

FISHERIES AND OCEANS
CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA) 2012
WHARF REMOVAL AND BREAKWATER
PROJECT EFFECTS DETERMINATION REPORT

GENERAL INFORMATION	
<i>(for guidance see page 12 of "The Canadian Environmental Assessment Act, 2012 - Project Effects Determination Process for SCH Projects" document)</i>	
1. Project Title:	Wharf Removal and Breakwater – Maces Bay SCH
2 Proponent:	Fisheries and Oceans Canada - Small Craft Harbours (DFO-SCH)
3. Other Contacts:	4. Role of each contact:
<ul style="list-style-type: none"> a) Public Services and Procurement Canada (PSPC) – Jason Keys, Environmental Services b) Fisheries and Oceans Canada (DFO) – Fisheries Protection Program (FPP) – Gilles Paulin, Fishery Protection Biologist c) Transport Canada (TC) – Navigation Protection Program (NPP) 	<ul style="list-style-type: none"> a) OGD consultant b) Regulatory Authority c) Regulatory Authority
5. Source of Project Information if project is a referral: Monique Pellerin – Project Manager (PSPC)	
6. Project Review Start Date: 2017-08-01	7. PATH No.:
8. DFO File No: N/A	9. Other Relevant File Numbers:
	PSPC File No. – R.098265.001 DFO-FPP # 18-HGLF-00099 TC NPP # Unknown TC NEATS # Unknown
BACKGROUND	
<i>(for guidance see page 12 of "The Canadian Environmental Assessment Act, 2012 - Project Effects Determination Process for SCH Projects" document)</i>	
10. Background about Proposed Development (including a description of the proposed development):	
<p>The proposed project will take place at Maces Bay DFO-SCH, an in-active Small Craft Harbour facility that historically serviced the commercial fishery. The proposed project consists of the removal of a portion of the end of the existing wharf, as well as covering the remaining wharf with rock to stabilize the deteriorated structure. The work will require work below the high water mark. The approximate coordinates of the project area are: 45.116547 N and -66.478298 E.</p> <p>The Maces Bay Wharf is currently derelict and entirely restricted from usable access, however it was previously (in its operating days) been classified as a Class C Wharf, indicating it is a wharf of up to 400 vessel meters, located on Maces Bay, in the Bay of Fundy. Maces Bay was an active fishing area approximately 53 kms west of the City of Saint John and south of Lepreau. The site is accessible by land from Provincial Highway Route No. 790. The wharf was primarily used for commercial fishing. The main commercial fisheries in the Phase I Environmental Site Assessment area were lobster, sea urchin, scallops, dulse and periwinkles. The Maces Bay wharf was the center of all fishing activity in the community and also the main landing port for several sea urchin boats from other areas. According to a letter written by the Boynes Cove Maces Bay Harbour Authority in 1999, in the peak fall and winter months, 55 to 60 people use to fish off of the wharf, including captains and crews. Several small boats employing 8 to 10 people in the dulse and periwinkle fishery also used the wharf. Maces Bay is a relatively exposed site, with an inlet to the wharf's northeast and hills to the southeast. The wharf extends into the water in a northwest direction and is exposed to the north, south and west winds. The berthing area is limited due to tidal range and rough seas.</p>	

This Project Effects Determination (PED) report is being conducted to fulfill the requirements under Section 67 of the *Canadian Environmental Assessment Act, 2012*. A review of the SCH Project Environmental Risk Assessment Form determined that this project is considered high-risk, and is being assessed as such.

Two authorizations may be required for the project including:

- Fisheries Act authorization for potential serious harm to fish habitat as a result of the the destruction of up to 5,300 m² of fish habitat; and
- *Navigation Protection Act* (NPA) authorization for the construction of breakwaters in navigable waters and below the high water mark.

PROJECT REVIEW

(for guidance see page 13 to 17 of "The Canadian Environmental Assessment Act, 2012 - Project Effects Determination Process for SCH Projects" document)

11. DFO's rationale for the project review:

Project is on federal land and:

- DFO is the proponent.
- DFO to issue *Fisheries Act* Authorization or *Species at Risk Act* Permit.
- DFO to provide financial assistance to another party to enable the project to proceed.
- DFO to issue licence or lease federal land to enable the project to proceed.

12. a) *Fisheries Act* Section(s) (if applicable): Paragraphs 35(1) and 35(2)(b)

b) *Species at Risk Act* Section(s) (if applicable): N/A

13. Primary Authority: DFO-SCH

14. Primary Authority's rationale for involvement:

- Primary Authority is the proponent.
- Primary Authority to provide financial assistance to enable the project to proceed.
- Primary Authority to provide a licence or an interest in land.
- Primary Authority to issue a regulatory permit, approval or authorization.

15. Other Authorities involved in review:

- DFO-Fisheries Protection Program (FPP)
- Transport Canada, Navigation Protection Program (NPP) and Environmental Affairs and Aboriginal Consultation Unit (TCEA)
- New Brunswick Department of Environment and Local Government (NBDELG)

16. Each Authority's rationale for involvement:

- Approval Requirement: The project was referred to the DFO-Fisheries Protection Program (FPP) and is currently under review. The proponent will comply with all/any of the conditions of the FPP letter/approval.
- Approval Requirement: A *Navigation Protection Act* (NPA) approval is required for this project. The proponent will comply with all/any conditions of the NPA approval.
- Approval Requirement: The project is being registered as an Environmental Impact Assessment (EIA) pursuant to the EIA Regulation (87-83) of the New Brunswick *Clean Environment Act*.

17. Other Contacts and Responses (Government Agencies, Aboriginal Consultation, Public Consultation, Other Organizations, Harbour Authority, etc.):

- Ms. Tammy Matchett – DFO Area Aboriginal Coordinator

Public Consultation

The wharf decommissioning project will remove the existing derelict hazard that is the failing structure. No negative public concern is expected as a result of this project, however, public consultation will be conducted in the form of letters to adjacent land owners and local newspaper ad's in both official languages.

Aboriginal Consultation

PSPC, on behalf of DFO-SCH, carried out an Aboriginal Assessment at Maces Bay in accordance with DFO-SCH's Preliminary Duty to Consult Assessment Guide. This Guide is intended to provide basic information to DFO-SCH in the Maritimes and Gulf Regions and to assist its Program Managers in making informed, prudent decisions that take into account statutory and other legal obligations, as well as policy objectives, related to Aboriginal and treaty rights. The Supreme Court of Canada has held that the Crown has a duty to consult and, where appropriate, accommodate when the Crown contemplates conduct that might adversely impact potential or established Aboriginal or treaty rights. While there may be other reasons to undertake consultations (e.g., good governance, policy-based, etc.), three elements are required for a legal duty to consult to arise:

1. There is contemplated or proposed Crown conduct.
2. The Crown has knowledge of potential or established Aboriginal or treaty rights.
3. The potential or established Aboriginal or treaty rights may be adversely impacted by the Crown.

Although there are no significant adverse environmental impacts anticipated as a result of this project and work activities will be undertaken within the existing harbour property which was developed to serve the fishing industry, there is the potential for Aboriginal vessels to fish for commercial purposes in the area and may infringe on Aboriginal treaty rights and interests.

18. Scope of Project (details of the project subject to review):

Project Description

The proposed project activities include rock installation over the existing wharf structure at the site to create an armourstone breakwater structure. The wharf approach and the last 30 m of the wharf will be demolished. The total footprint of the breakwater (including the existing 2,085 square metre wharf) will be approximately 8,865 square metres. There are no buildings or utilities at the site. Decommissioning of the wharf is necessary due to the state of disrepair. The structure is currently blocked from use due to safety concerns. The breakwater is being constructed in order to preserve the beach on the south side of the existing wharf structure, subsequently protecting the north side shoreline habitat from sediment migration as well.

