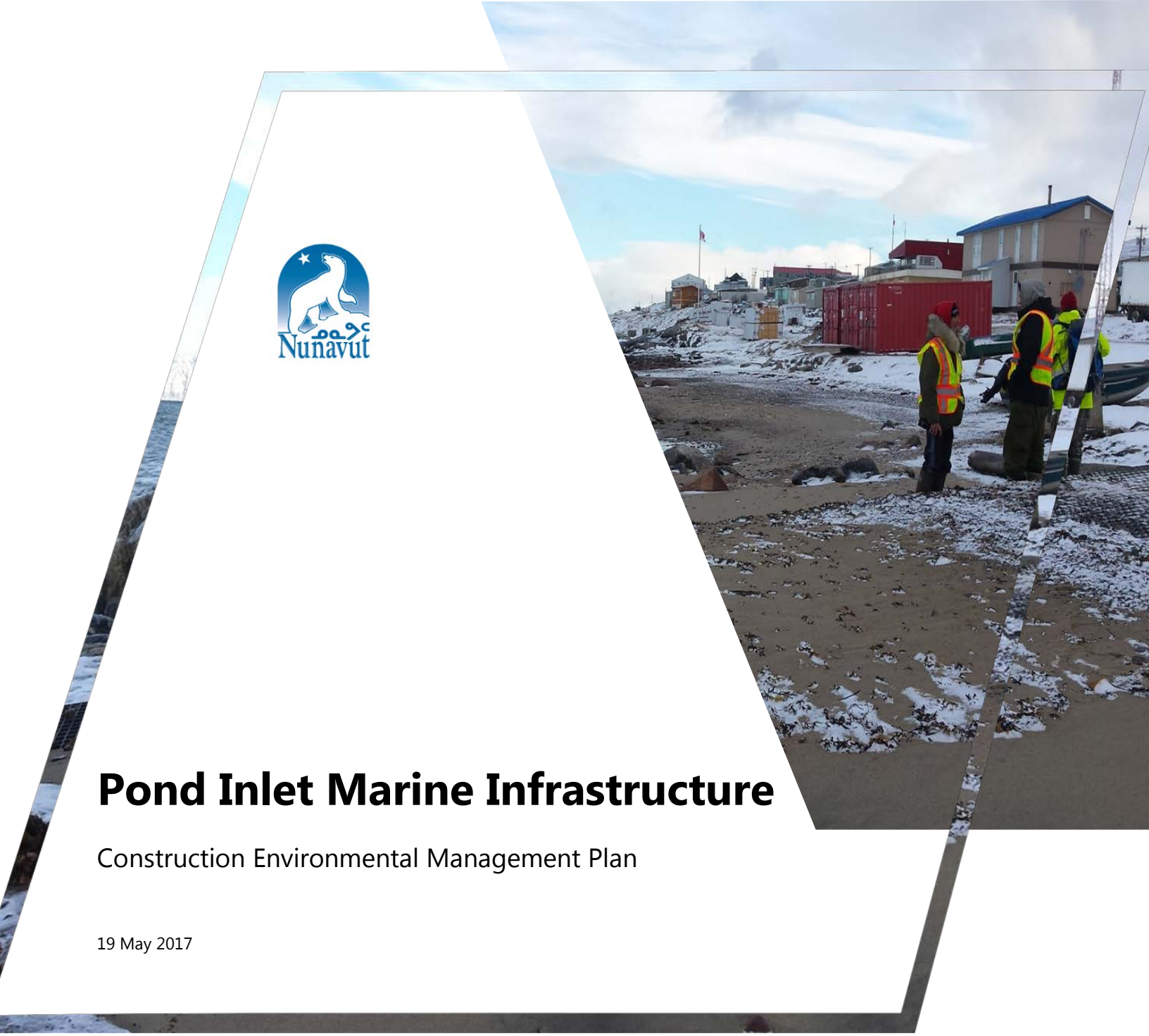


Pond Inlet Marine Infrastructure

Construction Environmental Management Plan

19 May 2017

4321 Still Creek Drive
Burnaby BC V5C 6S7
Canada

Document No.: 307071-01148-01-EN-PLN-0002

Advisian
WorleyParsons Group

www.**advisian**.com

Disclaimer

The information presented in this document was compiled and interpreted exclusively for the purposes stated in Section 1.2 of the document. Advisian provided this report for Government of Nunavut solely for the purpose noted above.

Advisian has exercised reasonable skill, care, and diligence to assess the information acquired during the preparation of this report, but makes no guarantees or warranties as to the accuracy or completeness of this information. The information contained in this report is based upon, and limited by, the circumstances and conditions acknowledged herein, and upon information available at the time of its preparation. The information provided by others is believed to be accurate but cannot be guaranteed.

Advisian does not accept any responsibility for the use of this report for any purpose other than that stated in Section 1.2 and does not accept responsibility to any third party for the use in whole or in part of the contents of this report. Any alternative use, including that by a third party, or any reliance on, or decisions based on this document, is the responsibility of the alternative user or third party.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission of Advisian.

Any questions concerning the information or its interpretation should be directed to Jamiann Questa or Stewart Wright.

Project No: 307071-01148-01-EN-PLN-0002 – Pond Inlet Marine Infrastructure: Construction Environmental Management Plan

Rev	Description	Author	Review	Advisian Approval	Date
0	Issued as Final	V. Seto / J. Forrest	R. Bracken	S. Wright	01-May-17
1	Re-issued as Final	V. Seto	R. Bracken	S. Wright	19-May-17

Table of Contents

Figure List

Table List

Appendix List

Abbreviations

Term	Definition
AIA	Archaeological Impact Assessment
ATV	All-Terrain Vehicle
BMP	Best Management Practices
CA	Contract Administrator
CCME	Canadian Council of Ministers of the Environment
CD	Chart Datum
CEMP	Construction Environmental Management Plan
CGS	Community and Government Services
CSA	Canadian Standards Association
CWP	Construction Work Plan
DFO	Fisheries and Ocean Canada
ECCC	Environment and Climate Change Canada
EDT	(Department of) Economic Development and Transportation
EI	Environmental Inspector
EM	Environmental Monitor
GN	Government of Nunavut
INAC	Indigenous and Northern Affairs Canada
MMO	Marine Mammal Observers
MSDS	Material Safety and Data Sheet
NIRB	Nunavut Impact Review Board
PSIR	Project Specific Information Requirements
SCH	Small Craft Harbour
SPRP	Spill Prevention and Response Plan
WHMIS	Workplace Hazardous Materials Information System

1 Introduction

1.1 Project Background

The Government of Nunavut (GN), through Economic Development and Transportation (EDT) is developing a new small craft harbour (SCH) in the Hamlet of Pond Inlet (the Hamlet) on the north shore of Baffin Island (the Project). The construction of the Project will be managed by Community Government Services (CGS) on behalf of EDT.

The Hamlet is the northernmost community located on Baffin Island. The community does not currently have an established harbour. The Project will improve the existing access for boats and the overall safety of marine activities in the community by providing a protected harbour for recreational users, hunters, fishers and cruise ship tender boats.

At this time, there is a small breakwater that has in-filled with sediment, and a steel structured boat ramp to facilitate launching and retrieval of boats. A small open area near the boat ramp is currently used as a sealift laydown area. This area becomes congested for several days following the sealift activities, restricting public access to the boat launch ramp and beach. This area is also exposed to high waves and winds and has little protection from storms. The Salmon River, located 4.5 km south west of the Hamlet, is used as a local safe harbour during storm events.

The proposed SCH will include a 2.5 ha inner harbour for the moorage of small local vessels (including two float strings), a fixed wharf for larger vessels, and sealift laydown area and ramp. The facility will be formed by an east and a west breakwater to provide a protected harbour. Construction will require significant amounts of aggregate, which is to be sourced from a new quarry located approximately 5 km from the construction site via road.

1.2 Purpose of the Plan

The primary purpose of the Construction Environmental Management Plan (CEMP) is to outline measures to be implemented to avoid, manage or mitigate potential environmental and social effects associated with construction activities. Associated monitoring requirements are also outlined.

This CEMP defines the requirements of the construction contractor(s) (the Contractor) for the Project and guides the development of Construction Work Plans (CWPs) for specified construction activities.

The CEMP is a live document and will be updated as required by terms and conditions defined in the Nunavut Impact Review Board (NIRB) screening decision report, other permit conditions and any additional consultation commitments. Revisions will also be made if there are changes to design or construction methods and procedures. The mitigation measures in the CEMP are based on guidelines, regulations, consultation comments and experience of constructing similar projects.

1.3 Project Overview

The Project will include three primary components (refer to Figure 1-1):

- SCH
- Quarry to supply aggregate

- Haul road between the quarry and the SCH. Two options are currently under consideration: one route primarily using existing road infrastructure and one that will require a new road to be constructed for most of its route (the alternate haul route).

These components are further defined in Section 3 of the Project Specific Information Requirements (PSIR). The current design and construction approach is based on the Pond Inlet Marine Infrastructure Project – Marine Facilities Schematic Design report prepared by Advisian (refer to Document; 307071-01148-01-MA-RP-0002). Table 1-1 contains a summary description of the components of the Project and proposed construction approach. The design of the SCH will be finalized during the detailed design phase and the Contractor will finalize the construction methods once onboard. However, this CEMP covers the main construction activities that will be required and provides appropriate mitigations.

The Project will require the following site services/activities to be executed at the start of construction:

- Mobilization (import) of marine construction and quarry equipment, construction material and supplies.
- Preparation of the Contractor laydown area; erection of fencing and other security measures as required; establishment of a fuelling, storage and maintenance area.
- Use of temporary construction site offices.
- Use of pre-fabricated accommodation modules to supplement the existing hotel, as required.
- Site services, which are likely to include: chemical and hazardous materials management; waste management; spill prevention and response; vehicle/equipment maintenance; refuelling and fuel storage; dust control; traffic control; and security.

The following services are expected to be provided through the Hamlet: potable water, sanitary waste disposal and fuel supply. If fuel supplies in the Hamlet are insufficient, the Contractor will provide portable tanks and fuel as required.

The Project is anticipated to be constructed over two open-water seasons, with demobilization in the third season. The first season will be scheduled based on the availability of sealift operations to mobilize the equipment, temporary offices and accommodations. On average, ice break-up starts mid-July and Pond Inlet is usually ice-free from the second week of August. Freeze-up typically starts in the second or third week of October and is usually complete in November. The first sealift of the season is historically around the end of August to early September. However, the Contractor may have an opportunity to access the Project site earlier if they are able to use one of the Baffinland Iron Mines sealift vessels, which typically access Eclipse Sound as early as the end of July depending on the ice conditions and the Mine schedule. If the main construction equipment is prepared for over-wintering (not demobilized), the second season may be able to commence in late May/early June with ice removal and management, with substantial completion at the end of season two. Post-construction, installation of small craft floats and demobilization will occur in the third season.

