, and somewhat wary of human development. Moreover, any species inhabiting the Project Study Area are likely relatively tolerant of human activity (e.g. Høllstedt & Henttonen, 2006), and thus are expected to adapt quickly to minor changes in habitat.

#### 7.1.2.2.2 Sensory disturbance and habitat avoidance

Noise, light, and general human activity and presence resulting from construction may result in minor temporary sensory disturbance. Without mitigation, sensory disturbance may temporarily alter habitat use in the Project Study Area causing some individuals to avoid otherwise suitable habitat. However, most species that are likely to use habitat within the Community Harbour Study Area will already be tolerant of human activity and associated sensory disturbances (noise and light). Blasting activities at the quarry and piling at the community harbour have the greatest potential for sensory disturbance and habitat avoidance, although the frequency and timing are expected to be of relatively short duration.

#### 7.1.2.2.3 Injury and mortality

Increased human presence, road traffic, equipment, and machinery activities are unlikely to injure wildlife given the predominant land activity is related to upgrading existing infrastructure. Improper waste management could result in increased human-wildlife interactions and subsequent lethal control of wildlife for protection of community members and Project personnel. Fuel or other contaminant spills could also result in negative impacts on wildlife. However, construction is to occur within areas already exposed to human activity and waste management and spill prevention plans will be in place.

The following measures are designed to mitigate potential negative impacts to wildlife. These measures will be further detailed within the CEMP (Dynamic Ocean & Worley Consulting, 2025b)):

- A qualified EM will be present during construction activities.
- A documentation and reporting process will be managed by the contractor to confirm disturbance, injury or death of any land or marine wildlife due to Project construction.
- A zero-tolerance policy regarding the harassment, disturbance and feeding of wildlife, birds, and aquatic organisms will be implemented.
- All relevant Project personnel will be educated on the wildlife (potentially nesting birds, fish, marine mammals etc.) and SAR expected to occur in the area according to scientific research and IQ/traditional knowledge.
- The CCEMP (see Section 8.3.1) will identify an appropriate strategy for documentation of wildlife observations. An immediate reporting structure will be in place to communicate observations of potentially dangerous wildlife observations which includes recording the time, date, location, activity, and proximity to Project personnel (e.g., polar bears).
- Food, food waste, and other attractants will be handled, stored and disposed of safely to avoid attracting and habituating wildlife.
- Wildlife will be given the right-of-way so as not to chase, weary, harass, or injure animals on the road.

- Implement timing restrictions to one 12-hour shift per day. As there is no applicable noise by-law, timing restrictions will be agreed through discussion with the Hamlet.
- A pre-construction wildlife (including migratory and marine birds) sweep will be conducted by a qualified professional to identify any sensitive wildlife features. Works cannot begin until this survey has been completed and confirmed that additional compliance measures are not required. The contractor will confirm their pre-construction wildlife sweep in the CCEMP (see Section 8.3.1). Minimum requirements for the survey are provided in Section 5.5.3 of the CEMP (Dynamic Ocean & Worley Consulting, 2025b).
- Work site boundaries will be flagged to prevent inadvertent loss or alteration of habitat.
- Lighting will be limited to the extent required to provide a safe work site and shielded and directed to reduce diffusion outside of the work area.
- The CSPRP (see Section 8.3.4) will detail response procedures to be implemented in the event of an accidental release and refuelling and storage practices for operation of equipment over or near water.
- Movement of vehicles and machinery will be restricted if any large congregations of wildlife or birds occur in the community harbour, Quarry or along the haul road. The EM will determine if work stoppage is required and when work can commence.

#### 7.1.2.3 Migratory and Marine Birds

Impacts to migratory and marine birds are considered negative but mitigable and significant adverse effects are not expected. Mitigation measures will be in place to manage and respond to concerns. Where relevant, CWPs will be developed by the contractor to manage specific concerns (see Sections 8.3).

Potential impacts to migratory and marine birds are summarized below.

##### 7.1.2.3.1 Loss or alteration of habitat

The Project is not expected to destroy or alter habitat of consequence, and any loss or alteration is unlikely to be detrimental to birds because of the existing human development and activity within the Community Harbour Study Area. Also, there is existing infrastructure within the Project Study Area, which will be upgraded. This lower value habitat does not appear to be limiting. Most avian species likely to nest within the Project Study Area (e.g., common raven) are relatively tolerant and often nest in areas modified by human development (Cornell Lab of Ornithology, 2017).

##### 7.1.2.3.2 Sensory disturbance and habitat avoidance

Noise, light, and general increased human activity and presence resulting from construction could result in temporary sensory disturbances. Without mitigation these sensory disturbances may temporarily alter habitat use causing some less-tolerant individuals to avoid otherwise suitable habitat or at worst, result in abandonment of nests. Lighting during construction could disrupt migratory patterns; however, this impact is likely limited given that construction will occur primarily during summer months when

daylight will be at its maximum and migratory birds are already present. Blasting activities at the quarry and pile driving at the community harbour have the greatest potential for sensory disturbance and habitat avoidance, although the frequency and timing are expected to be of relatively short duration. Mitigation measures will be implemented to reduce sensory disturbance to migratory and marine birds.

#### 7.1.2.3.3 Injury and mortality

Construction activities including grading, site preparation, and blasting have the potential to disturb nesting migratory birds and contribute to incidental take without proper mitigation. Increased human presence, road traffic, machinery, and work activities have the potential to inadvertently injure birds during construction. Specifically, blasting could result in injury or mortality and abandonment of nesting, and fuel or other contaminant spills could result in mortality, injury, or sub-lethal effects on birds. Mitigation measures will be implemented to reduce the possibility of injury and mortality to migratory and marine birds.

The following measures are designed to mitigate potential negative impacts to migratory and marine birds. These measures will be further detailed within the CEMP (Dynamic Ocean & Worley Consulting, 2025a):

- A qualified EM will be present during construction activities.
- A documentation and reporting process will be managed by the contractor to confirm disturbance, injury or death of any land or marine wildlife, due to Project construction.
- A zero-tolerance policy regarding the harassment, disturbance and feeding of wildlife, birds, and aquatic organisms will be implemented.
- All Project personnel will be educated on the wildlife (potentially nesting birds, fish, marine mammals, etc.) and SAR expected to occur in the area according to scientific research and IQ/traditional knowledge.
- Food, food waste, and other attractants will be handled, stored, and disposed of safely to avoid attracting and habituating wildlife.
- Movement of vehicles and machinery will be restricted if any large congregations of wildlife including marine or migratory birds occur in the Project Study Area. The EM will determine if work stoppage is required and when work can commence.
- Activities and infrastructure will be sited away from nests and roosts which will be protected by prohibited entry buffers, based upon government or biologist recommended setback distances and the 'alert' and 'flush' behaviors.
- A pre-construction wildlife (including migratory and marine birds) sweep will be conducted by a qualified professional to identify any sensitive wildlife features and bird nests. Works cannot begin until this survey has been completed and confirmed that additional compliance measures are not required. The contractor will confirm their pre-construction wildlife sweep in the CEMP (see Section 8.3.1). Minimum requirements for the survey are provided in Section 5.5.3 of the CEMP (Dynamic Ocean & Worley Consulting, 2025a).

- Work site boundaries will be flagged to prevent inadvertent loss or alteration of habitat.
- If there are large flocks of marine or migratory birds near the Project during sound producing activities (such as pile driving), the EM will document their behaviour. No large flocks are anticipated to be present near the Project other than when foraging or staging during migration.
- Lighting is limited to the extent required to provide a safe work site and shielded and directed to reduce diffusion outside of the work area.
- The CSPRP (see Section 8.3.4) will detail response procedures to be implemented in the event of an accidental release; and refuelling and storage practices for operation of equipment over or near water.

#### 7.1.2.4 Fish Habitat (including Marine Vegetation)

Impacts to fish habitat are considered negative but mitigable and significant adverse effects are not expected. Mitigation measures will be in place to manage and minimize negative impacts. Where relevant CWPs will be developed by the contractor to manage specific concerns (see Sections 8.3).

