

# **Appendix DD**

## **Socio-Economic Assessment Documentation**

**Socio-Economic Impact Analysis and Baseline -  
Boat Harbour Remediation Planning and Design  
(Gardner Pinfold Consultants Inc. 2018)**

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**Socioeconomic Impact Analysis  
and Baseline - Boat Harbour  
Remediation Planning and Design**

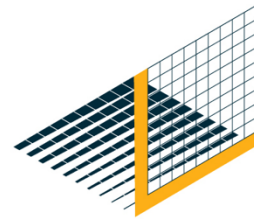
**Submitted to:**

**GHD Limited**

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# INTRODUCTION

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## 1.1 Project Description

Prior to 1967, Boat Harbour, located in Pictou County, Nova Scotia, was a 142-hectare tidal estuary connected to the Northumberland Strait. Known as A'se'k ("the other room") to the Mi'kmaq at Pictou Landing First Nation (PLFN), it played a significant role historically and culturally as a source of refuge, food, medicinal plants, and ceremony. PLFN have their main reserve, Fisher's Grant IR24, adjacent to Boat Harbour, and two other unpopulated reserves nearby – IR24G and IR37.

Boat Harbour was originally a tidal estuary connected to the Northumberland Strait in Nova Scotia. The Province of Nova Scotia (the Province) constructed the Boat Harbour Effluent Treatment Facility (BHETF) in 1967 to treat effluent from industrial sources including a chlor-alkali plant and a kraft bleached pulp mill. In 1972 it was reconfigured by reconstructing the natural tidal estuary into a closed effluent stabilization lagoon. The kraft mill owner is currently responsible for operating the facility under a lease agreement with the Province. The Province has committed to ceasing the reception and treatment of new effluent to the BHETF by January 31, 2020 in accordance with the Boat Harbour Act. Once operations have ceased, the Province will remediate Boat Harbour and lands associated with the BHETF and restore Boat Harbour to a tidal estuary. As part of the restoration work, the existing causeway along Highway 348 and the dam will be removed and replaced with a bridge that will permit boat access to Boat Harbour.

Currently, approximately 25% of the land in and around BHETF is used for community living, water supply, sustainable forestry, and recreational activities. The majority of community development is on IR24 of the PLFN, which comprises numerous residential and community facilities, including a health centre, a school, playground, church, gas station, band office, and a cemetery.

In 2016, the Government of Nova Scotia issued a public tender for general consulting services for the Boat Harbour Remediation Planning and Design. Planning and design is anticipated to be completed by January 2020, with active remediation commencing in 2020 and implemented over about 5 years with an anticipated completion of remedial activities in 2025. Remedial solution for BHETF requires the following:

- Management of residual mill effluent within the BHETF.
- Risk management and/or removal, treatment, and disposal of impacted sediments/sludge and dewatering effluent from former effluent ditch and natural wetlands, twin settling basins, ASB, Boat Harbour, and the estuary.
- Remediation of impacted surface water and potentially groundwater and soil.
- Use and closure of the existing sludge disposal cell, or transportation and disposal at an approved off-Site facility.
- Decommissioning of BHETF infrastructure including the pipeline, causeway, dam, and support facilities.
- Restoration of Highway 348 including construction of a bridge in the location of the existing causeway.

The Project area is located within Pictou County, which is comprised of a number of communities that could be socioeconomically impacted. In order to ensure all potential socioeconomic impacts are known and either mitigated against (in the case of negative impacts) or preserved / enhanced (in the case of potential benefits), a socioeconomic baseline has been established. This report represents that baseline and includes data related to PLFN, Pictou County (the County), and the Towns of New Glasgow, Pictou, Stellarton, Trenton, and Westville (Major Towns).

## **1.2 Study Scope**

### **1.2.1 Objective**

The objective of this study is to establish a socioeconomic baseline from which future change attributable to the remediation can be measured. In addition to establishing a baseline, potential socioeconomic impacts of the remediation are identified. This study is referred to as a socioeconomic impact study (SEIA) throughout the report.

### **1.2.2 Data Sources**

The SEIA draws on the following primary sources for identifying the key socioeconomic valued components:

- Statistics Canada data from the 2011 and 2016 census of population.
- Cost and project implementation data from GHD.
- Data provided by PLFN.
- Information and insight collected during stakeholder and rightsholder engagement at PLFN.

### **1.2.3 Limitations**

Throughout the following report, data reported for PLFN is from Statistics Canada's 2011 Census of Population, while data reported for the County and Major Towns is from the most recent 2016 Census of Population. 2016 census data for PLFN has yet to be released by Statistics Canada. While comparison between 2011 in one community and 2016 in others may not be entirely representative, it has been presented in this way for two reasons:

1. Developing an accurate baseline against which future change will be measured requires up-to-date data. It is anticipated that 2016 data for PLFN will be released later in 2018, at which time this socioeconomic baseline will be updated. To avoid the need to update all data in the baseline, a decision was made to report 2016 data where it was available.
2. Examining demographic trends at PLFN over the past few census years reveals that, for the most part, change is marginal across many indicators. A comparison of 2011 data at PLFN with 2016 in the County and Towns provides a sense of the differences in baselines that is representative for the purposes of this report until updated data is made available.

## 1.2.4 Key Indicators

Key indicators used to establish the socioeconomic baseline and assess potential impacts of the remediation include:

- Population and dwellings
- Demographics
- Labour force characteristics
- Income
- Occupation
- Education
- Industrial structure
- Impacts on gross domestic product, income, employment, and taxes
- Impacts on a range of social variables

## 1.3 Study Boundaries

### 1.3.1 Temporal and Spatial Considerations

The SEIA is primarily focused on the remediation lifecycle. Some consideration has also been given to pre- and post-remediation activities and operations. The SEIA assumes the following general project lifecycle:

**Table 1: Estimated Boat Harbour Remediation Lifecycle**

Activity	Estimated Start	Estimated Total Duration (Years)
Pre-remediation preparation	2016	4
Remediation	2020	5
Post-remediation activities	2025	10
<b>Total</b>		<b>19</b>

Source: GHD

The remediation phase captures the bulk of the socioeconomic impacts of the remediation, as it encompasses the period in which most remediation expenditures will be made and employment impacts are likely to be greatest.

