

population between the ages of 25 and 44 (Statistics Canada, 2011a). The Town of Mulgrave covers a land area of 17.81 km<sup>2</sup> with a population density of 44.6 per km<sup>2</sup>. In 2011, the population was 794. Eighty-two percent (82%) of the population is over the age of 15, with 23% of the population between the ages of 25 and 44 (Statistics Canada, 2011b).


















The Point Tupper Industrial Park is designated for heavy industrial use. The following industries have existed or are currently located there (CBCL, 2008, The Canadian Press, 2012, and Cape Breton Post, 2011):

- ◆ Pulp and paper mill (Port Hawkesbury Paper, Pacific West Commercial Corporation)
- ◆ Power generation plant and terminal (Nova Scotia Power Inc.)
- ◆ Heavy water processing (Atomic Energy of Canada)
- ◆ Petroleum processing and storage (Gulf Oil, NuStar Energy)
- ◆ Waste disposal (asbestos and coal fly ash)
- ◆ Gypsum wall board manufacturing and export facility (Cabot Gypsum)
- ◆ Port Hawkesbury Pier and marine shipping terminals
- ◆ Aggregate quarry (Martin Marietta Materials) – Mulgrave, NS
- ◆ Deep water terminal
- ◆ Ideal concrete
- ◆ Coal terminal, storage, and rail loading (Nova Scotia Power Inc., Savage)
- ◆ Marine construction and repair (Beaver Marine)
- ◆ Crane rentals (AW Leil Cranes & Equipment Ltd.)

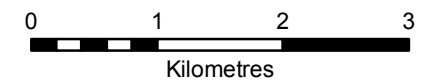
Development features and land use zoning are presented in Figure 4-22.

## Figure 4-22 Development Features

**Legend**

	Buildings/Structures		Built-Up Areas
	Bear Head LNG Site Features		Cemetery
	Cart Track		Park/Sports field
	County Boundaries		Storage Tank
	Railroad		Transformer Station
	Rivers and Streams		Landfill
	Roads		Pile (industrial)
	Waterbodies		Pit (industrial)
	Wetlands		

- ① Statia Terminals
- ② Nova Scotia Power
- ③ Stora-Enso
- ④ Exxon Mobil Canada
- ⑤ Town of Port Hawkesbury
- ⑥ Town of Mulgrave
- ⑦ Strait Richmond Hospital
- ⑧ Strait Area Education Recreation Centre
- ⑨ Tamarac Education Centre
- ⑩ West Richmond Education Centre
- ⑪ Mulgrave Memorial Education Centre
- ⑫ Port Hawkesbury Nursing Home

