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

GENERAL INFORMATION

1. Project Title: Harbour Improvements (Phase 2b – Harbour Entrance Channel Re-Dredging and Disposal), Le Goulet Small Craft Harbour	
2 Proponent: Fisheries and Oceans Canada, Small Craft Harbours (DFO-SCH)	
3. Other Contacts: Sylvie Poirier, Environmental Specialist Public Works and Government Services Canada (PWGSC) Environmental Services, Moncton, New Brunswick	**4. Role of Each Contact:** OGD Consultant
5. Source of Project Information: Janice Collette – Project Manager (PWGSC)	
6. Project Review Start Date: 2016-04-28	
7. PATH No.:	**8. DFO File No:** 16-HGLF-00230
9. Provincial/Territorial File No.:	**10. TC NPP File No.:**
11. Other relevant file numbers: PWGSC Project # R.076591.001	

BACKGROUND

12. Background about Proposed Development (including a description of the proposed development):

The proposed harbour improvements project will take place at a developed and active Fisheries and Oceans Canada (DFO) - Small Craft Harbour (SCH) facility. The harbour is a Class A facility (greater than 800 vessel metres) that opens to an inlet in Shippagan Bay / Shippagan Gully, in the Gulf of St. Lawrence along the northeastern shore of New Brunswick (refer to **Figures 1 and 2** in **Appendix A**). Le Goulet is an active harbour servicing the commercial fishery and recreational user. The Le Goulet Small Craft Harbour currently consists of a western training wall/wharf/rock protection structure, eastern rubblemound training wall, two floating wharves within the harbour basin, a concrete haul-out ramp, a parking/service area, a fenced upland storage area, various buildings including bait/storage sheds, an ice house, Harbour Authority office, and two former fish processing plants. Fuel and waste oil aboveground storage tanks (ASTs) are located in a gravel and grassed area to the southwest of the boat ramp.

The proposed Harbour Improvements Project at the DFO-SCH in Le Goulet, Gloucester County, New Brunswick is intended to be implemented on a phased construction approach, with project phases consisting of recommendations derived from National Research Council Canada (NRC)'s *Simulation of Coastal Processes at Shippagan Gully Inlet and Assessment of Future Scenarios* (Provan, Cornett, & Nistor, 2013) for the sustainable operation of the facility.

Activities associated with the current phase of the proposed harbour improvements project (**Phase 2b**) consists of re-dredging of the Entrance Channel and placement of approximately 15,000 cubic metres place measure (cmpm) of organic, silty material within an adjacent area of the Inner Harbour, in front of Burns Island. Several options for dredge material disposal / re-use were explored, however the only feasible option for the placement of the dredged material was determined to be within an area of the harbour at Le Goulet intended to be constructed utilizing excess construction materials from previous project phases stored on-site and serve as shoreline protection/wetland habitat. Sand and sandstone removed during the reconstruction of structure #302 (Harbour Improvements Project - Phases 1 and 2a) is proposed to be re-used to construct a low berm within the Inner Harbour in front of "Burns Island" (the outer sand spit island of the historic West Beach) and serve as shoreline protection and contain the dredged sediment. It is important to note that Burns Island currently exists due to reinforcement efforts in the 1990's consisting of rock protection strategically placed around the spit. This option allows for construction and dredging operations to be carried out without interference to harbour operations and does not protrude into productive areas of the estuary. The harbour is also large enough to allow this expansion without compromising harbour operations and future expansion.

Although the dredging methodology will only be known following tender review, it is anticipated that the Contractor will make use of floating plant and/or land based equipment to complete dredging activities; ice or fill roads during winter months (during the period of no navigation) and dredge with land based equipment; or undertake a combination of these

methods. Hydraulic dredging equipment is not recommended as there is not enough retention time within the cell.

The west side of the harbour entrance will be protected similar to the east (along structure #302 as part of Harbour Improvements Project - Phase 2a) and the disposal berm will either be protected (minimum protection required) or sloped as a spending beach. There are no plans for re-use of the dredged materials, therefore the area is intended to be vegetated to a natural area in keeping with its wetland surroundings. It is proposed that any temporary impact to the Burns Island wetland habitat during construction activities may be offset by the creation of further wetland habitat. The approximate coordinates of the project area are: 47º43'05"N and -64º40'06"W.

Dredging and disposal of sediment from navigational channel as well as reconstruction of the western training wall will be carried out in a future project phase (Harbour Improvements Project – Phase 3) to be assessed in a separate evaluation report in order secure necessary regulatory approvals without affecting the timelines of the independent project phases.

The proposed schedule for the construction activities is for the work to commence in the late fall of 2016 and is expected to be completed by the spring of 2017. The timeline is subject to DFO-SCH approvals/funding, therefore completion of works could extend to the summer of 2017.

PROJECT REVIEW

<table>
<tr><td>13. DFO's rationale for the project review:
Project is on federal land ☒ and;
☒ DFO is the proponent
☒ DFO to issue Fisheries Act Authorization, Species at Risk Act Permit or other regulatory permit
☐ DFO to provide financial assistance to another party to enable the project to proceed
☐ DFO to lease or sell federal land to enable the project to proceed
☐ Other</td><td>14. Fisheries Act Sections(s) (if applicable):
Sections 35(1) and 35(2)(b).</td></tr>
<tr><td>15. Other Authorities (if applicable):
DFO-Fisheries Protection Program (FPP)

Transport Canada – Environmental Affairs and Aboriginal Consultation Unit and Navigation Protection Program (NPP)</td><td>16. Other Authorities Rationale for Involvement:
<u>Permit Requirement:</u> The project was referred to the DFO-Fisheries Protection Program (FPP) for review. DFO-FPP has determined that the placement of dredge material is likely to result in Serious Harm to Fish, which is prohibited under Section 35(1) of the Fisheries Act. An authorization under Section 35(2)(b) of the Fisheries Act will be sought and the proponent will comply with all/any conditions of the Authorization.