Operation / Maintenance

The Environmental Management System (EMS) with an integrated Environmental Management Plan (EMP) for the Harbour Authority of Alma covers operational aspects of environmental management and is the mitigation measure for the environmentally responsible aspects of harbour operation (fuelling, waste disposal, activities on the property and water). The proposed project will not affect continued operations at the Alma DFO-SCH.

Decommissioning

This site is in the process of decommissioning/divestiture. The proposed project will stabilize the existing site and prevent further deterioration.

Scheduling

The proposed construction activities are expected to begin no sooner than October 2018 and be completed by March 31, 2020, depending on approvals and funding.

19. Location of Project:

The Maces Bay DFO-SCH (Harbour Code 2588) is located along the southern coastline of New Brunswick in waters of the Bay of Fundy (Figure 1 in Appendix A). The approximate coordinates of the project area are 45.116547 N and - 66.478298 E.

20. Environment Description:

Physical Environment

Maces Bay Small Craft Harbour is located on the southern shore of New Brunswick on the Bay of Fundy. The wharf is accessible from Maces Bay Road.

Under the National Ecological Framework of Canada, the Fundy Coast ecoregion lies within the Atlantic Maritime Ecozone. This ecoregion is strongly influenced by the Atlantic Ocean and has high winds, high humidity, and fog. The area is characterized as having cool, wet summers and mild, wet winters with most precipitation as rain. The Bay of Fundy is well known for its high tides, averaging 10 m with a maximum recorded tide of 16.1 m. The coniferous forests are typically composed of red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), red maple (*Acer rubrum*), with occasional white spruce (*Picea glauca*), white birch (*Betula papyrifera*), and yellow birch (*Betula alleghaniensis*). In elevated areas sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*) can be found (Agriculture and Agri-Food Canada 2013).

Within the Fundy Coast ecoregion, the bedrock is composed of Proterozoic, Palaeozoic, and Mesozoic strata rising from sea level to approximately 215 m asl inland. Discontinuous, stony glacial till covers the highlands, while loamy tills, sandy fluvioglacial sediments, and silty marine deposits can be found in the lowlands. The dominant soil type is Humo-Ferric Podzols (Agriculture and Agri-Food Canada 2013).

Four marine sediment samples were collected in 2011 as part of a Phase II Environmental Site Assessment (Dillon Consulting Limited 2011). All four samples met CCME Marine Probable Effects Levels and CEPA Disposal at Sea guidelines for metals, PAH, and PCB concentrations.

Canadian Climate Normals (1981-2010) for the Pennfield climate station (45°06'00.000" N, - 66°44'00.000" W), the station located closest to the project, indicate a mean annual temperature of 5.2 degrees Celsius (°C) with extremes ranging from approximately -37 °C to 37 °C. Measurable precipitation per year is approximately 1,238 millimetres (mm). Extreme daily precipitation of up to approximately 110 mm has been recorded.

Based on the Department of Natural Resources Surficial Geology Map of New Brunswick (Rampton, 1984), the surficial geology in the area is Late Wisconsinan aged mainly stony till. Based on the Department of Natural Resources and Energy Geological Map of New Brunswick (NBDNRE, 2000), the regional bedrock geology in the vicinity of the subject property is middle to late Triassic aged Lepreau formation of the Fundy group, generally consisting of conglomerate fine to medium grained sandstone and/or mudstone, locally containing calcareous nodules.

The subject property generally slopes to the west toward the waters of Maces Bay. Surface drainage at the subject property appears to follow the general slope of the property. Regional surface drainage (apparent groundwater flow direction) is also expected to follow the general slope of the subject property.

There is no known water supply or groundwater use on the subject property. In addition, septic fields or other sanitary services are not known to be present at the site. The residences/ seasonal dwelling on adjacent properties are suspected to be served by private potable wells and on-site septic systems. Considering the site location and characteristics, future on-site potable water use is unlikely. In addition, the site is located down-gradient from any potential offsite wells. Therefore, for the purposes of this assessment, the Site is considered to be non-potable with regards to groundwater use (Phase III ESA 2015).

Biological Environment

Through the Fundy Coast ecoregion, Maces Bay DFO-SCH is more precisely located inside the Fundy Coastal ecodistrict which comprises the southern coastline of New Brunswick along the Bay of Fundy from east Passamaquoddy Bay to Shepody Bay. It also encompasses the Western Isles, including Campobello, Deer, and Grand Manan islands. The cool and wet climate has created a forest composition with many boreal elements, except for the prominence of red spruce (*Picea rubens*). Forest stands on higher plateaus in the east consist almost solely of pure red spruce. Elsewhere, forests comprise a mixture of red spruce with white spruce (*Picea glauca*) and black spruce (*Picea mariana*), or balsam fir (*Abies balsamea*) with some red maple (*Acer rubrum*), white birch (*Betula papyrifera*), and yellow birch (*Betula alleghaniensis*). Typically, black spruce is associated with the margins of bogs and wet areas; white spruce is the predominant spruce species in a narrow band along the shoreline and on abandoned pastures and fields. Trembling aspen (*Populus tremuloides*), red pine (*Pinus resinosa*) and Jack pine (*Pinus banksiana*), a non-native species, can also be found near the project area.

In the immediately adjacent waters of the Bay of Fundy, there are lobster (*Homarus americanus*), scallop (*Placopecten magellanicus*), and rock crab (*Cancer irroratus*) fishing grounds. Clam beds are noted as existing adjacent to the project site, while periwinkles (*Littorina* sp.) are harvested along the coast, approximately 500 m east of the harbour. The harbour is located at the mouth of the Upper Salmon River which contains populations of several anadromous, catadromous and freshwater fish including: brook trout (*Salvelinus fontinalis*), American eel (*Anguilla rostrata*), rainbow trout (*Oncorhynchus mykiss*), white perch (*Morone americana*), and rainbow smelt (*Osmerus mordax*).

Based on observations by an experienced biologist during the Phase III ESA site visit and a review of available land based and aerial photographs taken of the site, the vegetative communities on the site appeared to be generally healthy. Although soil invertebrates (i.e., worms) were not observed in soil samples collected, the site areas investigated were located directly adjacent to the Maces Bay Road and the wharf road, both of which contain sand and gravel substrate and are not preferred soil conditions for soil invertebrates. Based on the presence of a healthy plant community, it is reasonable to assume soil invertebrates are also present and healthy in appropriate soil conditions. As a result, significant adverse effects to plant and soil invertebrate communities in the vicinity of the site are not anticipated. Plant and soil invertebrate communities appear functionally intact

An Underwater Benthic Habitat Survey was conducted in June 2018 (Dillon, 2018, see Appendix B). The dominant substrate type among each of the 12 transects was sand. There was a low abundance of macrofaunal life within the study area. Organisms encountered within the study area included a hermit crab (*Pagurus* sp.), Atlantic rock crabs (*Cancer irroratus*), a common starfish (*Asterias vulgaris*) and a ground fish species (likely *Paralichthys dentatus*). The macrofaunal life encountered included Bladderwrack (*Fucus* sp.), Rock weed (*Ascophyllum nodosum*), Brown algae (*Desmarestia* sp.), Irish moss (*Chondrus crispus*), Sea lettuce (*Ulva lactuca*), Kelp (*Laminaria saccharina*), and Red algae (*Porphyra umbilicalis*). Macrofloral debris was noted along each of the 12 transects. Live eelgrass (*Zostera marina*) beds were not observed within the proposed footprint of the armour-stone breakwater during the UBHS.

Species at Risk (Aquatic and Terrestrial)

A search of the Atlantic Canada Conservation Data Centre database was conducted (ACCDC, 2018). The ACCDC provided a list of nationally and/or provincially rare/unique species (i.e. plants and animals) within a 5 km buffer zone (standard ACCDC procedures) of the site of the proposed work. All species were cross-referenced with Schedule 1 of the *Species at Risk Act* (SARA). Species at risk or of concern are listed below:

The **Barn Swallow (*Hirundo rustica*)** has become closely associated with human rural settlements. It is the most widespread species of swallow in the world, found on every continent except Antarctica. It breeds across much of North America south of the treeline, south to central Mexico. In Canada, it is known to breed in all provinces and territories. It is a long-distance migrant and winters through Central and South America. Before European colonization, Barn Swallows nested mostly in caves, holes, crevices and ledges in cliff faces. Following European settlement, they shifted largely to nesting in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts. Barn Swallows prefer various types of open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared rights-of-way, cottage areas and farmyards, islands, wetlands, and subarctic tundra.