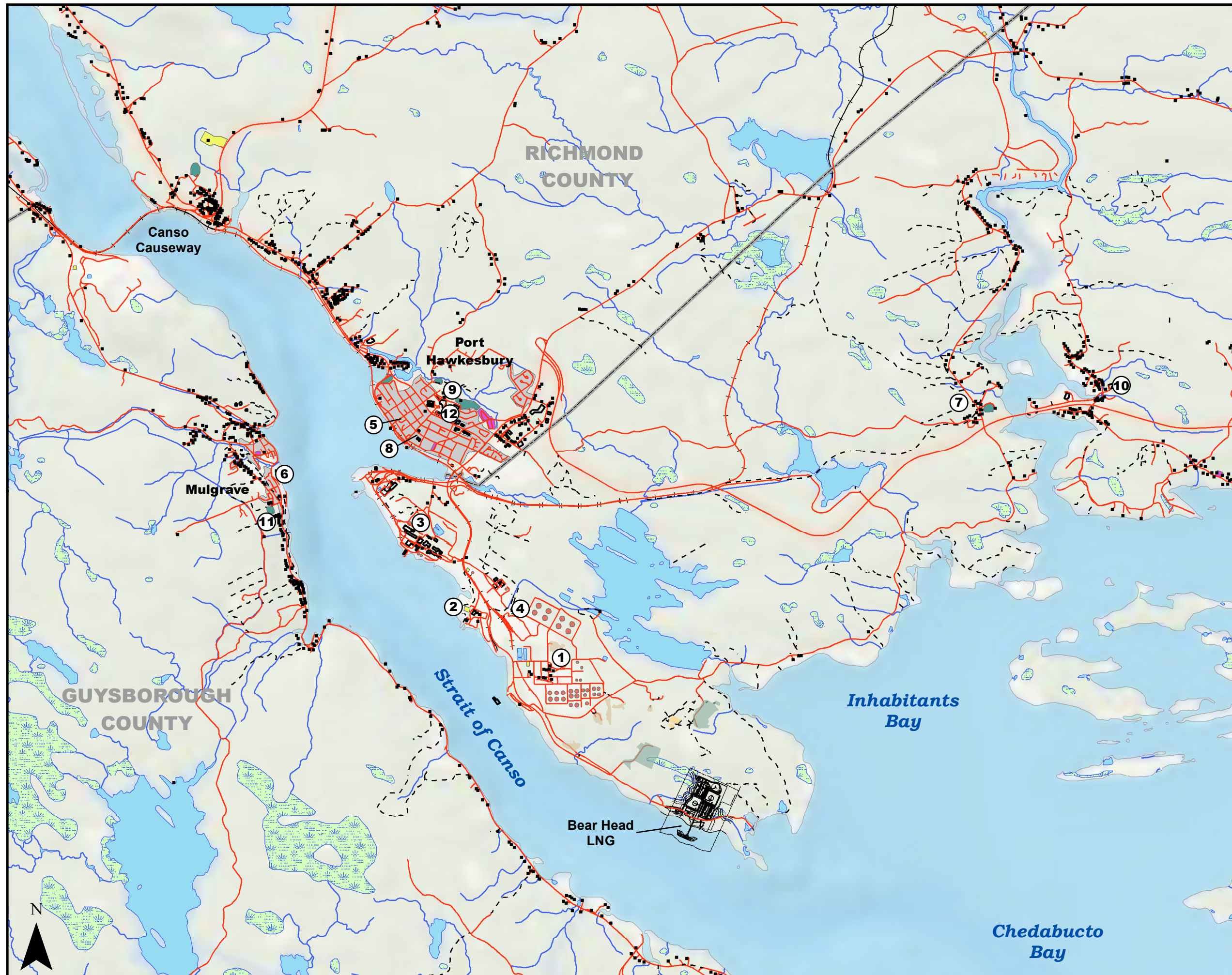


Map Parameters  
 Projection: Universal Transverse Mercator (UTM)  
 Datum: NAD83  
 Zone: 20  
 Scale: 1:60,000  
 Project Numer: 622560  
 Date: April 1, 2015

Data Source:  
 -Canvec (2013) Digital National Topographic System (NTS) topographic dataset for Port Hawkesbury (011F11)  
 -Site Preparation As-builts, J & T Van Zutphen for Bear Head LNG Corp., April 7, 2006, PN 6143  
 -Plot Plan, LNG International Limited, March 5, 2015, BH-DG-00-002 Rev C1



**SNC • LAVALIN**



#### 4.5.1.1 Recreation and Entertainment

Though Nova Scotia Sport and Recreation Commission had no record of provincial canoe, sea kayaking, hiking or snowmobile trails in the Point Tupper and Bear Head area (NSSRC, 2010), the site has been identified as a place where local people would walk. Since 2004, however, the site has been partially fenced and the road double gated, reducing access. Some recreational sailing and power boating does take place in the waters of the Strait of Canso and Chedabucto Bay.

Port Hawkesbury offers a variety of entertainment activities for residents and visitors. The facilities include the Port Hawkesbury Civic Centre, the Bowling Center, the Strait Arena Pool, the Strait Area Education Recreation Centre, Dance Debut Studio, a number of community halls, wilderness trails, community parks, and indoor and outdoor sports courts/fields. Seasonal activity flyers are published identifying activities such as Yoga, Tai Chi, Qigong, painting, knitting, fitness (swimming, sports, dance), cooking, and educational classes and programs. Additional seasonal activities include golf, water skiing, scuba diving, kayaking, and skating. The nearest movie theatre, however, is in Antigonish (Cineplex). Port Hawkesbury is also home to a variety of music and entertainment festivals, such as the Festival of the Strait and the Granville Green Concert Series (Town of Port Hawkesbury, 2015b).

#### 4.5.1.2 Local Emergency Response Services

Fire Services are provided to the Point Tupper Industrial Park in the first instance by the Municipality of the County of Richmond. Responses to industrial facilities will be coordinated with those on site who are charged with the first response in accordance with accepted and approved industrial practices. In emergency situations first responders could rely upon the support of additional resources from the surrounding municipalities.

#### 4.5.1.3 Medical Services and Hospitals

The project site is serviced by the Guysborough Antigonish Strait Health Authority (GASHA). Table 4-25 lists the health care services available in the area and Table 4-26 identifies the local hospitals and the regions they serve. The closest hospital to the Bear Head LNG site is the Strait Richmond Hospital.

**Table 4-25: Health Services for the Point Tupper and Port Hawkesbury Area**

Service	Number of Providers	Location
Physicians	5	Port Hawkesbury
Dentists	5	Port Hawkesbury
Optometrists	3	Port Hawkesbury
Hearing	1	Port Hawkesbury <sup>1</sup>
Holistic Services	2	Antigonish, North Sydney
Chiropractors	2	Port Hawkesbury <sup>2</sup>
Physiotherapists	1	Port Hawkesbury <sup>3</sup>
Chinese Medicine	1	Antigonish
Message Therapist	2	Port Hawkesbury
Pharmacies	4	Port Hawkesbury

1. Oration Hearing Aide Centre Ltd. provides health care to residents of Port Hawkesbury at a clinic hosted on the third Thursday of every month. Permanent offices are found in Sydney and Glace Bay.  
2. Two (2) chiropractors are located in Port Hawkesbury with an additional two (2) found in Antigonish.  
3. Strait Area Physiotherapy is located in Port Hawkesbury. There are an additional five (5) clinics in Antigonish and Baddeck.

**Table 4-26: Summary of Nearby Hospitals**

Hospital	Serving
St. Martha's Regional Hospital	Antigonish, Antigonish County
St. Mary's Memorial Hospital	Sherbrooke, Guysborough County
Guysborough Memorial Hospital	Guysborough, Guysborough County
Eastern Memorial Hospital	Canso, Guysborough County
Strait Richmond Hospital	Evanston, Richmond County

The Strait Richmond Hospital provides primary services to patients and is located approximately 20 minutes (16 km) from the Project site in Evanston, Richmond County. The services include: diagnostic imaging; EKG; emergency services; hospice and palliative care internal medicine; laboratory services; mental health outpatient services; nutrition and dietetic counseling; occupational therapy; pediatrics; physiotherapy; rheumatology; and social work services. There is also an 11 in-patient bed unit for addiction services.

Emergency Health Services operates ambulances in Port Hawkesbury; air ambulance services are available and the Strait Richmond Hospital is equipped with a helipad.

