

FINAL REPORT

MARINE INFRASTRUCTURE STUDY FOR THE SALMONID AQUACULTURE INDUSTRY BAY D'ESPOIR/CONNAIGRE PENINSULA/FORTUNE BAY REGION

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Table of Contents

EXECUTIVE SUMMARY	
1.0	BACKGROUND.....1
2.0	INTRODUCTION.....1
3.0	OBJECTIVE OF THE STUDY.....2
4.0	INFRASTRUCTURE ASSESSMENTS AND NEEDS.....3
4.1	POOL'S COVE3
4.2	BELLEORAM.....17
4.3	HARBOUR BRETON.....27
4.4	HERMITAGE.....37
4.5	CONNE RIVER.....55
4.6	MILLTOWN.....68
4.7	ST. ALBAN'S82
5.0	REGIONAL OVERVIEW99
5.1	BIO-SECURITY99
5.2	INFRASTRUCTURE PRIORITIES99
5.3	IMPLEMENTATION RECOMMENDATIONS.....100

EXECUTIVE SUMMARY

The salmonid aquaculture industry in Newfoundland has grown substantially on the Province's south coast in recent years. In conjunction with this, bio-security concerns have been raised concerning sustainability of the industry under present operating conditions.

To address these concerns, the Department of Fisheries and Aquaculture commissioned a study to examine bio-security threats being posed by lack of suitable infrastructure, and to recommend solutions for addressing such deficiencies. The study examined seven (7) communities presently servicing the industry consisting of Pool's Cove, Belleoram, Harbour Breton, Hermitage, Conne River, Milltown and St. Alban's.

Results of the study found that additional marine infrastructure is needed in all ports to address bio-security issues. These include clean 'inflow' wharves for aquaculture use, outdoor laydown areas for storing equipment, and additional 'outflow' wharves to relieve traffic congestion and user conflicts. Lack of storage facilities to accommodate fish feed was also raised as a concern.

Based on results of the study, the following infrastructure has been identified as being needed by the industry, in order of priority:

Priority	Location	Description	Estimated Cost (incl. HST)
1	Hermitage	Inflow Wharf & Laydown Area	\$2,363,700
2	Milltown	Inflow Wharf & Laydown Area	\$1,291,700
3	Pool's Cove	Inflow Wharf & Laydown Area	\$2,290,900
4	Belleoram	Inflow Wharf & Laydown Area	\$2,188,200
5	St. Alban's	Outflow Wharf & Laydown Area	\$1,144,600
5	Hermitage	Outflow Wharf & Laydown Area	\$2,332,700
6	Hr. Breton	Inflow Wharf & Laydown Area	\$2,859,600
7	Conne River	Inflow wharf & Laydown Area	\$2,365,900
8	Pool's Cove	Feed Storage Bldg.	\$962,000
9	Belleoram	Feed Storage Bldg.	\$962,000
9	Hermitage	Feed Storage Bldg.	\$962,000
9	Milltown	Feed Storage Bldg.	\$962,000
10	Hr. Breton	Feed Storage Bldg.	\$962,000
11	Conne River	Marginal Wharf	\$893,000
11	Conne River	Breakwater	\$950,900
12	Belleoram	Access Road Repairs	\$186,500
12	St. Alban's	Wharf Repairs	\$600,000
		Total Estimated Cost (including HST)	\$24,277,700

1.0 BACKGROUND

Salmonid aquaculture development on Newfoundland's South Coast has grown significantly in recent years, particularly in the Bay d'Espoir/Connaigre Peninsula/Fortune Bay region. Landings have been increasing annually and a potential for further expansion exists. To support such growth and ensure long term sustainability of the industry, both stakeholders and the Department of Fisheries and Aquaculture recognize a need for proper planning to reduce the potential for future disease transmission to farms.

Options for addressing this include (1) establishing bio-security zones and/or bay management areas to control movement of pathogens from one area to another, and (2) providing infrastructure to limit the opportunities for spreading disease to farms.

At present, aquaculture operators in the region typically have to share docking, loading and off-loading facilities with multiple other users and industries. This has resulted in congestion in many areas and increased potential for cross-contamination between sites and industries. The purpose of this study is to examine the marine infrastructure needs of the industry, identify capacity and bio-security issues which currently exist and provide recommendations and cost estimates for addressing the problems.

2.0 INTRODUCTION

The Bay d'Espoir/Connaigre Peninsula/Fortune Bay area on the South Coast of Newfoundland offers many fjords, coves and protected harbours suitable for salmonid aquaculture. Most of the area is accessible by roads, and electrical power is available to most areas as well through the Provincial electrical grid.

Most salmonid aquaculture activities at present are being conducted between McCallum to the west and Rencontre East to the east. Within this zone seven communities are being used as centers for servicing the industry. These are Pool's Cove, Belleoram, Harbour Breton, Hermitage, St. Alban's, Milltown and Conne River.