<u>Approval Requirement:</u> The Navigation Protection Act (NPA) approval and review process is being conducted for the proposed project. The proponent will comply with all/any conditions of the NPA approval.</td></tr>
<tr><td colspan="2">17. Other Jurisdictions Involved in Review:</td></tr>
<tr><td>18. Other Expert Departments Providing Advice: N/A</td><td>19. Areas of Interest of Other Expert Departments: N/A</td></tr>
<tr><td colspan="2">20. Other Contacts and Responses:
Ms. Sandra Comeau – (former) DFO Aboriginal Program Area Coordinator
Ms. Rachel Friolet – DFO Aboriginal Program Area Coordinator
Mr. Georges Moore – DFO Aboriginal Program Area Coordinator
Mr. Paul Aimé Mallet – Harbour Authority Representative for Le Goulet DFO-SCH</td></tr>
</table>

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

Project Description

Harbour Improvements (Phase 2b – Harbour Entrance Channel Re-Dredging and Disposal)
The currently proposed Phase 2b of the Harbour Improvements project at the Le Goulet DFO-SCH consists of re-dredging of the Entrance Channel and placement of approximately 15,000 cubic metres place measure (cmpm) of organic, silty material within an adjacent area of the Inner Harbour, in front of Burns Island. Sand and sandstone removed during the reconstruction of structure #302 (Harbour Improvements Project - Phases 1 and 2a) is proposed to be re-used to construct a low berm within the Inner Harbour in front of "Burns Island" (the outer sand spit island of the historic West Beach) and serve as shoreline protection and contain the dredged sediment. Re-dredging activities are anticipated to be limited to either land-based dredging or double-handling to reduce water management within the area created by the berm during dredge material placement. The west side of the harbour entrance will be protected similar to the east (along structure #302 as part of Harbour Improvements Project - Phase 2a) and the disposal berm will either be protected (minimum protection required) or sloped as a spending beach. There are no plans for re-use of the dredged materials, therefore the area is intended to be vegetated to a natural area in keeping with its wetland surroundings. The approximate coordinates of the project area are: 47º43'05"N and -64º40'06"W. Refer to **Figures 3 to 5** in **Appendix A** for plans of the existing site and proposed work.

Operation / Maintenance
The Environmental Management System (EMS) with an integrated Environmental Management Plan (EMP) for the Harbour Authority of Le Goulet 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 Le Goulet DFO-SCH.

Decommissioning / Abandonment
This facility is not presently planned to be decommissioned. At the time of decommissioning, Small Craft Harbours will develop a site-specific re-use or reclamation plan that is appropriate for the applicable environmental legislation and Fisheries and Oceans Canada policies.

Scheduling

The proposed construction is scheduled to commence in the late fall of 2016. The timeline is subject to DFO-SCH approvals/funding, therefore completion of works could extend to the summer of 2017.

22. Location of Project:

The Le Goulet DFO-SCH (Harbour Code 2631) opens to Shippagan Bay and Shippagan Gully inlet within the Gulf of St. Lawrence along the northeastern shore of New Brunswick in Gloucester County. The approximate coordinates of the project area are Latitude 47º43'05"N and Longitude -64º40'06"W. Refer to **Figures 1 and 2** in **Appendix A** for maps and an aerial photo showing the proposed project location and surrounding area.

23. Environment Description:

Socio-Economic Environment
The Le Goulet DFO-SCH is located along the northeastern shore of New Brunswick in Gloucester County. The Harbour is directly accessible from Rue du Havre off of Rue Pointe Sauvage and NB Route 133 in the village of Le Goulet, New Brunswick.

The Harbour Authority, through a lease agreement with DFO-SCH, manages the property and facilities. The structures occupying the site include a western training wall/wharf/rock protection structure, eastern rubblemound training wall, two floating wharves within the harbour basin, a concrete haul-out ramp, a parking/service area, a fenced upland storage area, various buildings including bait/storage sheds, an ice house, Harbour Authority office, and two former fish processing plants. Fuel and waste oil aboveground storage tanks (ASTs) are located in a gravel and grassed area to the southwest of the boat ramp.

The Le Goulet DFO-SCH currently accommodates a home fleet of approximately 60 full-time commercial fishing vessels and 10 to 15 recreational vessels (P.A. Mallet, pers. comm., 2015). According to the Harbour Authority, the following fisheries operated out of the harbour:

- Lobster – harvested in the month of July.

- Herring – harvested from the end of August until the quota is reached.
- Rock Crab – harvested between the months of September to October.
- Groundfish – harvested at the end of July.
- Mackerel – harvested in the month of August.

There are two fish processing plants located near the wharf, however according to the Harbour Authority, they are not currently in operation (P.A. Mallet, pers. comm., 2015). There are also currently no lobster holding facilities located near the wharf (P.A. Mallet, pers. comm., 2015). Aquaculture lease sites are situated within Shippagan Bay, however the closest lease site to the project area is currently not active (New Brunswick Department of Agriculture, Aquaculture and Fisheries, 2015). Vessels associated with one of the oyster aquaculture operations within Shippagan Bay utilize the Le Goulet harbour facilities (P.A. Mallet, pers. comm., 2015).

According to the Le Goulet Harbour Authority, there are Aboriginal fishers from the Esgenoôpetitj (Burnt Church) First Nation and Elsipogtog First Nation who fish snow carb (April to July) for commercial purposes from the Harbour. However, there are no Aboriginal fisheries for food, social, or ceremonial purposes known to be occurring at the Harbour according to the Le Goulet Harbour Authority and the DFO Aboriginal Program Area Coordinators (P.A. Mallet, pers. comm., 2016; S. Comeau, pers. comm., 2015; R. Friolet, pers. comm., 2016; and G. Moore, pers. comm., 2015 and 2016).

The land in the immediate vicinity of the Harbour has been developed to serve the general fishing industry. The nearest residential property is located over 1 km from the harbour.

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 Le Goulet is considered high potential for heritage and archaeological resources, however the nearest registered archaeological sites (CkDe-8, CkDe-14, and CkDe-15) are located east of Pointe-Sauvage, approximately 1 km north of the project site (New Brunswick Department of Tourism, Heritage and Culture, 2013).

Physical Environment

The Le Goulet DFO-SCH is located south of Shippagan, on the northeastern shore of the Acadian Peninsula in Gloucester County, New Brunswick. The harbour opens to an inlet in Shippagan Bay, in the Gulf of St. Lawrence. The coastal environment at Le Goulet is typical of the Gulf of St. Lawrence, with wide, relatively flat beaches extending into a shallow sloped inshore, sand beaches, and dunes. The tides in the area generally range from less than 0.5 to 1.5 m in height.

Based on available surficial geology maps, the native surficial soils consist of a moderately to highly permeable layer of silty, sandy deposits which may contain natural organic sediments (e.g., peat), generally 0.5 to 3 m in thickness (Rampton et. al., 1984). Bedrock mapping indicates the underlying rock formation is from the Late Carboniferous period and is comprised of red to grey sandstone, conglomerate, siltstone and shale (New Brunswick Department of Natural Resources and Energy. 2000).