For additional services, such as secondary and tertiary medical care including major trauma injuries and maternity procedures, St. Martha's and Cape Breton Regional Hospitals are available. The former, located in Antigonish about 45 minutes from the project site, provides primary and secondary health care services. The Cape Breton Regional Hospital in Sydney is 1.5 hours from the site, has over 260 in-

patient beds and provides primary, secondary, and tertiary health care services (GASHA, 2015a).

#### 4.5.1.4 Police

The Bear Head LNG site falls within the area served by the Port Hawkesbury RCMP Detachment, which patrols the Park and provide emergency response services. Businesses within the Park are responsible for individual site security. The Port Hawkesbury RCMP Detachment has a total of 25 members (C. Rickard, pers. comm., 2015).

#### 4.5.1.5 Social and Community Support Services

A variety of social services are available within the study area including: home care and continuing care nursing; Alcoholics Anonymous; the Palliative Care Society; Senior Citizens Advisory Committee; community and family centers; Abuse Centers and Victim Services; Children's Aid Society; Island Health Services Auxiliary; Leaside Transition House; Misty Campbell; Churches (Roman Catholic, Anglican, United, Pentacostal, Baptist, Latter Day Saints, Non-denominational); Child care services; Canadian Red Cross Service Centre; and Employment Service Canada Centre. Residents of Port Hawkesbury also have access to facilities and community groups located in neighboring communities within the County of Richmond (GASHA, 2015a, GASHA, 2015b, Town of Port Hawkesbury, 2015a).

#### 4.5.1.6 Accommodation and Related Services

There are nine (9) hotels, motels, cottages and inns in the Port Hawkesbury, Port Hastings and Troy area, and five (5) bed and breakfasts with a total of 326 units. These facilities provide year-round accommodation to visitors to the area. There are also longer term apartment rentals available in the Port Hawkesbury area. One, two, or three bedroom units can be rented at costs between \$500 and \$700 per month. Port Hawkesbury has a range of fast food restaurants, cafes, pubs, and licensed restaurants.

#### 4.5.1.7 Transportation Infrastructure

Primary traffic access to the Project site will be via Industrial Park Road from Trunk 4 in Port Hawkesbury to the NuStar Terminals, and then Bear Island Road to the site. Trunk 4 is a Nova Scotia arterial road that connects with Trans Canada Highway 104 and 105 at Port Hastings, approximately 6.2 km west of the Trunk 4 / Industrial Park Road intersection. Trunk 4 in this area is a four-lane wide undivided road. In 2004, traffic volumes in the Project area were estimated from 11,600 vehicles per day (vpd) west of Port Hawkesbury to about 14,000 vpd at the Trunk 4/Industrial Park Road intersection. In 2011, the estimated traffic volumes at the same locations have seen a reduction to 8,800 vehicles per day and 6,530 vehicles per day respectively.

The four lane sections of Trunk 4 and all of Industrial Park Road were constructed in the early 1970s to

provide construction access for the major industrial projects that were developing. These roads continued to serve the daily access needs of several hundreds of employees at the major industrial plants operating in Point Tupper and to carry truck loads of pulp to the mill and gypsum to the Georgia Pacific terminal. These roads will serve the needs of the project through its construction and operation. The section of Bear Island Road to the south of NuStar Terminals was reconstructed primarily to provide access to the NS Power ash dump. The road surface beyond the ash dump access is currently a two-way gravel access road

In 2002 and 2003 the Nova Scotia Department of Transportation and Public Works obtained machine traffic counts on Industrial Park Road between Trunk 4 and NuStar Terminals. The average weekday two-way volumes just west of Trunk 4 were about 5,350 vehicles per day in October 2003, including peak hour volumes of about 450 vehicles per hour. Daily and peak hour volumes will be considerably lower in the road section between the Point Tupper Road and entrance to the NS Power Plant.

A count obtained south of the entrance to the Nova Scotia Power Point Tupper Generating Station in August 2002 indicated average weekday volumes of 750 vehicles per day, including peak hourly volumes of about 75 vehicles. While traffic count data are not available for Bear Island Road south of NuStar Terminals, volumes are extremely low.

Daily volumes fluctuate seasonally with volumes usually higher in the summer and lower in the winter. Volume fluctuations on the sections of Industrial Park Road between Trunk 4 and the NS Power Plant can be expected to be similar to suburban traffic patterns that only exhibit minor seasonal fluctuations. As illustrated in Table 4-27, volumes during the spring and fall seasons are about equal to estimated annual average daily traffic (AADT), while winter volumes will be about 12% lower and summer volumes will be about 10% higher than AADT volumes.

**Table 4-27: Seasonal Variation in Average Daily Volumes**

Season	Average Daily Volume as a Percent of AADT
Winter (December, January, February, March)	88 %
Spring / Fall (April, May, October, November)	102 %
Summer (June, July, August, September)	110 %

Source: NSTPW permanent counter factors for Counter Group A

The distance from the Trunk 4 / Industrial Park Road intersection to the Project is about 8 km. Road types vary from a 0.5 km section of four-lane undivided road, i.e., Industrial Park Road at the north end, to a 1.2 km section of two-way gravel surface road, i.e., Bear Island Road at the south end. NSPI maintains an access to their ash dump location approximately 1.8 km from the start of Bear Island Road. Road descriptions for the current Project access road sections are included in Table 4-28.