Marine infrastructure facilities within this region vary from community to community, but are usually limited to a fisherman's wharf, slipway, fish plant wharf and/or ferry wharf. All users generally operate from the same structures, and no provisions have been made for addressing bio-security issues to date related to such use.

Marine facilities in place in the above communities at present which are accessible to the public consist of the following:

<u>Community</u>	<u>Structures</u>
Pool's Cove	Combined fishermen's wharf/ferry wharf
Belleoram	Fishermen's wharf, slipway, floating docks
Hr. Breton	Fishermen's wharves (2), floating docks
Hermitage	Fish plant wharf, ferry wharf, fishermen's wharf
Conne River.....	Public wharf, slipway, floating docks
Milltown	Coastal boat wharf
St. Alban's	Coastal boat wharf

3.0 OBJECTIVE OF THE STUDY

The objective of the study is to examine current infrastructure needs of the salmonid aquaculture industry as it relates to bio-security and future expansion, identify deficiencies where they exist and recommend solutions for addressing such deficiencies.

Work carried out to achieve this included meetings with industry stakeholders, visiting communities, assessing conditions of existing facilities, and reviewing potential sites for accommodating new infrastructure development where required. The findings of this work are discussed herein. Information obtained from stakeholders during consultation meetings is attached under Appendix A.

4.0 INFRASTRUCTURE ASSESSMENTS AND NEEDS

4.1 Pool's Cove

4.1.1 General:

Pool's Cove is a fishing community located on the northwest side of Fortune Bay, with a population of 189 (2006 census). Residents of Pool's Cove have traditionally prosecuted the wild fishery. In recent years however, the community has seen the emergence of a salmonid aquaculture industry involving farming of Atlantic salmon.

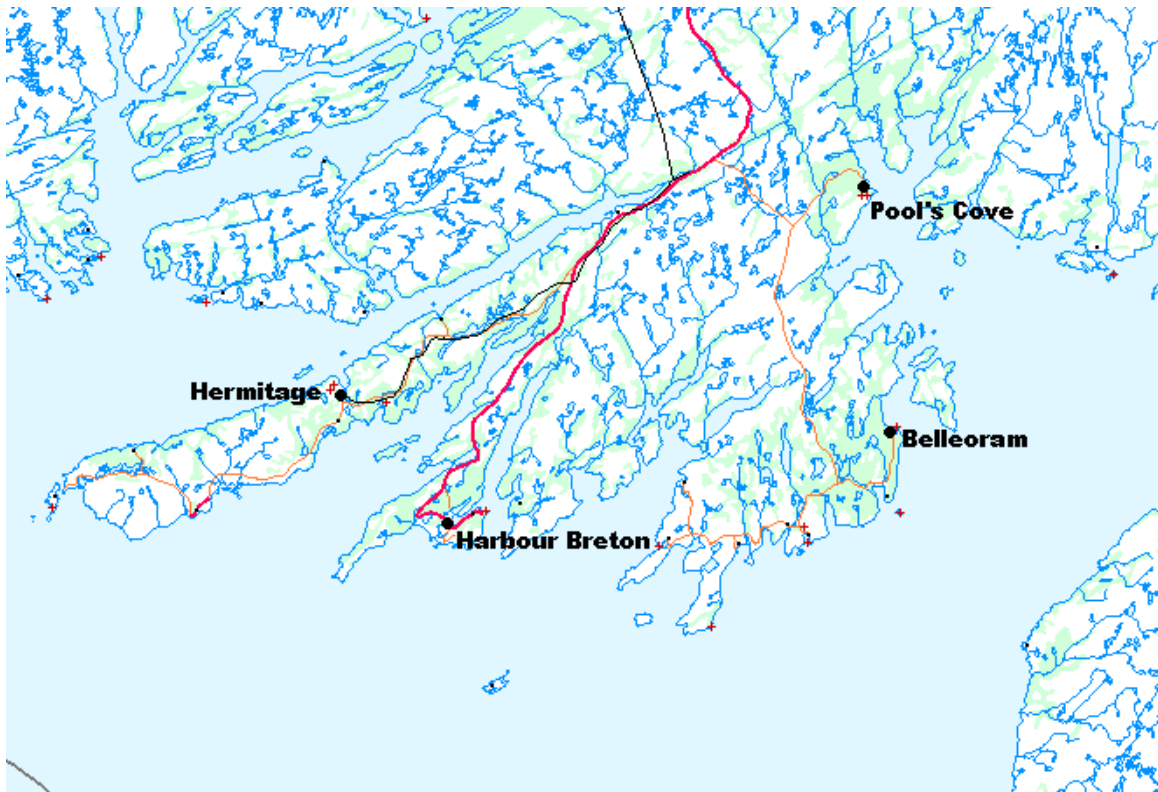


Figure 4.1.1.1 – Location Plan

4.1.2 Existing Marine Infrastructure

4.1.2.1 General

Marine facilities currently available for public use in Pool's Cove are limited to one wharf facility. Being the only wharf in the community, this structure is used by all users including traditional fishermen, aquaculture operators, the South Coast ferry service and recreational boaters. The only other marine facilities are small wharves, slipways and stages which are privately owned throughout the community.