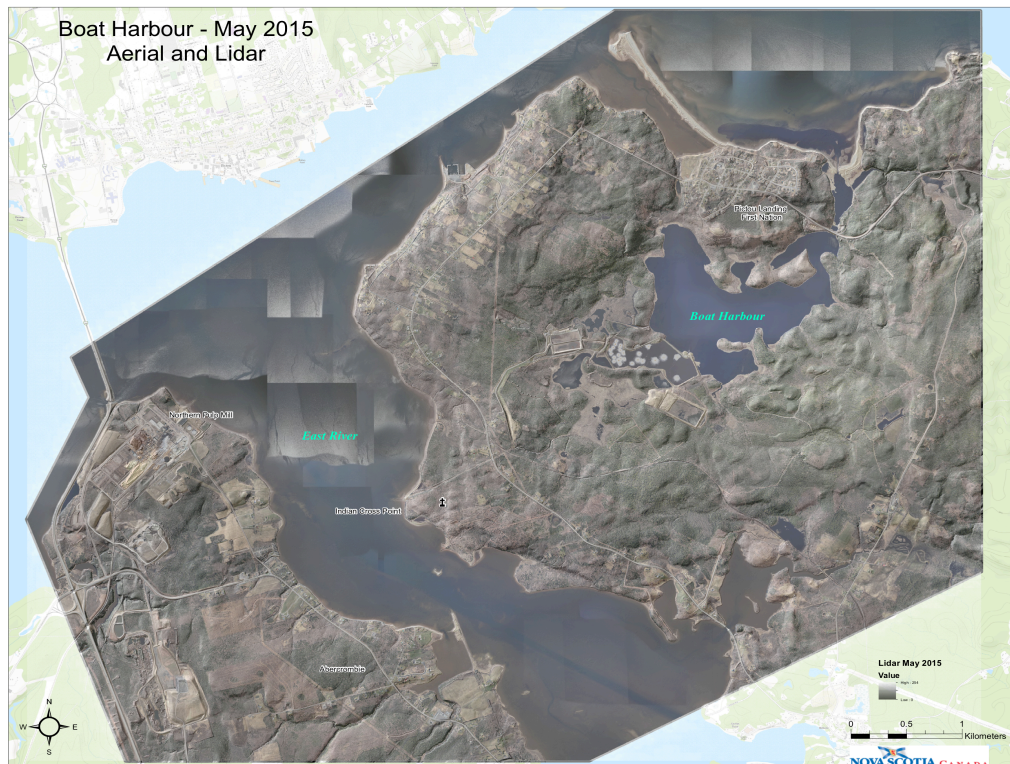
The project is fully located within the province of Nova Scotia and focused in a small geographic area within Pictou County (Figure 1). Special consideration is given to the potential socioeconomic impacts that may occur within the PLFN. It should be noted that limitations on data available through Statistics Canada and the Department of Fisheries and Oceans, as well as the configuration and resolution of Statistics Canada's Input-Output Model limit quantitative analysis of impacts to those that occur in Nova Scotia and Canada<sup>1</sup>. Regional and First Nation-level impacts are described qualitatively.

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<sup>1</sup> Due to issues of confidentiality, Department of Fisheries and Oceans does not release fisheries data on the Band level in Canada. The latest census data available from Statistics Canada for PLFN is from the 2011 Census of the Population. As of this writing, 2016 census First Nations data has not been released.



**Figure 1: Aerial and Lidar Depiction of Boat Harbour, May 2015**



Source: Nova Scotia Lands

Pictou County encompasses the following communities<sup>2</sup>:

- Town of New Glasgow
- Town of Pictou
- Town of Stellarton
- Town of Trenton
- Town of Westville
- Pictou Landing First Nation, which includes:
  - Boat Harbour
  - Fisher's Grant IR24 (the only populated Reserve land)
  - Fisher's Grant IR24G

<sup>2</sup> [https://en.wikipedia.org/wiki/Pictou\\_Landing\\_First\\_Nation](https://en.wikipedia.org/wiki/Pictou_Landing_First_Nation)

**Figure 2: Pictou County, Nova Scotia**



Source: Google Maps

## 1.4 Analytical Approach

The SEIA has been completed using the following analytical tools:

- Demographic analysis to assess the remediation's potential to impact local and regional population growth and thus on the demand for future social and physical infrastructure.
- Labour market analysis to relate remediation workforce demands to the availability of workers in the region and province.
- Economic input-output modeling of the Nova Scotia and Canadian economies to determine the impact of the remediation in terms of total employment, gross domestic product (GDP), and tax impacts.
- Key stakeholder and rightsholder engagement at PLFN to gather input on anticipated social and economic impacts at the First Nation level. Information gathered through consultation was also used to identify any gaps or opportunities that exist in the community in relation to remediation and post-remediation operations.

## 2. SOCIOECONOMIC PROFILE

The following socioeconomic profile describes the social and economic conditions of the PLFN, Pictou County as a whole, and the Major Towns within the County. This profile will serve as a baseline against which future change can be analyzed. The intention in doing so is to observe, where possible, socioeconomic impacts of the Boat Harbour remediation and post-remediation operations.

### 2.1 Population and Dwellings

Changes in population reflect the ability of an economy to support basic needs. Areas with strong population growth tend to be ones where economic opportunity is expanding. Areas characterized by stable or declining populations tend to be ones where economic conditions offer limited or diminishing opportunity.

#### 2.1.1 Pictou Landing First Nation

The population of PLFN saw an increase of 9.4% from 2006 to 2011 (Table 2).

**Table 2: Population PLFN, 2006 - 2011**

	2006	2011	2016	Change
Population	425	465	-	9.4%

Source: Statistics Canada, Census of Population 2006, 2011.

#### 2.1.2 Pictou County

The population of Pictou County saw a decline of approximately 6% in overall population from 2006 to 2016. Small changes in the number of private dwellings (total and occupied) were also observed (Table 3).

**Table 3: Population and Dwelling Characteristics, Pictou County, 2011-2016**

	2006	2011	2016	Change
Population	46,513	45,643	43,748	-5.9%
Total private dwellings	21,768	22,192	22,525	2%
Private dwellings occupied by usual residents*	19,285	19,468	19,305	-0.1%

Source: Statistics Canada, Census of Population 2011, 2016.

\*Refers to a private dwelling in which a person or a group of persons is permanently residing. Also included are private dwellings whose usual residents are temporarily absent on May 10, 2016. Unless otherwise specified, all data in housing products are for private dwellings occupied by usual residents, rather than for unoccupied private dwellings or dwellings occupied solely by foreign and/or by temporarily present persons.

This decline in population contrasts with a 0.2% increase in population for the province of Nova Scotia as a whole. As with many rural areas of the province, Pictou County has experienced overall economic decline and the out-migration of working-age people.

### 2.1.3 Major Towns

The towns of New Glasgow, Pictou, Trenton, Stellarton, and Westville have, on aggregate, seen a slightly greater decline in population (7.9%) as compared to the County as a whole (Table 4).

**Table 4: Population and Dwelling Characteristics, Major Towns, 2011-2016**

	2006	2011	2016	Change
Population	24,531	23,898	22,571	-7.9%
Total private dwellings	10,886	11,045	11,189	2.7%
Private dwellings occupied by usual residents	10,411	10,430	10,205	-1.9%

Source: Statistics Canada, Census of Population 2011, 2016.

This difference could be accounted for, in part, by a movement of retirement-age people from town centres to more rural settings, as well as a general loss of the working age population to urban centres, such as the Halifax Regional Municipality (HRM).

## 2.2 Demographics

Demographic change provides insight into how the age structure of an area's population is changing. Among the questions of interest are how the proportion of the population of prime working age is changing and what this implies about economic prospects and shifts in dependency, and how changing structure affects the need for basic services such as schools or health care. Table 5 compares population demographics for PLFN, Pictou County, and its Major Towns.