Table 1-1 Summary of Project Components and Construction Approach

Component	Description	Construction Approach
East Breakwater	The main east breakwater will be approximately 240 m in length, with a secondary east breakwater extending approximately 65 m off the main breakwater to protect the harbour entrance. The east breakwater is not intended to be accessible to vehicle or pedestrian traffic.	Use quarry core material with various rip rap shoreline protection arrangements depending on wave exposure. Driving surface will be finished with a crushed granular road surfacing. The west breakwater will be constructed first to provide protection to the beach from the prevailing westerly wind and waves and leave the existing ramp and sealift open to the public. Once the west breakwater and sealift laydown area and ramp are constructed, the ramp will be available for boat launching/storage, while the east breakwater is constructed.
West Breakwater	Approximately 360 m in length, commencing from the offshore edge of the sealift laydown area. The initial 100 m will include a 4 m wide driving surface to allow for one way traffic between the fixed wharf and sealift laydown area.	
Inner Harbour and Float Strings	2.5 ha (at low water mark) of protected area, as bounded by the breakwaters and sealift laydown area. Vessels will either tie up to float strings, anchored or be pulled ashore onto the beach. The two float strings will be extended from the shoreline, and will be removed over winter.	Swept for rocks and boulders, but not dredged using marine equipment. Float strings will require installation of a mooring system, installation of floats and transition structures.
Shoreline	Used for vehicle access to the floating docks along the shoreline in the Inner Harbour.	Sandy beach will be topped with crushed gravel road surfacing, graded and compacted.
Sealift Laydown and Ramp	Laydown area will be approximately 1 ha, and located adjacent to the west breakwater. A vehicle access ramp will be provided between the laydown area and west breakwater to allow vehicle access between the two. The sealift ramp will be approximately 20 m wide, with a 15 m wide driving surface, sloped down to the seabed from the laydown area.	Laydown area requires a containment berm and fill. The fill will be primarily sourced from dredged sediments from the fixed wharf berth pocket and approach channel. Crushed granular road structure will be placed on top of the fill to provide a suitable working surface. Sealift ramp will use quarry core material, finished with a coarse granular rock.
Fixed Wharf	Approximately 50 m long, located on the inshore side of the west breakwater. Topsides will include a bull rail, mooring cleats and access ladders.	Wharf will be a sheet pile cell structure, backfilled with a coarse crushed quarry rock and finished with a granular road surface. Sheet piles will be driven using a marine-based crane. The Contractor may choose to construct the wharf from the ice using land-based equipment during the spring.

Component	Description	Construction Approach
Harbour Entrance / Approach Channel	Used for vessel access to the fixed wharf, inner harbour and sealift ramp and laydown. A 30 m wide dredged berth pocket and approach channel is required to provide suitable access to larger vessels.	Dredged down to an elevation of -3.5 m CD using mechanical dredging equipment (i.e. backhoe or clamshell dredge). Dredging will occur once the marine equipment has completed construction of the sheet pile cells (refer to Fixed Wharf).
Ancillary Services – Electrical	Provide area lighting, navigation lights, maintenance and shore power plugs etc.	In conformance with the Canadian Electrical Code and the Nunavut Electrical Protection Act
Quarry	Provide fill material and rip rap for the construction of the breakwaters.	Drilling and blasting activities. Sorting and stockpiling blasted rock. Crushing, screening and stockpiling to produce various crushed granular products.
Haul Road	Route to transport the rock material for the construction of the SCH from the Quarry to the shoreline.	Refer to Section 3.3.2 of the PSIR for the road design standards. If the alternate haul route is the selected option, the final alignment will be left to the discretion of the contractor, but will be restricted to the Corridor that has been defined in the PSIR and shown in Figure 1-1. Alternate route may require stripping of overburden, cut/fill on in-situ materials, water crossing culverts or bridges, ditching and safety berms.

1.4 Existing Site Conditions and Construction Effects

The PSIR contains detailed information on the existing environmental setting based on the baseline investigations and desktop study, and assesses the potential environmental effects from construction activities.

1.5 Authorizations, Permits and Approvals

The Contractor will be required to comply with all Acts, Regulations, Bylaws and Codes. Section 3 references key Acts and Regulations, but does not provide an exhaustive list. A number of authorizations, permits, and approvals are required prior to commencing construction. Refer to Section 1.1.4 of the PSIR for applicable authorizations, permits and approvals.

1.6 Contractor Construction Work Plans

The Contractor will be required to prepare task and site specific Construction Work Plans (CWP) that will include environmental management, mitigation and monitoring measures that comply with the requirements of this CEMP, approval and permit obligations and legal requirements.

At a minimum, the Contractor will be required to prepare plans covering the following:

- Construction Health and Safety
- Quarry Development:
  - Quarry Operations (including blast and dust management)
  - Closure/Reclamation
- Traffic Management
- Spill Prevention and Response (a preliminary plan is provided in Appendix 1)
- Marine Construction

The Construction Health and Safety Plan will be prepared in accordance with the *Safety Act*: Occupational Health and Safety Regulations as well as guidelines and Codes of Practice of the Workers' Safety and Compensation Commission. The Quarry Development Plan will be prepared in accordance with the Northern Land Use Guidelines, Pits and Quarries, Indigenous and Northern Affairs Canada (INAC), 2010 and the *Explosive Use Act* and Regulations. Once the Project is complete, the operation of the quarry will become the responsibility of the Hamlet.

Additional plans may be required, which will be identified during design development, contracting and from regulatory permits and approvals.

Legend

- Proposed SCH Layout
- Existing Haul Road Option
- Gravel Road
- Stream/Creek
- Potential Contractor Laydown Area
- Proposed Quarry Location
- Alternate Haul Road Corridor

0 200 400 800
Metres

N

Note:
- Coordinate System: NAD 1983 UTM Zone 18N
- Basedata from Government of Nunavut, 2016

B SHEET

OneWay™ to zero harm

DATE:	19/05/2017
DRAWN:	YM
EDITED:	KR
APPROVED:	V.B.

CUSTOMER: Nunavut

Advisian
WorleyParsons Group

POND INLET MARINE INFRASTRUCTURE
CEMP
LOCATION AND SITE PLAN

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

WORLEYPARSONS PROJECT No:	FIG No:	REV
307071-01148	1-1	0

FILE LOCATION: U:\YVR\307071\01148 GON_NV\Marinfra\10 Eng\16 Geomatics\01 Mxd\CEMP\Pond Inlet\2017-04-28 PI Project Overview Rev0.mxd

PLOT DATE & TIME: 19/05/2017 3:34:48 PM
SAVE DATE & TIME: 19/05/2017 3:34:48 PM

USER NAME: yao.mo
ISSUING OFFICE: BURNABY GIS

Service Layer Credits:

2 Roles and Responsibilities

To successfully complete the Project, there are three primary organizations: the GN, Construction Administration Team, and the Contractor Team. The roles and responsibilities for each team with respect to management of environmental performance on the Project are set out below. The responsibility for the application of this CEMP encompasses all Project personnel from management to workers.

2.1 Government of Nunavut

As the owner of the Project, the GN has the obligation to ensure that their commitments to protect the environment are met, and that these relevant obligations are known to the Construction Administration Team. There are two departments in the GN that have a role in Project execution as described following.

2.1.1 Economic Development and Transportation

EDT is the owner of the Project and will be responsible for the facility once construction and commissioning have been completed.

2.1.2 Community and Government Services

CGS is managing the development of the Project through to the end of construction and commissioning on behalf of EDT.

CGS will have the following responsibilities under this CEMP during construction and commissioning:

- Advising the Contractor and clarifying information with respect to CGS environmental principles, standards and expectations.
- Communicating with regulators on matters related to permitting and regulatory compliance.
- Maintaining communication and information with the community and Hamlet administration.
- Reviewing and approving the CEMP, and any changes that may be required.
- Reviewing and approving Contractor CWPs in conjunction with Construction Administration Team.
- Reviewing monitoring reports and providing comments as required.
- Transmitting monitoring reports and incident notices to regulators and community members and groups as necessary.

2.2 Construction Administration Team

The Construction Administration Team will act on behalf of, and report to CGS.

2.2.1 Contract Administrator

The Contract Administrator (CA) acts as the CGS Representative and is responsible for verifying that the Contractor's activities are in compliance with contractual requirements and the approved design, including environmental requirements, regulations and relevant permits and approvals. All reporting by the Contractor shall be provided to the CA, or their designate, who will communicate information on environmental compliance activities with GN. With regard to environmental matters, responsibilities of the CA include:

- Participating in hazard identification associated with planned critical work activities.
- Liaising with the Contractors and the EI to resolve non-compliance issues.
- Maintaining effective and timely communication with CGS in the event of any non-compliance.

2.2.2 Environmental Inspector

Reporting to the CA, the Environmental Inspector (EI) will be on site as required to verify that monitoring activities associated with the CEMP and CWPs are implemented appropriately, assess environmental performance and verify the effectiveness of mitigation methods. The EI's responsibilities will include, but are not necessarily limited to:

- Reviewing Contractor CWPs and providing recommendations for improvements as needed.
- Approving Contractor CWPs in conjunction with CGS.
- Conducting periodic site inspections and environment compliance evaluations and audits.
- Acting as a primary point of contact as directed by the CA, for the Contractors regarding environment queries or complaints.
- Coordinating with the Contractors and the CA to resolve non-compliance issues.
- Liaise with Contractors and regulators, as directed by CGS and/or CA, for environmental compliance issues.

Note that individual responsibilities for environmental monitoring are yet to be determined and may be allocated between the EI and/or Contractor depending on contractual arrangements.

2.3 Contractor and Environmental Monitor

The Contractor is responsible for the management of construction activities and the preparation of task specific CWPs (refer to Section 1.6) for approval by GN/Construction Administration Team.

The Contractor will retain an Environmental Monitor (EM), to provide the following services:

- Preparation of CWPs and the environmental monitoring of construction, as required.
- Conducting field inspections, taking necessary environmental samples to confirm compliance with the CWPs and this CEMP for all Contractor works.
- Recording monitoring results, environmental compliance and corrective actions.
- Routine and incident reporting to Construction Administration Team/EI.
- Consulting on and resolving environmental issues including, leading incident investigations, etc.
- Suspending construction activities that do not accord with standards included in this CEMP or associated Contractor CWPs or following an Environmental Incident.

- Communicating with all Contractor personnel and providing training on environmental compliance requirements.
- Coordinating with the Contractor's staff, including all sub-contractors, to drive compliance with the CEMP and CWPs; all government regulatory, approval and permit conditions; procedures; and field instructions from the Construction Administration Team.
- Training and awareness: promotion of environmental protection by Contractor's staff, including the implementation of best management practices and procedures.
- Assist with and participate in inspections conducted by the Construction Administration Team.

3 Management, Mitigation and Monitoring Measures

This section outlines the management, mitigations and monitoring measures to be incorporated into the Contractor CWP and implemented before and/or during construction. Categories have been adopted based on either a construction activity that needs to be managed to mitigate a direct effect on the environment (e.g. traffic management) or an environmental component that will need to be managed (e.g. wildlife). Further categories may be required based on regulatory permits and approvals.

Each measure has been allocated a specific reference number to facilitate commitment tracking through the Project. Mitigation measures may apply to various environment categories; however it will only have one reference number assigned to avoid duplication.

3.1 Waste Management Plan

The following section contains management, mitigation, monitoring and reporting requirements associated with hazardous materials, solid and liquid waste (hazardous and non-hazardous) generated by the Project.