Underwater spot checks and a video survey were completed in late 2015 within the harbour area adjacent to Burns Island, to the west of the wharf/training wall reconstruction project site. This area is characterized with water depths ranging from 0 to 2 m and a substrate dominated by fines and scattered gravels (CBCL Limited, 2016; **Appendix C**).

The Le Goulet DFO-SCH property generally slopes to the south towards Shippagan Bay and the Gulf of St. Lawrence and surface drainage at the site appears to follow the general slope of the property, discharging from the north towards the Shippagan Bay and to the south and east toward the Gulf of St. Lawrence. Regional surface drainage (apparent groundwater flow direction) is southeast towards the Gulf of St. Lawrence (Dillon Consulting Limited, 2007).

The vegetation on site is limited with some grass. The upland area is primarily undeveloped wetland with the outer sand spit island of the historic West Beach known as “Burns Island” currently existing due to reinforcement efforts in the 1990’s consisting of rock protection strategically placed around the spit.

Canadian Climate Normals (1981-2010) for the Bathurst climate station (47°37’45.050’’N and -65°44’54.020”W), the station located closest to the project, indicate a mean annual temperature of 4.8°C with extremes ranging from -35.6°C to 37.4°C. Measurable precipitation per year is approximately 1110.1 mm. Extreme daily precipitation of up to 96.3 mm has been recorded (Environment Canada, 2015a).

Biological Environment

The Gulf of St. Lawrence and waters that feed into it are considered highly productive. Rainbow smelt (*Osmerus mordax*) and alewife (i.e., gaspereau) (*Alosa pseudoharengus*) occur throughout the nearshore marine environment of the Acadian Peninsula, with smelt traps common to bays, including within a few kilometres of the project location. Areas associated with

American eel (*Anguilla rostrata*) are located within 5 kilometres (km) of the wharf. Soft-shell clams can be found near Le Goulet Harbour, while razor clams and bar clams (*Spisula solidissima*) are present in patches throughout nearshore waters. Blue mussels (*Mytilus edulis*) and American oysters (*Crassostrea virginica*) are also common within the bays of the Acadian Peninsula.

Atlantic mackerel (*Scomber scombrus*), dogfish (*Squalus acanthias*), and Atlantic herring (*Clupea harengus*) are noted as occurring within the inshore marine environment, particularly south of the project location. Atlantic lobster (*Homarus americanus*) and rock crab (*Cancer irroratus*) are prevalent in the waters of the Gulf of St. Lawrence. Northern whelk (*Buccinum undatum*) and short-finned squid (*Illex illecebrosus*) are noted within 5 km of the project location on the southeastern shore. Sea urchins (*Strongylocentrotus droebachiensis*) are noted approximately 5 km offshore to the southeast of the project location.

Species fished commercially from the harbour include rock crab, lobster, herring, groundfish, and mackerel. Atlantic salmon (*Salmo salar*), anadromous brook trout (*Salvelinus fontinalis*), striped bass (*Morone saxatilis*) and Atlantic tomcod (*Microgadus tomcod*) are noted as not being fished recreationally within the project site, however these species are likely to occur in the area.

Harbour seals (*Phoca vitulina*) are also common along the coast of the Acadian Peninsula and whales are present in deeper water greater than 5 km to the southeast of the project site.

Flora observed in underwater spot checks and surveys completed as part of a Marine Underwater Benthic Habitat Survey in late 2015 consisted of eelgrass (*Zostera marina*), while faunal observations consisted of soft-shell clams (*Mya arenaria*), periwinkles (*Littorina* sp.), and sand shrimp (*Crangon* sp.). Records of unidentified shrimp (likely sand or mysid (*Mysis* sp.) shrimp), shrimp or fish larvae, and unidentified juvenile fish or fish larvae were also noted as well as unconfirmed records of juvenile rock crab (Cancer irroratus) and a hermit crab (*Paguroidea* family). Siphon holes that could be attributed to soft-shell clams, Atlantic surf clam (*Spisula* sp.), and/or razor clams (*Ensis* sp.) were also noted throughout this area (CBCL Limited, 2016; **Appendix C**).

The Maritime Breeding Bird Atlas identifies a total of 89 species of birds in the geographical block which contains Le Goulet Harbour (20LT78), 19 of which are listed as confirmed for breeding (Bird Studies Canada, 2015).

The area surrounding and including Burns Island is noted as a Provincially Significant Wetland (Government of New Brunswick, nd). A wetland delineation survey of this area in 2013 noted that it consisted predominantly of "low" saltmarsh habitat. This wetland type was located in the intertidal zone and almost 100% dominated by saltmarsh cordgrass (*Spartina alterniflora*). Other species that composed less than 1% of the total area surveyed included sea-side lavender (*Limonium nashi*), glasswort (*Salicornia europaea*), and sea milkwort (*Glaux maritima*) (AMEC, 2013). A wetland delineation survey conducted in June, 2016 noted that this wetland was dominated by salt-meadow cordgrass (*Spartina patens*), beach grass (*Ammophila brevilligulata*), black grass (*Juncus gerardii*), sea lyme grass (*Leymus mollis*), sea-milkwort, and beach-pea (*Lathyrus japonicus*). Although not dominant, a few non-native species were also found to be present and included dusty miller (*Artemisia stellariana*) and Lamb's quarters (*Chenopodium album*). Overall, the coastal wetland was identified as a high-functioning wetland with respect to fish and wildlife habitat (Boreal Environmental, 2016 *found in* GHD Limited, 2016; **Appendix D**). Wetland delineation and project information (specific to the placement of material dredged from the entrance channel) was reviewed by a provincially-certified wetland biologist. This biologist indicated that the creation of salt marsh habitat in the proposed dredge material placement site is considered to be a favourable option for the material to be dredged from the entrance channel, if any serious harm to fish can be adequately offset (through Authorization by DFO-FPP under paragraph 35(2)(b) of the *Fisheries Act*) and a monitoring program is established to ensure success of the wetland creation (Amec Foster Wheeler, 2016; **Appendix E**).

Species at Risk (Aquatic and Terrestrial)

A search of the Atlantic Canada Conservation Data Centre (ACCDC) database was conducted. The ACCDC provided a list of 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) listed as extirpated, endangered and threatened or of special concern. The melodus subspecies of piping plover (*Charadrius melodus melodus*), rufa subspecies of red knot (*Calidris canutus rufa*), Canada warbler (*Wilsonia canadensis*), and short-eared owl (*Asio flammeus*) were identified in the ACCDC search. Species identified as sensitive by the Committee on the Status of Endangered Wildlife in Canada but not appearing on Schedule 1 of SARA noted in the ACCDC search include the bank swallow (*Riparia riparia*), barn swallow (*Hirundo rustica*), bobolink (*Dolichonyx oryzivorus*), and Eastern wood-pewee (*Contopus virens*).