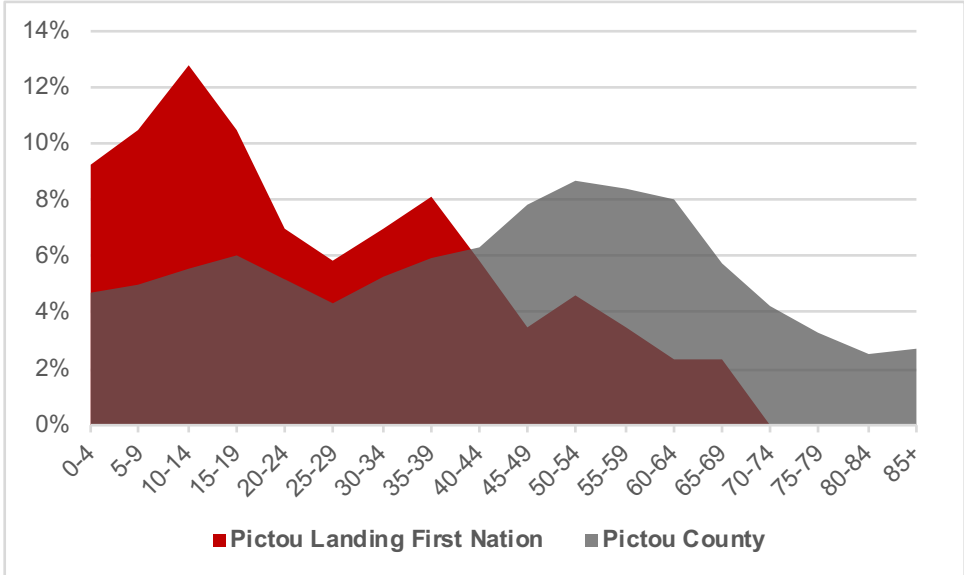
**Table 5: Age Distribution of the Population, 2011**

Age Groups	PLFN	Pictou County	Major Towns
Year	Percent of Population		
0-4	9	5	5
5-9	10	5	5
10-14	13	6	6
15-19	10	6	6
20-24	7	5	6
25-29	6	4	5
30-34	7	5	5
35-39	8	6	6
40-44	6	6	6
45-49	3	8	8
50-54	5	9	8
55-59	3	8	8
60-64	2	8	7
65+	2	19	19
<b>Median Age</b>	<b>24.1</b>	<b>46</b>	<b>43</b>

Source: Statistics Canada, Census of Population 2011, 2016.

Demographic differences between the population of PLFN and the County / Major Towns are significant. Age of the population is shifted heavily toward the younger end of the distribution at PLFN as compared to the County and Major Towns. The following chart illustrates the significant differences in the age profile of PLFN when compared to that of the County.

**Chart 1: Population Age Characteristics, PLFN (2011), Pictou County, and Major Towns (2016)**



Source: Statistics Canada, Census of Population 2011, 2016.

Nearly half (49%) of the population of PLFN in 2011 was under the age of 25, as compared to less than a third in the County and Major Towns. Approximately half the population of the County and Major Towns was over the age of 45. The median age of the population of PLFN was 24.1 versus 46 and 43 in the County and Major Towns, respectively.

The population of PLFN (and First Nations in Canada in general) is significantly younger than that of the County and Major Towns, which places more social and financial pressure at the child-care and education end of the spectrum than in surrounding communities, which are experiencing pressures on health care and social services aimed at an aging population.

In the context of the remediation project, this demographic difference may create impacts in two distinct ways:

1. The ability of working age people at PLFN to take advantage of training and employment opportunities related to the remediation may be constrained by the availability and cost of child care for their very young and school-aged children.
2. The ability of the remediation to source labour locally may be constrained by the relatively older age of the working population of the County and Major Towns. Half the population of the County and Major Towns is over the age of 45, which tends to be at the high end of a labour-and construction-focused work force.

**2.3 Labour Force Activity**

Three variables provide a strong indication of socioeconomic health: participation rate (proportion of the working age population in the labour force), employment rate (number in the labour force employed) and unemployment rate (number in the labour force unemployed). Table 6 summarizes key labour force characteristics for PLFN (2011), the County and the Major Towns in the County (2016).

**Table 6: Labour Force Characteristics. PLFN (2011), Pictou County, and Major Towns (2016)**

	PLFN (2011)	Pictou Co. (2016)	Major Towns (2016)
Total - Population aged 15 years and over	-	36,480	18,610
In the labour force	-	20,765	10,530
Employed	-	18,170	9,105
Unemployed	-	2,595	1,430
Not in the labour force	-	15,715	8,070
Participation rate (%)	53.1	56.9	56.52
Employment rate (%)	46.9	49.8	48.34
Unemployment rate (%)	14.7	12.5	14.5

Source: Statistics Canada, Census of Population 2011, 2016.

The profile of labour force activity was similar across the three levels of geography, with PLFN lagging slightly behind in labour force participation. The unemployment rate was comparable between PLFN and the Major Towns and is slightly lower in the County as a whole. Unemployment rates at the three geographic levels are, however, notably high when compared to those of Nova Scotia and Canada. In 2016, 8.3 percent of the labour force was unemployed in Nova Scotia and approximately 7% was unemployed in Canada as a whole in the same year.

High unemployment rates are typical in rural regions of Nova Scotia. This could be considered both an advantage and disadvantage in the context of the remediation project. A high unemployment rate could result in a large pool of local workers willing to undertake training and seek employment in remediation and post-remediation activities. On the other hand, high rates of chronic unemployment can have the effect of keeping workers from seeking employment, particularly on projects with a defined end date. Many primary and processing industries in Nova Scotia, for example, have found it challenging to attract workers even when located in regions with high rates of unemployment.

A few major differences between the PLFN and the County / Major Towns can be found when examining employment by major industry (Table 7).

**Table 7: Employment by Major Industry, PLFN (2011), Pictou County, and Major Towns (2016)**

	PLFN (2011)	Pictou Co. (2016)	Major Towns (2016)
Management	8%	9%	9%
Business, finance, and administration	0%	13%	13%
Natural and applied sciences and related occupations	3%*	3%	3%
Health occupations		8%	9%
Occupations in education, law and social, community and government services	11%	11%	11%
Occupations in art, culture, recreation and sport	0%	2%	2%
Sales and service occupations	16%	24%	28%
Trades, transport, equipment operators, and related occupations	6%	18%	14%
Natural resources, agriculture, and related production occupations	22%	4%	2%
Occupations in manufacturing and utilities	0%	5%	5%

Source: Statistics Canada, Census of Population 2011, 2016.

\* Combined for PLFN in 2011 Census.

There were generally more people employed in occupations related to sales and service; trades, transport, and equipment operation; and manufacturing and utilities in the County and Major Towns than there were at PLFN. The labour force at PLFN was most heavily represented by occupations in natural resources and agriculture production, which is almost entirely related to their fishing enterprise.

The lack of workers at PLFN in trades, transport, equipment operation, and related occupations highlights a potential gap in terms of the socioeconomic impact potential of the remediation project. A large percentage of pre-remediation preparation (road construction, building demolition, etc.) and remediation activities will involve transportation and heavy equipment operation. Socioeconomic benefits to PLFN could be magnified by developing capacity through education and skills development focused on these specific occupations.

## 2.4 Income

Measuring income provides an indicator of relative economic health – how well respective areas are able to sustain populations. Income can be measured on individual and household levels. Table 8 compares median and average household income at PLFN, Pictou County, and its Major Towns.



**Table 8: Median and Average Household Income, PLFN (2011), Pictou County, and Major Towns (2016)**

	PLFN (2011)	Pictou Co. (2016)	Major Towns (2016)
Median income of households	\$24,952	\$56,066	\$50,034
Average income of households	\$33,084	\$72,896	\$74,232

Source: Statistics Canada, Census of Population 2011, 2016.

Median and average<sup>3</sup> household income at PLFN is less than half that of household incomes in the County and its Major Towns.