4.1.2.2 Public Wharf

The public wharf at Pool's Cove was originally built as a timber pile structure many years ago to accommodate the South Coast ferry service. A cribwork extension was added in 2008 to relieve congestion and provide more berthing and offloading space for vessels. The structure now consists of a 41 m stem section supported on timber piles and a 35 m headblock section constructed of timber cribwork.

A paved access road connects the facility to the main road, and two storage sheds are built on the approach. Water depths at the structure range from 0 m near shore to 9.3 m at the outermost end. Approximately 12 m of the wharf near shore is unusable for berthing due to low water depths, leaving a total usable docking space of 69 m on the seaward side and 68 m on the end and leeward side.



Photo 4.1.2.1 – Photo of wharf looking east toward harbour entrance



Photo 4.1.2.2 – Photo of wharf looking North

This wharf is currently used for loading and offloading commercial fishing vessels, aquaculture vessels and the South Coast ferry, as well as berthing fishing vessels, aquaculture vessels and recreational boats. Electrical services, area lighting and a loading/off-loading jib crane hoist facility is currently provided at the wharf, but no water supply.

4.1.2.3 Uplands Storage/Parking Area

A small uplands/storage area is provided at the entrance to the public wharf, but is not large enough for more than parking and minor storage.



Photo 4.1.2.3 – Existing wharf laydown area

4.1.3 Current Vessel Operations

4.1.3.1 Commercial Fishing

Commercial fishers use the wharf daily on a seasonal basis for loading, offloading and berthing. Loading/offloading activities are primarily carried out on the seaward side of the pile structure, while the leeward face is used for berthing. Fishers from Pool's Cove and surrounding areas can have up to four (4) long-liners berthed at the wharf simultaneously at times. These vessels are generally 11–12 m in length.

The new wharf extension completed in 2008 alleviated much of the congestion which previously existed here, and is now satisfactory for providing the berthing and offloading needs of the commercial fishing fleet under current levels of fishing activity.

4.1.3.2 South Coast Ferry

A ferry arrives in the community daily and docks on the seaward side of the new cribwork extension. This vessel is approximately 30 m long and effectively occupies all of the seaward face of the extension when it docks. Because the ferry is a daily service, this area of the wharf is consequently unavailable for long term use by others.

4.1.3.3 Aquaculture

One full time aquaculture operator, Northern Harvest Sea Farms (NHSF), works out of Pool's Cove at present. This company has three farm sites situated south of the community and three situated North of the community, (Fig 4.1.3.1.). Four of these are currently stocked with fish while two are vacant.