An Offset Plan will be developed if DFO-FFHPP determines that a FAA is required for the Project so as to offset for the loss of seabed due to Project construction. There will be some positive habitat impacts due to the hard substrates provided by the shoreline protection component of the community harbour breakwaters.

The following measures are designed to mitigate potential negative impacts to fish habitat. These measures will be further detailed within the CEMP (Dynamic Ocean & Worley Consulting, 2025b):

- A qualified EM will be present during construction activities.
- A documentation and reporting process will be managed by the contractor to confirm disturbance, injury or death of any land or marine projects due to Project construction.
- If HADD to fish habitat or DoF beyond what is identified in the FAA is determined, DFO-FFHPP will be notified).
- No disturbance to the seabed outside of the Project footprint shall occur (with the exception of barge spudding and vessel anchoring).
- If marine-based equipment is used by the contractor, and if temporary pads need to be constructed on the foreshore for overwinter storage, the location will be discussed with and approved by DFO-FFHPP.
- Any Project generated debris that enters the marine environment will be retrieved and disposed of at an appropriate facility. Dredged sediment will be disposed of at an approved offsite facility.
- The EM will confirm appropriate SEC monitoring measures are in place to confirm that land-based activities do not result in sediment or other deleterious substances entering aquatic environments (marine, freshwater). Where appropriate, equipment installations will be undertaken (e.g., turbidity curtain, silt fences).

- The CSPRP (see Section 8.3.4) will detail response procedures to be implemented in the event of an accidental release; and refuelling and storage practices for operation of equipment over or near water.
- Land-based sources of sediment (stockpiling, placement of rock fill, drainage ditches) will be controlled in a way that debris and sediment will not enter the aquatic environments (marine, freshwater).
- Actions to prevent and respond to accidental release of deleterious substances into the marine environment will be undertaken by the EM. Minimum measures will be detailed in the CCMP (Section 8.3.1) and CSPRP (see Section 8.3.4).

#### 7.1.2.5 Fish and Marine Mammals

Impacts to fish and marine mammals are considered negative but mitigable and significant adverse impacts are not expected. Mitigation measures will be in place to manage and minimize negative impacts. Where relevant CWP's will be developed by the contractor to manage specific concerns (see Section 8.3).

Potential impacts to fish are summarized below.

##### 7.1.2.5.1 Fish Mortality

Direct mortality to fish is not expected to occur to the extent that would impact the ongoing productivity of fish. There will be some mortality for sessile species in the immediate footprint of the community harbour due to infill and dredging activities; however, mobile species (e.g., Arctic char, Arctic cod, sculpin) are expected to move to other neighbouring habitats.

Any impacts to the distribution of marine fish are expected to be short-term and reversible, as neighbouring habitats can be used that are of equal value. Within these neighbouring habitats, the opportunity for foraging or protection from predators is expected to be the same. The construction of the community harbour will not impact the migratory needs of Arctic char or Arctic cod, as they will be able to swim around the facilities (Indigenous and Northern Affairs Canada [INAC]) (now known as CIRNAC) (INAC, 2012).

##### 7.1.2.5.2 Behavioural Modifications

Potential for behavioural modifications of fish or marine mammals from certain activities (e.g., artificial light) are expected to be minimal and short term. If night works are required, lights will generally be pointed away from the marine environment.

##### 7.1.2.5.3 Water and Sediment Quality Degradation

Impacts to fish health due to sediment mobilization are not expected. A compliance turbidity monitoring program will be in place to confirm sediment plumes generated by dredging activities do not exceed CCME (CCME, 1999) turbidity thresholds (Section 5.5.5 of the CEMP (Dynamic Ocean & Worley Consulting, 2025b)).

The following measures are designed to mitigate potential negative impacts to fish (further detailed within the CEMP (Dynamic Ocean & Worley Consulting, 2025b)).

- A zero-tolerance policy regarding the harassment, disturbance and feeding of wildlife, birds and marine organisms will be implemented.
- All Project personnel will be educated on the wildlife (potentially nesting birds, fish, marine mammals etc.) and SAR expected to occur in the area according to scientific research and IQ/traditional knowledge.
- Turbidity monitoring will be implemented. If monitoring results exceed CCME (CCME, 1999) water quality guidelines, adaptive management will be implemented (e.g., use of silt curtains) (Section 5.5.5 of the CEMP (Dynamic Ocean & Worley Consulting, 2025b)).
- A qualified EM will be present during construction activities.
- A documentation and reporting process will be managed by the contractor to confirm disturbance, injury or death of any land or marine projects due to Project construction.
- Actions to prevent and respond to accidental release of deleterious substances into the marine environment will be undertaken by the EM. Minimum measures will be detailed in the CCEMP (Section 8.3.1) and CSPRP (Section 8.3.4).
- Lighting will be limited to the extent required to provide a safe work site and shielded and directed to reduce diffusion outside of the work area.
- Marine Mammal Observers will be present on site to implement necessary monitoring requirements during in-water works, including establishment of EZ and documentation of marine mammals observed.
- The contractors EM will be responsible for confirming defining 'near water' for distance from the HWL to the blasting location, either based on physical distance or based on the blast charge. Monitoring commitments will be in compliance with the Guidelines for the Use of Explosives in or Near Canadian Water (Wright & Hopky, 1998) and as outlined in the DFO-FFHPP LoA or FAA.
- Construction small craft vessels will maintain vigilance for marine mammals: minimum approach distances and best practices as outlined in the Marine Mammal Regulations must be adhered to, and protected areas as outlined within the most recent Notice to Mariners published by the CCG at the time of construction will be followed.
- The CSPRP (see Section 8.3.4) will detail response procedures to be implemented in the event of an accidental release; and refuelling and storage practices for operation of equipment over or near water.

#### 7.1.2.6 Species at Risk

Very few SAR are likely to be within the Project Study Area during construction, as discussed in Section 6.4.6, and in Table 3-1 of the ESEB Report (Dynamic Ocean & Worley Consulting, 2025c). Project impacts and mitigation measures for terrestrial wildlife, migratory and marine birds, fish, and marine mammal

SAR will be similar to those discussed in Sections 7.2.2.1 to 7.1.2.5. Construction activities that have the potential to impact on SAR include blasting, construction traffic and land-based equipment.

The likelihood of negative impacts to SAR is considered very low. These potential impacts are mitigatable and therefore serious adverse impacts to SAR are not expected. If observed, the following will be undertaken:

- If SAR are encountered during construction, the EM will document appropriately; record will be inclusive of the locations and dates of any observations of SAR, behaviour or actions taken by the animals when Project activities were encountered, and any actions taken by the contractor to avoid contact or disturbance to the species and its habitat.
- All Project personnel will be educated on the wildlife (particularly SAR) expected to occur in the area according to scientific research and IQ/traditional knowledge.
- Appropriate measures will be in place to confirm potential SAR are protected. It is not likely that SAR species are in the footprint.

Potential for polar bear to occur in the Project Study Area is possible because of the overlap in mapped range and previously sighted denning areas. If observed the following measure will be taken.

- If polar bear are sighted near a workspace, the EM will determine if work stoppage is required and when work can commence.
- Measures to protect polar bear will follow those outlined in Section 2.3 of the RNLUP (NPC, 2023b).

### 7.1.3 Socio-Economic Components

Construction activities as described in Section 2 that have the potential to impact the socio-economic VSECs identified are summarized in Table 7-2.

#### 7.1.3.1 Employment, Training and Business Opportunities

Employment, training and business opportunities available during construction represent a short-term positive impact to the community.

The Project will comply fully with the GN's Nunavummi Nangminiqaqtunik Ikajuuti (NNI) Policy (01-Apr-17) and will aim to maximize participation of Inuit labour, training and Inuit owned businesses on the Project (GN, 2017).