The impact of increased employment at PLFN as a result of the remediation project would, therefore, be much more significant than in the County or Major Towns given the relatively low baseline at PLFN and assumed wages for jobs at the site.

## 2.5 Education

Levels of educational attainment are commonly cited as an indicator of economic opportunity and potential for economic growth. Educational attainment to some extent reflects the opportunities created in an economy, and to another determines them. Low levels of attainment are typically associated with “old economy” resource-based activities that depend less on formal education than on-the-job training. Leaving school to take up such jobs is not uncommon. Those aspiring to higher levels of education tend also to aspire to jobs and incomes commensurate with that education. Such jobs tend to be at a premium in smaller communities causing generally younger people to leave. The outflow of the better educated makes it more difficult to attract new industry, thereby reinforcing the relatively low educational attainment statistics. Tables 9 and 10 detail the levels of educational attainment and major fields of study for PLFN, Pictou County, and its Major Towns.

**Table 9: Educational Attainment, PLFN (2011), Pictou County, and Major Towns (2016)**

	PLFN (2011)*	Pictou County (2016)	Major Towns (2016)
Total population aged 15 years and older	100%	100%	100%
No certificate; diploma or degree	40%	22%	23%
Secondary (high) school diploma or equivalency certificate	19%	25%	26%
Postsecondary certificate; diploma or degree	39%	53%	51%

Source: Statistics Canada, Census of Population 2011, 2016.

\* Percentage educational attainment does not add up to 100% for PLFN in Statistics Canada published census data.

<sup>3</sup> Median: the middle point in a series where half the population has higher income and the other half has lower income. Average: the sum of all income divided by how many households there are.

Educational attainment is generally lower at PLFN than in the County and Major Towns, with 60% attaining some form of certificate, diploma, or degree at PLFN versus nearly 80% at the other geographic aggregations.

**Table 10: Educational Attainment for Those with a Postsecondary Certificate, Diploma, or Degree, PLFN (2011), Pictou County, and Major Towns (2016)**

	PLFN (2011)*	Pictou County (2016)	Major Towns (2016)
Total population aged 15 years and older with a postsecondary degree	100%	100%	100%
Apprenticeship or trades certificate or diploma	55%	22%	20%
College; CEGEP or other non-university certificate or diploma	23%	46%	47%
University certificate or diploma below bachelor level	9%	5%	4%
University certificate; diploma or degree at bachelor level or above	9%	27%	29%

Source: Statistics Canada, Census of Population 2011, 2016.

\* Percentage educational attainment does not add up to 100% for PLFN in Statistics Canada published census data.

The form of postsecondary education most commonly attained at PLFN is an apprenticeship or trades certificate or diploma (55%), which contrasts with the County and Major Towns where the most common form is a college, CEGEP, or other non-university certificate or diploma (46% and 47%). More than three times the proportion of people attain a university certificate, diploma, or degree at the bachelor level or above in the County and Major Towns as do people at PLFN.

The concentration at PLFN on educational attainment in apprenticeship or trades certificates or diplomas could help facilitate access to the types of jobs that will presumably be in most demand during preparatory and remediation phases of the remediation. Socioeconomic impact at PLFN could be enhanced by identifying those with relevant training and education and filling any gaps that exist.

## 3. LOCAL ECONOMY

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### 3.1 Industrial Structure

Industrial structure provides an indication of how wealth is generated in the area, how this has changed (as reflected in industry mix and occupational structure), and whether the basis of wealth generation is sustainable. Industrial structure typically plays a key role in determining employment opportunities and income levels. It also reflects the ability of an economy to sustain itself through internal means (basic industries with an export orientation) rather than through dependence on external transfers (to support services).

#### 3.1.1 The Region

The economy of Pictou County, including PLFN and its Major Towns, is generally based on manufacturing, natural resource, and tourism industries.

Major manufacturing employers include<sup>4</sup>:

##### **Empire Company Limited**

Core businesses include food retailing and related real estate through wholly-owned subsidiary Sobeys Inc. Empire Company boasts \$24.6 billion in annualized sales and \$9.1 billion in assets and employs approximately 125,000 people globally through its affiliates.

##### **Michelin Tires Canada**

The Michelin Pictou County site manufactures high-performance car tires and tire membranes. Michelin employs over 3,000 workers in its three Nova Scotia facilities.

##### **Northern Pulp Nova Scotia Ltd:**

The Northern Pulp Nova Scotia Ltd operation at Abercrombie Point manufactures 280,000 tonnes of pulp, primarily for export and employs over 330 people directly as well as over 2,000 direct and spin-off jobs in the community<sup>5</sup>.

##### **The Pictou Pipe and Module Fabrication Yard**

Provides facilities for pipe and plate preparation and climate-controlled spool. The facility is on the Northumberland Strait, which allows for barge transportation of large modules and fabrications to Canadian, US and European markets.

##### **Fishing and Forestry**

In addition to the manufacturing sector, inshore fishing, seafood processing, and forestry industries play an important role in the regional economy. Fishing for both PLFN and other communities in the study area takes place in Department of Fisheries and Oceans Gulf Region, which includes parts of New Brunswick and Prince Edward Island. Approximately \$100 million worth of seafood was landed in the Nova Scotia part of the Gulf Region in 2016, 94% of which was accounted for by lobster<sup>6</sup>.

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<sup>4</sup> <http://www.townofpictou.ca/assets/PDFs/Town-Hall/Planning/Western-Pictou-County-Economic-Profile-V3.pdf>

<sup>5</sup> *Northern Pulp's Impact on the Nova Scotia Economy*, Gardner Pinfold (2016)

<sup>6</sup> <http://www.dfo-mpo.gc.ca/stats/commercial/land-debarq/sea-maritimes/s2016av-eng.htm>

A number of fish processors in the region buy and processes shellfish and pelagics throughout the year from the inshore fleet.

The region also has a number of enterprises that participate in logging and the harvest of forestry products for the supply and operation of sawmills and the pulp and paper industry. Approximately 200,000 m<sup>3</sup> of wood was harvested in Pictou County in 2016, representing 7% of all wood harvested in the province<sup>7</sup>.

2014 Nova Scotia Tourism statistics indicate approximately 14,000 people were seen through the Visitor Information Centre in the Town of Pictou<sup>8</sup>.

## Access

Major transportation access routes in the County include<sup>9</sup>:

**Table 11: Transportation Access Routes, Pictou County**

	Description
Pictou Marine Terminals	Active commercial port linking Nova Scotia to the world via the Gulf of St. Lawrence.
Trenton Airport Limited (CYTN)	Small commercial airport open to public transportation with runways maintained year round. Capacity for large business jets and Life Flights.
Highway 102	Linking region to HRM and major container terminals, including Halterm and CN Intermodal.
Melford Terminal	Approximately 120 km to proposed Melford Terminal on Strait of Canso. Pictou County is halfway point between Halifax and this marine-rail container terminal.
Stanfield International Airport	1-hour drive to passenger and cargo facilities.
Marine Atlantic Ferries - Pictou	Passenger / transport services to Prince Edward Island.