**Table 4-28: Description of Industrial Park Road and Bear Island Road**

Road Name	Location	km from Trunk 4	Cross Section Details	Notes
Industrial Park Road	Trunk 4	0.0	Traffic signals at Trunk 4 intersection.  4 - 3.6 to 3.7 m wide lanes; shoulders are 1.0 m paved with about 3.0 m gravel.	Speed limit is 60 km/h from Trunk 4 to just south of Point Tupper Road.
	Queen Street	0.1	Traffic is 2-way stop- controlled for Queen St. and Queen St. Extension	RA-5 overhead cross walk sign with push button actuated flashing lights exists over marked pedestrian cross
	Granville Street	0.5	Traffic is 2-way stop-controlled for Granville St.	
	Point Tupper Road	0.9	3 lanes including left-turn lane	
	Port Hawkesbury Paper Pulp Yard	2.3	2 - 3.6 m lanes with 1.0 paved shoulders  While pavement is badly broken from NS Power to NuStar Terminals, other sections have very good paved surfaces.	Speed limit is 70 km/h from south of Point Tupper Road to the end of Bear Island Road.  Road ends at the NS Power Ash Dump entrance.
	NS Power	2.9		
	Rail Road Crossing	3.0		
	NuStar Entrance Road	4.5		
	Port Malcolm Road	5.1		
	NuStar Terminals	5.2	2 - 3.6 m wide paved lanes	
Bear Island Road	NS Power Ash Dump	6.9	Gravel access from Bear Island Road	
	Current Project Area	8.0	Two-way gravel access road	Not maintained

Source: Study area site visit (JWEL, 2004a)

Tractor trailer units on Nova Scotia roadways are generally restricted to the maximum dimensions shown in Table 4-29, depending on how a road has been classified by the NSTIR.

**Table 4-29: Allowable Weights and Dimensions**

Road Class	Allowable Weights and Dimensions			
	Width (m)	Height (m)	Length (m)	Gross Weight (kg)
Schedule B (B-Train Roads)	2.6	4.15	23	41,500
Schedule C (Max Weight)	2.6	4.15	25	62,500
Schedule D (Intermediate)	2.6	4.15	23	49,500

Source: Web site <http://www.gov.ns.ca/just/regulations/regs/mvwd.htm> (May, 2013)

The section of Industrial Park Road from Trunk 4 to the NuStar Terminals wharf access road has been classified Schedule B, C, and D. Bear Head Road from NuStar Terminals to the end of the road is classified for schedule D loading; but, spring weight restrictions do not apply. Since other roads serving the industrial area have higher allowable weights, a request can be made to NSTIR to change the road classification. Weights and dimensions in excess of allowable limits are often permitted by requesting a Special Move Permit.

During the five year period from 1998 to 2002, there were nineteen (19) recorded collisions at the signalized Trunk 4 / Industrial Park Road intersection (Table 4-30). There were nine property damage only and ten personal injury collisions. Collisions at the intersection generally involve rear end collisions or left turning vehicles that fail to yield right-of-way, which is typical of many signalized intersections. There was only one reported collision on Industrial Park Road during the five year period involving a right angle property damage collision at the Port Hawkesbury Paper entrance.

**Table 4-30: Collision History at Reeves Street Intersection 1998 to 2002**

Year	Number of Collisions by Severity			
	PDO	Injury	Fatal	Total
1998	0	2	0	2
1999	4	1	0	5
2000	1	3	0	4
2001	1	2	0	3
2002	3	2	0	5
Totals	9	10	0	19

Source:  
NSTPW collision data base (Collision Data is not available beyond 2002)



The Trunk 4 / Industrial Park Road intersection was reconstructed during the fall of 2003 and an advance left turn signal phase was included. It is expected that these changes have improved intersection levels of performance and safety. One reported collision on Industrial Park Road over a five year period is not considered an indication of any significant safety problem. Updated traffic collision data is not available for this intersection. However, due to the relatively low volume of collisions previously reported, and the improvements made to the intersection in 2003, motorist safety at the intersection is not considered to be a problem.

## **4.5.2 Economic Development**

This section describes the regional economy of the study area, including information pertaining to current business, employment and income. Current information was provided by the 2011 Statistics Canada Census. The effects of the Bear Head LNG facility will extend beyond the Point Tupper and Port Hawkesbury areas into Richmond and Inverness counties and to the provincial economy as a whole.

### **4.5.2.1 Employment and Income**

The median total income of persons 15 years of age and over in Port Hawkesbury was \$31,029 in 2011; 71.7% of this came from employment income, 12.5% from government transfers and 1.4% from other sources of income (Statistics Canada, 2011c). Among the labour force in Port Hawkesbury, the average annual earning for full-time employment was \$39,862, higher than the provincial average of \$35,478 (Statistics Canada, 2011c).

For Richmond County, the median income was \$24,135 with an average income of \$31,233. The employment rate for persons 15 years of age and over was 45.7% and the unemployment rate was 14.5% (Nova Scotia Department of Finance, 2014).

### **4.5.2.2 Business**

Major employers in the Port Hawkesbury, Richmond County and Inverness County area include the Atlantic Superstore (Port Hawkesbury), Bayview Education Centre (Port Hood), Cape Breton Highlands Education Centre (Terre Noire), Cheticamp Packers (Cheticamp), Nova Scotia Community College (Port Hawkesbury), Sobeys (Port Hawkesbury), Wal-Mart (Port Hawkesbury), and the regional and county hospitals (JWEL, 2004a). The division of labor force, by sector, is presented in Table 4-31.