All use, handling, storage and transportation of hazardous and non-hazardous wastes are to be undertaken in compliance with statutes, regulations, standards, guidelines and local by-laws, which includes (but is not limited to):

- International:
  - International Maritime Dangerous Goods Code, International Maritime Organization, 2016
- Federal:
  - *Arctic Waters Pollution Prevention Act*; Part 4(1) states that: "*Except as authorized by regulations made under this section, no person or ship shall deposit or permit the deposit of waste of any type in the arctic waters or in any place on the mainland or islands of the Canadian arctic under any conditions where the waste or any other waste that results from the deposit of the waste may enter the arctic waters*"
    - Arctic Shipping Pollution Prevention Regulations (ASPPR), under the *Arctic Waters Pollution Prevention Act* (AWPPA)*:* to be referenced in relation to fuelling in the marine environment
    - Arctic Waters Pollution Prevention Regulations (AWPPR), under the AWPPA. This covers the shipowner's liability provisions regarding spillage of waste.
  - *Canadian Environmental Protection Act*: Interprovincial Movement of Hazardous Waste Regulations; Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations
  - *Explosives Act*
  - *Fisheries Act*: Section 36 states that: "*Subject to subsection (4), no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water*"
  - *Transportation of Dangerous Goods Act*
  - Oil Pollution Prevention Regulations (OPPR), under the *Canada Shipping Act* (CSA)

- Territorial:
  - *Environmental Protection Act:* Part 5 states that: "*Subject to subsection (3), no person shall discharge or permit the discharge of a contaminant into the environment…Unless the discharge is authorized by this Act or the regulations or by an order issued under this Act or the regulations*"
  - *Explosives Use Act*
  - *Fire Prevention Act*
  - *Nunavut Lands Claim Agreement Act*: Article 13 Part 7 states that: "*With the exception of domestic or emergency use of waters as set out in Section 5 of the Northern Inland Waters Act RSC 1985, c. N-25, no person may use water or dispose of waste into water without the approval of the Nunavut Water Board*"
  - *Public Health Act*
  - *Safety Act*
  - *Transportation of Dangerous Goods Act*
  - *Wildlife Act*

Relevant Best Practice (BMPs) for waste management includes the following:

- A Best Practices Guide to Solid Waste Reduction, Canadian Construction Association, 2001.
- Environmental Guideline for the General Management of Hazardous Waste, Government of Nunavut, Department of Environment, 2010.
- Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities, Department of Environment, Government of Nunavut, 2011.

3.1.1 Hazardous Materials Handling, Storage and Disposal

Hazardous materials may be used and/or generated in construction activities such as quarrying, maintenance of mobile equipment, welding and cutting of steel, painting wharf hardware and other miscellaneous components.

The mitigation and monitoring measures associated with transport, storage, use and disposal of hazardous materials are provided in Table 3-1.

Table 3-1 Hazardous Materials: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Hazardous Materials Measures	
HM01.	Ensure staff are trained and qualified to safely handle the hazardous waste and materials.
HM02.	Hazardous waste and materials shall be stored a minimum 30 m distance from a waterbody or identified sensitive environmental area (as identified through permitting, during pre-construction surveys [if required] or by the EI or EM).
HM03.	A suitable container, based on the properties of the waste or materials to be stored, shall be selected: hazardous materials shall be stored in their original containers, where possible, or in containers specially manufactured for the purpose of storing a specific hazardous waste or materials.
HM04.	Containers used for hazardous waste and materials shall not be used for non-hazardous waste types.
HM05.	All hazardous waste and materials shall be stored on a firm working surface that is impervious to leaks.
HM06.	All hazardous waste and materials shall be stored within a container which has at least 10 % more capacity than the total volume of substances to be stored.
HM07.	Drainage into and from the storage area shall be controlled, and/or suitable secondary containment implemented, to prevent spills or leaks from leaving the site and to prevent run-off from entering the site.
HM08.	Containers shall be sound, sealable and not damaged or leaking.
HM09.	Containers shall be closed and sealed at all times, except while materials are being added or removed.
HM10.	All hazardous waste and materials shall be classified and labelled – containers must be clearly labelled to identify their contents according to requirements of the WHMIS and the relevant Transport Authority.
HM11.	All hazardous waste and materials containers shall be accompanied by the Material Safety Data Sheet (MSDS) or have the MSDS on file available.
HM12.	Incompatible waste and materials shall be stored in a manner that contact, in the event of a spill or accidental release, is not possible (i.e. corrosive materials must be kept away from flammable materials).
HM13.	Containers shall be placed so that each can readily and easily be inspected for signs of leakage, corrosion or deterioration. Leaking, corroded or deteriorated containers shall immediately be removed and their contents transferred to a sound container.
HM14.	Inspections of the hazardous waste and materials management shall be performed and recorded at least weekly.
HM15.	A registered hazardous waste carrier shall be used to transport the waste to a registered receiver or hazardous waste management facility if disposal is required.
HM16.	Records are to be maintained indicating the type and quantity of waste being stored along with the date, type and quantity of hazardous waste brought into or removed from the facility.
HM17.	Any open source of ignition, open flame, hot works and smoking is prohibited in the hazardous waste and materials storage area. All designated smoking areas shall have appropriate fire proof containers for waste.

Reference #	Requirement
HM18.	Engines will be shut off and smoking shall be prohibited during fueling.
HM19.	During transfer of petroleum products, a trained person must be in attendance for the entire duration of the operation. Reasonable precautions shall be taken to avoid the discharge of petroleum products onto land or into water (i.e. Fuel transfers must be stopped prior to overflowing to leave room for expansion).
Other Environmental Measures Applicable	
WW01.	Staff shall be trained on sorting and storage requirements of specific wastes or materials that will be reused; or are prohibited from disposal in the non-hazardous waste system.
SP02.	Spill kits shall be readily available, and will be appropriate to the type and amount of hazardous and waste materials anticipated for the Project. Standard spill kits typically contain absorbent booms, socks, pads, waste bags and ties, and PPE such as gloves and goggles. Further details on the contents of the spill kits will be provided in the SPRP by the successful Contractor.

3.1.2 Non-Hazardous Waste and Wastewater

Non-hazardous solid waste generated may include food waste, wood packaging, cardboard, paper, plastics, scrap steel, glass etc. The majority of non-hazardous waste is to be disposed of in the Hamlet's landfill and overburden from the quarry activities will be stockpiled at the quarry.

Anticipated wastewater production for the project will include both sewage (human waste) from on-site sanitary facilities and grey water. Wastewater will be transported by the Hamlet's sewage truck and disposed of in the existing sewage lagoon.

The mitigation and monitoring measures associated with transport, storage, and disposal of non-hazardous waste material are provided in Table 3-2.

Table 3-2 Non-Hazardous Waste and Wastewater: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Non-Hazardous Waste and Wastewater Measures	
WW01.	Staff shall be trained on sorting and storage requirements of specific wastes or materials that are to be reused; or are prohibited from disposal in the non-hazardous waste system.
WW02.	Where possible, materials shall be re-used, reduced and/or recycled to minimize waste generated.
WW03.	Install barriers to prevent vehicle interaction at waste storage areas.
WW04.	Waste shall be segregated in clearly marked waste containers applicable to the end use (e.g. landfill waste categories used by the Hamlet; i.e. wood waste).
WW05.	Domestic waste containers shall be kept closed (e.g. equipped with lids, covers / tarps over skips) at all times except when bins are being emptied or filled, to prevent scavenging by wildlife and domestic animals, as well as to control odour.
WW06.	Containers and tanks are to be in good condition (no rusting or apparent structural defects).

Reference #	Requirement
WW07.	Tanks or vessels must be able to withstand the pressure expected by the stored waste, taking into account factors such as temperature fluctuations.
WW08.	All waste shall be stored in plastic bags while conducting marine work to prevent waste being released into the water.
WW09.	Waste shall not be deposited in, or placed on land or ice, under any conditions where the waste may enter arctic waters.
WW010.	Daily site cleaning (housekeeping practices) and routine inspections shall be completed to ensure materials are correctly sorted and placed in the proper bins.
WW011.	Vehicle washing areas for haul trucks, if required, shall be contained separately and shall be provided with an oil water separator sized to expected flows and conditions.
Other Environmental Measures Applicable	
HM04.	Containers used for hazardous waste shall not be used for non-hazardous waste types.
WL07.	Food, food waste, and other attractants shall be handled, stored and disposed of safely to avoid attracting and habituating animals.

3.2 Spill Prevention and Emergency Response

Spill Prevention and Emergency Response is addressed in two sub-sections:

- Spill Prevention and Response
- Emergency Response

The acts, regulations and BMPs noted in Section 3.1 also apply to spills and emergency response. Additional acts and BMPs include:

- *Environmental Protection Act*, Spill Contingency Planning and Reporting Regulations (R-068-93).
- Northern Land Use Guidelines, INAC, 2003.
- National Fire Code of Canada, National Research Council Canada, 2015.
- Workplace Hazardous Materials Information System (WHMIS), Health Canada, 2015.
- Guidelines for Spill Contingency Planning, INAC, 2007.
- Guidelines for the Preparation of Hazardous Material Spill Contingency Plans, Environment Canada, 1990.
- Emergency and continuity management program, Canadian Standards Association (CSA) Z1600-14, 2014.
- National Oil Spill Preparedness and Response Regime, Transport Canada, 2012.

3.2.1 Spill Prevention and Response Plan

A site specific Spill Prevention and Response Plan (SPRP) is being developed prior to construction (refer to Section 1.6).

A preliminary SPRP is provided in Appendix 1. The preliminary SPRP includes the mitigation and monitoring measures for spill prevention and response that have been defined to date. This Plan will be further developed and updated once a Contractor has been selected. The SPRP will follow INAC's Guidelines for Spill Contingency Planning (2007).

3.2.2 Emergency Response Plan

An Emergency Response Plan will be prepared for the Project by the Contractor that outlines the protection of the environment, personnel and the public in the event of an emergency scenario during construction.

In conformance with the "Environmental Guideline for the General Management of Hazardous Waste", Government of Nunavut, 2010, the emergency response plan will be developed in cooperation with local emergency response personnel and emergency response equipment will be available in the event of a spill, fire or other emergency situation.

At a minimum the emergency response plan will:

- Define the roles and responsibilities in the event of an environmental emergency.
- Include a pre-work hazard analysis which requires Contractors to identify spill hazards, pathways of exposure to environmental receptors, access for emergency/clean-up vehicles, and storage facilities for spill response gear.
- Include emergency classification procedures (as necessary).
- Define communication protocols including a key contact list for emergency response.
- Define incident reporting guidelines and necessary information such as: Date and time of call; Estimated time of spill or release; Type of hazardous material spilled or released; Evacuation requirements; Estimated quantity of hazardous material spoiled or released; Spill response completed prior to reporting; Assistance required for successfully containing and cleaning the spill or release.
- Include post-incident reporting requirements.
- Be developed in conjunction with Hazardous waste management and spill prevention / response plan.

3.3 Road/Marine Traffic Management

The key concern is to ensure safety of residents, to maintain normal road traffic flow and marine access and navigation in the community. Traffic management is addressed in three sub-sections:

- Road Traffic and Transportation: Includes road construction and operations (i.e. dust management and maintenance).
- Vehicle and Equipment Operators and Use: Includes driver requirements, and vehicle and equipment specifications, fuelling and maintenance requirements.
- Marine Traffic and Transportation: Includes marine construction and vessel movements

3.3.1 Road Traffic and Transportation

The Contractor will be required to prepare a Traffic Management Plan to minimize the risk of traffic accidents, maintain normal traffic flow in the community, maintain normal Hamlet service delivery to residents (refer Section 1.6) and manage dust.

The mitigation and monitoring measures for road traffic and transportation management are provided in Table 3-3.