The piping plover is listed on Schedule 1 of SARA and by COSEWIC as Endangered. The piping plover is a North American bird that breeds along the Atlantic coast, from South Carolina to Florida, and in the Caribbean (Cuba, Bahamas).

Approximately 25% of Canada's piping plovers are found in the Atlantic Provinces and they breed on the Magdalen Islands of Quebec and in New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland. Piping plovers nest above the normal high water mark on exposed sandy or gravelly beaches. Along 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. The most important limiting factor for piping plovers of the melodus subspecies is the loss of habitat, mostly caused by human use of beaches, and the consequent human disturbance around nesting sites. (Environment Canada, 2015b). The beach along the community of Le Goulet is identified by Environment Canada as critical habitat in the *Recovery Strategy for the Piping Plover (*Charadrius melodus melodus*) in Canada* (Environment Canada, 2012). A piping plover habitat survey was completed in the area of the sandspit across from the existing training wall (in the location of the proposed east training wall). The beach substrate in this area is comprised of a mix of sand, gravels and cobbles and the vegetation density at the foredune crest was classified as either "none" or "sparse". It was determined that this area does not likely represent critical habitat for piping plover because the nearest critical habitat point location identified by Environment Canada is the beach along the community of Le Goulet (greater than 2 km to the southwest) and because the habitat is deemed unlikely to be selected by piping plovers for nesting, feeding or cover. The beach in this area is characterized as rather narrow, averaging only 6.7 m above the normal high tide mark, and moderate-to-steeply sloping ranging from -7.0 degrees (º) to -15.5º (sloping from the foredune crest to the water's edge). These two qualities of beach alone would likely make this area unattractive to nesting piping plovers (CBCL Limited, 2016).

The rufa subspecies of red knot is listed on Schedule 1 of SARA and by COSEWIC as Endangered. This shorebird travels thousands of kilometres during migration and may use the shores of Prince Edward Island as staging areas. Preferred migration stop-overs include sandflats and sometimes mudflats in coastal zones where they can feed on intertidal invertebrates. The species also frequents saltmarshes, brackish lagoons and mussel beds. Threats to red knot include decreased wetland habitats, human disturbance, and the effects of climate change such as increased storm activity during migration and rising sea levels (Environment Canada, 2015b).

The Canada warbler is listed as Threatened by both Schedule 1 of SARA and COSEWIC. This bird breeds primarily across much of southeastern Canada, the northeastern United States, and the Great Lakes region. The Canada warbler is found in a variety of forest types, but mostly in wet, mixed deciduous-coniferous forest with a well-developed shrub layer. In winter, this migratory bird uses primarily mature cloud rainforests located at an elevation of 1000 to 2500 m, as well as old-growth forests, forest edges, coffee plantations, agricultural field edges and semi-open areas (Environment Canada, 2015b).

The short-eared owl is listed by both Schedule 1 of SARA and COSEWIC as a species of Special Concern. The short-eared owl breeds in all of Canada's provinces and territories, but is most frequently found in the Prairie provinces of Alberta, Saskatchewan and Manitoba as well as along the Arctic coast. It generally heads southward in the winter and is found in open habitats along the extreme southern coast of British Columbia and in southern Ontario. It is also occasionally seen in coastal areas of Atlantic Canada or in the Prairie provinces, where the number of wintering individuals fluctuates significantly from one year to the next. This species of owl makes use of a wide variety of open habitats, including arctic tundra, grasslands, peat bogs, marshes, sand-sage concentrations and old pastures. It also occasionally breeds in agricultural fields. Preferred nesting sites are in dense grasslands, as well as tundra with areas of small willows (Environment Canada, 2015b).

Sensitive Environmental Areas

A search of the ACCDC database yielded no records of sensitive environmental areas within 5 km of the Le Goulet Harbour (ACCDC, 2015). The nearest Important Bird Area (IBA) identified by IBA Canada is located approximately 5 km southwest of the project site and consists of the Beaches of Pokemouche and Grand Passage IBA.

The following Environmentally Significant Areas (ESAs) designated by the Nature Trust of New Brunswick (NTNB) (2005) are noted:

- **Le Goulet Cattail Marsh/École la Vague ESA** runs along the shore adjacent to Le Goulet (between Shippagan Beach and Baie de Petit Pokemouche) and consists of a coastal brackish marsh that supports a high diversity of bird life, very close to human settlement. This area is noted to be used by piping plovers and is thought to be used for feeding as the habitat is not ideal for nesting (NTNB, 1995).

- **Pointe-Sauvage Marsh (Burns Island) ESA** is located adjacent to the Le Goulet DFO-SCH and is characterized by NTNB as 100% high marsh with numerous shallow pannes and low primary productivity (Class II salt marsh). The Northern blue butterfly (*Plebejus idas*) has been noted by the NTNB to occur within an elevated bog west of the main road, however this species was not noted in the ACCDC database search conducted. The area around the wharf is used by roosting gulls, cormorants and some shorebirds, while the marsh on the lagoon side of Shippagan Beach to Pointe-Sauvage is used by several species of ducks, migratory shorebirds and herons (NTNB, 1995).

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 that those already discussed above.

24. Environmental Effects of the Project:

Potential Project/Environment Interactions and their effects are outlined below.

Harbour Improvements (Phase 2b – Harbour Entrance Channel Re-Dredging and Disposal):

- 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 adverse effects to migratory birds during site access.
- Potential to enhance populations of predators in the harbour area.
- Potential for suspended solids/sediments and turbidity immediately adjacent to the project site affecting fish/fish habitat.
- Potential loss of fish habitat during placement of dredged material.
- Impacts to fish habitat within construction footprints.
- Potential disturbance to wetland habitat during dredge material placement activities.
- Potential for introduction of invasive species into the marine environment.
- Potential discovery and disturbance or loss of heritage/archaeological resources.
- Interference with vessel movement in the vicinity of the harbour.
- Interference with commercial and recreational use of the harbour.
- 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.
- Safety hazards to workers during construction.

Operation / Maintenance:

- Safety hazards to workers during operation/maintenance.

Decommissioning / Abandonment:

- Safety hazards to workers during decommissioning/abandonment.

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 work approved or permitted pursuant to the *Navigation Protection Act*.

Table 1 of **Appendix B** provides a matrix of potential project/environmental interactions, while **Table 2** of **Appendix B** describes the assessment criteria for determination of significance.