**Table 4-31: Division of Labour in Richmond and Inverness Counties**

Labour Force Division	Percentage of Workforce (%)	
	Richmond	Inverness
Agriculture, forestry, hunting and fishing	6.9	11.1
Mining, quarrying, oil, and gas	1.9	1.9
Utilities	1.1	0.8
Construction	9.6	6.9
Manufacturing	12.4	9.5
Wholesale trade	3.2	1.2
Retail trade	10.1	12.9
Transportation and warehousing	5.1	4.1
Information and cultural industries	0.8	1
Finance and insurance	3.2	2
Real estate	0.4	0.4
Professional and scientific	3.1	2.6
Waste management	1.9	2.1
Educational services	7.6	9.3
Health care	14.2	11.2
Arts and entertainment	1.3	1.9
Food and accommodation	4.9	8
Public administration	5	6.6
Source: Nova Scotia Department of Finance, 2011		

### 4.5.3 Marine Navigation

Table 4-32 summarizes marine traffic information for the Strait of Canso attained from the Sydney MCTS for 2014. The “Number of Vessel Movements” describes the movement of a vessel from one designated point to another. For example, a vessel moving from the pilot boarding station to an anchorage is considered one movement. If this vessel then moves from the anchorage to a berth, that is considered a second movement. To provide context, the total number of vessels accessing the Strait of Canso is equal to about half of the number of movements. It should also be noted that only marine traffic over 30 m in length is accounted for; most non-reporting traffic would be small fishing vessels and pleasure craft.

**Table 4-32: Number of Vessel Movements in Strait of Canso Area 2014**

Month	Year	Number of Vessel
January	2014	128
February	2014	131
March	2014	187
April	2014	155
May	2014	237
June	2014	195
July	2014	149
August	2014	147
September	2014	157
October	2014	172
November	2014	148
December	2014	117
Total annual vessel movements		1923
Estimated number of vessels		962

Source: 2014 Sydney MCTS Annual Statistics from J. Gaudet

#### 4.5.3.1 Safety of LNG Operations

To ensure both environmental and human safety, LNG vessels are supervised and managed by governmental and inter-governmental organizations, and by industry standards. The principles for the protection of the surrounding communities, the environment and the site are based on:

- ◆ The physical and chemical properties of the LNG;
- ◆ The codes, standards, and regulations; and
- ◆ Technology and operational controls that have evolved since the commencement of LNG transportation and storage.

Additional information pertaining to the safety of the LNG vessels can be found in the Risk Assessment in Appendix B.

#### 4.5.3.2 Marine LNG Vessels

It is expected that the Bear Head LNG activities will result in 80 to 130 LNG vessels per year entering Chedabucto Bay and Strait of Canso waters. This would increase the total number of movements by approximately 7% assuming that LNG vessels will not anchor and move directly to berth. Table 4-33 provides examples of vessels that may service the proposed project. The actual size of LNG vessels

may vary between 125,000m<sup>3</sup>-167,000m<sup>3</sup>, as was previously approved.

**Table 4-33: Particulars of Bear Head LNG Vessels**

	Existing Vessel Data	
	Minimum	Maximum
Liquid Capacity	134,318	266,000
Length Overall (LOA)	289	345
Beam	46	54
Loaded Draft (m)	12	12.2
Ballast Draft (m)	9.78	9.6
Loaded Displacement (mt)	101,151	163,922
Frontal wind area, ballast (m <sup>2</sup> )	1,300	1,742
Lateral wind area, ballast (m <sup>2</sup> )	6,250	9,552

#### 4.5.3.3 Ocean Passage into Canadian Waters

All vessel traffic entering or leaving the Chedabucto Bay region are required to communicate with the ECREG and the local MCTS. The Vessel Traffic Services (VTS) Zone begins at the “12-mile limit”. Communication must be made to MCTS 24 hours before approaching the area. This advanced warning ensures that MCTS is aware of the vessel from about 200 miles from the shore, ensuring that safe passage is possible and assisting in the scheduling of passages. As shown in Figure 4-23, there are two entry points into the area, located in the east and south east of Calling in Point (CIP) 1A (JWEL, 2004a). Marine navigation mapping is shown in Figure 4-23; all information was validated by Regional Program Specialist, MCTS, Julien Gaudet in February 2015.

All inbound, berthing, and outbound procedures of LNG vessels are regulated by the Port. Movements associated with birthing are well defined and all safety procedures specific to this Port must be followed at all times.

As a vessel approaches the Chedabucto Bay area, the Master must ensure that MCTS is contacted. This is to inform MCTS of the appropriate time for the pilot to board the vessel, to determine the required speed to maintain, and to identify the side of the vessel for the pilot’s boat to approach. The pilot boards the vessel, discusses the plan of vessel passage with the Master and crew and then assumes command of the navigation team. Although the pilot is in control of navigation of the vessel, the Master remains responsible for all other duties.

An approaching vessel may be required to anchor prior to berthing if:

- ◆ The berth is unavailable or in use;
- ◆ The area is experiencing poor weather conditions; or

- ◆ Other commercial conditions pertaining to the vessel are not met.

The pilot on board the vessel directs the anchoring activities. Most anchoring points within the Chedabucto Bay area are between 25 to 40 m. Once the pilot deems the anchorage has an adequate hold, he disembarks the vessel. The vessel will then remain ready to continue once favorable conditions are met.

The pilot is also responsible for vessel navigation once favourable berthing conditions are met. There are two important buoys for vessels approaching the berth in the Chedabucto Bay area, namely buoys C11 (Eddy Spit) and C13. The vessel must reduce speed once around C11 and once around C13, then begin to maneuver into the turning position to approach the berth. Transport Canada requires that all vessels have manuals that are inclusive of site specific berthing procedures. The terminal's procedures for safe operation will be detailed in the approved TERMPOL documentation, and these procedures will then be added to the vessel's Operations Manual.