Table 3-3 Road Traffic and Transport: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Traffic Measures	
TF01.	Consult and coordinate with existing road service providers in the Hamlet. Road use shall not disrupt the delivery of community services and will be done in consultation with the Hamlet administration.
TF02.	A traffic awareness campaign concerning road safety, particularly for children and teens shall be implemented.
TF03.	Project specific speed limits shall be set for the haul route, not greater than limits specified by the Hamlet *(to be agreed)*. Speed limits will be set such that community safety is maintained and for the control of dust mobilisation.
TF04.	Road use timing restrictions shall be adhered to *(to be agreed with Hamlet administration)*.
TF05.	Traffic control measures shall be implemented at intersections along the haul road route, as required. This may include the use of a traffic monitor.
TF06.	Appropriate roadway construction materials, which will not require significant dust management efforts during use, shall be selected.
TF07.	Suitable dust suppressants to reduce dust generation to acceptable levels shall be used. Dust suppressants will be in accordance with the Government of Nunavut, Department of Sustainable Development, Environmental Protection Service, and Environmental Guideline for Dust Suppression.
TF08.	Proactive maintenance shall be undertaken to address problem areas of the road which may produce significant dust.
TF09.	Haul road shall be maintained and repaired immediately if damaged. Undertaking regular grading and compacting to remove potholes.
TF10.	Regular inspection and maintenance of water control features (i.e. culverts) shall be undertaken during construction.
TF11.	Consultation with the sealift companies and Hamlet administration shall be undertaken to minimize obstructing access to the existing sealift during SCH construction.
Other Environmental Measures Applicable	
WL09.	Escape routes for wildlife on access roads shall be provided (where possible), particularly during winter (i.e. avoid creating continuous berms of snow adjacent to roads that restrict wildlife).
WL10.	Appropriate mitigation measures will be implemented in the event large congregations of wildlife and birds occur in the Project Area.
SE05.	Road surfaces shall be stabilized and controlled runoff channels created where required.

3.3.2 Vehicle and Equipment Operators and Use

The mitigation and monitoring measures for vehicle and equipment operators and use are provided in Table 3-4.

Table 3-4 Vehicle and Equipment Operators and Use: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Vehicle and Equipment Use Measures	
VE01.	Drivers will be properly trained and licensed. Personnel shall be encouraged to drive defensively and courteously.
VE02.	All vehicles shall have adequate lighting so they can be easily seen.
VE03.	Combustion emissions sources (machinery) and staging areas for vehicles and heavy duty machinery shall be located away from sensitive receptors.
VE04.	Construction equipment shall be sized correctly for the task and in compliance with any Hamlet road restrictions.
VE05.	A regular maintenance program for Project vehicles and equipment shall be implemented to ensure construction equipment is in good working order.
VE06.	When existing local facilities are not available for refuelling, onshore equipment and vehicles must be serviced and refuelled at least 15 m away from sensitive habitats unless secondary containment is used; preferably over an impermeable surface (e.g. drip trays). Drip pans and / or other protective devices shall also be used to prevent spills of petroleum products and other potentially hazardous liquids (e.g. antifreeze) during servicing.
VE07.	Revving of engines on mobile or stationary machines shall be limited and equipment not in use shall be shut down (restrict idling).
VE08.	Gas or diesel engine exhausts shall be fitted with noise mufflers, where available.
VE09.	The use of horns, bells, hooters, or other audible signals on mobile equipment shall be limited, while maintaining safe operation.
VE10.	Ongoing visual assessments of the potential for dust generation and combustion emissions shall be conducted (during work and/or when machinery is operating) to determine requirement for the implementation of dust suppression measures.
VE11.	Equipment (including material stockpiles and vehicle parking areas) shall be located as far as practical from residences or sensitive wildlife features (or habitats). If the noise source is directional, equipment will be orientated to minimize propagation in critical directions.
VE12.	When offshore equipment and marine vessels are refueled through a floating hose, Contractor will ensure that all hoses and equipment are in good working order, appropriate spill containment and clean-up equipment is available, and personnel are trained in refueling and spill response procedures.

Reference #	Requirement
Other Environmental Measures Applicable	
HM18.	Engines shall be shut off and smoking shall be prohibited during fueling.
SP02.	Spill kits shall be readily available, and will be appropriate to the type and amount of hazardous and waste materials anticipated for the Project. Standard spill kits typically contain absorbent booms, socks, pads, waste bags and ties, and PPE such as gloves and goggles. Further details on the contents of the spill kits will be provided in the SPRP by the successful Contractor.
SP06.	Routine inspections of equipment for leaks, cracked hoses and other conditions that may result in spills shall be undertaken. The Contractors shall ensure external equipment surfaces are free of oil, diesel and other potential contaminants prior to use.

3.3.3 Marine Traffic and Transportation

A range of vessels and equipment will be present in the waters around the SCH during construction activities. There is a potential for construction vessels to interfere with existing marine use and navigation.

The mitigation and monitoring measures to prevent interference with existing marine use and navigation are provided in Table 3-5.

Table 3-5 Marine Traffic and Transportation: Mitigation Measures Summary

Reference #	Requirement
Marine Traffic Control Measures	
MT01.	Construction vessels will keep to pre-defined work areas and routes that will not interfere with sealift deliveries and to minimize the impact on existing traffic and navigation.
MT02.	Clear communication protocols or procedures for vessels working in the area will be established.
MT03.	Communication protocols will be established to notify the community of marine activities, including ongoing consultation with the community and HTA and Notice to Shipping.
Other Environmental Measures Applicable	
MC12.	Project-related vessels shall maintain vigilance for marine mammals, document sightings, and employ minimum distances and best practices if within 100 m of any marine mammals. Collisions or any injured or distressed marine mammal must be reported immediately to the CA/EI and DFO.
MC13.	Rapid acceleration of vessels shall be avoided.
MC14.	Vessels must follow the guidance for marine mammals and protected areas as outlined in the most recent Notice to Mariners published by the Canadian Coast Guard.

3.4 Blasting Management

The Contractor will prepare a Quarry Development Plan that must include a Blasting Management Plan (refer to Section 1.6). The quarry development plan will be prepared taking into consideration the Northern Land Use Guidelines for Pits and Quarries, INAC, 2010.

The Blasting Management Plan must include:

- Strategies for dealing with excess explosives, mechanisms for collecting, treating and discharging seepage water that may be contaminated through blasting.
- Procedures to avoid debris from entering into the watercourse, if/when blasting near watercourses.
- Vibration and noise control where relevant to sensitive nearby sensitive receptors (i.e. workers, denning wildlife).
- Timing restrictions for when blasting will be prohibited (i.e. allowed 12 hours a day only).

An Abandonment and Restoration Plan will be developed prior to the closure of the quarry, if the quarry is not transferred to the Hamlet upon completion of the construction phase of the Project.

Mitigation and monitoring requirements associated with blasting are provided in Table 3-6.

Table 3-6 Blasting: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Blasting Measures	
BL01.	Construction should be initiated prior to the arrival of migratory birds (breeding season mid-May to mid-August) such that the quarry and surrounding area becomes unattractive for nesting. A pre-construction survey shall be conducted by the EM to identify all sensitive wildlife features, e.g. active bird nests, wildlife dens and wildlife foraging or traveling nests, if blasting commences within this window.
BL02.	Blasting shall be restricted to hours as agreed with the Hamlet.
BL03.	A notification protocol with input from the local community and other stakeholders for advance notification of planned substantial noise-causing activities shall be implemented.
BL04.	Buffers or exclusion zones shall be implemented, in the event a sensitive species or feature (e.g. nest) is identified, to ensure wildlife are not disturbed.
BL05.	Prior to blasting occurring, warning must be issued in affected area using loud signaling devices.
BL06.	Blast mats shall be used as needed to prevent physical damage from fly rock and supress dust.
BL07.	Dust suppressants and/or watering shall be used to reduce dust generation from blasting to acceptable levels.
BL08.	No blasting shall occur in water.
Other Environmental Measures Applicable	
WL11.	A pre-construction wildlife sweep will be conducted by the EM to identify all sensitive wildlife features, e.g. active bird nests, wildlife dens and wildlife foraging or traveling.

3.5 Sediment and Erosion Control

Sediment and erosion control is required for all surface disturbance activities, such as preparation of the Contractor laydown area; development of the quarry and (if required) construction of the haul road. The Contractor will be required to apply applicable sediment and erosion control BMPs to meet water quality criteria as well as measures to mitigate impacts from permafrost degradation and associated instability and erosion. The design and construction of the haul road will be in accordance with INAC's Northern Land Use Guidelines – Access: Roads and Trails and other relevant guidelines such as Land Development Guidelines for the Protection of Aquatic Habitat, Fisheries and Oceans Canada (DFO) and Ministry of Environment, Land and Parks, 1993. Proposed mitigations are provided in Table 3-7.

Table 3-7 Sediment and Erosion Control: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Sediment and Erosion Control Measures	
SE01.	Perimeter controls shall be applied to act as a barrier, preventing sediment from reaching surrounding water courses (i.e. sediment/silt fence).
SE02.	Temporary sediment control measures shall be applied at the base of soil stockpiles.
SE03.	Soil stockpile storage areas to shall be constructed to prevent sediment from entering waterways (i.e. contour soil stockpiles and bulk material stockpiles to reduce erosion potential).
SE04.	Sediment control measures shall be applied at the base of exposed slopes (i.e. silt fence) to minimize conveyance of sediment to a waterbody.
SE05.	Road surfaces shall be stabilized and controlled runoff channels created.
SE06.	Downstream water quality in potentially impacted water bodies shall be monitored.
SE07.	Material shall be stockpiled in such a way that debris/sediments will not enter the marine environment. Material will not be stockpiled on the ice.
SE08.	Haul road embankments shall be constructed to a suitable thickness (1 to 1.5 m) before a surface course is applied in order to limit disturbance to thermal regime.
SE09.	The Contractor shall consider haul road design alternatives that allow for a reduction in grade, and minimizes watercourse crossings and disturbance to riparian areas.
SE10.	Regular monitoring of the haul road shall be undertaken to identify ground stability concerns.
SE11.	Sediment and erosion control measures shall be implemented as soon as possible after vegetation removal in riparian areas.
SE12.	Culverts and /or other drainage features shall be installed at water crossings and in lowland areas in order to maintain flow.

Reference #	Requirement
Other Environmental Measures Applicable	
TF07.	Suitable dust suppressants to reduce dust generation to acceptable levels shall be used. Dust suppressants will be in accordance with the Government of Nunavut, Department of Sustainable Development, Environmental Protection Service, and Environmental Guideline for Dust Suppression.
WL12.	Work site boundaries shall be flagged to prevent inadvertent loss or alteration of habitat outside of the designated Project footprint.

3.6 Marine Construction Management

Marine construction activities in the intertidal and subtidal areas comprise:

- Placement of rock
- Pile-driving
- Dredging
- Re-use and placement of dredged material

All marine activities are to be undertaken in compliance with all statutes, regulations, standards, guidelines and local by-laws, which include (but are not limited to):

- *Fisheries Act* (refer to Section 3.7).
- *Navigation Protection Act*: Part 3 states that: "*It is prohibited to construct, place, alter, repair, rebuild, remove or decommission a work in, on, over, under, through or across any navigable water that is listed in the schedule except in accordance with this Act or any other federal Act*".
- *Canadian Environmental Protection Act*: the beneficial re-use of dredged material in the construction of the breakwater will be undertaken such that the objectives of the Act are met.