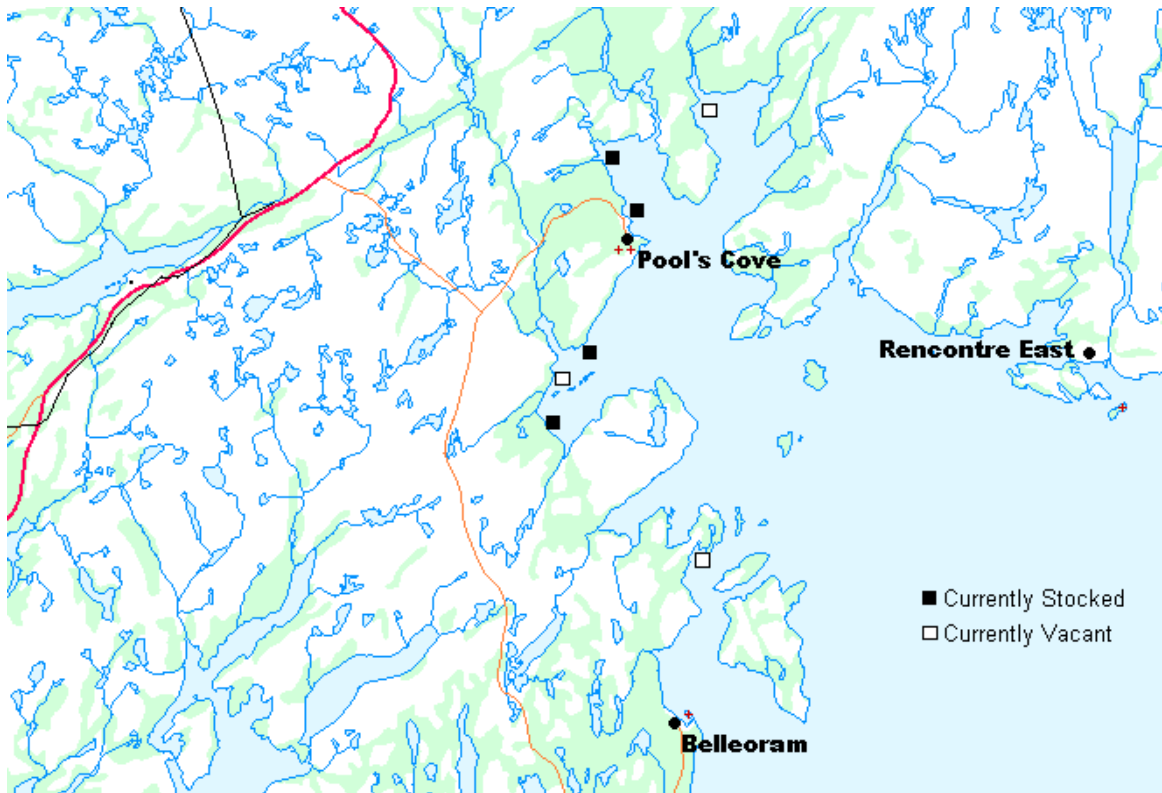


Figure 4.1.3.1 – Location of NHSF's Aquaculture Operations in Pool's Cove

NHSF operates two (2) barges measuring 18 m long each, and four (4) long-liners measuring 12 m long each. The company uses the Pool's Cove wharf daily for all of its activities including loading, off-loading and berthing. All feed, smolt and harvested salmon going to and from the farm sites currently flow through this wharf. Feed is loaded at the wharf daily to go to the farm sites, while smolt are loaded in the spring.

All feed and smolt used in the operation are currently delivered to the wharf by transport trucks. Feed usually comes in 1 tonne packaged 'bales' which are off-loaded at the wharf and moved around with a forklift. Loading of feed and smolt onto the vessels is accomplished by forklifts on shore and a crane mounted on each receiving vessel.



Photo 4.1.3.1 – NHSF vessels tied up on leeward side of wharf

4.1.4 Aquaculture Issues Raised at Meetings

Principal issues identified during industry consultation meetings at Pool's Cove concerned the lack of a clean inflow wharf for aquaculture use, and the lack of a protected laydown and storage area for storing feed.

4.1.4.1 Clean Inflow Facilities

The existing wharf at Pool's Cove is classified as a 'dirty' or 'outflow' wharf from a bio-security perspective, as it accommodates multi-use activities from commercial fishing, aquacultural, ferry operations and recreational activities combined. All feed and smolt currently delivered to the aquaculture sites must be transported through this facility, exposing it to potential cross-contamination from other operations. To provide a clean 'inflow' facility for aquaculture purposes would require a separate facility for the aquaculture industry which is far enough removed from the existing structure to minimize potential for cross-contamination between sites.

Locations in the existing harbour were examined to see where such a wharf could be accommodated, but limited space exists for new facilities which would isolate them from the existing structure. Any wharf in the existing harbour would remain subject to contamination from sea-borne circulation of bloodwater and other contaminants through natural water currents.

Local operators suggested a preferred location for a new inflow wharf would be outside the existing harbour in an area called 'Back Cove'. This site is located South of the community as shown below.