Positive short-term spin-off economic impacts are also anticipated, with potential Project spending on local accommodation and food from local businesses. It is also likely that some non-local workers will make personal purchases such as arts and crafts from local artisans.

### 7.1.3.2 Land and Resource Use

#### Harvesting, Travel Routs, and Access

Harvesting is essential to Inuit culture and livelihood. Residents in Resolute Bay continue to rely on harvesting activities (hunting, fishing, trapping and gathering) as a source of nutrition, clothing, and for arts and crafts. The following factors have been taken into consideration for assessing the potential impacts from the Project to harvesting, travel routes and access:

- Harvesting locations in and around the Project areas (depicted in Figure 4-1).
- Access to ice, water and land.
- Timing of construction activities.
- Potential impacts to harvested wildlife.

Feedback received from elders, HTA members, Guardians, and other knowledge holders has indicated that harvesting is limited in Resolute Bay, apart from seal hunting along the ice cracks and hunting at the floe edge beyond the bay. Hunters and fishers are not concerned about impacts to subsistence harvesting caused by construction of the Project and indicated the Project would have no impact on their ability to fish or hunt. Additionally, when asked about any concerns on wildlife impacts, especially marine mammals due to underwater sound generated during construction, the feedback received indicated that the hunters expected the impact would be temporary and wouldn't have any lasting impacts on the wildlife they harvest.

Quarry operations and the haul route have the potential to impede access for residents and hunters to reach Prospect Point. During construction, although it is expected that boaters will be able to launch at alternate locations along the shoreline, including the existing beach area to the east of the community harbour that is currently used by the community. The Project has the potential to impede access to boaters but will be mitigated with alternative existing access points.

Ice access is considered very good along the shoreline fronting the hamlet and is not anticipated to be an issue during construction of the community harbour.

The following measures are designed to mitigate potential negative impacts on Inuit Harvesting. These measures will be further detailed within the CEMP (Dynamic Ocean & Worley Consulting, 2025b).

- The contractor will be required to coordinate and sequence construction activities so that access to boaters is maintained at all times during construction.
- The Project will construct skidoo access over any potential barriers caused by stockpiles or stockpile pads to provide pass-through access to hunters.
- Road closures will be limited to ~ 30 mins/day once a day and coordinated to be at the same time as much as possible so residents can plan accordingly.
- Blasting and road closure notices will be posted on radio, social media, at the Hamlet and HTA offices, Co-op store, and on VHF radio.

- Continued consultation and coordination of construction activities with the HTA and the Guardians will be conducted.

Given the limited harvesting activities identified in the Project Study Area and the mitigations described above (along with the mitigations proposed in previous sections for noise, wildlife, fish, marine mammals, and fish habitat), the Project does not expect to have a significant adverse effect on land and resource use or Inuit harvesting rights and any impacts are mitigatable.

Prior to demobilization at the end of each construction season, the contractor will meet with a designated HTA representative to confirm that Project site has been left in a state so as to maintain access throughout the winter months. If concerns are raised, the contractor will make corrections that are accepted by the HTA representative prior to end of season demobilization.

#### 7.1.3.2.1 Tourism

The Project has the potential to impede access for outfitters and cruise ship tenders during construction. Potential impacts to tourism are considered negative but mitigatable and significant adverse effects to tourism are not expected.

The following measures are designed to mitigate potential negative impacts to tourism. These measures will be further detailed within the CEMP (Dynamic Ocean & Worley Consulting, 2025b).

- The Project will consult with cruise ship operators and outfitters to maintain safe access for passengers.
- The contractor will be required to coordinate and sequence construction activities so that access for outfitters and cruise ship tenders and passenger safety are maintained during construction.
- The contractor will be required to issue NAVWARNs to notify mariners of any potential navigational interferences.

#### 7.1.3.3 Local and Regional Traffic Patterns

Potential impacts to local and regional traffic patterns are considered to be negative but mitigatable and significant adverse effects are not expected.

To reduce impacts on air transportation, the Project will plan accordingly so that it does not monopolize commercial flights. The Project will use private charter flights to transport Project personnel as necessary, to avoid the Project taking up seats on scheduled flights that the community depends on.

A large volume of haul truck traffic will be required to transport the rock from the quarry to the community harbour. The existing haul road will require improvements to allow for safe truck travel (culverts, increasing width in areas, pull outs to permit vehicle passing etc.). The contractor will also be responsible for maintaining the road in good condition. Use of the existing road by the contractor will also require adherence to a CTMP (see Section 8.3.3) to mitigate impacts on cabin owners, community service trucks and community traffic.

Given the volume of truck traffic expected and the fact that roads are shared by many users including ATVs, snow machines, trucks, cyclists, and pedestrians, a CTMP will be implemented by the contractor in order to minimize the risk of traffic accidents.

Sealift operations are not expected to be impacted, as barges are directed to the western beach near the industrial area of the community. This keeps sealift activities separate from boating operations on the eastern shore closer to the residential area.

The following measures are designed to mitigate potential negative impacts on local and regional traffic patterns. These measures will be further detailed within the CEMP (Dynamic Ocean & Worley Consulting, 2025b)):

- The contractor will have an appropriate driver training and safety awareness program that will be in place.
- The contractor will confirm that appropriate vehicles and equipment are in use during construction that are properly suited for conditions of the road, especially brakes to handle steepness.
- The contractor will have an appropriate inspection and maintenance program in place for all construction equipment and vehicles (including brake checks).
- Appropriate measures will be included in the CTMP (see Section 8.3.3) to identify speed limits or other actions equipment operators need to consider minimizing dust, wildlife mortality, and other negative impacts. The maximum speed limit will be 20 km/hr.
- Adequate lighting on all vehicles so they can be easily seen.
- Use of approved dust suppressants and/or watering to reduce dust generation on roadways, stockpiles and any other construction activity that generates dust. Dust suppressants will be in accordance with the GN, Department of Sustainable Development, Environmental Protection Service, and Environmental Guideline for Dust Suppression (GN, 2002, 2014).
- Traffic control measures such as flag people at any busy intersections along haul route.
- The contractor will conduct a traffic awareness campaign concerning road safety, particularly for children and teens (e.g., traffic safety and awareness talks in local schools and public events/community centres, posters distributed and posted around town, radio shows etc.).
- Road closures will be limited to ~ 30 mins/day once a day and coordinated to be at the same time as much as possible so residents can plan accordingly.
- Blasting and road closure notices will be posted on radio, social media, at the Hamlet and HTA offices, Co-op store, and on VHF radio.

#### 7.1.3.4 Human Health and Community Wellness

Potential impacts to human health and wellness are considered negative but mitigatable and significant adverse effects are not expected.

Given the construction workforce's size relative to the small population of the community, the Project aims to minimize any strain on the community's health centre. To this end, the contractor will be required to provide a dedicated emergency responder for Project personnel and ensure all workers receive industry-standard health and safety training. In emergencies, the health centre may assist with stabilizing injured workers until medical evacuation to a larger facility. However, having a dedicated emergency responder for the workforce's modest size, coupled with an emergency medi-vac plan, is expected to effectively minimize any potential strain on local health services.

The impacts of increased dust caused by construction activities are considered negative but mitigatable and will be minimized. Impacts to respiratory health due to increased dust during construction are not anticipated.

The following measures are designed to mitigate potential negative impacts on human health and community wellness. These measures will be further detailed within the CEMP (Dynamic Ocean & Worley Consulting, 2025b):

- The contractor will be responsible for installing diesel particulate filters on diesel equipment.
- The contractor will have an appropriate inspection and maintenance program in place for all construction equipment and vehicles (including brake checks).
- Appropriate measures will be included in the CTMP (Section 8.3.3) to identify speed limits or other actions equipment operators need to consider minimizing dust, wildlife mortality, and other negative impacts. The maximum speed limit will be 20km/hr.
- Use of approved dust suppressants and/or watering to reduce dust generation on roadways, stockpiles and any other construction activity that generates dust. Dust suppressants will be in accordance with the GN, Department of Sustainable Development, Environmental Protection Service, and Environmental Guideline for Dust Suppression (GN, 2002).
- Implementation of a CQBMP (see Section 8.3.5).