During construction activities, fish and marine mammals are at risk of injury or behavioural effects from underwater noise or reduced water quality generated by in-water construction activities.

Mitigation and monitoring requirements associated with marine construction are provided in Table 3-8.

Table 3-8 Marine Construction Management: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Marine Construction Management Measures	
MC01.	A Monitoring Plan for the Project shall be developed that includes requirements during dredging and placement of quarry material. This will include allowable levels of Turbidity/Total Suspended Solids (TSS) and marine mammal monitoring requirements.
MC02.	Measures to reduce sediment mobilization during in-water activities shall be used by the Contractor when TSS/turbidity exceeds Canadian Council of Ministers of the Environment (CCME) water quality criteria.

Reference #	Requirement
MC03.	Prior to construction, contractor will communicate with HTA to obtain information relevant to the current marine mammal sightings before the onset of construction practices that could result in disturbance or injury.
MC04.	Soft-start procedure shall be implemented for pile-driving that could generate underwater noise above auditory thresholds for marine mammals.
MC05.	Vibratory piling equipment shall be used to reduce noise effects to community and marine fauna, where possible. A monitoring program shall be developed to verify that underwater noise levels are less than 30 kPa @ 10 m from the piling activity.
MC06.	Additional mitigation measures, e.g. bubble curtains, shall be required for pile driving if the underwater noise auditory thresholds are exceeded.
MC07.	Pile driving shall be conducted within hours as agreed with the Hamlet.
MC08.	Mechanical dredging methods shall be used, which result in lower levels of underwater noise compared to hydraulic methods.
MC09.	MMOs will be employed to monitor for the presence of marine mammals in a defined marine mammal exclusion zone. During the open-water season, the exclusion zone will be initially set at 500 m, with in-situ underwater noise monitoring to be conducted at the onset of in-water works to verify the exclusion zone based on the underwater sound auditory threshold of 160 dB re 1µPa. Communication with construction teams and reporting of data will be included.
MC10.	Prior to construction, stop-work conditions shall be specified. Such conditions would include exceedance of sound thresholds, or sighting of a marine mammal within the exclusion zone by the MMO. Work must not re-start until the marine mammal has moved out of the exclusion zone.
MC11.	If construction is to occur during the iced-season, the in-air sound levels will be measured and pinnipeds monitored on the ice. In the absence of Canadian guidelines, the US in-air acoustic threshold for non-harbour seal pinnipeds of 100 dB re20µPa rms will be adopted.
MC12.	Project-related vessels shall maintain vigilance for marine mammals, document sightings, and employ minimum distances and best practices if within 100 m of any marine mammals. Collisions or any injured or distressed marine mammal must be reported immediately to the CA/EI and DFO.
MC13.	Rapid acceleration of vessels shall be avoided.
MC14.	Vessels must follow the guidance for marine mammals and protected areas as outlined in the most recent Notice to Mariners published by the Canadian Coast Guard.
MC15.	The area of sea that is artificially illuminated shall be minimized.
MC16.	Water-based equipment or machinery shall be located and secured in such a way as to prevent grounding in identified sensitive habitats.
MC17.	Rock material used for in-water construction will be free of fines that could affect water quality.
MC18.	An EM will be present during all in-water construction activities to monitor for stress related behaviours or for fish kills. If observed, adaptive management will be implemented or, if necessary, stop-work will be implemented until effective mitigation measures are in place.

Reference #	Requirement
MC19.	All lubricants and hydraulic fluids used on equipment that will be working below the high water level will be biodegradable and non-toxic.
MC20.	All Project marine construction vessels and equipment shall be clean and free of marine fouling to avoid the introduction of invasive species.
Other Environmental Measures Applicable	
BL03.	A notification protocol with input from the local community and other stakeholders for advance notification of planned substantial noise-causing activities shall be implemented.
SP01.	All workers shall be trained in the spill prevention and response requirements during site induction and subsequent toolbox talk sessions.
WW08.	All waste shall be stored in plastic bags while conducting marine work to prevent waste being released into the water.

3.7 Wildlife and Vegetation

The Project will potentially affect wildlife (birds, fish and mammals) and vegetation during construction. Activities are to be undertaken in compliance with all statutes, regulations, standards, guidelines and local by-laws, which include (but are not limited to):

- Federal
  - *Fisheries Act*
  - *Species at Risk Act*
  - *Migratory Birds Convention Act*
- Territorial
  - *Wildlife Act*

Subsections are provided below for wildlife, birds and vegetation that provide the management and mitigation measures to minimize potential adverse effects.

Fish and Fish Habitat management measures will be determined through the *Fisheries Act* process, which covers:

- Section 35: No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery, unless authorized under Section 35(2).
- Section 36: Subject to subsection (4), no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water.

The CEMP will be updated if additional mitigation and monitoring requirements are defined by DFO.

3.7.1 Wildlife

There are several prohibited activities related to wildlife stated in Acts and Regulations that include (but are not limited to):

- *Wildlife Act*:
  - Section 90(1): No person shall intentionally feed a wild animal
  - Section 90(2): No person shall deposit or place in, on or about a place an attractant, if there is a reasonable likelihood that it would endanger a person, a wild animal or a domestic animal
- *Species At Risk Act*:
  - Section 32(1): No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species
  - Section 36(1): If a wildlife species that is not listed has been classified as an endangered species or a threatened species by a provincial or territorial minister, no person shall: (a) kill, harm, harass, capture or take an individual of that species that is on federal lands in the province or territory; (b) possess, collect, buy, sell or trade an individual of that species that is on federal lands in the province or territory, or any part or derivative of such an individual; or (c) damage or destroy the residence of one or more individuals of that species that is on federal lands in the province or territory

The mitigation and monitoring measures to minimize the potential adverse effects on wildlife are provided in Table 3-9.

Table 3-9 Wildlife: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Wildlife Measures	
WL01.	A zero-tolerance policy regarding the harassment, disturbance and feeding of wildlife, whilst working on the Project, shall be implemented and communicated through the induction process.
WL02.	The EM shall be on site as required to assess the presence of wildlife (including Species at Risk) and determine potential impacts to construction activities.
WL03.	All workers shall be trained in relation to the wildlife (particularly species at risk) expected to occur in the area, including traditional knowledge, through site induction and tool box sessions.
WL04.	Polar bear sightings shall be reported immediately to the EM and CA/EI so that appropriate actions are taken.
WL05.	Sightings of wildlife species, with particular attention to species at risk, shall be recorded on a wildlife sighting form (including recording the time, date, location, activity, and proximity to workers).
WL06.	Wildlife sightings shall be tracked in order to respond appropriately to emerging trends.
WL07.	Food, food waste, and other attractants shall be handled, stored and disposed of safely to avoid attracting and habituating animals.
WL08.	Speed limits will be implemented and enforced on all roadways and wildlife will be given the right-of-way so as not to chase, weary, harass or injure animals on the road.

Reference #	Requirement
WL09.	Escape routes for wildlife on access roads shall be provided (where possible), particularly during winter (i.e. avoid creating continuous berms of snow adjacent to roads that restrict wildlife).
WL10.	Appropriate mitigation measures will be implemented in the event large congregations of wildlife and birds occur in the Project Area.
WL11.	A pre-construction wildlife sweep shall be conducted to identify all sensitive wildlife features, e.g. active bird nests, wildlife dens and wildlife foraging or traveling.
WL12.	Work site boundaries shall be flagged to prevent inadvertent loss or alteration of habitat outside of the designated Project footprint.
WL13.	Lighting shall be limited to the extent required to provide a safe work site and shielded and directed to reduce diffusion outside of the work area.
WL14.	In the event caribou are sighted, protection measures implemented will follow those outlined in Appendix I of the North Baffin Regional Land Use Plan.
WL15.	If fish are encountered in creeks during haul road construction, they will be salvaged from the area and returned downstream. Adaptive management measures will be implemented for any further construction in about that creek.
Other Environmental Measures Applicable	
BL04.	Buffers or exclusion zones shall be implemented, in the event a sensitive species or feature (e.g. nest) is identified, to ensure wildlife are not disturbed.
WW05.	Domestic waste containers shall be kept closed (e.g. equipped with lids, covers / tarps over skips) at all times except when bins are being emptied or filled, to prevent scavenging by wildlife and domestic animals, as well as to control odour.

3.7.2 Birds

There are several prohibited activities related to birds stated in Acts and Regulations that include (but are not limited to):

- Migratory Bird Regulation:
  - Section 6: Subject to subsection 5(9), no person shall (a) disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird, or (b) have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird except under authority of a permit therefore

Relevant BMPs for birds include the following:

- General Nesting Periods of Migratory Birds in Canada, ECCC (https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1)
- Safeguarding Migratory Birds – Technical Information, ECCC (https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=8D910CAC-1#_03_1)
- Migratory Birds Environmental Assessment Guideline, Government of Canada, 1998.

- Guidelines to Avoid Disturbance to Seabird and Waterbird Colonies in Canada, Environment and Climate Change Canada (ECCC), 2016.
- Avoidance of Detrimental Effects to Migratory Birds (Incidental Take), ECCC, 2017 (https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=8D910CAC-1#_03_1).

The mitigation and monitoring measures to minimize the potential adverse effects on avian are provided in Table 3-10.

Table 3-10 Birds: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Bird Measures	
BR01.	Activities and infrastructure will be sited away from nests and roosts that will be protected by prohibited entry buffers based upon government or biologist recommended setback distances. Any nest that is disturbed will result in immediate notification to ECCC and the Government of Nunavut.
BR02.	Construction activities will not begin until the area has been surveyed for migratory birds and nests (in a non-intrusive manner).
BR03.	Nest monitoring may be periodically required to determine efficacy of setbacks and buffers.
Other Environmental Measures Applicable	
BL01.	Construction should be initiated prior to the arrival of migratory birds (breeding season mid-May to mid-August) such that the quarry and surrounding area becomes unattractive for nesting. A pre-construction survey shall be conducted by the EM to identify all sensitive wildlife features, e.g. active bird nests, wildlife dens and wildlife foraging or traveling nests, if blasting commences within this window.
BL04.	Buffers or exclusion zones shall be implemented, in the event a sensitive species or feature (e.g. nest) is identified, to ensure wildlife are not disturbed.
WL01.	A zero-tolerance policy regarding the harassment, disturbance and feeding of wildlife shall be implemented.
WL10.	Appropriate mitigation measures will be implemented in the event large congregations of wildlife and birds occur in the Project Area.
WL11.	A pre-construction wildlife sweep shall be conducted to identify all sensitive wildlife features, e.g. active bird nests, wildlife dens and wildlife foraging or traveling.
WL12.	Work site boundaries shall be flagged to prevent inadvertent loss or alteration of habitat outside of the designated Project footprint.
WL13.	Lighting shall be limited to the extent required to provide a safe work site and shielded and directed to reduce diffusion outside of the work area.

3.7.3 Vegetation

The mitigation and monitoring measures to minimize the potential adverse effects on vegetation are provided in Table 3-11.