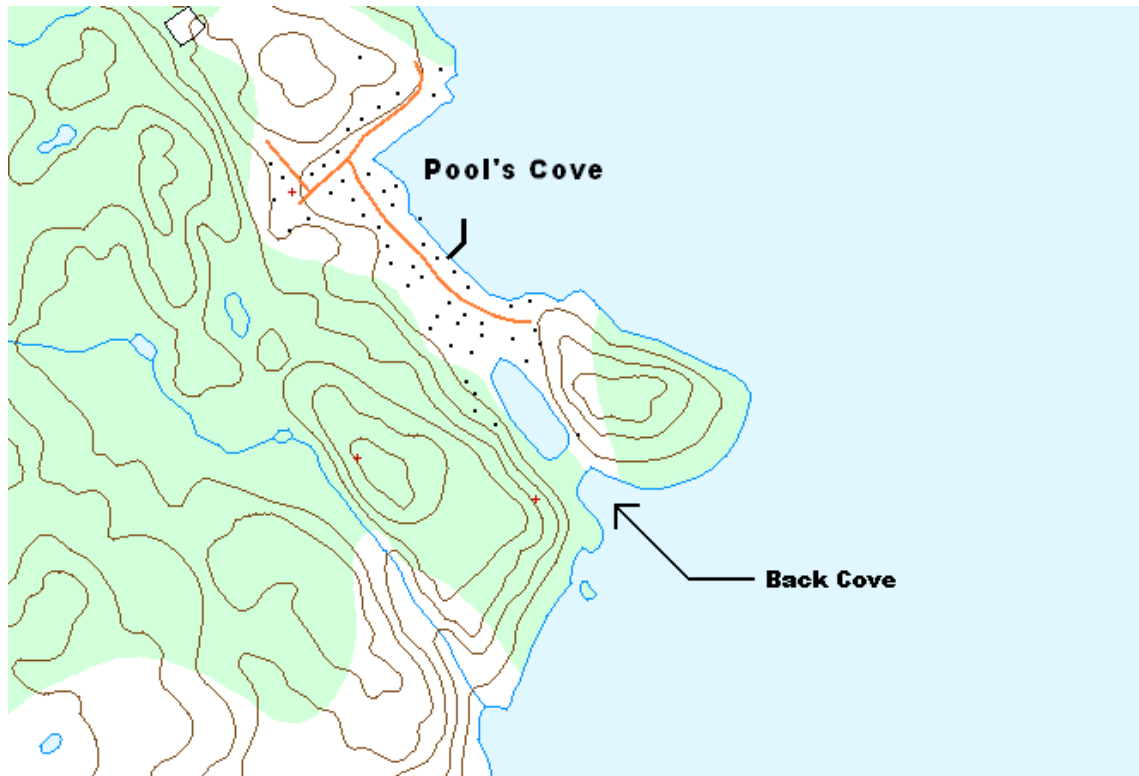


Figure 4.1.4.1 – Proposed Clean Inflow Wharf Location

Back Cove is a deepwater site accessible via existing roads, and is physically and geographically separated from the existing public wharf. Its isolated location would allow handling and storage activities from aquaculture operations to be readily separated from non-aquaculture activities ongoing in the community.



Photo 4.1.4.1 – Photo looking out Back Cove from access road



Photo 4.1.4.2 – Photo looking from North side of Back Cove toward potential inflow wharf location



Photo 4.1.4.3 – Photo looking at North side of Back Cove



Photo 4.1.4.4 – Photo of potential storage building and laydown area in Back Cove

The main reason why Back Cove has not been developed in the past is because of its exposed location to the Atlantic. As such, any development of this site will need to include provision of a breakwater structure to provide a protected area from which to work.

4.1.4.2 Protected laydown and storage areas

In conjunction with a clean inflow wharf, a second issue raised at stakeholder meetings was a need for clean facilities for storing and handling feed destined for the farm sites. At present feed is delivered to the existing wharf in wrapped ‘bales’ which are subsequently stored out doors on the limited uplands area available. This creates logistical, operational and expense issues due to the fact that the limited space only allows small quantities of feed to be stored there at a time. This results in a need for more frequent feed deliveries, and prevents operators from taking advantage of potential cost reduction measures that could be available from buying feed in bulk.

Feed stored in the open laydown area near the wharf is typically wrapped with a covering at the manufacturing plant to protect the feed against the elements. Following delivery to Pool’s Cove, it is further covered with tarps by the Owner to provide added protection against the elements. Nevertheless, coverings on the feed can become damaged or torn by winter weather conditions, exposing it to the elements. Once exposed, the feed must be quickly used or it can spoil due to fungal growth, mildew or rot.

In addition, once the feed is exposed scavengers can potentially access it, creating negative marketing challenges for the industry.

4.1.5 Infrastructure Assessment

4.1.5.1 Existing Infrastructure Condition

The existing wharf is in good condition and not in need of any repairs or upgrading at present.

4.1.5.2 Existing Infrastructure Capacity

The existing wharf is a multi-use facility is classified as an 'outflow' or 'dirty' wharf for aquaculture purposes. This structure provides a protected berthing capacity of 68 m, versus 132 m of combined vessel lengths for the eight (8) long-liners and two (2) barges which frequent the area. Despite this apparent imbalance in capacity, berthing requirements do not currently pose a large problem at the site, as the vessels can tie up side by side during the winter months to increase berthing capacity. In the summer months it is generally found that all of the vessels aren't there at the same time. However, the above figures do suggest that minimal excess capacity exists at present to accommodate significant expansion of the fishing or aquaculture efforts. Construction of a new inflow wharf elsewhere in the community would significantly improve this by re-locating aquaculture vessels to a different facility.

Storage and laydown capacity at the existing wharf is substantially undersized at present, particularly for aquaculture users. If a new inflow wharf is built elsewhere, this deficiency would need to be addressed as part of that development.

4.1.5.3 New Infrastructure Needs

Infrastructure required at Pool's Cove to accommodate present and future development of the aquaculture industry consists of a new inflow wharf, an improved means of accommodating feed inflows to the site such as a feed storage facility, and a new uplands laydown area to accommodate storage of gear and equipment.

This inflow wharf needs to be designed to provide protection from wind for loading and off-loading, as well as a secure area for docking and berthing aquaculture vessels so they don't have to occupy the public wharf. This inflow wharf would be used for loading feed and supplies going to the farm site, as well as personnel travelling to and from the sites.