The contractor will be required to bring in all first aid equipment and supplies including over the counter medications for the construction workforce to ensure that the community's limited resources are not stretched beyond its capacity. Additionally, the Health centre has advised that workers bring in any required prescription medications as there is no capacity in the community to fulfill prescriptions for non-local personnel.

There is potential for negative social impacts during construction resulting from a relatively large number non-local workers (compared to the community's population) living and interacting with community members. The Project will take steps to minimize activities and behaviours with the potential to cause negative social or environmental impacts on the community. As part of their employment with the contractor, workers will be required to sign a Code of Conduct governing their behaviour on the job and during recreational hours. This will include adhering to all rules at construction sites and the construction camp. Additionally, the worker induction program will include an Inuit cultural awareness component to promote understanding and respect for local culture and residents. There will also be a zero-tolerance policy for alcohol, marijuana or illicit drug possession or use.



#### 7.1.3.5 Community Infrastructure and Services

Potential impacts to community infrastructure and services are considered to be negative but mitigatable and significant adverse effects are not expected.

The Project aims to minimize any undue burden on community services and infrastructure. Maintaining community infrastructure and services is also a priority for the Hamlet.

Accommodation for non-local workers during construction may be provided by the ATCO South Camp hotel or a dedicated construction camp if using the hotel would place undue strain on the community's needs. This approach will effectively minimize any impacts on local housing and accommodation facilities.

The Project will limit use of community services by having an on-site fire response plan to deal with local fires and have staff trained in the use of fire suppression aids. In the rare event that additional firefighting aid is required, the local volunteer fire station will be called.

It is anticipated that any solid waste disposal, water and sewage services required for the Project will be minimal and can be met by the current capacity of the hamlet's landfill facility, wastewater treatment and water reservoir facilities. The Project will have a dedicated water truck to support construction water and dust suppression needs.

The Project will have a dedicated fuel truck for meeting Project fuel requirements. Given that fuel supply in the community may not be sufficient to meet construction needs, the Project is coordinating with GN-PPD, who will arrange multiple fuel shipments to support both community and construction needs, if required. If this becomes impractical, the contractor will be required to bring in temporary double-wall fuel tanks for fuel storage during construction to avoid impacting the community's fuel supply.

A CTMP (see Section 8.3.3) will be implemented for the Project to mitigate potential negative effects on the truck traffic for the delivery of community services by the large volume of haul truck traffic required to transport rock material from the Quarry to the community harbour.

Use of approved dust suppressants and/or watering to reduce dust generation on roadways, stockpiles and any other construction activity that generates dust. Dust suppressants will be in accordance with the GN, Department of Sustainable Development, Environmental Protection Service, and Environmental Guideline for Dust Suppression (GN, 2002).

#### 7.1.3.6 Archaeological and Culturally Significant Sites

No archaeological, paleontological, or culturally significant sites were found within the proposed Northern Quarry area, Haul Route, or Community Harbour Study Areas; therefore, no impacts are anticipated if the Northern Quarry is used.

The Contractor will be required to have Archaeological Resource Discovery Plan (ARDP) in place. If the Southern Quarry is used, archaeological sites that are within or adjacent to the Project footprint will

need to be avoided or mitigated. Avoidance measures will include buffers and may require physical constraints. The buffers will be determined in conjunction with discussions with GN C&H.

In either case, the contractor will be required to have chance find procedures in place. If historical or palaeontological features (e.g., stone features, stone tools, modified bone, fossils) or potential human remains are discovered within the construction footprint during construction, the measures outlined in Section 5.4.14 of the CEMP (Dynamic Ocean & Worley Consulting, 2025b) will be followed.

Project personnel will be prohibited from collecting any archaeological or palaeontological materials.

## 7.2 Operations Phase Impacts and Mitigations

During the operations phase of the Project, only the Community Harbour Study Area is relevant to potential impacts. The quarry will no longer be in operation for Project needs and rock hauling along the road will have ceased.

Operation of the community harbour will be managed by GN-EDT and an OEMP will be developed (see Section 8.4).

The operations phase does not consider potential changes from increased shipping. The community harbour is not anticipated to attract more marine traffic than what already exists for ports of call to Resolute Bay.

### 7.2.1 Physical Components

#### 7.2.1.1 Designated Environmental Areas

Once operational, there will be no impacts to designated environmental areas due to community harbour. No changes to shipping from what is currently existing; therefore, no impacts to the nearby TI NMCA. The proponents for the development of any new inshore commercial fisheries would need to confirm if any territorial permitting was required because of the potential impacts from increased shipping.

#### 7.2.1.2 Geological Site Conditions

No impacts to the geological site conditions during operations.

#### 7.2.1.3 Surface Features

No impacts to the surface feature condition during operations.

#### 7.2.1.4 Ground Stability and Permafrost

No impacts to the ground stability and permafrost conditions during operations.

#### 7.2.1.5 Hydrology

No impacts to hydrology conditions during operations because the haul road and quarry will only be used by the Project during construction.

#### 7.2.1.6 Air Quality

The future community harbour is not considering new equipment for operations thus no additional emissions will be generated. Road and marine traffic levels during operation of the community harbour will be the same as existing and therefore there is no impact on air quality during operations. The improvements to access may reduce congestion and waiting times and therefore reduce the amount of idling.

#### 7.2.1.7 Noise

For future community harbour operations there is no new equipment being considered which will eliminate additional noise generation. Road and marine traffic levels during operation of the community harbour will be the same as prior to the construction of the Project and therefore there is no increase in noise during operations. The improvements to access may reduce congestion and waiting times and therefore may reduce the amount of noise (e.g., idling).

#### 7.2.1.8 Climate Conditions

An expanding open-water season resulting from climate change will likely see the community harbour used for a comparative increased length of time, as subsistence fishing throughout the accessible season is important to the community. No additional impacts from an increased period of use have been identified.

#### 7.2.1.9 Sediment and Water Quality

No new equipment or activities within the community harbour are anticipated to impact water or sediment quality during operations beyond the existing boating related activities.

Potential impacts to water quality during operations activities could occur come from accidental vessel spills. The increased and safer access to the water is expected to reduce the risk of spills compared to existing operations; these impacts are considered positive. An OEMP will be prepared to manage operations and minimize the risk of spills, as described in Section 8.4.

#### 7.2.1.10 Coastal Morphology

The effects to coastal morphology will be localised to the vicinity of the community harbour (see Section 6.3.10).

Maintenance dredging may be required over the lifespan of the community harbour to remove accumulated sediments in the community harbour channel and basin.

#### 7.2.1.11 Bathymetry

As noted in Section 6.3.11, the bathymetry will change due to littoral drift.

#### 7.2.1.12 Tides and Currents

There will be no impacts to the tide and current conditions during operations. Due to the breakwater, there will be localised changes to currents in the vicinity of the community harbour. Since there will be no changes to shipping from what is currently existing, turbulence and current generated by vessel traffic will remain the same as pre-operation conditions.

### 7.2.2 Biological Components

#### 7.2.2.1 Terrestrial Vegetation (Including Rare Plants)

There will be no impacts to vegetation during operations as all surface disturbances and blasting activities will be complete.

#### 7.2.2.2 Wildlife (including Habitat and Migratory Patterns)

Road traffic levels to the community harbour will be similar to existing and given the low incidence of wildlife and value of the habitat for with the Community Harbour Study Area, no adverse impact on wildlife during operations is expected.

#### 7.2.2.3 Migratory and Marine Birds (including Habitat and Migratory Patterns)

No nests or colonies of marine and migratory birds are located near the Community Harbour Study Area and no adverse impacts during operations are expected on birds that might forage in the area.