The eastern population of **Barrow's Goldeneye (*Bucephala islandica*)** was identified in the ACCDC scan. The last COSEWIC assessment in November 2000 designated the Barrow's Goldeneye as Special Concern. The Barrow's Goldeneye is a medium sized diving duck. The limits of the range of the eastern population of Barrow's Goldeneye are still unknown. Data indicate that it breeds only in Canada with the only confirmed breeding records are from Quebec. Small numbers of this population winter in the Maritime Provinces and along the northern Atlantic coastline in the United States. In Quebec, the eastern population inhabits the Balsam Fir-White Birch forest regions of the province. More specifically, birds appear to be restricted to small, high elevation lakes north of the St. Lawrence Estuary and Gulf. During the non-breeding season, the species spends time in the coastal waters of the St. Lawrence Estuary and Gulf (Environment Canada 200b).

Harbour Porpoises (*Phocoena phocoena*) are widely distributed over the continental shelves of the temperate northern hemisphere, with two populations in Canada. On the west coast, members of the Pacific Ocean population occur throughout the coastal waters of British Columbia. On the east coast, members of the Northwest Atlantic population are found from the Bay of Fundy north to Cape Aston, at approximately 70° N, and south to North Carolina. The Harbour Porpoise Northwest Atlantic population is made up of four discrete sub-populations; three in Canadian waters (Newfoundland-Labrador, Gulf of St. Lawrence, and Bay of Fundy-Gulf of Maine), and one off the western coast of Greenland. There are no range-wide estimates of the abundance of Harbour Porpoises in eastern Canada, but it seems likely that the Northwest Atlantic population is greater than 50 000 individuals. Harbour Porpoises are among the smallest whales; in eastern Canada few individuals exceed 1.7 m in total length. Females are larger than males, and typically reach lengths of about 160 cm and weights of 65 kg. Like all porpoises, they have rounded heads that lack an obvious rostrum or beak. A small, triangular dorsal fin is located at about the middle of the back. The sides are a mottled greyish-white and fade to an almost white ventral surface. A black cape extends over the back and sides, although its extent varies considerably among individuals and populations. Individuals may also have dark patches on their faces. There is no difference in coloration between males and females, but the calves are usually darker than the adults. Harbour Porpoises are found primarily over continental shelves, and occasionally in deeper waters. The species is well adapted to cold water and is seldom found in water warmer than 16°C. True to its name, the Harbour Porpoise sometimes frequents bays and harbours, particularly during the summer. There is even one record from British Columbia of an individual found 55 km up the Fraser River. They are known to spend time in areas which have physiographic features

that help to concentrate prey, or make prey easier to capture. They need to feed frequently and stay relatively close to patches of prey, sometimes moving quickly between areas of suitable habitat separated by tens or even hundreds of kilometres.

The eastern population of the **Harlequin Duck (*Histrionicus histrionicus*)** was identified in the ACCDC scan. The last COSEWIC assessment in May 2001 designated the Harlequin Duck as Special Concern. The Harlequin Duck is a small subarctic sea duck. Harlequin Ducks of the eastern population mostly breed throughout much of Labrador, along eastern Hudson Bay, and the Great Northern Peninsula of Newfoundland. There are also known breeding populations along the north shore of the Gulf of St. Lawrence, the Gaspé Peninsula, northern New Brunswick, and southeastern Baffin Island in Nunavut. Satellite telemetry and banding information have indicated that the migration patterns of Harlequin Ducks are variable. Many of them spend the winter on the east and south coasts of Newfoundland, in southeastern Nova Scotia, in southern New Brunswick, in Maine, and at a few locations south of Cape Cod. Small groups may spend the winter along the Gaspé Peninsula and Anticosti Island of Québec, and a few individuals may spend the winter in Prince Edward Island. Approximately half the wintering population can be found in New England. Harlequin Ducks spend most of the year in coastal marine environments, but they move inland each spring to breed along fast-flowing turbulent rivers. During the winter, the Harlequin Duck are often associated with offshore islands, headlands, and rocky coastline where the surf breaks against rocks and ice buildup is minimal. These ducks feed close to rocky shorelines or rock skerries (Environment Canada 2009b).

Kalm's Hawkweed (*Hieracium kalmii* var. *fasciculatum*): This species is typically encountered in thickets, clearings and roadsides. It is conceivable that there is habitat nearby, but the immediate project area is not considered suitable for this species. Effects on Kalm's Hawkweed due to the project are deemed negligible.

The **Peregrine Falcon (*Falco peregrinus*)**, anatum subspecies was identified in the ACCDC scan. The last COSEWIC Assessment in April 2007 designated the Peregrine Falcon as non-active, while it is listed on Schedule 1 of SARA as threatened. The Peregrine Falcon is a North American bird that breeds south of the treeline in Alaska and Canada, throughout most of the U.S., and from central to south Mexico. The anatum subspecies was extirpated from most of eastern Canada, southern Alberta, Manitoba, and the interior of British Columbia. Declines in peregrine populations in North America were associated with the widespread, intensive use of persistent organochlorine compounds, particularly the pesticide DDT. Nests are usually scrapes made on cliff ledges on steep cliffs, usually near wetlands and can include artificial cliffs such as quarries and buildings (Environment Canada, 2009b).

The **Piping Plover (*Charadrius melodus*)** was identified in the ACCDC scan. The last COSEWIC assessment in May 2001 designated the Piping Plover as Endangered. The Piping Plover is a North American bird that breeds along the Atlantic coast from Newfoundland to South Carolina. It winters along the Atlantic coast, from South Carolina to Florida, and in the Caribbean (Cuba, Bahamas). In Canada, the melodus subspecies breeds on the Magdalen Islands of Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland. Piping Plovers nest above the normal high-water mark on exposed sandy or gravelly beaches. On the Atlantic coast they often nest in association with small cobble and other small beach debris on ocean beaches, sand spits, or barrier beaches. They also forage for food on these beaches (Environment Canada 2009b). The project site and adjacent shoreline do not provide preferred habitat of the Piping Plover.

Red Knot (*Calidris canutus rufa*): This species prefers sandy beaches, with gentle slopes and minimal wave action. The waterfront adjacent to the project site is quite rocky, rises abruptly from the water's edge and is considered generally unsuitable for Red Knot. Therefore, the impacts of the project on this species are considered negligible.

The **Rusty Blackbird (*Euphagus carolinus*)** typically nests in the boreal forest and shores of wetlands, slow moving streams, bogs, marshes and swamps etc. During the winter, the species frequents damp forests and sometimes cultivated fields. The primary threat to the species is habitat loss through conversion of wetlands into farm or other developmental properties.

The **Van Brunt's Jacob's-ladder (*Polemonium vanbruntiae*)** grows naturally in the central Appalachians of eastern North America. It occurs in a relatively small area from eastern West Virginia to southern New Brunswick and southeastern Quebec, where it reaches its northern limit. It is known from three sites in New Brunswick, one historic site was rediscovered in 2009, one new site was found in 2005, and one site that may have been introduced. The species grows in rich soil, in open or semi-open habitat that floods in the spring but does not have standing water all summer. This type of habitat is found in riparian meadows, swamps, or non-wooded depressions that are often at the bottom of slopes and near streams. Grassy clearings that are too wet for large trees are also suitable. The average temperature at sites in Canada is about 4 degrees Celsius, and the average annual precipitation is high at 1016 millimeters. Although the plant is found in mountainous regions, it prefers flat terrain with a slight slope. The Quebec populations occur at the limit of Maple-basswood and Maple-yellow Birch bioclimatic zones. Surrounding vegetation usually consists of Spruce, Fir, or Cedar. Most populations are associated with a variety of common and invasive grasses. Where competition is

very strong, Van Brunt's Jacob's-ladder usually has problems spreading. Van Brunt's Jacob's-ladder has specific moisture requirements; it cannot tolerate changes that extend spring flooding, or cause the habitat to dry out too much. The greatest threats to Van Brunt's Jacob's-ladder are road and residential construction, agriculture (including mowing, ploughing, and cultivation of Christmas trees), logging, and all-terrain vehicle traffic.