The storage area needs to provide both an outside laydown area for storing equipment, vehicles and gear, and an enclosed building for accommodating storage of feed. This building would allow operators to store feed for extended periods of time protected from the elements and animals. Provision of a wharf facility which can accommodate ocean going ships would open the possibility as well of having feed delivered to the site in future by ship rather than transport truck. This would further minimize bio-security hazards by eliminating the issue of transport trucks travelling through community roads which themselves are potential carriers of contaminants.

This would require construction of a breakwater wharf, a fenced off laydown area with controlled access and a storage building, as shown below;

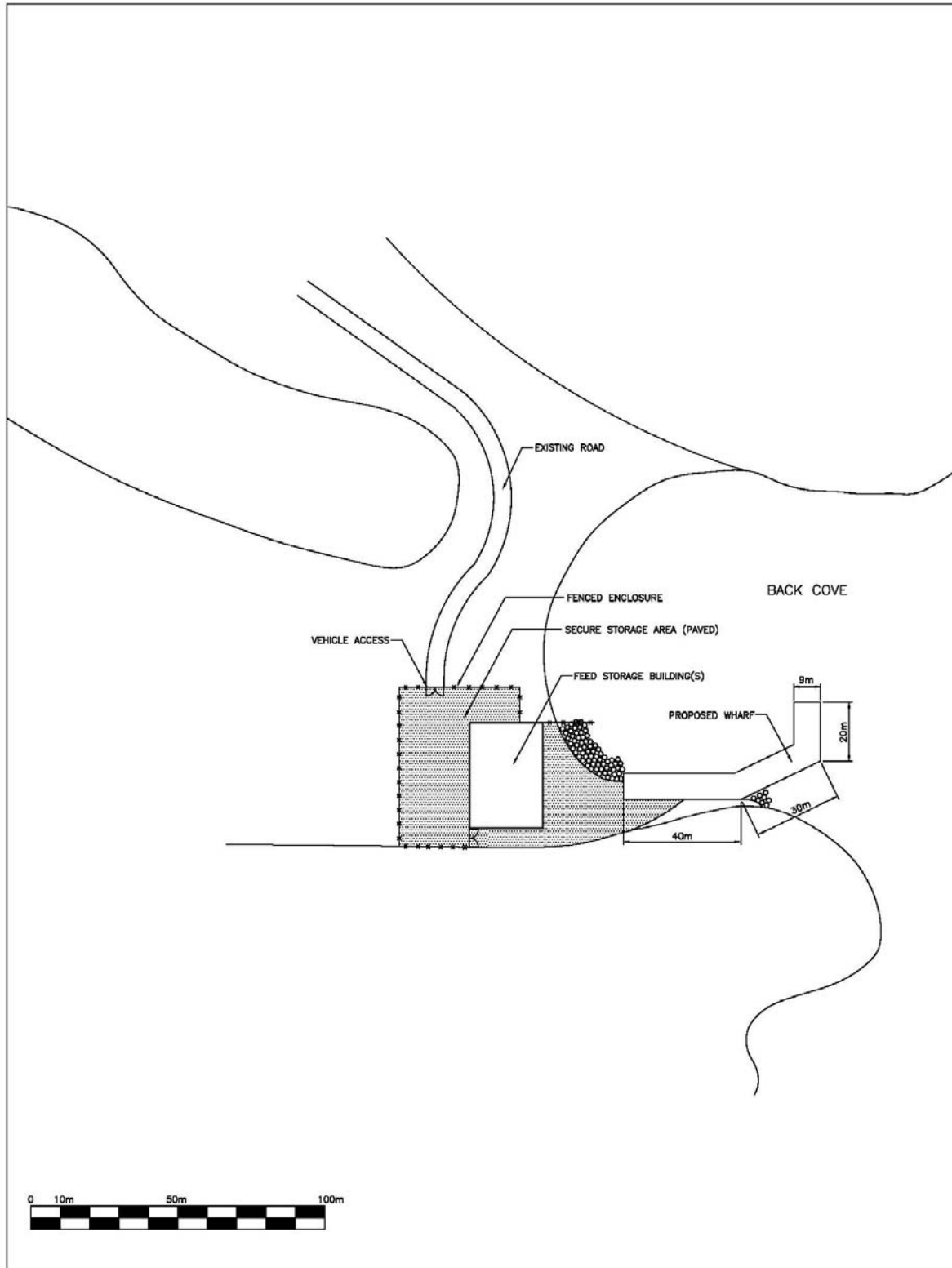


Fig 4.1.5.1 – Concept Plan for Proposed New Inflow Wharf and Storage Area Development