25. Mitigation Measures for Project:

Potential Effect	Mitigation
Harbour Improvements (Phase 2b – Harbour Entrance Channel Re-Dredging and Disposal)	
Moderate, **reversible**, **immediate** degradation of soil quality occurring **once** and over the **short term**.	• 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.
Small, **reversible**, **immediate** degradation of groundwater/marine water quality occurring **intermittently** over the **short term** / **Moderate**,	• An Application for Authorization inclusive of a plan to offset potential loss of habitat will be submitted to DFO-Fisheries Protection Program (FPP). The project will incorporate the recommended mitigation once an approval is received.

irreversible, **immediate** loss of fish habitat occurring **once** and over the **short term**.	• 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 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. • Marine equipment may be inspected by PWGSC 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).
Small, **reversible**, **immediate** disturbance of birds/bird habitat **intermittently** over the **short term**.	• 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 *Migratory Birds Convention Act*. • 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.
Small, **reversible**, **immediate** disturbance to terrestrial/aquatic species and wetland habitat **intermittently** over the **short term**.	• Wetlands or 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. • An Application for a Watercourse and Wetland Alteration Permit will be submitted to the Surface Water Protection section of NBDELG. The project will incorporate conditions set forth in the Permit. • 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.
Moderate, **irreversible**, **immediate** disruption or loss of heritage/archaeological resources **once** over the **short term**.	• 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 PWGSC 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 PWGSC 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 PWGSC Project Manager and/or the Construction Supervisor.
Small, **reversible**, **immediate** disruption of commercial and recreational harbour use **intermittently** over the **short term**.	• The Harbour Authority will coordinate all construction/vessel activities within the harbour for the duration of the project so as to avoid unnecessary interference with harbour users. Any and all stipulations of federal, provincial, or municipal authorities or their officers must be strictly followed.
Small, **reversible**, **immediate** reduction in air quality due to noise and dust occurring **intermittently** over the **short term**.	• Construction activities must be carried out during times acceptable to local authorities and smaller, less disturbing equipment will be used where possible. • 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.
Significance of Adverse Environmental Effects: Although the potential exists for short-term environmental effects during the project, the implementation of recommended mitigation measures will result in insignificant impacts. DFO concludes that this project will not likely contribute to significant adverse environmental effects, provided that the above recommended mitigation measures are applied.	
Operation/Maintenance and Decommissioning/Abandonment	
Immediate worker health and safety hazards **intermittently** over the	• Site access must be restricted to construction personnel and authorized visitors.

short term.	• All personnel involved with activities must be adequately trained and utilize appropriate personal protective equipment.

Significance of Adverse Environmental Effects: Although the potential exists for short-term environmental effects during the project, the implementation of recommended mitigation measures will result in insignificant impacts. DFO concludes that this project will not likely contribute to significant adverse environmental effects, provided that the above recommended mitigation measures are applied.

26. Description of any Significant Adverse Environmental Effects of the project (after applying mitigation):

Significant adverse environmental effects are unlikely, taking into account mitigation measures.

27. Other Considerations (Public Consultation, Aboriginal Consultation, Follow-up)

Public Consultation

The harbour improvements project at Le Goulet Harbour will increase the overall operational capacity and safety of the harbour and for harbour users (harbour for fishers and occasional recreational user) to conduct harbour activities, allowing the harbour to continue being a viable resource to the commercial fishery. The proposed project will increase the sustainability of the commercial fisheries at this location. No negative public concern is expected as a result of this project.

Aboriginal Consultation

PWGSC, on behalf of DFO-SCH, carried out an Aboriginal Assessment at Le Goulet Harbour in accordance with DFO-SCH's Preliminary Duty to Consult (DTC) 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; and
3. The potential or established Aboriginal or treaty rights may be adversely impacted by the Crown

The Le Goulet Harbour Authority advised, during the DTC process, that there are Aboriginal vessels from the Esgenoôpetitj (Burnt Church) First Nation and Elsipogtog First Nation that fish commercially from the Le Goulet harbour but that, to his knowledge, the SCH facility is not utilized for Aboriginal traditional, food or ceremonial fisheries. During the DTC process, the DFO Area Aboriginal Program Coordinators also advised that the SCH facility is not utilized for Aboriginal traditional, food or ceremonial fisheries. The proposed project site was also reviewed for archaeological potential with known archeological sites (pre-contact, historic, burial) in the area of the site, the scope and type of work to be conducted to deduce a residual archaeological potential. As a result of the DTC assessment, aboriginal consultation will be pursued with Esgenoôpetitj (Burnt Church) First Nation and Elsipogtog First Nation for this proposed project.

Government Consultation

Federal and provincial authorities likely to have an interest in the project were consulted by Public Works & Government Services Canada, Environmental Services during the course of this assessment. A project description was distributed to the following federal and provincial authorities: Fisheries and Oceans Canada - Fisheries Protection Program, Transport Canada – Environmental Affairs and Aboriginal Consultation Unit, Transport Canada – Navigation Protection Program, and New Brunswick Department of Environment and Local Government – Environmental Assessment Section. The Environmental Assessment and Marine Programs group of Environment Canada as well as the Surface Water Protection Group of the New Brunswick Department of Environment and Local Government are also intended to be contacted during the assessment and permit application phase of the project.

Accuracy and Compliance Monitoring

Site monitoring (accuracy and compliance monitoring) may be conducted to verify whether required mitigation measures were implemented. The proponent must provide site access to Responsible Authority officials and/or its agents upon request.

28. Other Monitoring and Compliance Requirements (e.g. *Fisheries Act* or *Species at Risk Act* requirements):
N/A

CONCLUSION

29. Conclusion on Significance of Adverse Environmental Effects:
The Federal Authority has evaluated the project in accordance with Section 67 of *Canadian Environmental Assessment Act (CEAA), 2012*. On the basis of this evaluation, the department has determined that the project is not likely to cause significant adverse environmental effects with mitigation and therefore can proceed using mitigative measures as outlined.

30. Prepared by: **31. Date:**

32. Name: Sylvie Poirier

33. Title: Environmental Specialist, PWGSC

34. Approved by: **35. Date:**

36. Name: Raymond Losier

37. Title: DFO-SCH Senior Project Engineer, NB

DECISION

38. 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.

39. Approved by: **40. Date:**

41. Name: Raymond Losier

42. Title: DFO-SCH Senior Project Engineer, NB

43. Transport Canada

Project Title:	
TC File No.:	
NPP File No.:	
EED Decision:	☐ 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. ☐ Taking into account the implementation of any mitigation measures that Transport Canada considers appropriate, the project **is likely** to cause significant adverse environmental effects that cannot be justified. As such, Transport Canada shall not exercise any power or perform any duty or function conferred on it by or under any Act of Parliament that would permit the project to be carried out in whole or in part, at this point in time. The project shall be referred to the Governor in Council to decide if those adverse environmental effects are justified under the circumstances pursuant to subsection 69(3) CEAA, 2012.