The **Horned Grebe (*Podiceps auritus*)** is a small duck-like waterbird, 31 to 38 cm long. Its summer breeding plumage includes a distinctive tuft of showy feathers behind the eye, extending back to the nape of the neck and contrasting sharply with its black head. Its foreneck, flanks and upper breast are chestnut-red, while its back is black and its belly white. Its bill is thin and straight, with a pale tip. Males and females are similar in coloration, although the plumage of the male tends to be brighter. Its winter plumage is black and white and characterized by a black crown and white cheeks, which extend almost around the nape. The juvenile plumage is similar to that of adults in winter, but the upper parts are tinged brown. Chicks have dark stripes, which are particularly visible on the head and neck. The Horned Grebe is found across Eurasia and in northwestern North America, primarily in Canada. In the United States, it breeds in central and southern Alaska as well as locally in some northwestern states. In Canada, it breeds mainly in all of the Prairies, but also in British Columbia, Yukon, the Mackenzie River Valley in the Northwest Territories, extreme southern Nunavut, northwestern Ontario and the Magdalen Islands, where a small isolated breeding population has persisted for at least a century. In Canada, the various colonies are grouped into two populations separated by 2000 km: the Western population, which includes birds breeding from British Columbia to the extreme northwestern part of Ontario; and the Magdalen Islands population, which includes birds breeding in this archipelago and other sporadic breeders that occur in Quebec. The wintering grounds of the Magdalen Islands population are unknown, but it is presumed that the birds winter along the Atlantic coast of North America. It is possible that the Magdalen Islands population and the Western population overlap on the wintering range. According to surveys carried out between 1993 and 2006, the Magdalen Islands population is estimated at an average of 15 adults. Since 1993, no more than 25 adults have been seen during the same breeding season, and only 5 adults were observed in 2005. The population on the Magdalen Islands declined by 2% per year between 1993 and 2007. The analysis of annual surveys suggests that the population has declined by 22% over the last three generations. Moreover, most of the birds and nests found recently, from 2000 to 2007, during the breeding season were concentrated on East Pond and on Brion Island. Other nesting areas of the archipelago seem to be deserted. The Horned Grebe breeds primarily in temperate zones such as the Canadian Prairies, but can also be found in more boreal and subarctic zones. It generally nests in freshwater and occasionally in brackish water on small permanent or semi-permanent ponds which last until autumn, but it also uses marshes and shallow bays on lake borders. These water bodies are found in both open and forested areas. Breeding ponds must contain areas of open water and beds of emergent vegetation that provide nest material, concealment and anchorage, and protection for the young. Little information is available on the particular requirements of the Horned Grebe during migration, but birds have been observed on lakes, rivers and marshes. Some birds follow coastlines for part of their migration. Horned Grebes generally winter in marine habitats, mainly estuaries and bays. Birds are found in greatest numbers in coastal habitats, particularly in areas that provide some degree of protection. On the Magdalen Islands, the number of ponds identified as suitable for Horned Grebe breeding seems to be stable. Nevertheless, other factors, such as the presence of the Pied-billed Grebe, eutrophication or the drying of certain ponds, have reduced the availability of preferred habitat.

There are no listed wildlife species or critical habitats (including wetlands) that will likely be affected by the project activities as there is no critical or limiting habitat at the proposed work site other than those already discussed above. It should be noted that the ACCDC report identified two observational occurrences of a Horned Grebe and a Barn Swallow. The existing site does not provide critical habitat to the Horned Grebe and may have been observed en-route to its breeding grounds on the Magdalen Islands. However, the Barn Swallow could potentially be utilizing local habitat. This is easily mitigated through avoidance of bird nesting timelines.

Human Environment

Lands adjacent to the coastlines in the Maritimes tend to have high archaeological potential given their historic importance and proximity to transportation routes and fishing resources. The shoreline around and including Maces Bay is considered high potential for heritage and archaeological resources; however, there are no registered archaeological sites located within 5 km of the project site.

21. Scope of Effects Considered (Section 5(1) and 5(2)):

Table 1: Potential Project / Environment Interactions Matrix

Project Phase / Physical Work/Activity	As per Section 5(1)			Section 5(1c)				Section 5(2)			Due Diligence						
	Fish (Fisheries Act)	Aquatic Species (SARA)	Birds (MBCA)	Health and Socio Economic	Aboriginal Interest			Health and Socio Economic	Physical and Cultural Heritage	HAPA * Significance	Water (ground, surface, drainage, etc.)	Wetlands	Terrestrial / Aquatic Species	Fish	Birds	Soil/Marine Sediments	Air Quality
					Physical and Cultural Heritage	Land use	HAPA * Significance										
Construction of breakwater extensions and jetty																	
Transportation of material and equipment	P	-	P	P	-	-	-	P	-	-	P	-	P	-	P	P	P
Removal of end of wharf	P	-	P	P	-	-	P	P	-	P	P	-	P	P	P	P	P
Construction of breakwater	P	-	P	P	-	-	P	P	-	P	P	-	P	P	P	P	P
Disposal of construction, demolition, and excavation waste	P	-	P	-	-	-	-	-	-	-	P	-	P	-	P	P	P
*structure, site or thing that is of historical, archaeological, paleontological or architectural significance																	
P = possible interaction																	
“-“ = no interaction																	

Evaluation of Environmental Effects

The Valued Ecological Components (VECs) selected in Table 1 are addressed in Sections 22 and 23 of the PED. The physical works/activities and required mitigation measures are detailed. The assessment is based on:

- Information provided by the proponent;
- a review of project related activities;
- an appraisal of the environmental setting, and identification of resources at risk;
- the identification of potential impacts within the temporal and spatial bounds; and
- personal knowledge and professional judgment of the assessor.

The significance of project related impacts was determined in consideration of their frequency, the duration and geographical extent of the effects, magnitude relative to natural or background levels, and whether the effects are reversible or are positive or negative in nature. These criteria are described in Table 2 and used in Section 23.

Table 2: Assessment Criteria for Determination of Significance

Magnitude	Magnitude, in general terms, may vary among issues, but is a factor that accounts for size, intensity, concentration, importance, volume and social or monetary value. It is rated as compared with background conditions, protective standards or normal variability.	
	Small	Relative to natural or background levels
	Moderate	Relative to natural or background levels
	Large	Relative to natural or background levels
Reversibility	Reversible	Effects can be reversed
	Irreversible	Effects are permanent
Geographic Extent	Immediate	Confined to project site
	Local	Effects beyond immediate project site but not regional in scale
	Regional	Effects on a wide scale
Duration	Short-term	Between 0 and 6 months in duration
	Medium-term	Between 6 months and 2 years
	Long-term	Beyond 2 years
Frequency	Once	Occurs only once
	Intermittent	Occurs occasionally at irregular intervals
	Continuous	Occurs on a regular basis and regular intervals

Methodology

The environmental effects evaluation methodology used in this report focuses the evaluation on those environmental components of greatest concern. The VECs most likely to be affected by the project as described are indicated in Table 1. VECs were selected based on ecological importance to the existing environment (above), the relative sensitivity of environmental components to project influences and their relative social, cultural or economic importance. The potential impacts resulting from these interactions are described below.

This environmental effects evaluation considers the full range of project/environment interactions and the environmental factors that could be affected by the project as defined above and the significance of related impacts with mitigation.