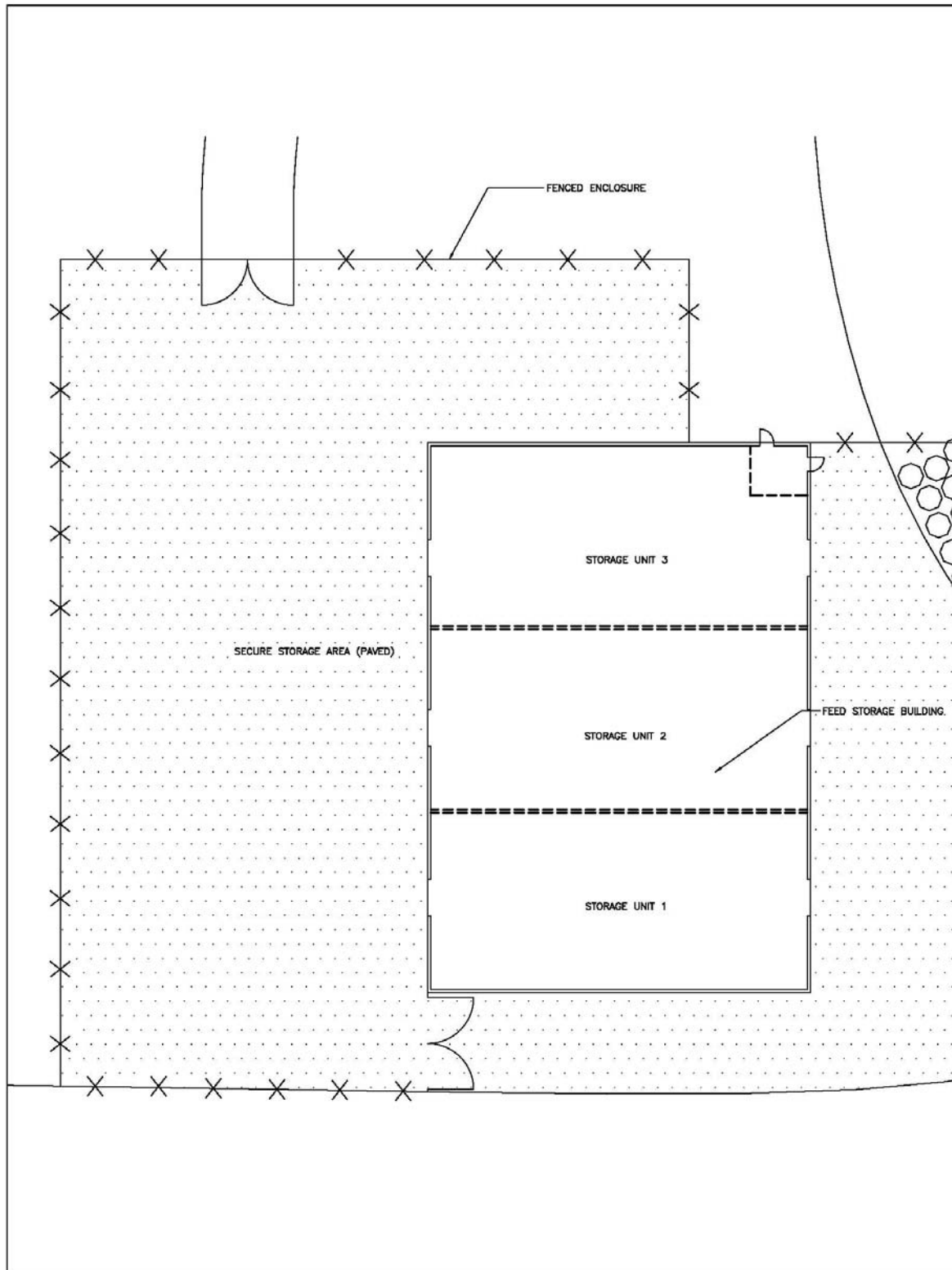


Fig. 4.1.5.2 – Potential Concept Plan for Proposed Feed Storage Area

4.1.6 Cost Estimates

In reviewing options for situating new aquaculture facilities in Pool's Cove, Back Cove is the logical choice for such a development, and is recommended as the preferred location.

In terms of costs, any facility should be large enough to accommodate both present and reasonably foreseeable future expansion of operations in the area, particularly for elements which can't easily be expanded later. In this regard, size requirements for storage buildings will vary depending on whether the facilities are publically or privately funded. Publically funded facilities would typically provide space for multiple users whereas privately funded facilities would not. For purposes of this study a storage building is proposed which can accommodate approximately 1200 tonnes of feed and multiple users. The actual size needed will depend on the number of companies to be operating from the port in the future which require such services.

Development costs presented herein are based on the following information and assumptions;

- Wharf costs are based on water depths obtained from nautical charts;
- Elevations and areal data were obtained from topographical maps;
- Land required for the development is reported to be owned by the current aquaculture operator or the Province, and is assumed to be available at no cost to the project;
- The wharf will be a combination breakwater and docking facility, capable of accommodating future berthing of bulk feed ships;
- Berthing space will be provided on the leeward side of the wharf to accommodate berthing of multiple vessels;
- The wharf will be 9m in width.
- A fenced storage area will be provided behind the wharf to accommodate storage of bulk equipment and materials. This area will be paved to permit operation of forklifts;
- The feed storage bldg. would be compartmentalized to permit different companies to operate from the same facility if desired. Forklifts will be able to drive through the storage building to the laydown area behind to facilitate delivery of feed and equipment to and from the wharf;
- Access to the wharf would be restricted to aquaculture users, who can be required to pass through the bldg. first if desired, for bio-security reasons.