#### 7.2.2.4 Marine Fish Habitat (including Marine Vegetation)

Impacts to marine fish habitat due to operational activities are considered positive as the community harbour will facilitate existing boating activities that will be conducted in a safer manner with less risk to the marine environment from spills.

#### 7.2.2.5 Fish and Marine Mammal Species

No impacts to marine fish during the operational phase of the Project are anticipated. The community harbour will provide a safer access point with less risk to the marine environment from spills. The Project will be constructed to service existing marine use and therefore additional vessel traffic is not planned. Furthermore, the presence of the facility is unlikely to interfere with fish migration as they are expected to swim around the breakwater (INAC, 2012).

Freshwater fish are not expected to be impacted during operations as the quarry and haul road are only required during the construction phase.

#### 7.2.2.6 Species at Risk

No impacts to vegetation, wildlife or marine mammal SAR have been identified from the operation of the community harbour as there are very few SAR likely to be present within the Project Study Area; therefore, impacts on species-at-risk are not expected.

### 7.2.3 Socioeconomic Conditions

#### 7.2.3.1 Population, Education and Employment

In the future, the presence of a community harbour in Resolute Bay could provide opportunities for economic development in the community such as a commercial fishery or the potential to increase tourism by attracting more outfitting and cruise ship visits. However, any such opportunities would be developed outside of this Project and related impacts would be addressed directly by the proponent of these activities.

#### 7.2.3.2 Land and Resource Use

Once operational, the Project will have a positive impact on harvesting, navigation, and travel. The Project will provide a safe harbour for launching, landing and mooring boats.

No concerns from the community were expressed about the community harbour affecting ice access once operational. Feedback received from elders, HTA members, Guardians and other knowledge holders has indicated that ice access is considered very good along the shoreline fronting the hamlet and is not anticipated to be an issue during operation of the community harbour. Hunters remarked that alternate routes along the shoreline could be taken if required.

#### 7.2.3.3 Local and Regional Traffic Patterns

The community harbour will have a positive impact on marine traffic navigating through Resolute Bay by providing a safe harbour for boaters and cruise ship passengers. Boat launching and landing facilities will be improved and an area to safely moor and offload boats will be provided. The community harbour will therefore have a positive impact on local and regional traffic patterns.

#### 7.2.3.4 Human Health and Community Wellness

The community harbour will improve the access and safety of boating operations and therefore will have a positive impact on community health and wellness.

#### 7.2.3.5 Housing and Community Infrastructure and Services

The operation of the community harbour will have a positive impact on existing community infrastructure for boat launching, landing and mooring by providing a dedicated launch ramp, a safe harbour and an expanded laydown area for storage and parking.



The operation of the Project will have no impact on the delivery of trucked community services (i.e. water, fuel, sewage, and solid waste).

#### 7.2.3.6 Archaeological and Culturally Significant Sites

There will be no impacts to archaeological or culturally significant sites from the operation of the community harbour. However, if the Southern Quarry is used, and if it remains operational for other community needs subsequent to Project completion, consideration will need to be given to the archaeological buffer requirements throughout use of the quarry.

### 7.3 Residual Effects

No residual effects to the environment are expected after the mitigation and monitoring measures for the Project are implemented. A FAA may be required from DFO-FFHPP and if so, an Offset Plan will be developed and proposed to DFO-FFHPP to offset for residual effects to fish and fish habitat.

### 7.4 Cumulative Effects

All Project effects previously described are expected to be negative and mitigatable, or positive. Using the NIRB Public Registry all past, present and reasonably foreseeable projects were screened for potential to interact with the Project. At this time, no other projects have been identified to incur cumulative effects with those of the Project.

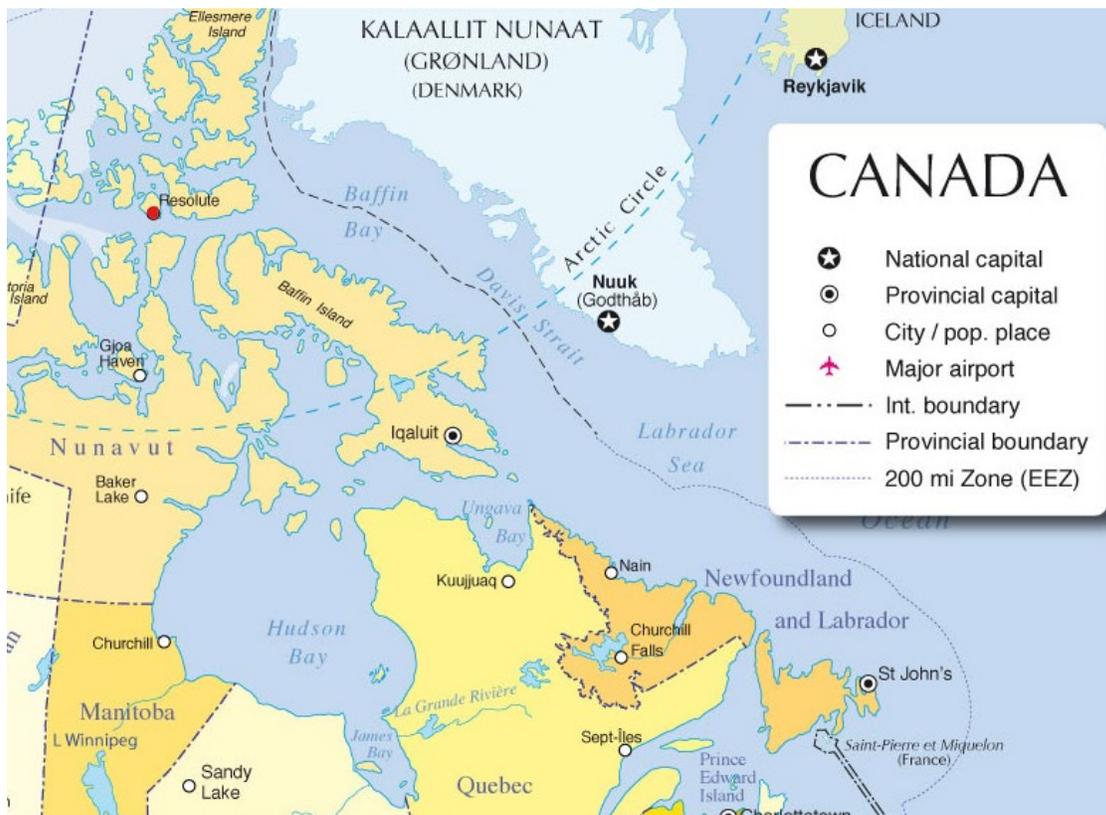
## 7.5 Assessment of Transboundary Effects

Potential Project effects identified in Section 7 are localized to the Project Study Area and will be minimized or eliminated by the mitigation measures described.

Delivery of construction equipment and materials for the Project will be handled by existing sealift vessels so there is no additional vessel traffic resulting from the Project.

The community harbour has been designed to improve existing access for boats and the overall safety of marine activities in the community by providing a protected harbour. Any increase in shipping during operation of the community harbour is not considered part of the Project. Any new commercial fisheries that may be developed and use the community harbour would require permitting under a separate application to NPC for referral to NIRB.

No anticipated transboundary effects are therefore expected from the Project, with the closest territorial, provincial or international boundaries to the Project Study Area being the NWT (550 km to the southwest) and Greenland (700 km to the northeast) (see Figure 7-4).



**Figure 7-4: National and International Boundaries**

Note: Red dot denotes Resolute Bay, Project location

Source: OneWorld (2021)

## 8 Environmental Management and Monitoring Plans

Regulatory compliance will be managed using BMPs and the development of several compliance documents, including a CEMP, CWPs and an OEMP.

### 8.1 Canadian Ambient Air Quality Standards

Guidelines and BMPs that will be incorporated into the CEMP, the CCEMP and into the contractor CWPs include are outlined in Section 5.1 of the CEMP (Dynamic Ocean & Worley Consulting, 2025b).