22. Environmental Effects of Project:

Potential Project/Environment Interactions and their effects are outlined below. The effects are described for each project phase.

- Project activities may result in debris/material entering the marine environment.
- Activities may result in construction related debris or toxic materials affecting soil and/or marine water quality.
- Potential for suspended solids/sediments and turbidity immediately adjacent to the project site affecting fish/fish habitat.
- Permanent loss of fish habitat in area of rock break footprint
- Potential adverse effects to migratory birds during site access.
- Potential to enhance populations of predators in the harbour area.
- Potential for introduction of invasive species into the marine environment.
- Potential discovery and disturbance or loss of heritage/archaeological resources.
- Noise and dust generated as a result of the construction activities and transport of equipment/materials.
- Use of heavy machinery may cause short-term elevated noise levels and emissions at the site.

Navigation Consideration:

- Environmental effects of the project on navigation are taken into consideration as part of the Project Effects Determination (PED) only when the effects are indirect, i.e. resulting from a change in the environment affecting navigation. Direct effects on navigation are not considered in the PED, but any measures necessary to mitigate direct effects will be included as terms and conditions associated with work approved or permitted pursuant to the *Navigation Protection Act*.

23. Mitigation Measures for Project (including Habitat Offsetting, if applicable)

Table 3: Potential Project/Environment Interactions and Recommended Mitigation Measures

Construction of breakwaters' extensions	
Effect	Recommended Mitigation Measures
Potential degradation of soil. <i>(Moderate, Reversible, Immediate, Short-term, Intermittent)</i>	<ul style="list-style-type: none"> • Machinery must be checked for leakage of lubricants and fuel. Basic petroleum spill clean-up equipment must be kept on-site. All spills or leaks must be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633). • Hazardous materials (e.g., fuels, lubricants, hydraulic oil) and wastes (e.g., waste oil) should be managed so as to minimize the risk of chronic and/or accidental releases. • Waste materials are not to be buried on site. Construction debris and waste materials will be disposed of in accordance with Provincial Waste Management Regulations.
Potential degradation of groundwater/marine water quality affecting fish/fish habitat. <i>(Small, Reversible, Immediate, Short-term, Intermittent)</i> Loss of fish habitat. <i>(Moderate, Irreversible, Immediate, Long-term, Once)</i>	<ul style="list-style-type: none"> • A request for review has been submitted to DFO-FPP. The project will incorporate the recommended mitigation once an approval/letter of advice is received. • Activities must be completed in such a way as to minimize the amount of fines and organic debris that may enter nearby aquatic environments. • Visual monitoring of the turbidity will be required on a daily basis in the vicinity of the project to ensure that the turbidity is limited. If excessive change occurs in the turbidity that differs from the existing conditions of the surrounding water body (i.e., distinct colour difference) as a result of the project activities, the work must stop immediately and the PSPC project manager should be contacted to determine if further mitigation measures are required. • Any equipment that has been in the marine environment will be cleaned of any sediments, plants or animals and washed with freshwater and/or sprayed with undiluted vinegar prior to being mobilized to the project site. • If a marine mammal is identified within the vicinity of the project, work shall stop until the animal is gone.

	<ul style="list-style-type: none"> • Marine equipment may be inspected by PSPC or DFO to ensure invasive species are not introduced to the marine environment. • Heavy machinery will not be allowed in the water. Machinery shall be operated on land above the high water mark, in a manner that minimizes disturbance to the banks and bed of the waterbody. • Any construction debris/material that enters the marine environment will be removed immediately. Waste materials are not to be buried on site. Construction debris and waste materials will be disposed of in a provincially-approved manner. • No construction or infill material may be obtained from any coastal feature, namely a beach, dune, or coastal wetland. • Onsite crews must have emergency spill clean-up equipment, adequate for the activity involved, on-site. Spill equipment will include, as a minimum, at least one 250L (i.e., 55 gallon) overpak spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags. All spills or leaks must be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633).
<p>Potential disturbance of birds/bird habitat.</p> <p><i>(Small, Reversible, Immediate, Short-term, Intermittent)</i></p>	<ul style="list-style-type: none"> • All vessels and machinery must be well muffled at all times. Contractors should avoid any sharp or loud noises (e.g., not blow horns or whistles) and should maintain constant noise levels. If necessary, trucks may be required to avoid the use of “hammer” braking along specific sections of the route, while radio communication should replace whistle blasts and horns. • Adherence to the regulations set out by the <i>Migratory Birds Convention Act</i>. • Contractors must ensure that food scraps and garbage are not left at the work site. • Project staff and/or contractors shall not access beaches, sand spits, dunes, mud flats, or sand flats during any stage of the project. • Concentrations of seabirds, waterfowl, or shorebirds must not be approached when accessing the project site by water, or when ferrying supplies. • All equipment must be maintained in proper running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes hydraulic fluid, diesel, gasoline and other petroleum products. • Refueling operations will take place at least 30 metres from any watercourse and harbour and the refueling will take place on a prepared impermeable surface with a collection system. • All equipment to be used in or over the marine environment is to be free from leaks or coating of hydrocarbon-based fluids and/or lubricants harmful to the environment. Hoses and tanks are to be inspected on a regular basis to prevent fractures and breaks. • Construction activities will be carried out during times acceptable to local authorities.
<p>Potential disturbance to terrestrial/aquatic species.</p> <p><i>(Small, Reversible, Immediate, Short-term, Intermittent)</i></p>	<ul style="list-style-type: none"> • Sensitive coastal habitats (i.e., any area in which plant or animal life or their habitats are either rare or especially valuable) must not be accessed nor used as staging areas. • All vessels and machinery should be well muffled, and maintained in proper working order and must be regularly checked for leakage of lubricants or fuel. • Construction waste or any miscellaneous unused materials must be recovered for either disposal in a designated facility or placed in storage. Under no circumstances will materials be deliberately thrown into the marine or terrestrial environment.
<p>Potential disruption or loss of heritage/archaeological.</p> <p><i>(Moderate, Irreversible, Immediate, Short-term, Once)</i></p>	<ul style="list-style-type: none"> • All construction personnel will be responsible for reporting any unusual materials unearthed during project activities to the Construction Supervisor. • In those situations where the find is believed to be an archaeological resource, the Construction Supervisor will immediately stop work in the vicinity of the find and notify his/her immediate supervisor and the PSPC Project Manager. • Work in the area will be stopped immediately and an archaeological curator at the New Brunswick Department of Tourism, Culture and Heritage – Provincial Archaeological Services will be contacted at 506-453-2738. • Work can only resume in the vicinity of the find when authorized by the PSPC Project Manager and Construction Supervisor, after approval has been granted by the New Brunswick Department of Tourism, Culture and Heritage. • In the event of the discovery of human remains or evidence of burials, the excavation work will immediately cease and nearest law enforcement agency will be contacted immediately by the PSPC Project Manager and/or the Construction Supervisor.
<p>Potential reduction in air quality due to noise and dust.</p> <p><i>(Small, Reversible, Immediate, Short-term, Intermittent)</i></p>	<ul style="list-style-type: none"> • Construction activities must be carried out during times acceptable to local authorities and smaller, less disturbing equipment will be used where possible.