Table 3-11 Vegetation: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Vegetation Measures	
VG01.	Working areas shall be inspected prior to clearing to confirm the absence of rare plants by the environmental monitor.
VG02.	Vehicle and equipment mobilized to site shall be inspected to ensure they are clean and free of soil, invasive plants and/or their seeds.
VG03.	All personnel shall be trained through the induction and subsequent toolbox talk session on the risk of damaging or disturbing vegetation and sensitive communities.
VG04.	Monitoring of disturbed areas for potential weed infestations shall occur on a regular basis by the environmental monitor.
Other Environmental Measures Applicable	
TF07.	Suitable dust suppressants to reduce dust generation to acceptable levels shall be used. Dust suppressants will be in accordance with the Government of Nunavut, Department of Sustainable Development, Environmental Protection Service, and Environmental Guideline for Dust Suppression.
VE05.	A regular maintenance program for Project vehicles and equipment shall be implemented to ensure construction equipment is in good working order.
VE06.	When existing local facilities are not available for refuelling, onshore equipment must be serviced and refuelled at least 15 m away from sensitive habitats unless secondary containment is used; preferably over an impermeable surface (e.g. drip trays). Drip pans and / or other protective devices shall also be used to prevent spills of petroleum products and other potentially hazardous liquids (e.g. antifreeze) during servicing.
SP04.	Hydraulic, fuel, and lubrication systems of equipment near watercourses and sensitive habitats shall be inspected periodically to ensure that the systems are in good condition and free of leaks.
WL12.	Work site boundaries shall be flagged to prevent inadvertent loss or alteration of habitat outside of the designated Project footprint.

3.8 Archaeological Resource Discovery Plan

There is potential to unearth cultural, heritage or archaeological resources during surface disturbance activities, such as preparation of the Contractor laydown area; development of the Quarry and construction of the Haul Road. Refer to the PSIR 4.3.1 for the status of Archaeological Impact Assessments (AIA).

There are several prohibited activities related to cultural, heritage or archaeological resources stated in Acts and Regulations that include (but not limited to):

- Nunavut Archaeological and Palaeontological Sites Regulations; Part 5(1) states that: "*No person shall excavate, alter or otherwise disturb an archaeological site, or remove an archaeological artifact from an archaeological site, without a Class 2 permit.*"
- Nunavut Agreement: Section 33 in part states that: "*a permit holder shall not survey, investigate, excavate or alter an archaeological site without the consent of the title holder to the land.*"
- Territorial Land Use Regulations: Part 16 states that: *"If, in the course of a land use operation, a suspected historic or archaeological site or burial site is unearthed or otherwise discovered, the permittee shall immediately:*
  - *(a) suspend the land use operation on the site*
  - *(b) notify the engineer or an inspector of the location of the site and the nature of any unearthed materials, structures or artifacts*"

The mitigation and monitoring measures to minimize the potential adverse effects on cultural, heritage and Archaeological are provided in Table 3-12. The Project Archaeological Resource Discovery Protocol is provided in Appendix 2.

Table 3-12 Cultural, Heritage and Archaeological: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Cultural, Heritage and Archaeological Measures	
CH01.	If historical or palaeontological features (e.g. stone features, stone tools, modified bone, fossils) not previously recorded are identified within the construction footprint during construction, the measures outlined in the Archaeological Resource Discovery Protocol shall be implemented.
CH02.	All workers shall be briefed regarding the potential negative effects of construction activities to archaeological and palaeontological resources and shall be familiar with this CEMP, including the Archaeological Resource Discovery Protocol.
CH03.	If potential human remains are found within the footprint during construction, the measures outlined in the Archaeological Resource Discovery Protocol shall be implemented.
CH04.	Project personnel shall be prohibited from collecting any archaeological or palaeontological materials.

3.9 Community Health, Infrastructure and Tourism

There is potential during construction for the Project to increase pressure on community health services and infrastructure such as utility services (water, sewage, solid waste), health care and fire response. In addition, tourism is an important part of the local economy and access via water may be impacted during construction.

Mitigation measures to minimize the potential adverse effects on community health, infrastructure and tourism are provided in Table 3-13.

Table 3-13 Community Health, Infrastructure and Tourism: Mitigation Measures Summary

Reference #	Requirement
Cultural, Heritage and Archaeological Measures	
CI01.	A dedicated emergency responder shall be provided for the Project and an emergency medi-vac plan will be in place for the construction workforce.
CI02.	Contractor employees shall be required to sign a Code of Conduct governing behaviour on the Project and during recreational hours to reduce the likelihood of negative social effects on the community.
CI03.	Contractor shall implement a cultural awareness program for all staff to promote understanding and respect for local residents.
CI04.	The Project shall impose a zero tolerance policy for illicit drug possession or use.
CI05.	Contractor shall work with the local hotels and Hamlet to determine available bed space and develop a plan for housing workers, maximize use of hotel space but leaving sufficient reserve for normal community needs.
CI06.	The Project shall implement an on-site fire response plan to reduce impacts to local fire services. Project staff shall be trained in the use of fire suppression aids.
CI07.	A dedicated fuel truck shall be used to meet Project fuel requirements, if fuel supplies in the Hamlet are insufficient.
CI08.	Ongoing communication and consultation, as agreed with the Hamlet administration and the HTO, will inform hunters, fishers, cruise ship operators and outfitters during construction to minimize access restrictions and maintain safety.
CI09.	Access to the existing boat ramp shall be maintained until the new ramp is constructed to allow continuing access to water.

4 Monitoring and Reporting

The effectiveness of environmental protection measures will be assessed regularly by the Contractor and Construction Administration Team. Contractor monitoring will occur throughout construction with the frequency of monitoring dependent on the construction activities taking place. In addition, the Construction Administration Team will conduct inspections.

- Contractor shall be responsible for inspecting their tools and equipment before use; and to ensure all environmental protection measures put in place are in good working condition and appropriate for the work/activities being undertaken on a daily basis.
- Contractor EM will review the implementation of mitigation measures and monitoring results. Environmental monitoring reports will be prepared on a daily or weekly basis (depending on construction activities and as agreed with the Construction Administration Team) for submission to the Construction Administration Team. Any Environmental Incidents, including reportable spills and spills to water, non-compliance with permit conditions and the implementation of stop-work will also be recorded. Environmental Incidents will be reported to the Construction Administration Team within 24 hrs and then notified to regulators, as required.

Environmental Incidents will be investigated. Mitigation measures will then be updated via adaptive management to further minimize / prevent additional environmental effects.

In the event that the mitigations outlined in the CEMP are found to be ineffective, Contractor will work with the Construction Administration Team/EI and CGS to revise the specific mitigations appropriately and ensure that they are deployed in the field. Further engagement with relevant regulatory authorities will be undertaken as required by CGS.

All records, checklists, inspection reports, including any non-compliances or non-conformances and corrective action plans are to be maintained. Records shall be and remain legible, identifiable, and traceable.

The daily/weekly Environmental Monitoring Reports issued by the Contractor should include the following environmental details:

- Description of environmental incidents.
- Number of environmental inspections and trending report on findings and corrective actions and status.
- Brief review of environmental issues raised by employees at meetings or reported to the Contractor's site team and the respective corrective actions.
- Brief overview of past month's environmental activities.
- Brief overview of the upcoming month's environmental activities.
- List environmental concerns, environmental milestones and environmental initiatives implemented.

Changes to work processes/methods or design must be evaluated through a management of change process to ensure risks are managed. The Contractor shall establish a management of change procedure and all workers must receive training on how to identify a change, how to initiate the management of change process, and how to evaluate risks associated with change.

5 Training and Competency

5.1 Induction

All employees working on the Project will be given induction training covering the key environmental risks and controls required for work on site. The induction program will be designed by the Contractor's EM and will be reviewed by the Construction Administration Team and CGS, as required. Training will be delivered to all the Contractor workforce.

The Contractor will be responsible for ensuring workers are informed and implementing the environmental requirements, including associated monitoring and reporting.

5.2 Training and Awareness

The Contractors workers will be provided with environmental training to achieve a level of awareness and competence appropriate to their assigned activities. Targeted environmental awareness training will be provided to individuals or groups of workers with a specific authority or responsibility for environmental management or those undertaking an activity with an elevated risk of environmental impact. Such training may be delivered in the form of site orientation and toolbox meetings or through formal training programs (as applicable). All records of personnel training will be maintained by the EM.

6 Communications

6.1 Internal Communication

CGS and the Construction Administration Team will prepare and implement communications protocol during construction. Communication within the Project team related to the implementation of environmental commitments will entail:

- Formal written correspondence among all parties and government representatives.
- Attendance at design, construction and planning meetings.
- Field inspections and reports.
- Electronic communications.
- Toolbox Meetings.
- Meetings with local communities.
- Meetings with representatives of regulatory authorities.
- Formal environmental and social awareness training.

With respect to receiving and responding to communication and documentation, Contractors are expected to follow the following protocols:

- Maintain copies of their inspection records, including checklists.
- Maintain copies of all correspondence received by the Construction Administration Team in relation to inspections and non-conformance reports.
- Contractors will maintain copies of all formal communications received by the Construction Administration Team.

6.2 External Communications

6.2.1 Communications and Consultation with Regulators

Communications with regulators will be carried out through the holder of individual permits/approvals etc. In most cases this will be CGS as the Project proponent on behalf of EDT. In the event that Contractors hold permits, they shall communicate directly with regulators regarding those permits and keep CGS informed. CGS will have copies of all permits, licenses, key communication, inspection reports and compliance reports.

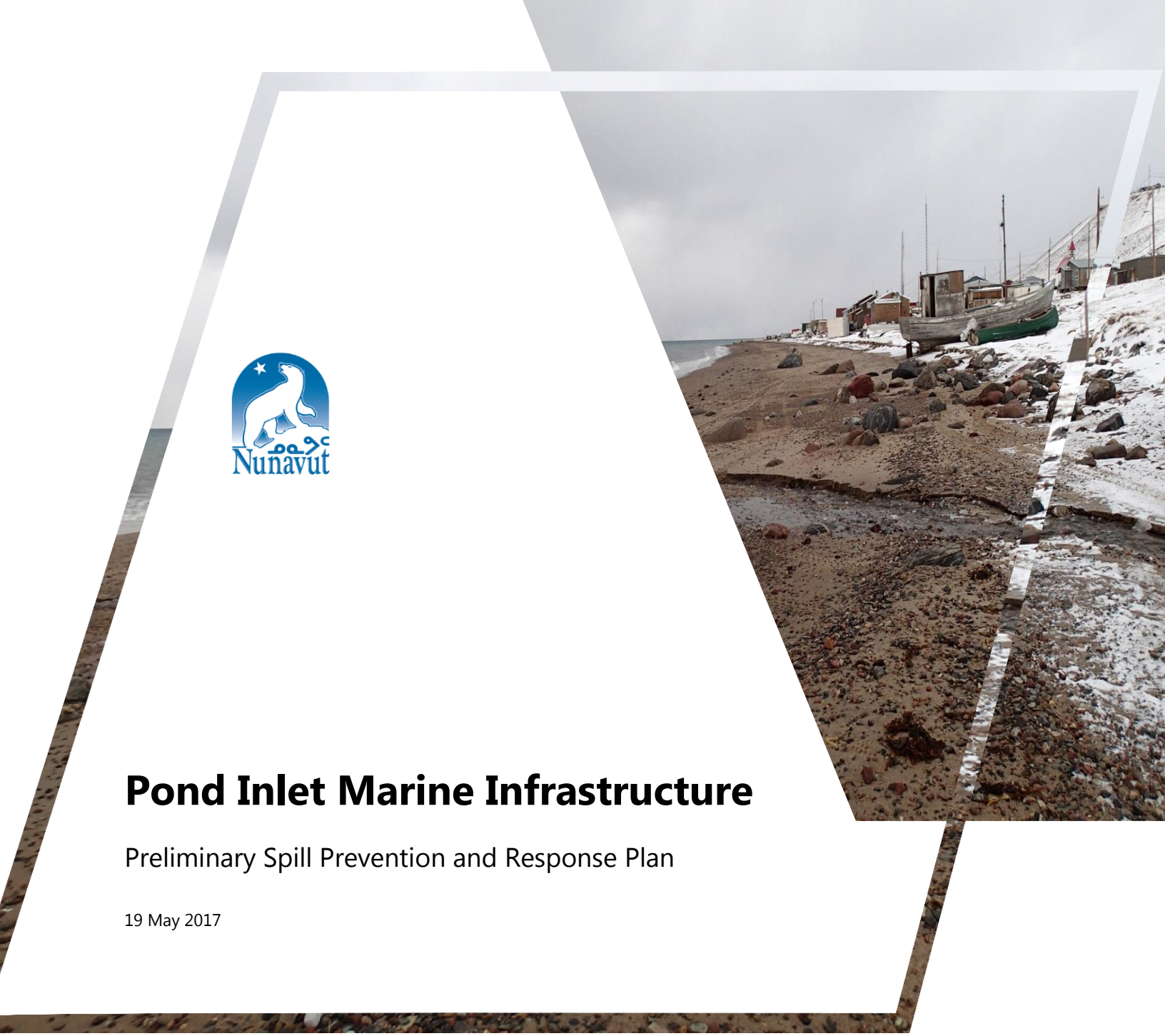
6.2.2 Communications with the Community

CGS will work with the Hamlet and the Contractor to establish communications protocol to allow community members to be consulted, informed and advised of construction activities and to gather feedback.