### 8.2 Construction Environmental Management Plan

A CEMP (Dynamic Ocean & Worley Consulting, 2025b) has been developed that details measures to be implemented to minimize potential negative environmental and socio-economic effects associated with the construction phase of the Project. Implementation of mitigation and monitoring measures will support permitting and regulatory requirements and will be in place to confirm that residual effects due to Project construction do not occur.

### 8.3 Construction Work Plans

Prior to construction, the contractor will be responsible for submitting a construction method plans which describes the phases for mobilization, preparation, drilling, site clean up and restoration and demobilization.

Construction Work Plans will be developed prior to construction as summarized below. Minimum requirements for the CWPs are provided in Section 5.3 of the CEMP (Dynamic Ocean & Worley Consulting, 2025b).

#### 8.3.1 Contractors Construction Environmental Management Plan

The contractor will be responsible for developing a CCEMP, to be in compliance with the Regulatory CEMP (Dynamic Ocean & Worley Consulting, 2025b) and permit and approval conditions received from pertinent AHJs.

#### 8.3.2 Contractors Marine Safety Plan

The Contractor Marine Safety Plan (CMSP) is intended to minimize traffic interferences for the community and confirm that Inuit harvesting rights are not impacted on land or in water. The CMSP will identify a communication plan for mariners, and regulatory authorities (NAVWARNs) and identify any temporary structures associated with the Project. It is also to confirm that mitigation measures (e.g., navigational markers and marine construction buoys) are being undertaken for the TC NoW permit to minimize navigational interferences.



### 8.3.3 Contractors Traffic Management Plan

The CTMP is intended to confirm an appropriate plan is in place to manage site access, traffic through the community and ensure the community is informed of ongoing construction traffic safety concerns. This includes driver training and safety awareness, establishing a dedicated haulage route, management of road closures, and a public safety awareness campaign.

### 8.3.4 Contractors Spill Prevention and Response Plan

The CSPRP will identify spill prevention and response procedures and confirm compliance with regulatory communication requirements in the event of accidental spills. The CSPRP will describe procedures for safe fuel handling and storage, including details of the requirements for secondary containment for all equipment in addition to any specific procedures required for near- or over-water fuelling. The purpose of the CSPRP is to establish policies, procedures, and a communication matrix for the steps to be followed during an accidental spill.

### 8.3.5 Contractors Quarry and Blasting Management Plan

A CQBMP is intended to confirm the procedures for the safe operation of the quarry (borrow pits) during construction and blasting. The CQBMP will be developed to detail the operations and maintenance to be undertaken by the contractor during community harbour construction, including site safety and security measures and steps for development, operation, maintenance and monitoring of the quarry (borrow pits). The CQBMP will also identify appropriate decommissioning of the quarry (borrow pits), including soil replacement, removal of waste and public safety measures.

### 8.3.6 Contractors Health and Safety and Emergency Response Plan

A Contractor Health and Safety and Emergency Response Plan (CHSERP) is intended to establish Health and Safety procedures to be undertaken to confirm a safe working environment and Emergency Response. The CHSERP will address all health and safety aspects of the Project as required by Nunavut Safety Acts and Regulations to address potential emergency situations (e.g., fire, vehicle or equipment incidents, major first aid, wildlife encounters or natural disasters) that could occur at the Project site during the construction phases.

## 8.4 Operations Environmental Management Plan

The GN-EDT is responsible for oversight of marine harbours under GN's ownership, including Iqaluit and Pond Inlet on Baffin Island and as such is familiar with the preparation and implementation of regulatory operations manuals and plans, including emergency response plans, SRPs, facilities inspection protocols, inventory management, and reporting requirements. The GN-EDT will be responsible for the operations of the community harbour and will develop and implement plans for all aspects of the community harbour operations. The GN-EDT will work with the Hamlet of Resolute Bay, the HTA, and local contractors as required to confirm that operational requirements are met.

The plan will incorporate any permit conditions that relate to operations. The components of the plan will include:



- Roles and Responsibilities, including inter-agency agreements with the Municipality, the Municipal Fire Department, and the HTA as required.
- Operations –procedures for cargo handling, fuelling, seasonal float removal and reinstatement, etc.
- Environmental Management, Mitigation and Monitoring Measures:
  - Waste Management.
  - Spill Prevention and Response.
  - Sediment and Erosion Control.
  - Wildlife and Vegetation.
  - Inspections, Reporting and Conformance – daily, seasonal and longer-term inspection schedules.
  - Maintenance – marine structures, rock armour, supporting infrastructure (i.e. beach erosion, maintenance dredging, etc.).
  - Training and Competency.
  - Operations HSERP to same minimum requirements described in Section 8.3.6.
  - Communications Protocols – regulatory and community.

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# Appendix A: Consultation Log



## Resolute Bay Community Harbour Project - Consultation Log

Group	Method and Date	Topic	Feedback/Questions/Concerns	Project Response and Mitigations
Hamlet Council	Meeting 2024-08-07	Design	What's the point of the laydown?	We need space to store the floats during the winter and it provides a good surface for boat trailer and vehicle parking and storage. We need an area to put the sediments that will be dredged to make the harbour deeper.
			Be prepared to deal with muddy "soup like" dredge	Noted.
			Has the design taken in to consideration the strong winds and spring storms we experience here?	Yes, the harbour has been designed with consideration to winds and storms.
			Will the harbour affect any bigger ships that anchor in the bay?	No, the harbour will be too shallow for large ships to use.
			Option 2 is preferred, as indicated during the previous consultations. Option 1 is located too close to the sewage outfall, and with a new water treatment plant expected soon, pursuing Option 1 could present challenges	Noted.
		Expectations / Requests	Why does it take so long to get this harbour built? Why is there so much time between years to complete it?	Construction is only feasible during the summer months. We need open water to build the harbour so that's why there's a lot of idle time. If it was down south we could have it built in 1.5 years.
			Request to have the little fuel tank near the harbour reopened. It could be a very convenient gas station for boaters.	This would need to go through GN-PPD. The Project can support the Hamlet in discussions with the GN-PPD to inquire if this would be possible.
		Operations and Maintenance	Will the ramp require a lot of grading? Who will be responsible for the maintenance of the Harbour?	The ramp will require annual maintenance. The GN-EDT will be responsible for maintenance and will look to coordinate with the Hamlet about how to maintain the facility. Funding for maintenance is included in the funding agreement.
		Employment and Training	Will locals be hired?	Yes. The Project aims to maximize participation of Inuit labour, training, and Inuit owned businesses on the Project. The contractor will work with the Hamlet and the community to understand how best to advertise for positions well ahead of time.
		Dust	The Hamlet no longer uses CACL. Hardly ever needs to control for dust because there is more rain in recent years. Hamlet has a water truck for dust control.	Noted.
		Quarry and Haul Road	Improving and widening the road so it can be used as a haul road will be a benefit to the community.	Noted.
			What happens if blasting ends up producing rocks that are not big enough?	The engineering team would need to modify the design to flatten angles and buffer with materials. It will work but it would likely mean the harbour would require more frequent maintenance.
			Will the Project not proceed if the rock is too small?	No. The Project would proceed but we would need to provide a stockpile of rocks and material to be used for repair and maintenance if the breakwater becomes damaged from waves and/or ice.
			There's good rock past Prospect Point about 40-50kms away.	Thank you. Unfortunately, that is too far to be feasible as a quarry.
		Construction	Will construction be 24 hours per day, every day of the week?	That's up to the community and what residents are willing to tolerate. If they are able to work longer hours they should be able to finish earlier. The contractor will need approval from the community on hours.
		Access to water and ice	There are many alternate locations for boaters to launch their boats. Access to the water during construction will not be an issue.	Noted.