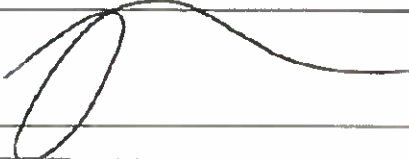

	<ul style="list-style-type: none"> • Dust suppression by the application of water must be employed when required. The project authority shall determine locations where water is to be applied, the amount of water to be applied, and the times at which it shall be applied. Waste oil must not to be used for dust control under any circumstances.
<p>Worker health and safety <i>(Medium-term, other criteria not applicable)</i></p>	<ul style="list-style-type: none"> • Site access must be restricted to authorized workers only. • Workers in contact with hazardous materials must be provided with and use appropriate personal protective equipment. • Proper safety procedures must be followed for the duration of the project as per applicable municipal, provincial and federal regulations. • Employees will be trained in health and safety protocols (e.g., safe work practices, emergency response).
<p>24. Description of any Significant Adverse Environmental Effects of the project (after applying mitigation): Although the potential exists for short-term and long-term environmental effects during rock protection work, with the implementation of recommended mitigation measures, no significant adverse environmental effects are anticipated.</p>	
<p>25. Other Monitoring and Compliance Requirements (e.g. <i>Fisheries Act</i> or <i>Species at Risk Act</i> requirements): N/A</p>	

CONCLUSION

(for guidance see page 18 of "The Canadian Environmental Assessment Act, 2012 - Project Effects Determination Process for SCH Projects" document)

26. Conclusion on Significance of Adverse Environmental Effects:

The Federal Authorities have evaluated the project in accordance with Section 67 of the *Canadian Environmental Assessment Act, 2012 (CEAA, 2012)* and have determined that the project is not likely to cause significant adverse environmental effects with the implementation of recommended mitigation measures. DFO-SCH may proceed with the project as proposed.

27. Prepared by:	Jason Keys		
28. Title:	Environmental Specialist, PSPC		
29. Signature		30. Date:	Aug. 21/2018
31. Approved by:	Patrick Mazerolle		
32. Title:	Senior Project Engineer, DFO-SCH		
33. Signature		34. Date:	Aug 28/2018
35. Approved by:			

DECISION

(for guidance see page 19 of "The Canadian Environmental Assessment Act, 2012 - Project Effects Determination Process for SCH Projects" document)

36. Decision Taken

- The project is not likely to cause significant adverse environmental effects, and DFO may exercise its power, duty or function.
- The project is likely to cause significant adverse environmental effects, and DFO has decided not to exercise its power, duty or function.
- The project is likely to cause significant adverse environmental effects, and DFO will ask the Governor in Council to determine if the significant adverse environmental effects are justified in the circumstances.

37. Approved by:	Patrick Mazerolle		
38. Title:	Senior Project Engineer, DFO-SCH		
39. Signature		40. Date:	

41. FISHERIES AND OCEANS CANADA – FISHERIES PROTECTION PROGRAM

Project Title:	DFO-SCH #2588 Maces Bay, Charlotte County, New Brunswick – Wharf Removal and Breakwater	
DFO File No.:	18-HGLF-00099	
Fisheries Act Review Decision:	The DFO has reviewed the Project Effects Determination Report (<i>Canadian Environmental Assessment Act (CEAA) 2012</i>) and, in considering the implementation of mitigation measures that are included as a requirement in the DFO Section 35(2) <i>Fisheries Act Authorization</i> , DFO concludes the project is not likely to cause significant adverse environmental effects and, as such, DFO may exercise any power or perform any duty or function that would permit the project to be carried out in whole or in part.	
Recommended by:	Gilles Paulin	
Title:	Fishery Protection Biologist Ecosystem Management	
Signature:		Date:
Mailing Address:	343 Avenue Université PO Box 5030 Moncton, NB, E1C 9B6	
Tel:	(506) 851-4879	
Email:	Gilles.Paulin@dfo-mpo.gc.ca	
Approved by:	Paulette Hall	
Title:	Regulatory Reviews Manager Fisheries Protection Program	
Signature:		Date:

42. TRANSPORT CANADA			
Project Title:	DFO-SCH #2501 Alma, Albert County, New Brunswick – Breakwater Extensions and Jetty Reconstruction		
TC File No.:	NEATS # Unkown		
NPP File No.:	# Unknown		
EED Decision:	<input checked="" type="checkbox"/> Taking into account the implementation of any mitigation measures that Transport Canada considers appropriate, the project is not likely to cause significant adverse environmental effects and, as such, Transport Canada may exercise any power or perform any duty or function that would permit the project to be carried out in whole or in part.		
<hr/>			
Reviewed by:	Melissa Ginn		
Title:	Environmental Assessment Officer Environmental Affairs and Aboriginal Consultation Unit		
Signature:		Date:	
Mailing Address:	10 Barter's Hill, St. John's, NL A1C 6M1		
Tel:	709.351.3200	Fax:	709.772.3072
Email:	melissa.ginn@tc.gc.ca		
Recommended by:	Jason Flanagan		
Title:	Senior Environmental Assessment Officer Environmental Affairs and Aboriginal consultation Unit		
Signature:		Date:	
<hr/>			
Approved by:	Kevin LeBlanc		
Title:	Regional Manager Environmental Affairs and Aboriginal Consultation Unit		
Signature:		Date:	

46. References:

- Amec Foster Wheeler Environment & Infrastructure (2015) Underwater Benthic Habitat Survey, Alma Small Craft Harbour. Draft Report to Public Works and Government Services Canada for Department of Fisheries and Oceans.
- ACCDC (Atlantic Canada Conservation Data Centre) (2018) ACCDC data response for Maces Bay, New Brunswick. Accessed through PSPC Atlantic Region GIS Tool on May 23, 2018.
- Amiro P. (2003) Population status of inner Bay of Fundy Atlantic salmon (*Salmo salar*). Can. Tech. Rep. Fish. Aquat. Sci. 2488.
- Birds Studies Canada (2017) Accessed August 04, 2017 at: <http://www.birdscanada.org/>
- DFO (2014) Recovery potential assessment of American Eel (*Anguilla rostrata*) in eastern Canada. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2013/078.
- Ecological Stratification Working Group (1995) A National Ecological Framework for Canada. Agriculture and Agri-Food Canada, Research Branch, Centre for Land and Biological Resources Research and Environment Canada, State of the Environment Directorate, Ecozone analysis Branch, Ottawa/Hull. Report and national map at 1:7 500 000 scale. Accessed August 04, 2017 at: <http://ecozones.ca/english/zone/AtlanticMaritime/ecoregions.html>.
- Environment Canada (2012) Recovery Strategy for the Piping Plover (*Charadrius melodus melodus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada. Ottawa. v + 29 pp.
- Environment Canada (2017a) Canadian Climate Normals 1981-2010. Pennfield Climate Station, New Brunswick. Accessed May 23, 2018 at: http://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnName&txtStationName=alma&searchMethod=contains&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=6108&dispBack=0
- Environment Canada (2017b) Species at Risk Public Registry – Species Profiles. Accessed online August 04, 2017 at: http://www.registrelep-sararegistry.gc.ca/species/default_e.cfm.
- Gregory D., Petrie B., Jordan F., Langille P. (1993) Oceanographic, geographic and hydrological parameters of Scotia-Fundy and southern Gulf of St. Lawrence inlets. Can. Tech. Rep. Hydrogr. Ocean Sci. No. 143. Accessed February 4, 2017 from the Bedford Institute of Oceanography website: <http://www.bio.gc.ca/science/data-donnees/archive/ceice/Inlets/SydneyHbrSouthArm.htm>
- Important Bird Areas Canada (2017) Map Viewer. Retrieved from IBA Canada website: <http://www.ibacanada.ca/mapviewer.jsp?lang=en>
- NTNB (Nature Trust of New Brunswick) (2005) Environmentally Significant Areas in New Brunswick. Report of ESA Summaries. 911 p.
- NBDAAF (New Brunswick Department of Agriculture, Aquaculture and Fisheries) (2015) Marine Aquaculture Site Mapping Program. Accessed on August 04, 2017 at: <http://www2.gnb.ca/content/gnb/en/departments/10/aquaculture/content/masmp.html>
- NBDNR (New Brunswick Department of Natural Resources) (2008) Bedrock Geology of New Brunswick. Minerals. Policy and Planning Division. Map NR-1 (2008 Edition). Scale 1:500 000 (Revised. December 2008).
- New Brunswick Department of Tourism, Heritage and Culture (2013) Archaeological Resource Mapping. Query including Maces Bay, New Brunswick. Mapping produced by the New Brunswick Department of Tourism, Heritage and Culture – Archaeological Services Unit.
- Rampton V.N. (1984) Generalized surficial geology map of New Brunswick Department of Natural Resources and Energy, Minerals, Policy and Planning Division, NR-8 (scale: 1:500 000)
- Zelazny V.F. (2007) Our Landscape Heritage: The Story of Ecological Land Classification in New Brunswick. New Brunswick, Dept. of Natural Resources, 359 p.