#### **4.5.4 Fisheries, Aquaculture and Marine Harvesting**

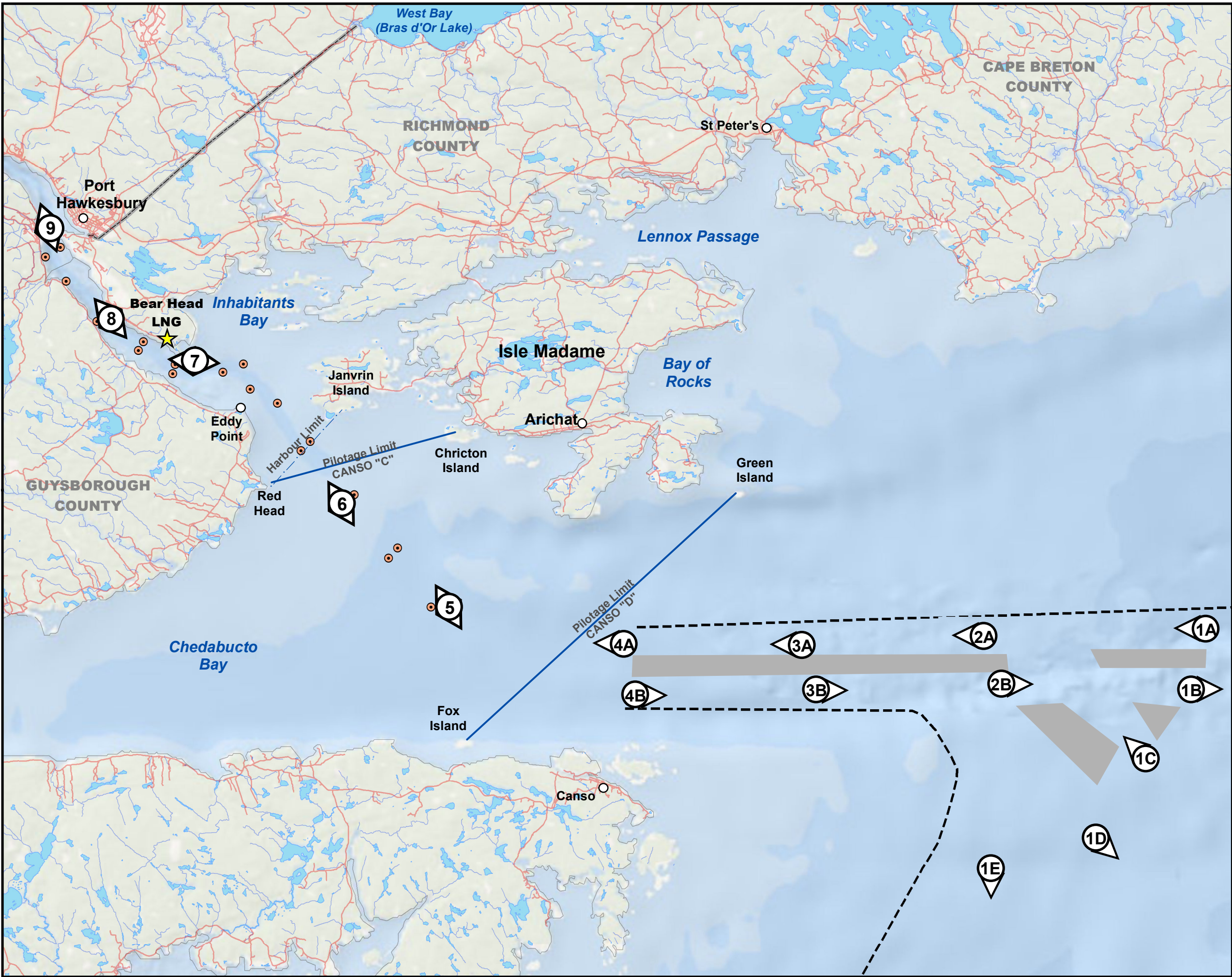
##### **4.5.4.1 Commercial Fishery**

Fisheries in the narrow confines of the Strait of Canso are limited in comparison to most other parts of Nova Scotia by three primary factors:

- ◆ The deep slopes of the Strait of Canso;
- ◆ The barrier to migration posed by the Causeway; and
- ◆ The industrial development along the shoreline.

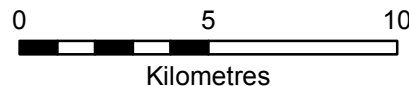
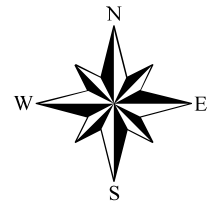
Prior to construction of the causeway, the Strait of Canso provided a major migration route for some species, including herring and mackerel, between the Atlantic and the Gulf of St. Lawrence. Herring and mackerel are comparatively uncommon today, although two mackerel traps are still registered in the Strait. The water deepens quickly given the deep narrow structure of the Strait and the narrow shoreline provides limited habitat for many commercial species, such as lobster. Nonetheless, a valued lobster fishery exists and is active throughout the Strait and nearshore areas.

In contrast, Chedabucto Bay, the eastern entrance to the Strait, is particularly productive and supports seasonal fisheries. Two key fisheries-related features of Chedabucto Bay include a larger overwintering population of herring that can be fished according to the current management plan by large seiners and a trap shrimp fishery operating just inshore of Cape Chedabucto.