## Resolute Bay Community Harbour Project - Consultation Log

Group	Method and Date	Topic	Feedback/Questions/Concerns	Project Response and Mitigations
		Fuel	Fuel capacity in the community is good, we do not experience shortages except for jet fuel every now and then. Fuel resupply is in Aug/Sept.	Noted.
Resolute Bay HTA Guardians	Design Workshop 2024-08-08	Design	There should've another harbour option provided out at Prospect Point. That area doesn't have all the problems with ice and snow coming in to the bay.	Noted.
			The idea of a harbour out at Prospect Point should have been brought up before now. We've had so many years and meetings to tell them where to locate this harbour. That location is too far for most boaters anyway.	Noted.
			Option 2 remains the preferred option by the HTA	Noted.
			What will the ramp be made of? Concrete? Gravel is very hard to deal with.	Concrete is very expensive and hard to manage because of the ice. The ramp will be compacted but will still need to be maintained.
			Will large vessel carriers have an ability to unload at the breakwater?	No. The harbour is designed for local boats not large ships. Sealift operations will remain on the West side of the bay.
			That's good that the large vessel operations will be separate from local boating.	Noted.
			Will a vehicle be able to drive down floats?	The floats can accommodate an ATV but not a side by side, they start getting too wide.
			Please consider looking in to a float that could accommodate a side by side to help provision boats moored on the float.	Noted. A side by side may start getting too wide for a float in the harbour but the Project will look in to this.
			It would be good to add a maintenance building on the laydown. It looks like there is room for a tackle shop maybe or sheds?	Buildings are not included in the current Project scope but that is something the community could look at getting funding to do. It's a great idea.
			Will AFA and small yachts be accommodated?	The harbour is only designed for local boat sizes. Bigger boats like the AFA vessels would need to work with the tides to come in to the harbour. During high tide, bigger boats will be able to come in and go.
			It will be very nice to have the ability for two boats to launch at the same time. That's a benefit for hunters.	Noted.
			Boats are getting bigger and heavier now. The biggest is a 28ft Silver Dolphin.	Noted.
			There would be a few people that might need to pull their boats on shore still.	Noted.
			The community can also look in to how best to use the floats for off loading harvests. An electrical winch could be installed maybe to help offload large animals.	Noted.
			Operations and Maintenance	Who will be responsible for taking the floats out every winter?
Quarry and Haul Road	There are many archaeological sites to be aware of near the Prospect Point quarry.	Noted.		
	The area is also a recreational area and there are many terns that nest along the shoreline and outcrop there.	Noted.		
Dust	There is lots of dust on the haul road	Noted. The contractor will be responsible for dust control. They may use a dust suppressant or water.		
Local Site Conditions	Winds are much stronger in recent years and we get much more rain now.	Noted.		

## Resolute Bay Community Harbour Project - Consultation Log

Group	Method and Date	Topic	Feedback/Questions/Concerns	Project Response and Mitigations
			If the winds are greater than 30kms/hr boating stops	Noted.
			Wave action from stronger storms recent years is causing the gravel to be pushed up to shore creating those shoreline ridges or cuts you might've seen.	Noted.
			The strongest storms are in August.	Noted.
			There is a lot of sediment that comes down the Mecham River and fills in the old harbour area.	Noted.
Cabin Owners	Brief introductory engagement with Randy Nungaq Aug 8, 2024	Quarry and Haul Road	Randy Nungaq is an outfitter and has been engaged with the Project since the Feasibility Study. Randy confirmed he, along with his partner Daisy, are the owners of one of two cabins along the proposed haul route. Brief introductions were made with follow up by email and phone calls.	Chris Meisl met Randy by chance on the beach while conducting field work. Introduced himself and briefly discussed the plans for the harbour.
Hamlet Resolute Bay HTA	Email to SAO and HTA manager September 11, 2024	New Proposed (Northern) Quarry - Borehole Drilling	Hamlet Council and the Resolute Bay HTA approved the drilling of investigative boreholes in the newly proposed quarry area but stated that further consultations during the December consultation trip would be required to confirm if the community would be accepting of this quarry location.	A new potential quarry location was identified by the Project's geologist during the summer field program. This new "Northern" quarry area is being considered because it has a large area of exposed bedrock, it's closer to the harbour location than the Southern quarry area at prospect point and there are no archaeological sites compared to a few that would need mitigating at the Southern quarry. Diane Pinto sent an email to the SAO and the HTA manager asking for approval to explore the area further by allowing boreholes to be drilled during the September drilling program.
Cabin Owners	Phone Call with Randy Nungaq (Owner of the cabin closest to the newly proposed "Northern" quarry area) September 12, 2024	New Proposed Quarry and Haul Road	No concerns about the haul road	Noted.
			Inquiry about whether the quarry would be filled after construction to match the natural surroundings.	It would be a more of a hole that we would not fill at the end. The depth would be around 5-10m, depending on what rock we find and extent of quarry required. At the end the quarry would have fencing around it. It would look like the quarry in Pond inlet, but smaller and less deep. Photos sent. It could be transferred to the Hamlet after the Project for community use.
			Inquiry about blasting noise and flying rock.	There will be noise during blasting, but very infrequent and the community will be told before hand. The contractor will be responsible for minimizing and managing flying rock and for protecting the trailer. The quarry would also include adjacent stockpiles, and have crushers and other equipment that would be noisy.
			Not too concerned about noise	Noted.
			No concerns about proposed borehole drilling (was sent a map showing locations of boreholes)	Noted.
			Prefers that the vegetation around his cabin remains in place (this is ~120ft buffer or so from the cabin).	Noted.
			Suggested another potential quarry / outcrop location between the 2 rivers and inquired if the area had been studied.	Noted and will check with the geologists.
Hamlet Council	Meeting 2024-12-03	Construction	What is the construction season?	About June to October or as soon as the sea ice comes in, they will have to stop.
			How many people will be coming in for construction?	About 20-30 workers.
			Will the road be closed off to residents during construction?	No. The road will stay open to the community. The road will need to be closed for blasting through but that would be limited to 10-30 min every other day or so.

## Resolute Bay Community Harbour Project - Consultation Log

Group	Method and Date	Topic	Feedback/Questions/Concerns	Project Response and Mitigations
			Will the equipment be shipped in?	Yes. The idea would be that the equipment would come in on the first sealift in 2026.
			The construction window is short and in the summer there is 24 hrs of daylight here. Would they be running 24 hrs per day or will there be down time?	We have had projects run 24 hours before but ultimately it's up to the Hamlet if they approve it and if the contractor is willing to. At times they may want to just for a couple of weeks to work the tides.
			If they do 16-18 hour days that would be overtime, so wouldn't that increase cost?	There are pros and cons. The con would be that there would be construction all the time but it might cut down the amount of time overall needed to build the harbour. When we go out to tender for the construction contractor that would need to be put into the documents so they could price it out. With each year the Project is in construction there is inflation, so cutting it down by a season and putting that money into the harbour would be a benefit.
			Will people still be able to drive along the beach road during construction?	Yes, the road will be available to the community. At times there may be a flag person needing to control traffic to allow for public safety with the large haul trucks.
			There are dogs kept in that harbour area during the winter	Noted. The Project will engage with the dog owners Devon Manik and David Idlout.
		Quarry	No concerns about the newly proposed Quarry area (Northern quarry) or the large hole that will be left behind.	The idea would be that the quarry would be left to the Hamlet afterward so they could use it if needed.
			Regarding blasting, is there any idea how far the blasting will be felt? Where I grew up in a mining town you could feel it and sometimes it would break things in the house.	Residents will be able to hear it but I don't know if you will feel it. There were no reports of blasting damage in Pond Inlet or Iqaluit. In Pond Inlet you were able to feel a bit of vibration in the ground but certainly nothing broke. Also, these will be smaller blasts compared to Pond and Iqaluit. The Project can also install recording devices to monitor the blasts and confirm they are within allowable limits.
		Navigation and Lighting	Although the lights will be very bright we would rather the lights than a boat accident.	Noted.
			No concerns about navigation or navigation lighting.	Noted.
		Fish and Fish Habitat	No concerns about Fish and Fish Habitat	Noted.
		Operations and Maintenance	Will the community manage the harbour?	The harbour will be initially owned by the GN. The GN will work with the QIA and the Hamlet to determine how it will be operated.
	What is involved in harbour maintenance?	During operations it will be taking the floats in and out every season, grading, and general repairs and maintenance.		
Resolute Bay HTA Guardians	Design Workshop 2024-12-09	Quarry and Haul Road	The new northern site looks a little easier based on the slopes and with the archaeological sites at the southern site, the northern site is better.	Noted.
			No concerns with the proposed stockpile or contractor laydown areas shown. The area is not used for trails of any kind or harvesting. People travel further inland or along the existing road.	Noted.
			What happens if the cabin owners object to blasting or the stockpile locations?	We have been engaged with closest cabin owner so far and are trying to engage with the other cabin owner. The closest cabin owner is ok with it but we will continue to engage with them as the Project moves forward.