6.2.3 Complaints/Grievances

As part of the communications protocol, a complaints process will be maintained whereby complaints are received and recorded by the Contractor and responded to if response is required.

Appendix 1 Preliminary Spill Prevention and Response Plan



Pond Inlet Marine Infrastructure

Preliminary Spill Prevention and Response Plan

19 May 2017

4321 Still Creek Drive
Burnaby BC V5C 6S7
Canada

Document No.: 307071-01148-01-EN-PLN-0003

www.**advisian**.com

Advisian
WorleyParsons Group

Table of Contents

Table List

1 Introduction

This document is a preliminary Spill Prevention and Response Plan (SPRP) for the Pond Inlet Marine Infrastructure Small Craft Harbour (SCH) Project. It has been developed in accordance with Indigenous and Northern Affairs Canada's (INAC) Guidelines for Spill Contingency Planning. As the Project is still in the planning phase the details required for a complete plan are not available at this time. Once a contractor is selected (the Contractor) and construction methodologies and equipment are finalised, this preliminary SPRP will be updated with the specific details required.

This plan is effective as of 18 May 2017.

Table 1-1 Revision History of Spill Prevention and Response Plan

Revision Number	Date	Revisions Made
0	May 18, 2017	Preliminary Plan for submission with NIRB Application

1.1 Company Contact Details

Company Name: Government of Nunavut, Community and Government Services

Address: P.O. Box 1000 Station 200, Iqaluit, Nunavut X0A 0H0

Contact Person: Paul Mulak, Director, Capital Projects

Phone: (867) 975-6000

Email: pmulak@gov.nu.ca

1.2 SPRP Distribution List

The completed SPRP will be distributed to the personnel and organizations detailed in Table 1-2.

Table 1-2 Distribution list for the Spill Prevention and Response Plan

Name	Role	Organization
tbc	*tbc*	Government of Nunavut: Economic Development and Transport
tbc	*tbc*	Government of Nunavut: Community and Government Services
tbc	*tbc*	Contractor

1.3 Purpose and Scope

The purpose of this plan is to outline measures to be implemented to prevent, manage or mitigate potential spill scenarios and to outline the response actions in the event of a spill of any size, including a worst case scenario. The objective is to initiate an immediate response with trained personnel and equipment to clean up any accidental spill and minimize impact to the terrestrial or marine environment in the immediate and surrounding area of the SCH and quarry construction sites.

The plan identifies key response personnel and their roles and responsibilities, as well as the equipment and other resources required to respond to a spill. It details spill response procedures that will minimize potential health and safety hazards, environmental damage, and clean-up efforts.

1.4 Project Description

The Government of Nunavut (GN) intends to construct a new small craft harbour in the Hamlet of Pond Inlet (the Hamlet) on the north shore of Baffin Island (the Project). The Project will be executed by the GN Department of Community and Government Services (CGS) on behalf of the Department of Economic Development and Transportation (EDT).

The proposed SCH will include a 2.5 ha inner harbour for the moorage of small local vessels (including two float strings), a fixed wharf for larger vessels, and sealift laydown area and ramp. The facility will be formed by an east and a west breakwater to produce a protected harbour. Construction will require significant amounts of aggregate, which is to be sourced from a new quarry (a component of the Project) located approximately 5 km from the construction site via road.

The Project will include three primary components:

- SCH
- Quarry to supply aggregate
- Haul road between the quarry and the SCH. Two options are currently under consideration: one route utilizing existing road infrastructure and one that will require a new road to be constructed.

These components are further defined in Section 3 of the Project Specific Information Requirements (PSIR). The current design and construction approach is based on the Pond Inlet Marine Infrastructure Project – Marine Facilities Schematic Design report prepared by Advisian (refer to Document; 307071-01148-01-MA-RP-0002). Note that the design may be subject to change during detailed design.

The Project will require the following site services/activities to be executed at the start of construction:

- Mobilization (import) of marine construction and quarry equipment, construction material and supplies.
- Preparation of the Contractor laydown area; erection of fencing and other security measures as required; establishment of a fuelling, storage and maintenance area.
- Installation of temporary construction site offices.
- Installation of pre-fabricated accommodation modules to supplement the existing hotel.
- Site services, which are likely to include: chemical and hazardous materials management; waste management; spill prevention and response; vehicle/equipment maintenance; refuelling and fuel storage; dust control; traffic control; and security.

The following services are expected to be provided through the Hamlet: potable water, sanitary waste disposal and fuel supply. If fuel supplies in the Hamlet are insufficient, the Contractor will provide portable tanks and fuel as required.

The Project is anticipated to be constructed over two seasons. The first season will be scheduled based on the availability of sealift operations to mobilise the equipment, temporary offices and accommodations. On average, ice break-up starts mid-July and Pond Inlet is usually ice-free from the second week of August. Freeze-up typically starts in the second or third week of October and is usually complete in November. The first sealift of the season is historically around the end of August to early September; however, the Contractor may have an opportunity to access the Project site earlier if they are able to use one of the Baffinland Iron Mines sealift vessels, which typically access Eclipse Sound as early as the end of July depending on the ice conditions. If the main construction equipment is prepared for over-wintering (not demobilised), the second season may be able to commence in late May/early June with ice removal and management, with substantial completion at the end of season two. Post-construction, installation of small craft floats and demobilization will occur in the third season.

1.5 Site Description

The proposed SCH is located at the sealift area, as identified by the Pond Inlet Community Plan and Zoning By-law, along the sandy beach in front of resident houses and the existing boat access ramp (Hamlet of Pond Inlet, 2014). The harbour currently extends from the existing small, infilled breakwater to the creek at the southern edge of the beach-front homes.

The seabed in the area of the SCH is generally gently sloping from the high water mark approximately 20 to 30 m offshore to elevation 1 m Chart Datum (CD). There is a horizontal shelf at elevation -1 m CD to around 150 m offshore of the high water mark. Further offshore the seabed begins to slope at approximately 4.5 to 5% for 85 m to elevation -5 m CD. Offshore of the -5 m CD contour the seabed slopes steeply at 15 to 20% into deeper water.

The intertidal zone is generally a sandy beach with cobble and boulder, and bedrock outcroppings approximately 100 m and 170 m west of the existing breakwater.

1.6 List of Hazardous Material On-Site

The Contractor will provide the details of the hazardous materials to be used and stored on-site. These will be detailed in Table 1-3. A preliminary list of materials is included.

Table 1-3 List of Hazardous Material Stored on-site, Type of Storage Container, the Normal and Maximum Storage Quantities, and Storage Location

Material	Storage Container	Normally On-Site	Maximum On-Site	Storage Location and Uses
Diesel	Fuel will be dispensed on a daily basis from existing facilities in the Hamlet or fuel will be stored and dispensed from the Contractor's own fuel storage if provided.			
Gasoline	Fuel will be dispensed on a daily basis from existing facilities in the Hamlet			
Propane	Forklift-able metal cylinder rack			
Lubricants and Oils	Drums on pallets, in lined storage area			
Oxy / Acetylene	Forklift-able metal cylinder rack			
Paint	Inside fire proof cabinets, stored inside heated enclosure in Contractors laydown area.			
Explosives	Certified explosives magazine			

2 Existing Preventative Measures

The implementation of best management practices (BMPs) and operating procedures will be key to the prevention of spills during construction. Table 2-1 provides the minimum requirements.

Table 2-1 Spill Prevention and Response: Mitigation and Monitoring Measures Summary

Reference #	Requirement
Spill Prevention and Response Measures	
SP01.	All workers shall be trained in the spill prevention and response requirements during site induction and subsequent toolbox talk sessions.
SP02.	Spill kits shall be readily available, and will be appropriate to the type and amount of hazardous and waste materials anticipated for the Project. Standard spill kits typically contain absorbent booms, socks, pads, waste bags and ties, and PPE such as gloves and goggles. Further details on the contents of the spill kits will be provided by the successful Contractor.
SP03.	Spills shall be reported according to the Spill Contingency Planning and Reporting Regulations (R-068-93) and magnitudes of the events. (24 Hour Spill Report Line by calling 867-920-8130). Reporting requirements for spill magnitudes of individual contaminants are provided in Schedule B of the Regulations (R-068-93).
SP04.	Hydraulic, fuel, and lubrication systems of equipment near watercourses and sensitive habitats shall be inspected periodically to ensure that the systems are in good condition and free of leaks.
SP05.	Appropriately sized drip trays for stationary equipment shall be used. Use secondary containments and drip trays in a manner which does not lead to the collection of rainwater and/or snow.
SP06.	Routine inspections of equipment for leaks, cracked hoses and other conditions that may result in spills shall be undertaken. The Contractor shall ensure external equipment surfaces are free of oil, diesel and other potential contaminants prior to use.
SP07.	Hoses and nozzles used for dispensing fuel shall be maintained in good repair, free of leaks, and equipped with automatic shut-offs.
SP08.	Any delivery hose that has the potential to cause a spill, if it were pulled away from the delivery pump, shall be fitted with a breakaway valve.
SP09.	Operators shall always stay with the nozzle while refuelling.
SP10.	Maintenance and operating procedures shall be established and posted to prevent spills.
SP11.	The Contractor shall drain the existing fuel line (leading to Innuit Head) prior to undertaking blasting works for the laydown area due to the proximity of the fuel line and take appropriate measures to protect the line from damage during blasting.
SP12.	Construction vessels must comply with the requirements for shipboard oil pollution emergency plan and arrangements with a certified response organization defined under the *Canada Shipping Act*, 2001. The requirements are dependent on the size of the vessel.