APPENDIX A

Figures

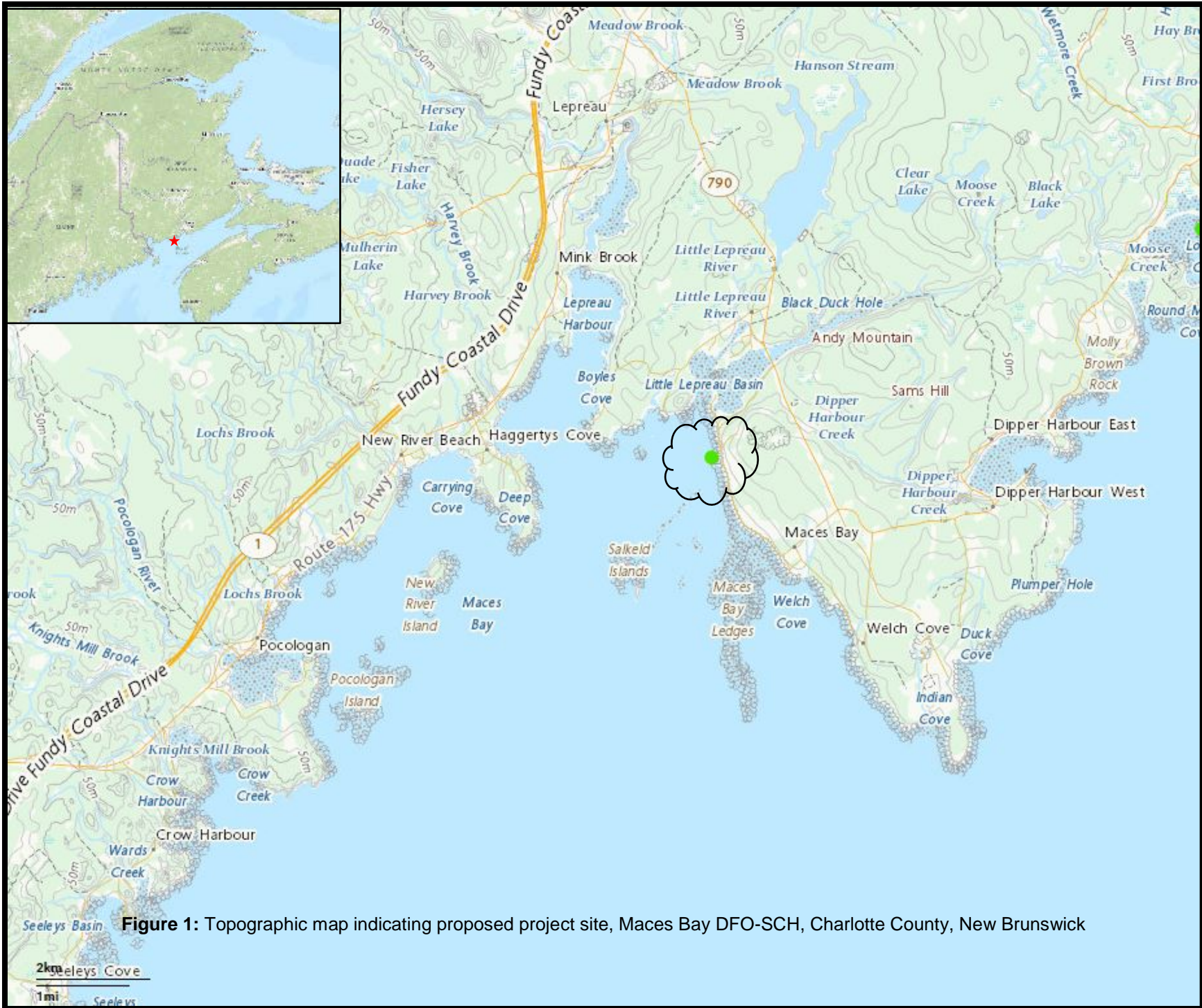


Figure 1: Topographic map indicating proposed project site, Maces Bay DFO-SCH, Charlotte County, New Brunswick