**Figure 4-23**  
**Marine Navigation**

- Calling-in Points
- Buoys
- Marine Traffic
- Rivers and Streams
- Waterbodies



Map Parameters  
 Projection: Universal Transverse Mercator (UTM)  
 Datum: NAD83  
 Zone: 20  
 Scale: 1:200,000  
 Project Numer: 622560  
 Date: April 1, 2015

Data Source:  
 -Canvec (2013) Digital National Topographic System (NTS) topographic dataset for Port Hawkesbury (011F11)  
 -Marine Communications and Traffic Services

The major species caught in the deeper offshore water in the approaches to the Strait include snow crab and shrimp. There is little potential for seaweed, scallop and urchin harvesting and aquaculture in the Strait, but these are important in the outer Bay and around Ilse Madame. Recreational deep-sea fishing for tuna is also important, especially off Cape Canso.

#### 4.5.4.2 Landings and Value

The fishery can be described in terms of which fishers and vessels operate from the area, the quantities and value of landings in local communities, and by the overall catch from the waters offshore regardless of where vessels may land their catch. The landings and licensing information by Statistical District helps define the characteristics of the local fishery. The catch and effort data, which applies more to offshore areas, describes what is caught in the area regardless of where it is landed. Certain species, such as lobster, do not contain geographic information on logs and thus are typically assigned to the area where the catch is landed.

Table 4-34 illustrates the value of catch within the management area 4Wd, which corresponds to the Strait of Canso and its approaches as illustrated in Figure 4-24.

**Table 4-34: Catch (metric tonnes) and Value (\$'000) within Unit Area 4Wd**

Year	Total Weight	Total Value
2010	5,423	31,079
2011	4,942	36,845
2012	5,524	39,031
2013	6,969	36,736

The total weight of the catch has increased consistently from year to year. The value, however, decreased during 2012 to 2013 due to the unusually low prices for lobster in 2013.

Landings of Catch and Value are also available by Statistical District (Table 4-35). These figures represent catch from any location that is landed at ports within Districts 9, 14, and 15<sup>6</sup>. Preliminary landings for 2014 were available and are included; the value of landings in recent years is substantially higher than that from the catch within 4Wd, indicating that catch (approximately 35%) from outside the study area is brought to major ports within the study area.

<sup>6</sup> District 9 extends from the St. Peters Canal to Inverness County Line (Port Hawkesbury), including Isle Madame. District 14 extends from the Antigonish County line to Halfway Cove. District 15 extends from Halfway Cove to Little Harbour.

**Table 4-35: Landings (metric tonnes) and Value (\$'000) for Statistical Districts 9, 14 and 15**

Year	Statistical District	Weight Landed Round	Value (\$'000)
2010	9	9,574	27,565
	14	149	1,217
	15	5,970	22,327
	Total	15,693	51,109
2011	9	6,472	28,446
	14	109	1,130
	15	5,601	25,178
	Total	12,182	54,754
2012	9	6,973	25,672
	14	726	1,959
	15	6,946	25,905
	Total	14,645	53,536
2013	9	4,731	21,738
	14	226	781
	15	6,367	21,962
	Total	11,324	44,481
2014	9	6,166	29,142
	14	1,089	2,021
	15	5,925	27,340
	Total	13,180	58,502

The landings and value in District 14, including the southwest side of the Strait (with no major fishing ports) is substantially lower than those for Districts 9 and 15, which include the important fishing ports of Arichat and Canso.

#### *Groundfish*

The weight and value of groundfish landings in Districts 9, 14 and 15 are presented in Table 4-36. The landings and values were combined for all districts to maintain confidentiality. Between 2010 and 2014,



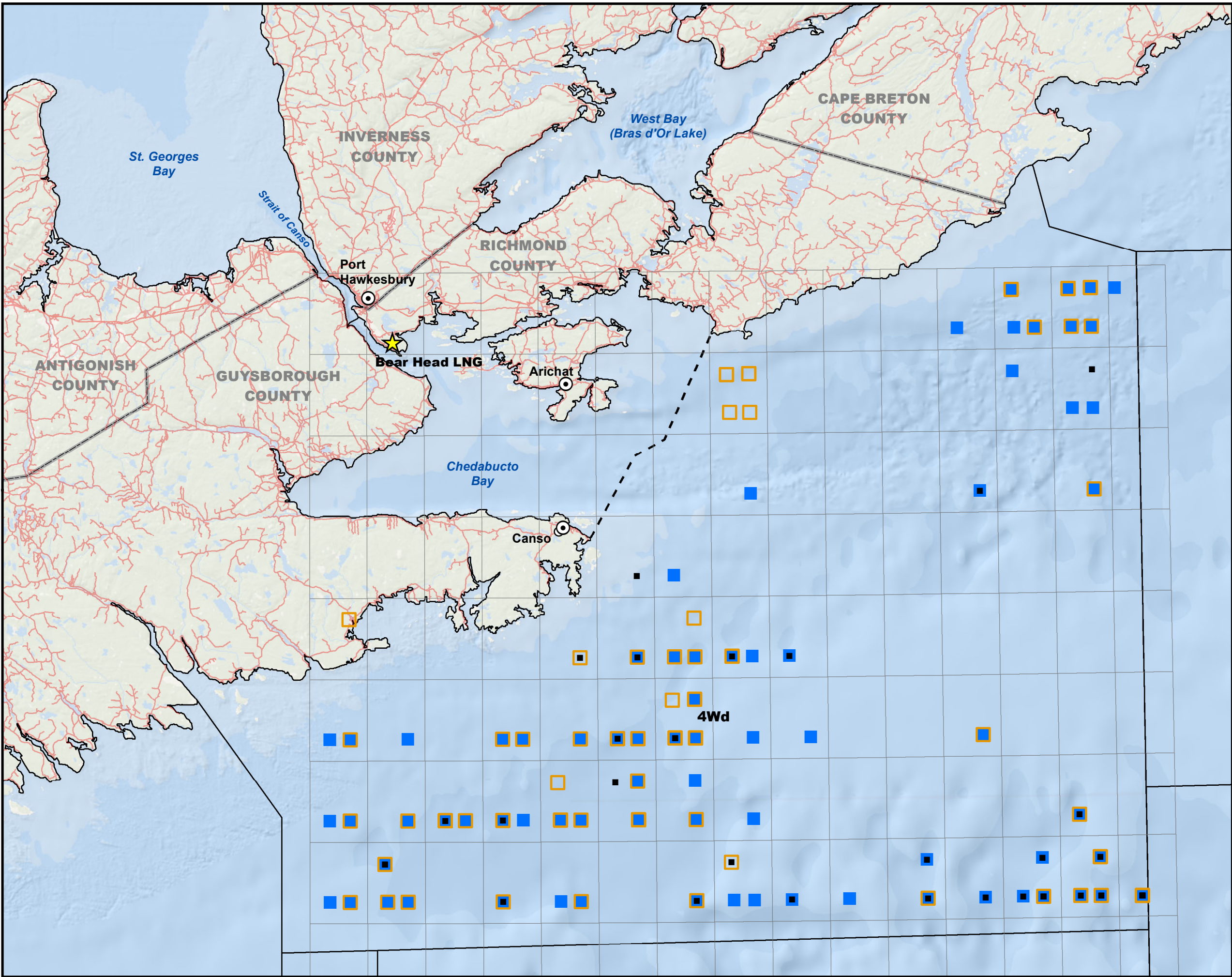
shellfish accounted for over 86% of the landings by weight and snow crab accounted for almost 44% of the total catch of crustaceans and molluscs, with shrimp accounting for just over 23% and lobster just under 14% of all shellfish landings.