## Public Service Facilities and Institutions

- Pictou Antigonish Regional Library
- Aberdeen Regional Hospital
- Pictou County Wellness Centre
- Chignecto Regional School Board, providing education for 20,000 students in grades primary to 12, is made up of 20 schools.
- Nova Scotia Community College (Stellarton Campus) – offers 20 programs to approximately 600 full-time students

<sup>7</sup> <https://novascotia.ca/natr/forestry/registry/annual/2017/Registry-of-Buyers-2016.pdf>

<sup>8</sup> <https://tourismns.ca/research/visitor-statistics/historical-tourism-activity>

<sup>9</sup> <http://www.townofpictou.ca/assets/PDFs/Town-Hall/Planning/Western-Pictou-County-Economic-Profile-V3.pdf>

- St. Francis Xavier University (Antigonish) - one of Canada's top undergraduate universities with annual enrollment of approximately 5,000

### **3.1.2 Pictou Landing First Nation**

#### **Commercial Fisheries**

Fishing is the most economically significant commercial activity that occurs at PLFN. The primary species harvested are lobster and snow crab, but PLFN fishers also pursue rock crab, mackerel, herring, and tuna. Lobster landings in 2017 were valued at \$3.2 million, and PLFN fishers landed \$1.8 million in snow crab. PLFN operates 23 licenses (vessels) and employ 79 people between lobster and snow crab enterprises<sup>10</sup>. Landings and employment attributable to other PLFN fisheries were not available.

All fish and shellfish landed at PLFN is immediately sold to a buyer at dockside. No seafood processing occurs in the community.

Mi'kmaq fisheries in general in Nova Scotia account for between 4% and 5% of total commercial landings in the province. Mi'kmaq lobster landings increased five-fold between 2003 and 2014 (from 290 to 1,500 tonnes), presumably reflecting both improved access and improved fishing capability. This produced a quadrupling of revenues, to \$16.4 from \$4.0 million. The Mi'kmaq share of Nova Scotia lobster landed value increased from 2% to the 3% range over the period.

Mi'kmaq landings of other molluscs and crustaceans (mainly, snow crab and shrimp) remained fairly stable, fluctuating within a narrow range of approximately 5,000 tonnes since 2007. This species group benefited from improving markets and prices after 2007, with landed value doubling from \$11.6 to \$23.9 million (value hit a peak of \$28.9 million in 2011). The Mi'kmaq share of Nova Scotia landed value of these other shellfish species increased from the 6% range prior to 2007, to a peak of 11.4% in 2011, then declined to 6.7% by 2014.

While PLFN's share of the above growth is unknown due to confidentiality restrictions on DFO's Aboriginal fisheries data, the overall trends can be presumed to apply.

#### **Retail and Amenities**

PLFN owns and operates an Ultramar gas bar, convenience store, and cafe at 6496 Pictou Landing Rd. at PLFN. Annual sales volumes were not available.

#### **Local Artisans**

Traditional art and crafts are produced by a small number of people at PLFN and sold to people inside and outside the community. There is potential to increase production and sales of local art and crafts as traffic and population increases (temporarily) in and around PLFN.

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<sup>10</sup> Personal Communication, Wayne Denny, Director Fisheries, PLFN (May 2018).

## **4. ECONOMIC AND FISCAL IMPACTS**

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### **4.1 Remediation Project Expenditures**

#### **4.1.1 Pre-remediation Expenditures**

The primary focus of this analysis is on the socioeconomic impact of the remediation phase of the project, where the vast majority of expenditures will be made. It should be noted, however, that considerable spending has and will occur in the time leading up to the official start of on-site remediation. Approximately \$14 million has been spent as of March 2018 and approximately \$12 million more will be spent across a range of activities that include:

- Pilot scale testing
- Construction of berms
- Engagement of PLFN
- Studies to support remediation project

An additional \$18 million will be spent on long-term monitoring and care of the site from 2026 onward.

#### **4.1.2 Remediation Expenditures**

GHD provided the following Class D estimates of year-by-year expenditures over the anticipated project schedule, including 10% contingency. All expenditures are expected to take place in Nova Scotia. There are no inflation or discounting rates applied to the estimates, therefore the total of \$242 million will be less than the actual dollars spent over the nine-year period.

There is an increase in spending toward a peak of activity in years 8 to 11 followed by a gradual decline in activity toward the wind-up in year twelve. Table 11 details project expenditures by year.

**Table 12: Boat Harbour Remediation Expenditures by Year**

(\$ millions)																	
	Y1-3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16	Y17	Y18	Total
	2014-2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031+	
<b>Services</b>																	
Planning and Assessments	2.50	0.25	0.25														3.00
Remediation Project Management	1.45	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73							8.00
First Nation Participation, Engagement, and Capacity Building	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30							3.00
General Service Consultant		4.00	4.00	1.60													9.60
Independent Monitor			0.50	0.50	0.05												1.05
Contract Administration and Oversight (Pilot Scale Testing)			0.90	0.19													1.09
Contract Administration and Oversight (Remediation + EOI)					2.58	5.16	5.16	5.16	5.16	2.58							25.80
Risk Assessment			0.50														0.50
<b>Subtotal</b>	<b>4.25</b>	<b>5.28</b>	<b>7.18</b>	<b>3.32</b>	<b>3.66</b>	<b>6.19</b>	<b>6.19</b>	<b>6.19</b>	<b>6.19</b>	<b>3.61</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>52.04</b>
<b>Construction</b>																	
Pilot Scale Testing - Access Berm		2.00															2.00
Pilot Scale Testing			4.80	0.56													5.36
Perimeter Access Road					1.50												1.50
Remediation					16.26	32.52	32.52	32.52	32.52	16.26							162.60
<b>Subtotal</b>	<b>0.00</b>	<b>2.00</b>	<b>4.80</b>	<b>0.56</b>	<b>17.76</b>	<b>32.52</b>	<b>32.52</b>	<b>32.52</b>	<b>32.52</b>	<b>16.26</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>171.46</b>
<b>Long Term Maintenance and Monitoring</b>											0.85	0.85	0.85	0.85	0.85	13.86	18.11
<b>Total</b>	<b>4.25</b>	<b>7.28</b>	<b>11.98</b>	<b>3.88</b>	<b>21.42</b>	<b>38.71</b>	<b>38.71</b>	<b>38.71</b>	<b>38.71</b>	<b>19.87</b>	<b>0.85</b>	<b>0.85</b>	<b>0.85</b>	<b>0.85</b>	<b>0.85</b>	<b>13.86</b>	<b>241.61</b>

Source: GHD

## 4.2 Economic Impact Analysis

The following analysis assesses the socioeconomic impacts of the Boat Harbour remediation project. In particular, it captures the impacts of project expenditures on a year-by-year basis. The suite of conventional economic indicators discussed below includes: output (sales), gross domestic product (added-value), income, jobs, and tax revenues to government. The local community socioeconomic context and potential impacts are also presented.

In order to develop the economic impact indicators, direct project expenditures are used to drive an economic Input-Output model (I/O model). The Statistics Canada Interprovincial Input-Output (I/O) model captures the relationship amongst industries in the province measuring how direct expenditures on goods and services on a project create output, jobs, and income in the economy:

- **Direct impact:** refers to the impact generated directly by remediation activity spending. Direct GDP refers to the added value created by the remediation activities, while direct employment and labour income refers to the jobs and payroll at GHD and project partners.
- **Indirect impact:** refers to the impacts arising from purchased inputs triggered by the direct activity. For example, a dredging company buys equipment from manufacturers, maintenance from service companies and fuel and consumables from various suppliers. These suppliers in turn buy their inputs from other companies, and so on. Taken together, the process of producing these goods and services creates profits, employment, and income thereby generating indirect impacts.
- **Induced demand:** refers to the demand created in the broader economy through consumer spending of incomes earned by those employed in direct and indirect activities. It may take a year or more for these rounds of consumer spending to work their way through an economy.