Figure 2: Maces Bay DFO-SCH, Charlotte County, New Brunswick



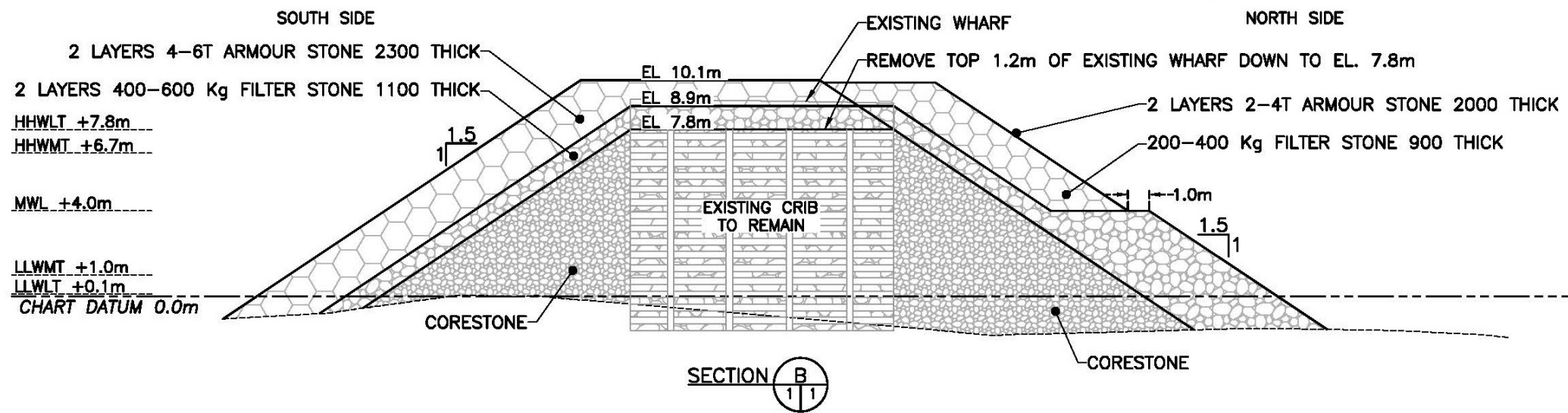
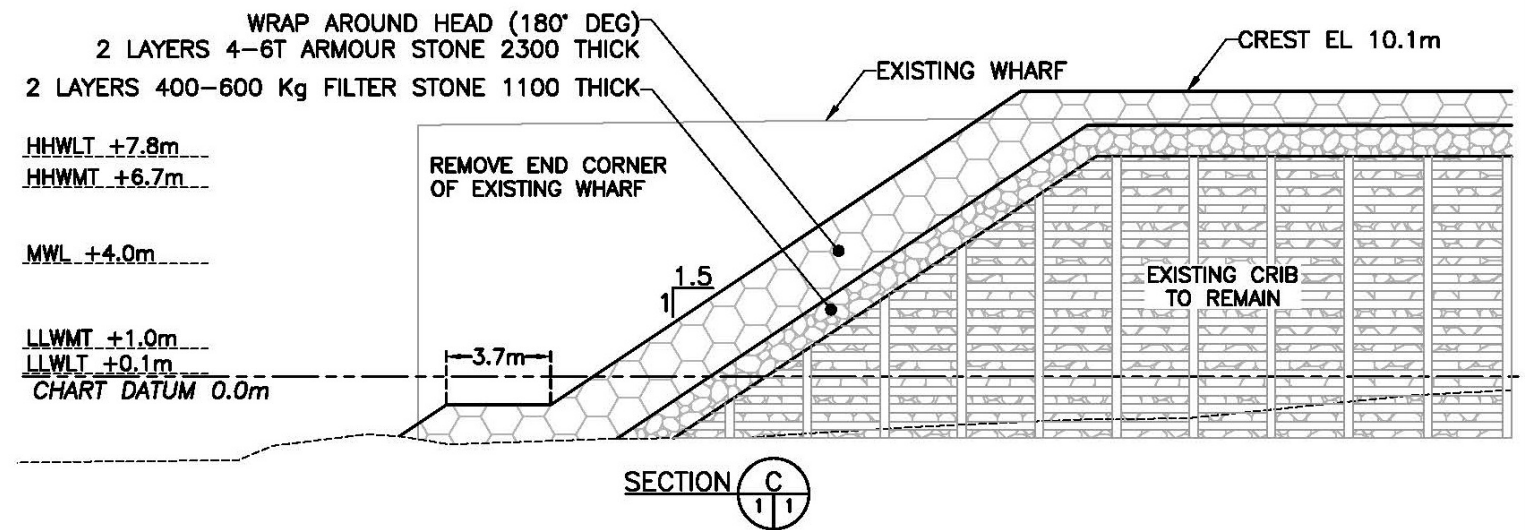
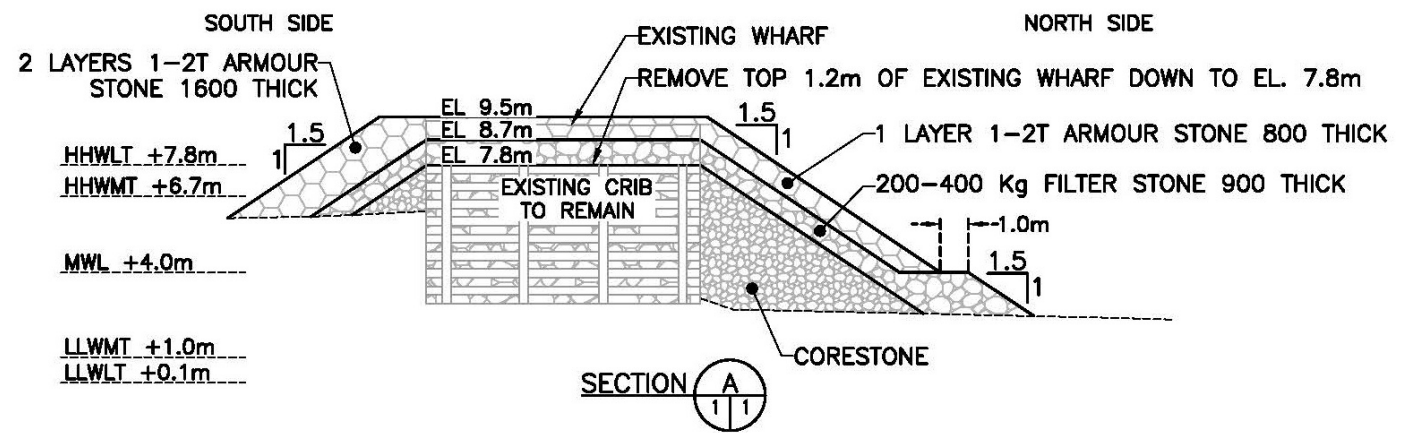
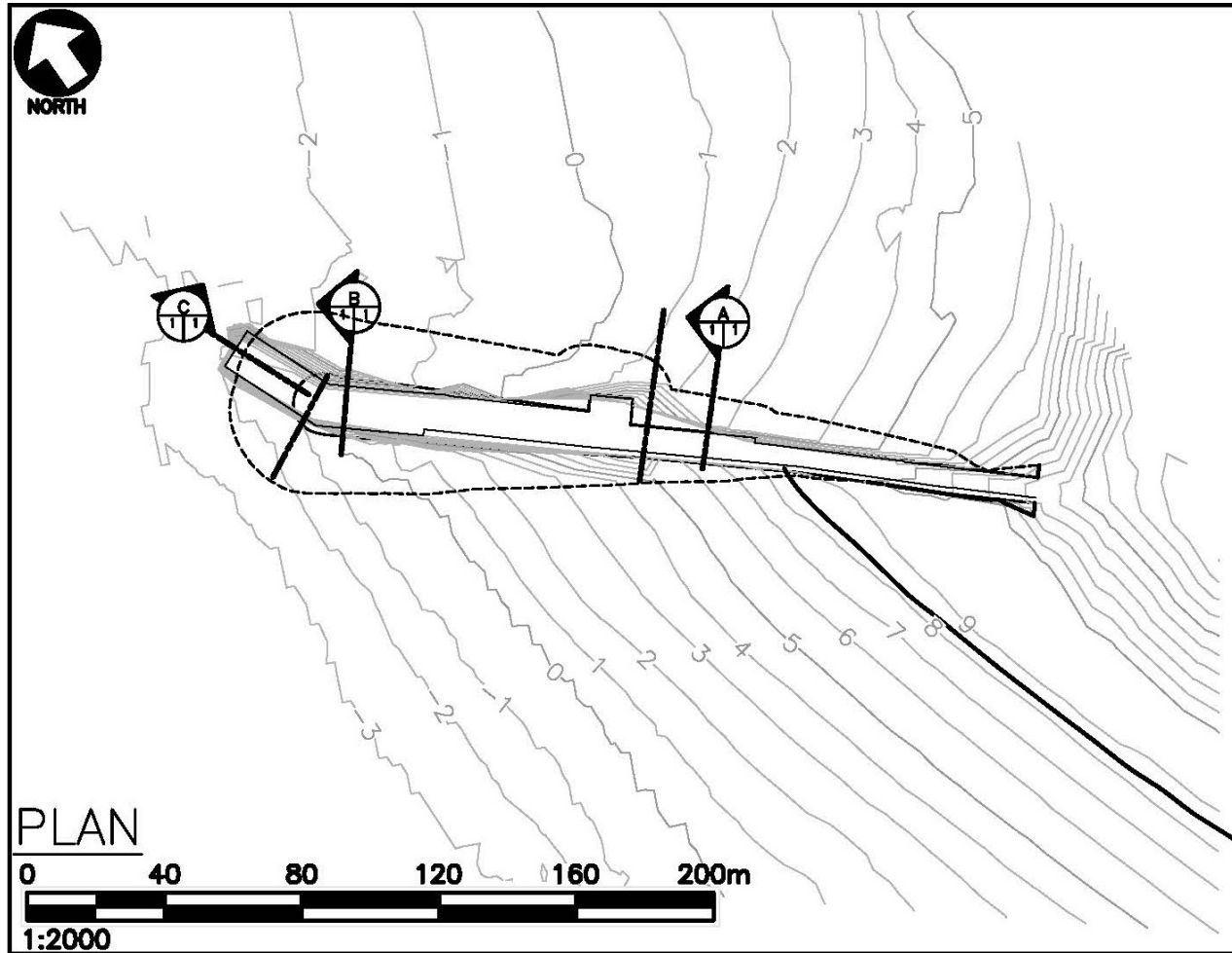
Figure 3: Maces Bay DFO-SCH, Charlotte County, New Brunswick



Figure 4: Maces Bay DFO-SCH, Charlotte County, New Brunswick



Figure 5: Maces Bay DFO-SCH, Charlotte County, New Brunswick



NOT FOR CONSTRUCTION


Date MAR 22/17	Scale AS NOTED	Designed VL	Drawn JPR	Checked	Approved	CBCL No. 173400.00	Figure
 CBCL LIMITED Consulting Engineers						MACÉS BAY SHORELINE PROTECTION STUDY OPTION 1 CONCEPTUAL CROSS SECTIONS FOR PROPOSED BREAKWATER	
							3.1

Figure 6: Site plan showing proposed breakwater at Macés DFO-SCH, Charlotte County, New Brunswick

APPENDIX B

Underwater Benthic Habitat Survey Report