Reference #	Requirement
Other Environmental Measures Applicable (Refer to CEMP)	
VE06	When existing local facilities are not available for refuelling, onshore equipment and vehicles must be serviced and refuelled at least 15 m away from sensitive habitats unless secondary containment is used; preferably over an impermeable surface (e.g. drip trays). Drip pans and / or other protective devices shall also be used to prevent spills of petroleum products and other potentially hazardous liquids (e.g. antifreeze) during servicing.
VE12	When offshore equipment and marine vessels are refueled through a floating hose, Contractor will ensure that all hoses and equipment are in good working order, appropriate spill containment and clean-up equipment is available, and personnel are trained in refueling and spill response procedures.
HM07	Drainage into and from the storage area shall be controlled, and/or suitable secondary containment implemented, to prevent spills or leaks from leaving the site and to prevent run-off from entering the site.
HM08	Containers must be sound, sealable and not damaged or leaking.
WW08	All waste shall be stored in plastic bags while conducting marine work to prevent waste being released into the water.
WW09	Waste shall not be deposited in, or placed on land or ice, under any conditions where the waste may enter arctic waters.

3 Response Organization

The Contractor will provide the details of any response organization, if required, in accordance with the requirements on INAC's Guidelines for Spill Contingency Planning (2007).

4 Action Plan

The contractor will develop and provide details of the action plan in accordance with the requirements on INAC's Guidelines for Spill Contingency Planning (2007).

4.1 Potential Spill Sizes and Sources

The contractor will assess the potential for discharge events based on the construction methodology and equipment and machinery to be used on site. The details of the hazardous materials, potential discharge event, discharge volume and extent of impact will be provided in Table 4-1. The potential environmental impacts associated with each spill scenario will be summarized in Table 4-2.

Table 4-1 List of Hazardous Material, Potential Discharge Events, Potential Discharge Volumes (worst case scenario in brackets) and Direction of Potential Discharge

Material (sources)	Potential Discharge Event	Discharge Volume (worst case)	Direction of Potential Discharge
Diesel			
Gasoline			
Propane			
Lubricants and Oils			
Oxy/Acetylene			
Paint			
Explosives			

Table 4-2 Potential Environmental Impacts of Spill (including worst case scenario)

Material (sources)	Potential Discharge Event	Discharge Volume (worst case)	Direction of Potential Discharge
Diesel			
Gasoline			
Propane			
Lubricants and Oils			
Oxy/Acetylene			
Paint			
Explosives			

4.2 Procedures

The procedures to be implemented following a spill are provided in the following sections. These are broken down into:

- Response
- Initial Notification
- Reporting a Spill
- Containing and Controlling Spill

The Contractor will further detail spill response procedures specific to the construction activities being undertaken by that contractor.

4.2.1 Response

The Contractor will take the following actions in response to a spill:

- The first person on the scene will follow the Spill Scene Checklist (*to be developed*) documentation within the Contractor spill response procedures.
- Assess and immediately address any safety concerns, including removal of potential for ignition or other emergencies.
- Identify the spilled product, identify and stop the source, and mobilize necessary equipment and implement measures to control and contain the spill. Refer to Material Safety Data Sheets (MSDS) for the product.
- Contain and control the spill as described in Section 4.2.4.
- Avoid use of water or fire extinguishing chemicals on nonpetroleum product spills unless it is necessary to control a fire or prevent an explosion.
- If a major spill (i.e. a spill where the available equipment and materials on-site would be insufficient to respond) was to occur, specialized equipment and contractors would be immediately dispatched to the site.
- Assist in on-going response and clean up actions as required.
- Where required (depending on the volume, location and substance spilled) formulate plans with the regulatory authority(ies) to conduct water quality monitoring of the marine water and include notification of marine users. These plans would include method of water quality sampling, and mitigation measures.
- Initiate plans for remediation and waste management matters.

4.2.2 Initial Notification

- The Contractor (the first person on the scene of a hazardous material spill or release) will refer to Spill Scene Checklist and conduct these initial response activities to secure the area and protect human life.
- The Contractor will immediately notify the Construction Administration Team and Environmental Inspector(s) in the event of any spill or release, regardless of the location, quantity or substance released.

- The Contractor will fill out the Northwest Territories/Nunavut Spill Report Form (Appendix B-2 of INAC's Guidelines for Spill Contingency Planning) and submit to the following:
  - NWT 24-Hour Spill Line, Phone: (867) 920-8130
  - NWT 24-Hour Spill Line, Fax: (867) 873-6924
  - NWT 24-Hour Spill Line, Email: spills@gov.nt.ca
  - Construction Administration Team (*relevant contact to be provided*)
- There are applicable territorial and federal requirements for reporting spills. Depending upon the substance and quantity of the release, the incident may be reportable, as per Appendix B-3 of INAC's Guidelines for Spill Contingency Planning. The Environmental Inspector(s) will determine in accordance with applicable regulations, if an incident is reportable to regulatory agencies.

4.2.3 Reporting a Spill

- Report spill immediately to Environmental Inspector(s) who will determine if the spill is to be reported to the NWT 24-Hour Spill Line at 867-920-8130.
- The Environmental Inspector will immediately notify the appropriate regulatory agency when a reportable event occurs, or will delegate the responsibility.
- When reporting a spill the Environmental Inspector will provide the authorities with the following information:
  - Name and Phone Number of person reporting spill
  - Name and Phone Number of Person, Party, or Contractor responsible for spill
  - Location (Datum and UTM) and time of spill
  - Type and quantity of the substance spilled
  - Cause and effect of the spill
  - Details of action taken or proposed
  - Description of the spill location and the surrounding area
- The Environmental Inspector will notify the Construction Administration Team, and provide the information reported to regulatory authorities.
- The Environmental Inspector will complete all other internal notifications as soon as practical.
- The Environmental Inspector will conduct all follow-up reporting requirements with the Northwest Territories and Nunavut regulatory authorities, and others as required.

4.2.4 Containing and Controlling Spill

At a minimum, the following general guidelines for containment and clean-up will be implemented for spills of most hazardous materials adjacent to, or into, marine waters or to ice:

- Initiate spill containment by first determining what will be affected by the spill.
- Assess speed and direction of spill and cause of movement (water, wind and slope).
- Determine best location for containing spill, avoiding any water bodies.
- Contain any spill to water bodies by installing berms or aquatic containment (e.g., floating oil booms) appropriate for the type and size of spill.
- Contain the spill on land with sandbags, spill pads, berms, etc.

- Contain any spill on snow or ice and prevent spilled liquids from moving towards waterways using absorbent materials or a snow dike.
- Have a contingency plan ready in case spill worsens beyond control or if the weather or topography impedes containment.
- Recover spilled product using absorbent material appropriate to the product spilled.
- Clean-up will be under the direction of the Environmental Monitor and/or appropriate Qualified Professional(s).
- Further assessment and clean-up of contaminated areas will be undertaken and is dependent on the type, volume, extent and effect of the spill. Consultation will be conducted, as appropriate.
- Disposal of product and spill containment and clean-up waste will be undertaken as per the Waste Management procedures identified in the CEMP.

5 Resource Inventory

The Contractor will provide the details of on and off-site resources that will be available for spill response, in accordance with the requirements on INAC's Guidelines for Spill Contingency Planning (2007).

6 Training Program

Spill prevention and response will be included within the worker induction and training requirements described within the CEMP. The Contractor will develop and provide details of a spill prevention and response training program in accordance with the requirements on INAC's Guidelines for Spill Contingency Planning (2007).

Appendix 2 Archaeological Resource Discovery Protocol

1.0 Archaeological Resource Discovery Plan

1.1 Archaeological and Palaeontological Resource Discovery during Construction

In the event that archaeological, historical or palaeontological resources are discovered during construction of the Project, the sites will be assessed and appropriate mitigative measures will be determined. Each site will be assessed based on the following criteria:

- The significance of the site.
- The location of the site with respect to the Project.
- The feasibility of Project alternations to avoid the site.
- The decision of the responsible regulatory agency (Department of Culture and Heritage).

In the event that archaeological or palaeontological resources are discovered during construction, the measures outlined below should be followed:

1. Suspend work immediately in the vicinity of any newly discovered archaeological, palaeontological, historical or traditional land use site. Work may not resume until all measures are undertaken.
2. Notify the Contractor Environmental Monitor (EM) who will notify the Construction Manager (CM).
3 The EM will provide an initial assessment of possible archaeological, palaeontological, and historical remains and either allow construction to resume or, in the event of a confirmed or potential discovery, proceed by notifying:
    a. The Project Archaeologist
    b. The Department of Culture and Heritage, as required
4 The Project Archaeologist may deem it necessary to visit the site and will, regardless of whether a site visit is required, develop an appropriate mitigation plan in consultation with the Construction Management Team's Environmental Coordinator (EC) and, if necessary, the Department of Culture and Heritage.

1.2 Human Remains Discovery during Construction

In the event that suspected human remains are discovered during construction, the Project will adhere to the Department of Culture and Heritage's Human Remains Policy and will follow the measures outlined below:

1. Suspend work immediately within 10 m of the suspected human remains, which must be left in the condition they were found.
2. Immediately notify the EM who will notify the CM, or designate. The CM, or designate, will promptly notify the CMT of the situation. The EC will be informed.

3. The EC, or designate, will ensure that appropriate flagging, fencing and protection is promptly installed around the area to ensure privacy and dignity for the remains and to prevent disturbance to the site. All personnel must stay outside of this identified area unless approved by CMT. Work within 10 m of the location of concern may not resume until the measures below are undertaken. The site will be monitored to ensure compliance with the suspension of activities in the area.
4. CMT will undertake an initial non-invasive assessment of possible human remains. If there are clear visible indications that the remains are human CMT will contact the RCMP.
5. Access will be restricted, or prohibited, as necessary to ensure no disturbance to the location of concern occurs. The CM, or designate, will be responsible for determining what travel is essential and ensuring restrictions are met.
6. If it is unclear if the remains are human, the CM, or designate, will immediately contact the Project Archaeologist or other qualified resources to determine whether the remains are human. If it is determined that the remains are human, CMT will then contact the RCMP. If the remains are confirmed to be human but appear to be of some antiquity (e.g. buried, aged), the Project Archaeologist will provide initial notification to the Department of Culture and Heritage.
7. Project personnel will allow RCMP to conduct their investigation without interference. The CM, or designate, will serve as point of contact for RCMP personnel and any other officials (e.g. coroner, forensic specialists) associated with any investigation, until such a time that a Company communication or management representative assumes a liaison role, if necessary.
8. If the RCMP determines that the site is a crime scene, subsequent procedures will follow applicable territorial regulations for found human remains, and the responsible regulatory agency (e.g. RCMP) will manage the site. The CM, or designate, will support the investigation and work will not resume until the investigation is complete and authorization to resume construction is received from the RCMP.
9. If the RCMP determines that the site is not a crime scene, RCMP will engage the Department of Culture and Heritage, or will advise the CM, or designate, or Project Archaeologist to engage the agency directly. The Department of Culture and Heritage has the authority and responsibility to determine the appropriate course of action in relation to found human remains of an archaeological nature. The Project Archaeologist will either support or complete an investigation as required by applicable territorial laws, regulations, permits and guidelines pertaining to found burial sites.
10. At the same time that the Department of Culture and Heritage is contacted, CGS will provide notification to the community.
11. The CM, or designate, will ensure that other interested parties are engaged as appropriate (e.g. local land authority).
12. The human remains will be handled in accordance with all applicable territorial requirements and permits, and in keeping with the local community's input. The investigation and mitigation plan will be developed by the Department of Culture and Heritage and/or the Project Archaeologist in consultation with the EC and the local community.