To prepare data to drive the I-O model, direct expenditures are first classified by industry using standard North American Industry Classification codes (NAICS). The model accepts this detailed expenditure information and generates the direct, indirect and induced impacts according to standard economic indicators:

- **Gross value of output:** Economic impact arises as industry expenditures work their way through the economy. Company spending on inputs becomes the revenue of many other companies, which they in turn spend on inputs for the goods and services they produce, and so on. Gross value of output, then, is the cumulative sum of these sales and purchases of intermediate and final goods and services. These transactions occur in the province, and also spill over to other provinces where supply and service industries may be located.
- **Gross Domestic Product:** GDP captures the value of final goods and services produced in the economy, providing a measure of the value-added or income generated (wages and earnings for labour and returns to and of capital in the form of profit and depreciation).
- **Employment:** This captures the numbers employed, expressed in full-time equivalent jobs (FTE).



- **Labour Income:** this captures payments in the form of wages and earnings in an industry. Returns to labour in the form of earnings form a key component of GDP.
- **Taxes:** The model captures federal and provincial taxes on products and production. Custom income tax impacts calculations are based on tax information contained in Statistics Canada’s Social Policy Simulation Database and Model (SPSDM). Corporate taxes are not included.

#### 4.2.1 Total Impacts

The starting point for economic impacts is the total expenditures of \$242 million. This value appears as the direct output in Table 12. The indicators are generated by the Statistics Canada I/O model and a custom provincial and federal income tax calculation is incorporated into the table.

**Table 13: Total Boat Harbour Remediation Economic Impacts**

	Direct	Indirect	Induced	NS Total	Canada
Output (000)	\$241,610	\$43,318	\$42,718	\$289,686	\$352,911
GDP (000s)	\$137,629	\$23,787	\$26,104	\$187,520	\$219,509
Income (000s)	\$90,642	\$15,275	\$10,921	\$116,838	\$135,210
Employment (FTE)*	1,373	309	312	1,994	2,347
Federal taxes (000s)	\$10,079	\$1,812	\$1,359	\$13,251	\$15,479
Provincial taxes (000s)	\$9,303	\$1,884	\$1,425	\$12,612	-

Source: Statistics Canada Interprovincial Input-Output Model, 2013; Gardner Pinfold income tax calculations. \*FTE: Full-time equivalent (FTE) jobs.

As a result of Boat Harbour remediation project spending, \$188 million is added to the Nova Scotia economy, including \$117 million worth of income tied to about 2,000 full-time equivalent jobs<sup>11</sup>. Provincial and federal taxes on direct and spinoff (indirect and induced) impact amounts to about \$13 million each. Impacts extend to other provinces as a result of the spending in Nova Scotia as seen by the impacts to Canada.

#### 4.2.2 Annual Impacts

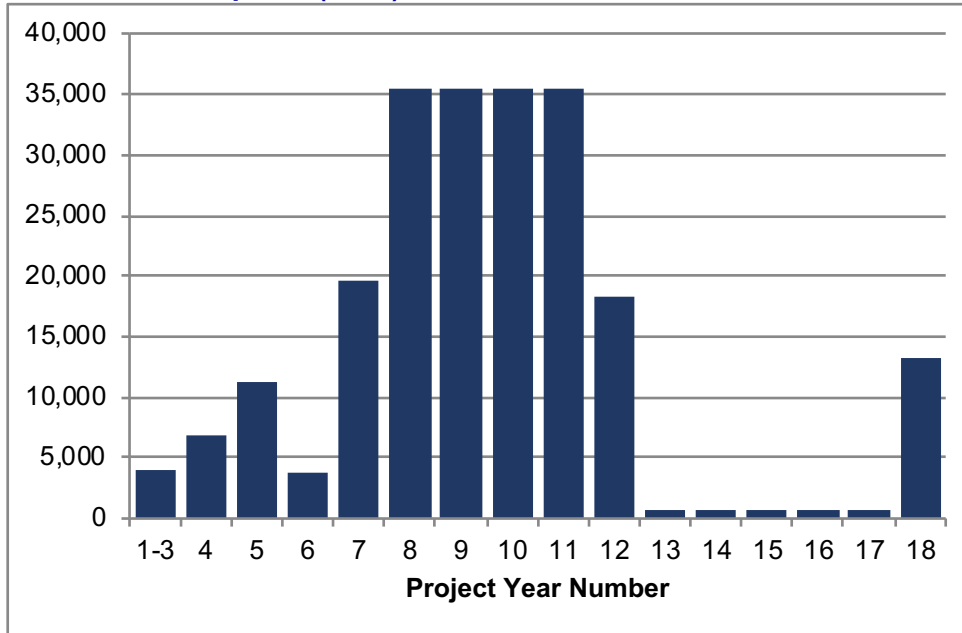
The annual impacts follow the same year-to-year pattern for each impact indicator therefore just three are shown in the series of charts below (GDP, income, and employment).

Each chart shows the impacts rising to a peak in the 8th year, with similar impacts for years 9 through 11. The most important driver of this pattern is the high expenditures for remediation activities starting in the 8th year.

Peak years generate approximately \$39 million in added value (GDP), including nearly \$17 million in salary and wage earnings, and this is linked to about 250 full-time equivalent jobs per year.

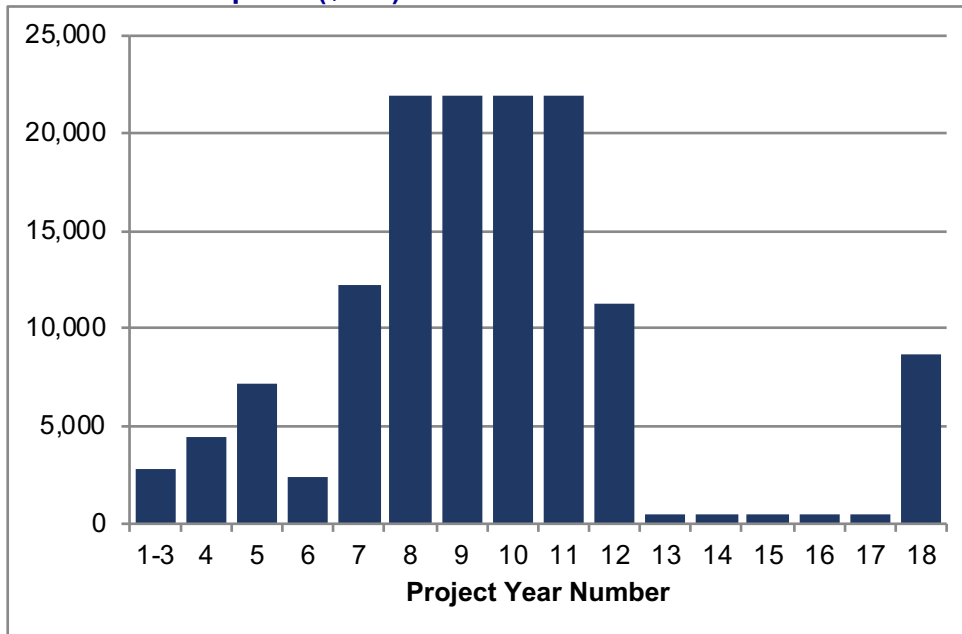
<sup>11</sup> While it is anticipated that the vast majority of workers will be sourced provincially, it is possible that a small number would be hired from outside Nova Scotia, which would reduce the provincial employment and income impacts.