The location of groundfish catch reports are illustrated in Figure 4-24, based on integrated catch and effort information provided by DFO's Statistical Services in Ottawa. Note that each 6 minute grid square indicates the fishing effort for each of the four years from 2010 to 2013. If four points are indicated, then fishing effort was reported for each year. The density of the points thus indicates the potential for effort for the species or species group within the grid square over the most recent four years of data. The distribution of groundfish effort shows that relatively less effort occurs within the main navigation channels.

Groundfish landed in the area include cod, haddock, plaice, pollock and Atlantic halibut (JWEL, 2004a). Halibut are the most valuable groundfish species and during certain times of the year are fished by a directed long-line fishery usually operating out of southwest Nova Scotia. The proportion of halibut in the catch likely explains the variation in value to weight in the catch from year to year.

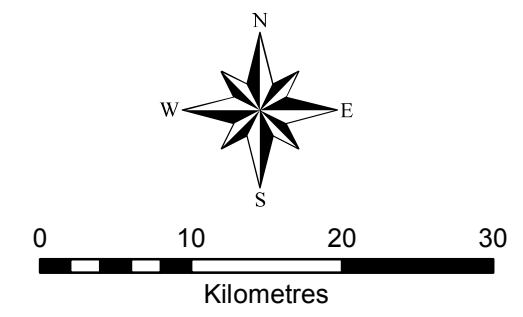
#### *Pelagic and Estuarial Species*

Pelagic and estuarial species include marine diadromous fish species frequently caught in freshwater, such as alewife (gaspereau), eel, and smelt, and marine species such as herring, mackerel, sharks and tunas. The most valuable pelagic species landed in the area is bluefin tuna. This species often forms the largest proportion of the pelagic and estuarial catch. Recently a shoreline fishery for elvers (young eels) has become increasingly important with a high-value market in Japan (Schuyler, J. pers. Comm.).



**Figure 4-24**  
**Groundfish Catches**  
**2010-2013**

- Approximate Groundfish Catch Locations**
- Cod
  - Halibut
  - Other Groundfish Species
  - ⊙ Major Ports
  - County Boundaries
  - DFO Unit Area
  - 6 Minute Catchment Grid



Map Parameters  
Projection: Universal Transverse Mercator (UTM)  
Datum: NAD83  
Zone: 20  
Scale: 1:500,000  
Project Numer: 622560  
Date: April 1, 2015

Data Source:  
-Canvec (2013) Digital National Topographic System (NTS) topographic dataset  
-Department of Fisheries and Oceans

**Table 4-36: Landings (metric tonnes) and Value (\$'000) by Species and Species Group for Districts 9, 14 and 15**

Year	Species Group	Weight Round	Value
2010	Crab, Snow	6,418	25,242
	Groundfish	2,743	2,921
	Lobster	1,864	16,211
	Mollusc and Crustacean, Other	1,421	623
	Pelagic and Estuarial	33	456
	Shrimp	3,214	5,657
	<b>Total</b>	<b>15,693</b>	<b>51,109</b>
2011	Crab, Snow	5,170	30,321
	Groundfish	1,261	2,587
	Lobster	1,544	16,061
	Mollusc and Crustacean, Other	1,867	826
	Pelagic and Estuarial	21	538
	Shrimp	2,320	4,421
	<b>Total</b>	<b>12,182</b>	<b>54,754</b>
2012	Crab, Snow	4,691	23,324
	Groundfish	3,408	4,442
	Lobster	1,701	18,785
	Mollusc and Crustacean, Other	2,241	1,190
	Pelagic and Estuarial	220	896
	Shrimp	2,383	4,898
	<b>Total</b>	<b>14,644</b>	<b>53,535</b>