Recommended by:		
Signature:		**Date:**
Mailing Address:		
Tel:		
Fax:		
Email:		
Approved by:	**Kevin LeBlanc** Regional Manager Environmental Affairs and Aboriginal Consultation Unit	
Signature:		**Date:**

44. References:

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APPENDIX A:
FIGURES

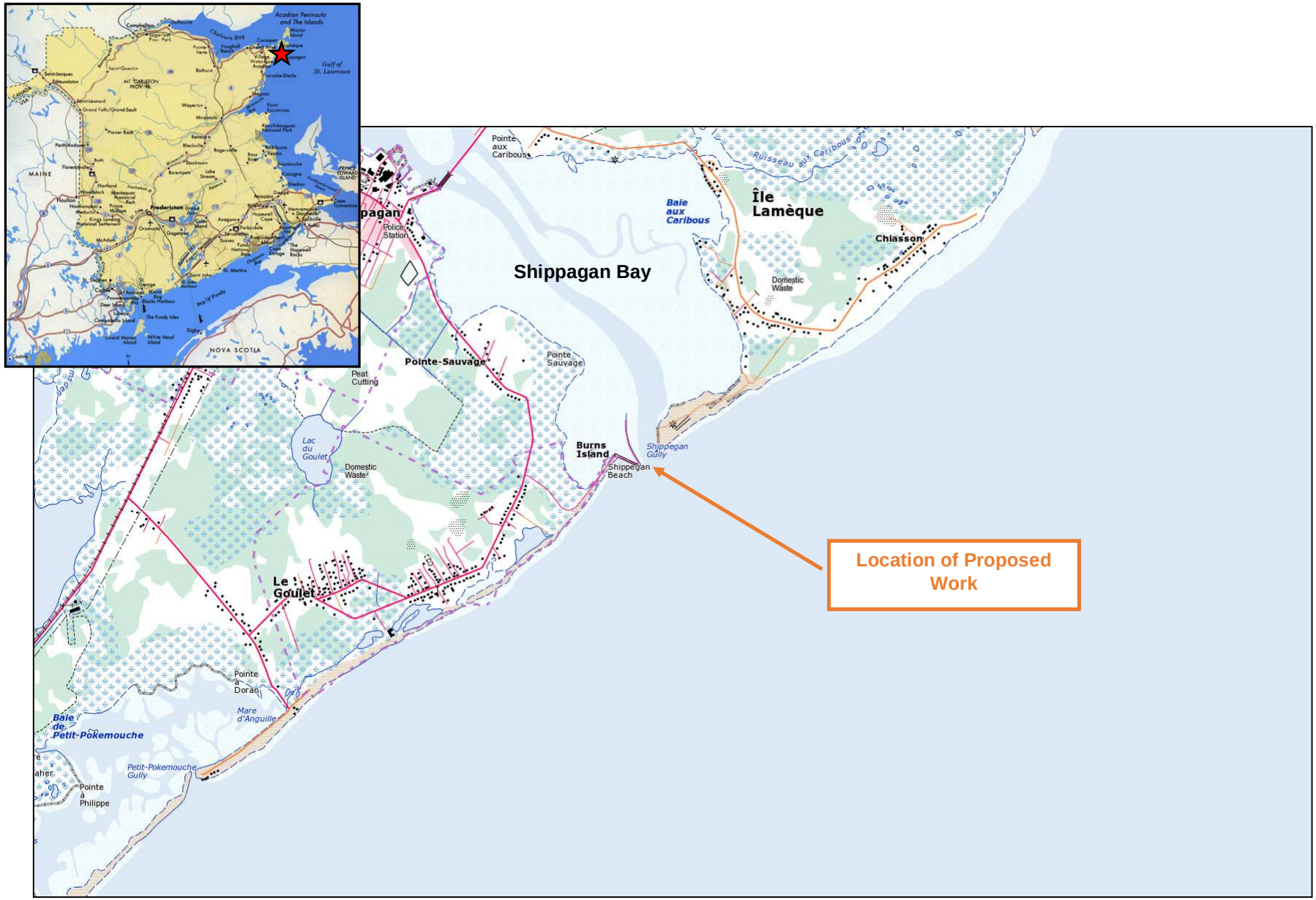

Figure 1: Topographic map indicating proposed project site, Le Goulet DFO-SCH, Shippagan Gully, Gloucester County, NB

Figure 2: Oblique aerial photo of Le Goulet DFO-SCH, Gloucester County, New Brunswick