**Chart 2: Annual Gross Domestic Product (GDP) Impacts (\$000)**



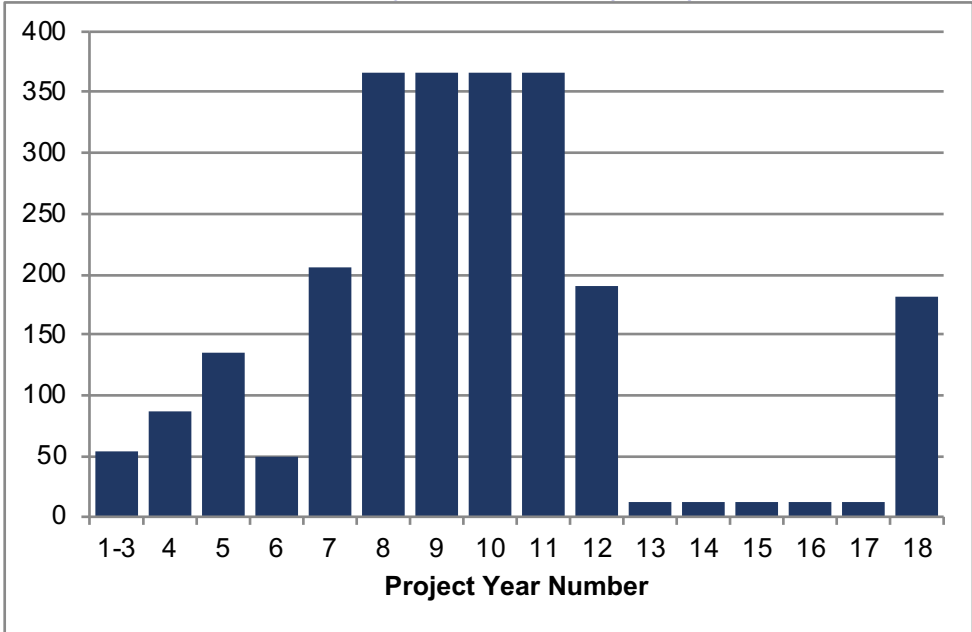
Source: Statistics Canada Interprovincial Input-Output Model (2013)

**Chart 3: Annual Income (salaries and wages) Impacts (\$000)**



Source: Statistics Canada Interprovincial Input-Output Model (2013)

**Chart 4: Annual Employment Impacts (FTEs)**



Source: Statistics Canada Interprovincial Input-Output Model (2013)

**4.2.3 Post-remediation Expenditures**

Once the remediation of Boat Harbour is complete, approximately 10 years of restoration and monitoring will occur. While no detailed estimate was available on the costs associated with post-remediation activities, it is generally assumed that expenditures related to restoration and monitoring will total approximately \$18 million. 50% of this expenditure is expected to be related to equipment and analytical services, with 50% applied to labour.

Socioeconomic impact could be enhanced for PLFN and surrounding communities by identifying potential employment opportunities in post-remediation and ensuring capacity exists to fill some of those positions locally.

**4.3 Project Impact on Local Economy**

**4.3.1 Employment**

The Project has the potential to offer employment opportunities for people at PLFN, the County, Major Towns, and the province of Nova Scotia across a range of skilled and unskilled trades and occupations. The anticipated labour requirement is not large enough or generally too specialized to require significant recruitment from outside the region or province, although a small number of workers with specialized skills may be sought outside Nova Scotia. Table 13 outlines the estimated labour requirement by National Occupation Code (NOC) for all planned remediation-related activities.

**Table 14: Estimated Required Direct On-Site Labour Force by Project Activity**

<b>Project Activity</b>	<b>Occupations Required</b>	<b>NOC</b>	<b>Number Required</b>
<b>Pipeline Decommissioning</b>	General labourers	76	2
	Heavy equipment operators	7521	3
	Inspectors	2261	1
	Labourer, heavy equipment	761	2
	Supervisor, heavy equipment operator crews	7302	1
<b>Remediation - Site Preparation</b>	Heavy equipment operators	7521	5
	Supervisor, heavy equipment operator crews	7302	2
	Labourer, heavy equipment	761	3
<b>Remediation - Active</b>	Heavy equipment operators	7521	17
	Labourer, heavy equipment	761	16
	Supervisor, heavy equipment operator crews	7302	8
<b>Building Decommissioning</b>	Heavy equipment operators	7521	3
	Labourer, heavy equipment	761	2
	Supervisor, heavy equipment operator crews	7302	1
<b>Dam Decommissioning</b>	Heavy equipment operators	7521	3
	Labourer, heavy equipment	761	2
	Supervisor, heavy equipment operator crews	7302	1
<b>Bridge Construction</b>	Heavy equipment operators	7521	5
	Labourer, heavy equipment	761	2
	Supervisor, heavy equipment operator crews	7302	1
<b>Disposal Cell Closure</b>	Heavy equipment operators	7521	4
	Labourer, heavy equipment	761	6
	Supervisor, heavy equipment operator crews	7302	3

Source: GHD / Gardner Pinfold estimates. An estimate of working days and required personnel by general project phase provided by GHD was used to develop estimates of required personnel by NOC occupation.

It should be noted that labour requirements should be considered for each phase, and that the numbers required do not necessarily aggregate. In other words, workers hired for a particular job in one phase may be able to work in the same job in a subsequent phase, so incremental workers may not be needed.

The occupations required for remediation activities line up well with the occupational and training profile of PLFN, the County, and Major Towns, where concentrations exist in trades, transport, and equipment operation. Relatively high rates of unemployment in the study area do not necessarily equate with worker availability but suggest an opportunity for training and skills development in the areas most in demand during project activities.

**Table 15: Summary of Major Occupations Required for On-Site Boat Harbour Remediation Activity**

Occupations Required	NOC	Number Required*
General labourers	76	2
Heavy equipment operators	7521	40
Inspectors	2261	1
Labourer, heavy equipment	761	33
Supervisor, heavy equipment operator crews	7302	17
<b>Total</b>		<b>93</b>

Source: GHD / Gardner Pinfold estimates.

\* Number required does not necessarily equal number of individuals that may be hired. One individual may be hired to perform the same task on multiple activities.

The Project will also employ a large number of other workers in fields such as engineering, finance, management, analytics, logistics, and support services. Estimates of these requirements were not available.

#### 4.3.2 Procurement

Although the analysis of a detailed list of materials, equipment, and supplies required for the remediation was not included in this study, it is anticipated that a large percentage of requirements can be sourced within the province, if not within the study area itself. Local contractors have extensive experience with most project components (e.g. bridge and road construction, building demolition, general construction, trucking, waste disposal, etc.) and the capacity to be engaged in a project of this size and duration.

#### 4.3.3 Retail and Amenities

Potential socioeconomic benefits as a result of the remediation may accrue to local businesses and their employees through increased demand for retail goods, services, and amenities. Project-related inflows of workers from outside the community could result in incremental economic benefits through increased spending at restaurants, hotels, retail stores, gas stations, and other businesses in the area.