## Resolute Bay Community Harbour Project - Consultation Log

Group	Method and Date	Topic	Feedback/Questions/Concerns	Project Response and Mitigations
			If you want large rock, suggest you go to the end of the island about 40 kms away.	We are not sure we are going to be able to get the size we need here so we will be providing a stockpile of rock for repairs and maintenance. 40kms is unfortunately just too far to go for rock, it's just too expensive.
			Instead of a large hole could you carve it out and make it flat?	The rock we need is around 6m below the ground. We would love to make it flat but the rock on top is quite cracked so we need to go deep.
			The quarry might be a problem in the short term but in the long term it might make good habitat for birds.	Thank you, that is a good point.
			What is the distance limit during blasting?	Believe it is between 200-500m but it depends on what the blast size is, so that would be up to the contractor.
			People might want to take pictures of the blasts	Yes, they can do that from a safe distance away.
			We have a lot of problems with the culverts and river crossings along the haul road. A temporary bridge would be too costly but could you do culverts and a bridge?	We could put money in to building a bridge but that would take away from what we could build at the harbour. We want to put as much money as possible in to the harbour.
			In June/July for the first week or so you can not pass the river, it's very heavy, there is still ice in the harbour then though.	Noted.
		Design	There are roughly 20 boats but some are not used all the time. Estimate about 15-16 boats are regularly used.	Noted.
			If the harbour is built, it is likely that people will buy more and bigger boats because their investments would be much better protected.	Noted.
			The floats have to be removed every winter and put in every summer, is that correct?	Yes. There will be large concrete blocks that will stay in the water and then chains which will run to the shore, and then when you install the floats you hook them up to the chain.
		Employment and Training	Will there be opportunities for local employment?	Yes, the contractor is required to have Inuit employment and the contractor will do training in the community so there will be opportunities. We have a slide that will speak to this a little later on.
		Local Site Conditions	There is currently no Smart Ice program in town. HTA will look in to getting it started again.	Noted.
			By March/April there should be about 2m of ice in the harbour area but we will check.	Noted.
			There is some melt around the outfall to consider.	Noted.
		Access to water and ice	There is no issue about launching boats out of the construction area as we can launch other locations.	Noted.
			Ice access is easy along the shoreline at several areas. No concerns with ice access due to construction.	Noted.
		Wildlife	What happens if whales come around while you're building the harbour?	The Project will hire a local wildlife monitor to look out for marine mammals. There will be an exclusion zone so if whales come in, all work will stop until the whales clear out. With increased noise in general due to construction there might be less marine mammals coming in during construction.

## Resolute Bay Community Harbour Project - Consultation Log

Group	Method and Date	Topic	Feedback/Questions/Concerns	Project Response and Mitigations	
			There might be some impacts to wildlife but we are more interested in a harbour. We do worry about wildlife a bit but this harbour will benefit our community.	Noted.	
			Construction noise and possibly 24 hr activity may be a positive in keeping the polar bears away from the community.	Noted.	
			There's really not much harvesting in the area anyway, the whales will come right in the bay, so if anything, maybe once the harbour is built we will be able to catch them right in the harbour.	Noted.	
		Fuel		How are they going to refuel? From our gas station or a tank?	Usually the contractor will bring in their own fuel truck and fill up at the gas station and then distribute the fuel as needed.
				Suggest that there be designated times the contractor is able to use the gas station so it doesn't impact residents. The gas station is only open from 4-5pm.	Noted. The community fueling time will not be impacted.
		Dust		It's very dusty here and we use water. For dust mitigation, I would prefer water be used and not chemicals so it doesn't wash in to the ocean.	Noted. The contractor will only use an approved dust suppressant that is environmentally friendly.
				What safe chemicals do they use?	It's a calcium chloride solution. It packs the dust down so you don't have to apply it as frequently. There are also others we can look to use. We can also do a trial and if the community does not like it then we can switch to water.
				Currently we just put down fresh water on the roads when it gets dusty. Where will they get water from? The lake or the river?	Probably from the rivers. Drinking water lakes are not usually used. The contractor will get a permit to get the water and from where they can get it. Then they will report on how much they took and where.
		Permitting		Where is the quarry permit from?	National Resource Canada provides the explosive permits and then the area is managed by NIRB, CIRNAC, and the Hamlet.
		Navigation and Lighting		No concerns about navigation or navigation lighting.	Noted.
				I would rather have it bright than run in to the breakwater.	Noted.
		Fish and Fish Habitat		No concerns about Fish and Fish Habitat. No ideas for offsetting (if required) more interested in getting the harbour built.	Noted.
Cabin Owners	Drop in meeting with Randy Nungaq Dec 9, 2024	Quarry and Haul Road	Inquired whether blasting may break cabin windows.	Blasting shouldn't break windows, but if it does it is the contractors responsibility to fix. During blasting they would not be able to be in their cabin due to proximity.	
			Open to renting the cabin if needed for the Project	Noted.	
			Concerned about vegetation around his cabin, noting it takes a long time to grow.	Current drawing shows vegetation is outside quarry area. Dust would occur and would need to be managed by the contractor.	
			OK with the quarry nearby his cabin. Whatever is required to get that harbour built.	Noted.	
	Drop in meeting with Randy Idlout Dec 9, 2024		No concerns or issues with a quarry and stockpile nearby. Stated that the harbour is close to his cabin which he likes.	Noted.	

## Resolute Bay Community Harbour Project - Consultation Log

Group	Method and Date	Topic	Feedback/Questions/Concerns	Project Response and Mitigations
Community (15 residents)	Open House	General	Many supportive comments toward the Project.	Noted.
			Inquiries on what the quarry will look like	Pictures and videos of the Pond Inlet quarry were shown during the slide show and displayed on posters.
			Inquiries about employment and training opportunities	Noted the types of jobs that will be available and that the contractor will be responsible for training. There will be a local hiring process once a contractor has been selected.
			Concern about what happens if whales come in to the bay	The Project will hire a local wildlife monitor to look out for marine mammals. There will be an exclusion zone so if whales come in, all work will stop until the whales clear out. With increased noise in general due to construction there might be less marine mammals coming in during construction.
			Comment about 24 hr construction would be okay as it would keep the bears away.	Noted.
			Inquiry about whether there would be fees to use the harbour	The harbour is not expected to operate with fees, as none of the other harbours in Nunavut currently do. However, this would ultimately be determined through discussions between the GN and the community once the harbour is completed.
			Comments that there were big storms in the fall this year and it looks like the harbour is designed correctly for the predominate winds.	Noted.
Sealift Carriers	Emails- Feb 2025 to provide Project information and updates and solicit feedback.	General	No comments received to date.	The Project is well removed from sealift operations.
Fuel Carriers	Emails- Feb 2025 to provide Project information and updates and solicit feedback.	General	No comments received to date.	The Project is well removed from any fuel transfer operations associated with the tank farm.
Cruise Ship Operators	Emails- Feb 2025 to provide Project information and updates and solicit feedback.	General	No comments received to date.	