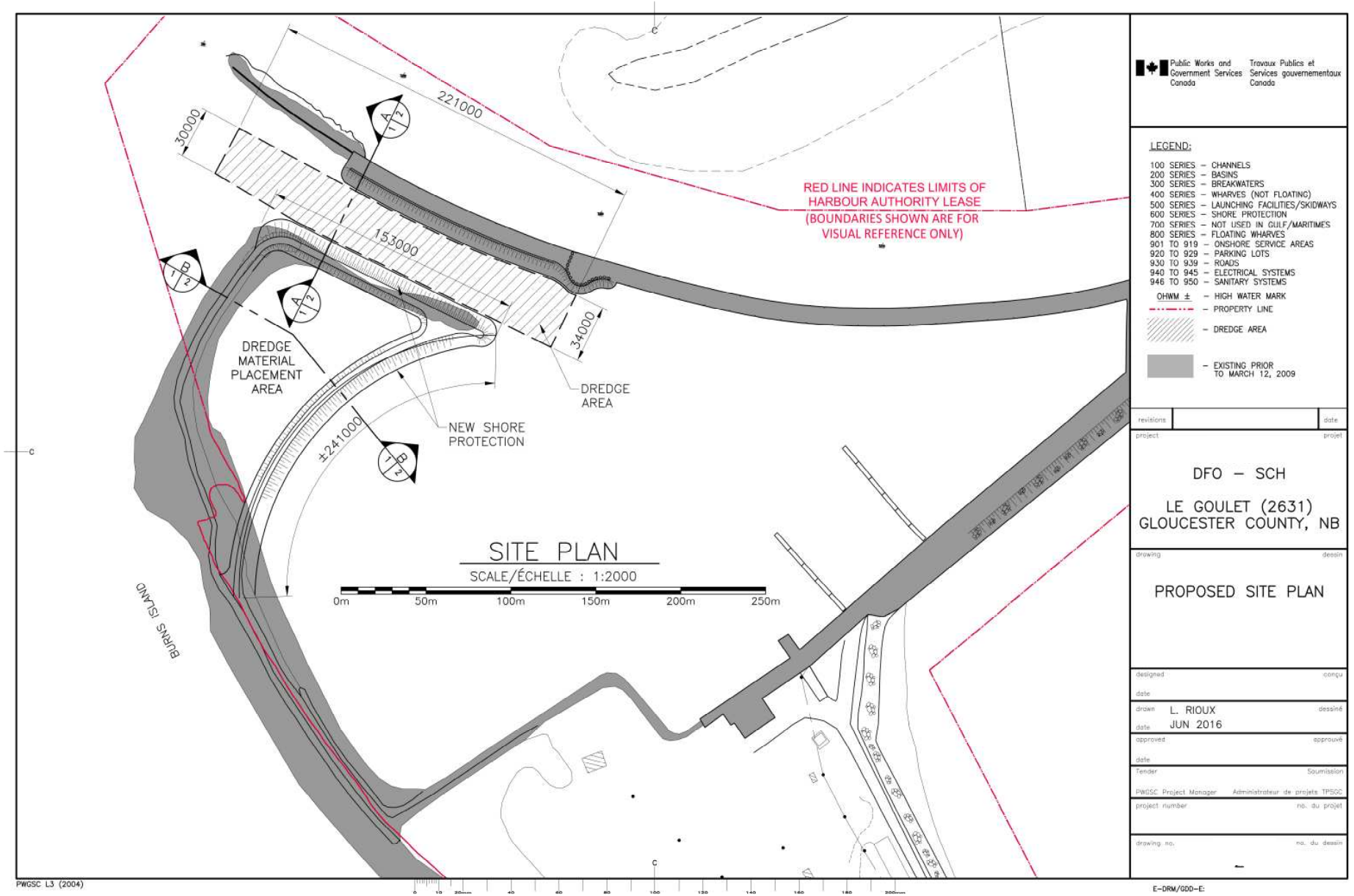

Figure 3: Site plan showing proposed dredging and dredge material placement (Harbour Improvements Project - Phase 2b) activities at Le Goulet DFO-SCH, Gloucester County, New Brunswick

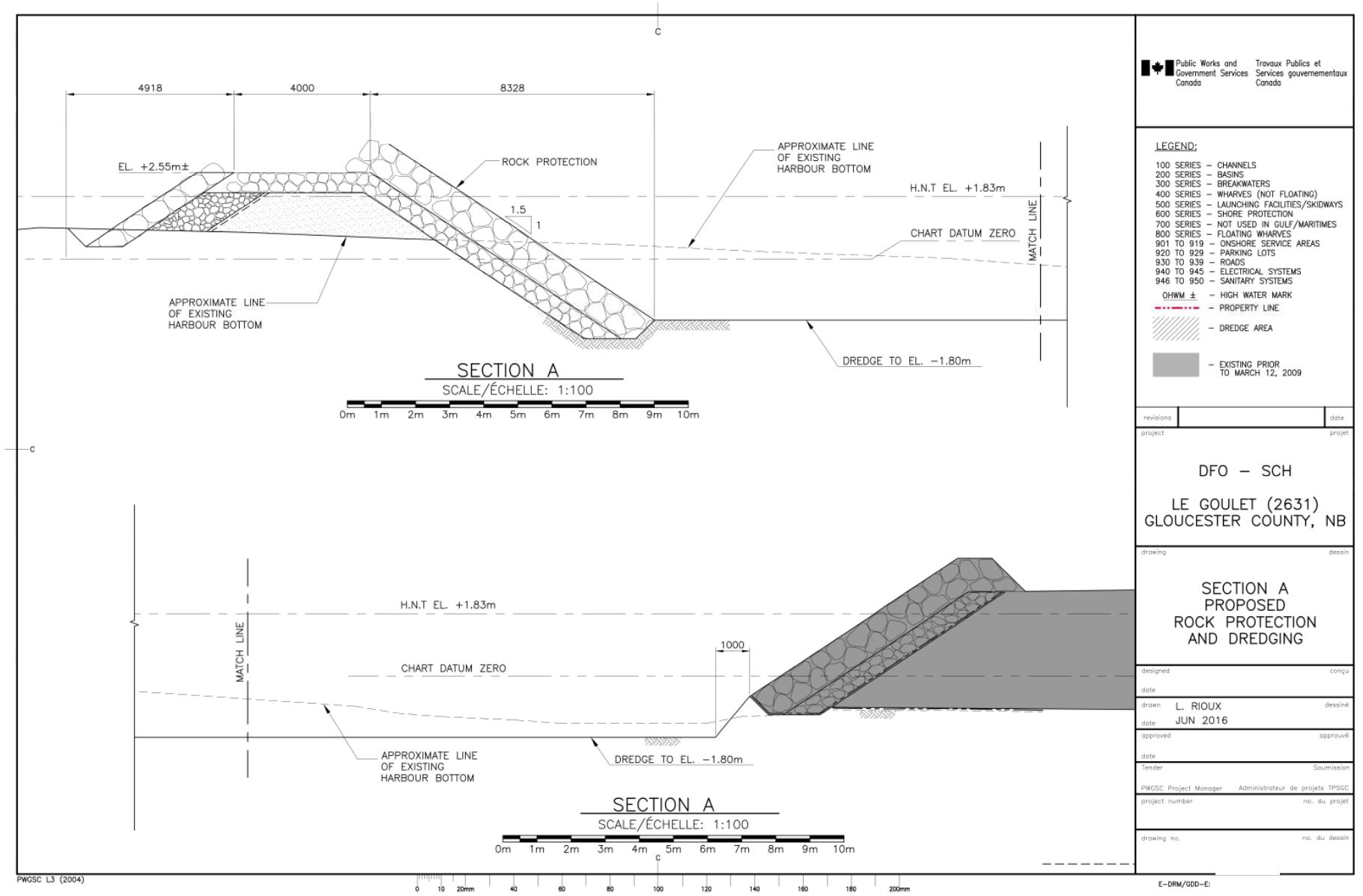

Figure 4: Cross-sections proposed dredging and shoreline protection (Harbour Improvements Project - Phase 2b) activities, Le Goulet DFO-SCH, Gloucester County, NB