#### 4.3.4 Ecological Goods and Services

Ecological goods and services are the range of benefits arising to humans from the functioning of healthy productive ecological systems. Ecosystems supply goods - clean water, food, timber, and minerals - as well as services, such as climate governance, water supply management, nutrient cycling, and recreation. Various methodologies have been developed to assess the economic value of the use and non-use of ecological goods and services.

It is anticipated that the remediation and rehabilitation of Boat Harbour will result in positive changes to the ecosystem, thereby increasing the socioeconomic value of the ecological goods and services it provides. It is, however, beyond the scope of this study to develop estimates of this value.

### **4.3.5 Pictou Landing First Nation**

#### **Fisheries**

Direct socioeconomic impact of the Boat Harbour remediation project on PLFN commercial fisheries is anticipated to be neutral. Full rehabilitation of Boat Harbour may result in the return of fish and shellfish species that traditionally inhabited the water but not in quantities that would be pursued commercially. A remediated Boat Harbour may create opportunities for traditional food fisheries to return to PLFN for community members wishing to harvest returning and new species for personal and ceremonial use. Socioeconomic impact in this case would be positive, although not easily quantifiable from an economic perspective.

#### **Gas Station and Convenience Store**

The Boat Harbour remediation project has the potential to create socioeconomic impacts through the gas bar in two ways:

1. Increased traffic in and around PLFN resulting from the remediation could have the effect of increasing sales at the gas bar, convenience store, and/or the café. Stakeholders consulted at PLFN thought the likelihood of this was moderate – that it was possible increased traffic could be seen moving through PLFN, but that the location of the remediation made it more likely that gas, convenience store, and café business would increase in Trenton and New Glasgow over PLFN.
2. The construction of the bridge at Highway 348 and resulting detour could discourage members of communities to the south and southwest of the bridge from coming into PLFN for gas and amenities resulting in negative socioeconomic impacts as a result of the remediation.

#### **Local Artisans**

There is also some optimism among community stakeholders that Mi'kmaq culture will be an integral part of the ultimate design of the grounds around Boat Harbour. Local art and crafts could be showcased in an interpretive setting or sold commercially, should PLFN choose to include some form of commercial operation (e.g. tourism amenities) as part of the rehabilitated grounds<sup>12</sup>.

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<sup>12</sup> Findings from community stakeholder consultation.

## **5. SOCIAL IMPACTS**

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### **5.1 Population**

Due to the magnitude and timeline of the remediation, no significant impacts on population at PLFN, in the County, or Major Towns are anticipated. From time to time, project activities may require a temporary influx of workers that require housing in local hotels or guest houses. Hotel, cottage, and guest house accommodation are available in all Major Towns in the study area. Additional housing, if required, could be sourced in nearby Antigonish and Truro.

### **5.2 Housing**

With larger construction projects, an influx of workers (sometimes thousands) from outside the region can create pressure on housing availability and market price. No such impacts are anticipated as a result of the Boat Harbour remediation project due, mainly, to the size of the labour requirement and ability to source much of the workforce locally.

### **5.3 Social Infrastructure**

No major incremental burden on health and emergency services is anticipated to occur as a result of the remediation.

### **5.4 Transportation**

There is potential for the remediation to impact traffic volumes and transportation infrastructure in and around the study area. Traffic along the Granton Abercrombie Road, Trenton Connector, Highway 348, and other arteries will likely see increased truck traffic, which can cause delays and impact traffic safety for local residents. Truck traffic can also increase stress and damage to road and highway infrastructure, increasing costs to municipalities and the province. Finally, local residents can also be negatively impacted by increased noise and dust/debris produced by truck traffic.

### **5.5 Pictou Landing First Nation**

While the above impacts may apply to all residents in the study area, including those at PLFN, the following section outlines impacts specific to PLFN.

#### **5.5.1 Traditional Land Use and Mi'Kmaq Culture**

The ability of the people of PLFN to make cultural, recreational, agricultural, and ceremonial use of A'se'k, as their ancestors had, was rendered virtually impossible over 50 years ago. The remediation and rehabilitation of Boat Harbour has the potential to return the water and land to a state that allows and encourages all of these uses again. The social impact of that outcome is immense to the people of PLFN. Key stakeholders interviewed as part of this research identified the following impacts a remediated and restored Boat Harbour would have on PLFN:

- Access to PLFN's greatest source of recreation – swimming, gathering, boating, and enjoying the beach.

- Access to traditional food fishery - shellfish, smelts, some lobster, mackerel.
- Access to walking trails – potential to develop more.
- Access to plants with ceremonial and medicinal value.

### **5.5.2 Livelihood**

There is potential to improve livelihoods of some members of PLFN directly through employment on the remediation. Census data indicates a particular concentration in training in trades at PLFN, which form a large portion of the remediation labour requirement. Incomes for Project related jobs would presumably be higher (based on industry averages) than average or median household incomes currently earned by people at PLFN (\$33,084 and \$24,952 in 2011).

Potential positive social impacts could also result from future employment opportunities resulting from training and/or experience gained working on the remediation.

Stakeholders interviewed perceived both positive and negative potential social impacts related to Project related livelihood improvements. The increased economic security and buying power associated with increased household income was the main positive impact, while concern over the effects of a boom-bust project cycle was noted as a potential negative impact (i.e. the destabilizing effect a temporary infusion of income with its eventual withdrawal can have on a community).

### **5.5.3 Health**

The Project has the potential to result in positive impacts on the health of the community primarily through increased recreational use of a remediated and rehabilitated Boat Harbour. Mental health benefits may also result through what one stakeholder referred to as “the healing process” related to the return of Boat Harbour to PLFN. Finally, another stakeholder noted the benefit of decreased worry and stress around perceived health impacts that will result for the community from the remediation of Boat Harbour.



## 6. SUMMARY

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Government of Nova Scotia has commenced the remediation of Boat Harbour (A'se'k). Planning and design is anticipated to be completed by January 2020, with active remediation commencing in 2020 and implemented over 5 years with an anticipated completion of remedial activities in 2025.

The project is fully located within the province of Nova Scotia and focused in a small geographic area within Pictou County, which includes Pictou Landing First Nation whose social, economic, cultural, and ceremonial use of Boat Harbour has been affected by its industrial use over the past 50 years.

It is anticipated that Boat Harbour Remediation Planning and Design will result in a range of socioeconomic impacts for Nova Scotia concentrated in and around Pictou County. While this SEIA focused on impacts at the provincial, county, and town levels, special consideration was given to potential socioeconomic impacts that may accrue to the people of PLFN. Anticipated direct and indirect provincial socioeconomic impacts resulting from the estimated \$242 million in remediation expenditures include:

- \$188 million in GDP.
- \$117 million worth of income.
- 2,000 full-time equivalent jobs.
- \$13 million in provincial taxes.
- Employment opportunities across a range of skilled and semi-skilled construction-related occupations.
- Potential minor negative economic impacts to the gas bar at PLFN associated with increased traffic and detours / delays created due to bridge construction.
- Positive social, economic, recreational, and health impacts resulting from renewed access to the amenities associated with a remediated and rehabilitated Boat Harbour.
- Increased access for PLFN to traditional food fisheries, wild plants, and medicines.
- Positive socioeconomic impacts associated with ecological goods and services provided by a rehabilitated environment.
- Positive social impacts related to community re-engagement with Boat Harbour, inclusion in the remediation planning and design process, and healing from what is considered by PLFN as a historical injustice.