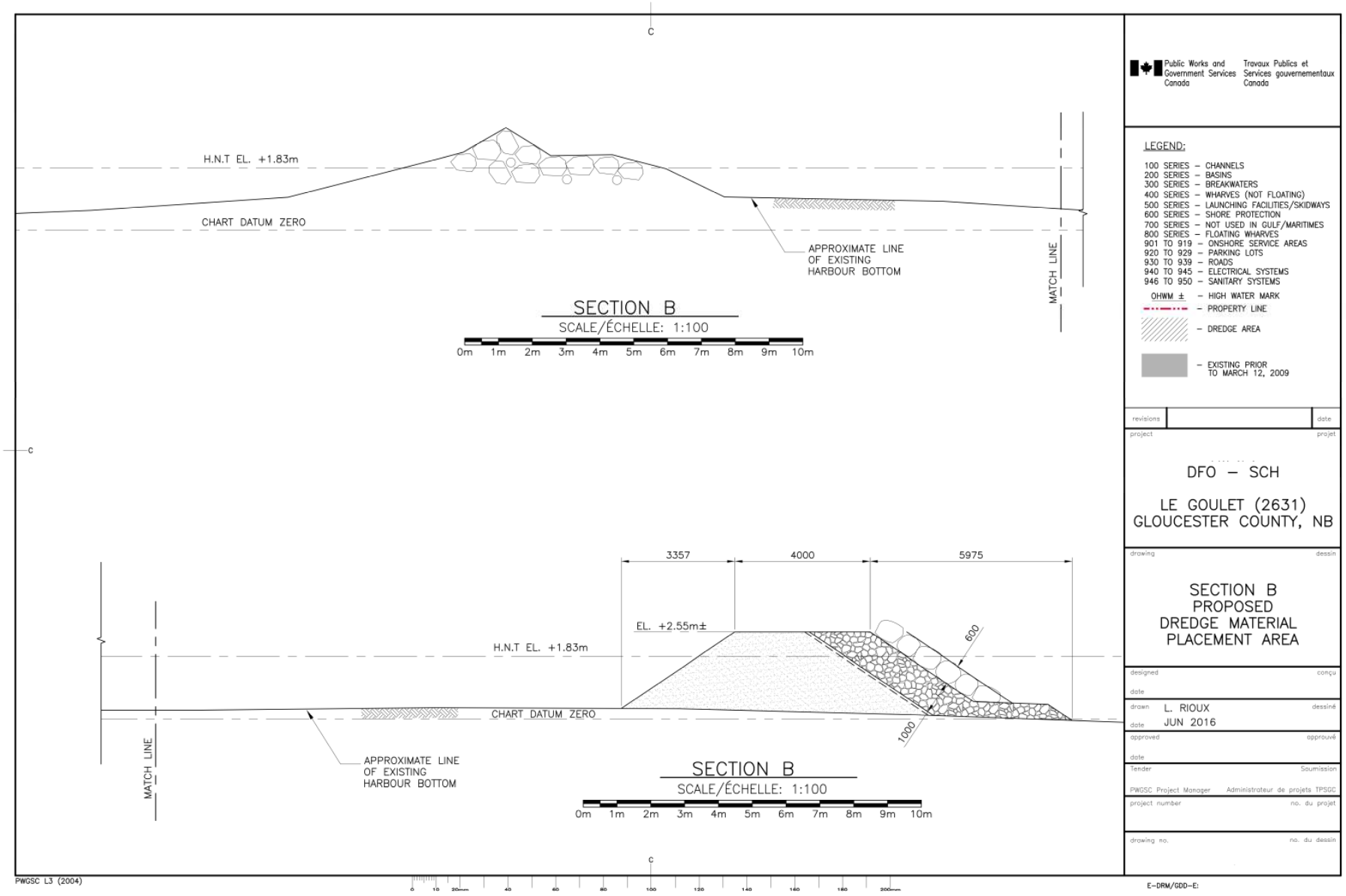

Figure 5: Cross-sections proposed dredge material placement area (Harbour Improvements Project - Phase 2b) activities, Le Goulet DFO-SCH, Gloucester County, NB

APPENDIX B:
TABLES

Scope of Effects Considered (CEAA Section 5(1) and 5(2))

Table 1: Matrix of Potential Project / Environmental Interactions

	As per Section 5(1)			*Section 5(1c)* *Aboriginal Interest*				*Section 5(2)*			*Due Diligence*						
Project Phase / Physical Work/Activity	*Fish (Fisheries Act)*	*Aquatic Species (SARA)*	*Birds (MBCA)*	*Health and Socio economic*	*Physical and cultural heritage*	*Land use*	*HAPA* Significance*	*Health and Socio economic*	*Physical and cultural heritage*	*HAPA* Significance*	*Water (ground, surface, drainage, etc)*	*Wetlands*	*Terrestrial / Aquatic Species*	*Fish*	*Birds*	*Soil*	*Air Quality*
Harbour Improvements (Phase 2b – Harbour Entrance Channel Re-Dredging and Disposal)																	
Transportation of material and equipment	P	P	P	-	-	-	-	-	-	-	P	-	P	P	P	P	P
Dredging of entrance channel	P	P	P	P	-	-	-	P	-	-	P	-	P	P	P	-	P
Construction of containment berm and shoreline protection	P	P	P	P	-	-	P	P	-	P	P	P	P	P	P	-	P
Placement of dredge material within containment berm	P	P	P	P	-	-	P	P	-	P	P	P	P	P	P	-	P
Operation / Maintenance	P	P	P	P	-	-	-	P	-	-	P	-	P	P	P	-	P
Decommissioning / Abandonment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

***** structure, site or thing that is of historical, archaeological, paleontological or architectural significance.
- = no interaction.
P = potential effect of project on environment.

Evaluation of Environmental Effects

The VECs selected in Table 1 are addressed in **Sections 24 and 25** of the **PED**. The physical works/activities and required mitigation measures are detailed. The following ratings are 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.

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 work approved or permitted pursuant to the *Navigation Protection Act*.

☒ Only direct effects were identified; therefore the effects of the project on navigation are not addressed in this Project Effects Determination.

☐ Indirect effects were identified and have been addressed in this Project Effects Determination.

Determination of Significance

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 indicated in Table 2.

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	Effect 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 Valued Ecological Components (VECs) most likely to be affected by the project as described are indicated above 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.

Scoping

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.

APPENDIX C:
MARINE UNDERWATER BENTHIC HABITAT SURVEY REPORT

APPENDIX D:
MARINE SEDIMENT SAMPLING PROGRAM (MSSP), UNDERWATER BENTHIC HABITAT SURVEY (UBHS) AND WETLAND DELINEATION SURVEY AND FUNCTIONALITY ANALYSIS REPORT

APPENDIX E:
REVIEW OF SALTMARSH CREATION LETTER