The cost of the development is estimated as follows:

Table 4.1.6.1
Cost Estimate
New Inflow Wharf, Laydown Area & Feed Storage Building

Item	Description	Units	Quantity	Unit Price	Total Price
1	Excavation & Backfill	m ³	750	20	15,000
2	Rock Fill	m ³	4,600	25	115,000
3	Cribwork	m ³	4,860	250	1,215,000
4	Dimension Timber	m ³	40	2,000	80,000
5	Concrete Deck	m ²	774	250	193,500
6	Mooring Cleats	ea	20	1,500	30,000
7	Feed Storage Building	m ²	900	860	774,000
8	Class "A"	t	700	30	21,000
9	Asphalt	t	340	150	51,000
10	Fencing	m	150	150	22,500
11	Area Lighting/Electrical	L.S.	-	-	60,000
12	Water Supply	L.S.	-	-	40,000
Total Estimated Construction Cost					\$2,617,000
Engineering & Inspection (10%)					261,700
Total Project Cost (excluding HST)					2,878,700
HST (13%)					<u>374,200</u>
Total Project Cost (including HST)					<u><u>\$3,252,900</u></u>

4.2 Belleoram

4.2.1 General:

Belleoram is a fishing community located on the Connaigre Peninsula on the southwest side of Fortune Bay. It currently has a population of 500 residents whose employment is mainly derived from the traditional fishery. The harbour is well sheltered and protected by a natural breakwater which extends out from the shore.

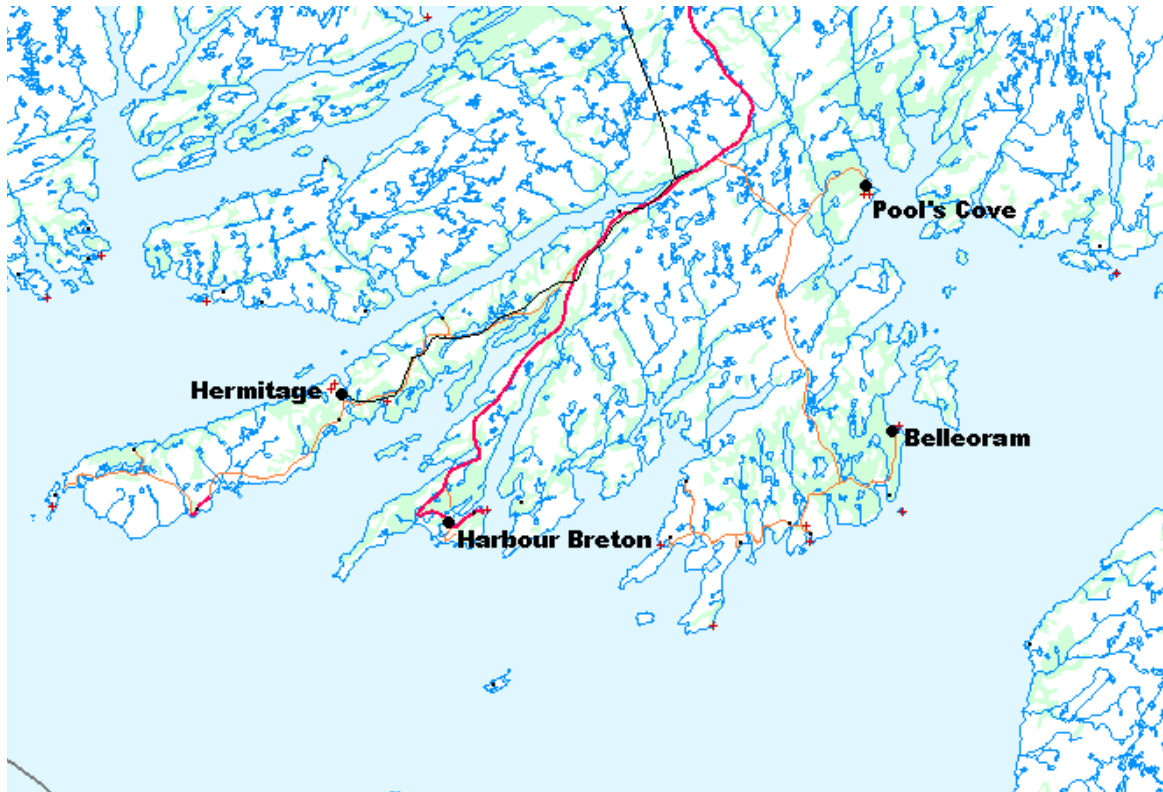


Figure 4.2.1.1 – Location Plan

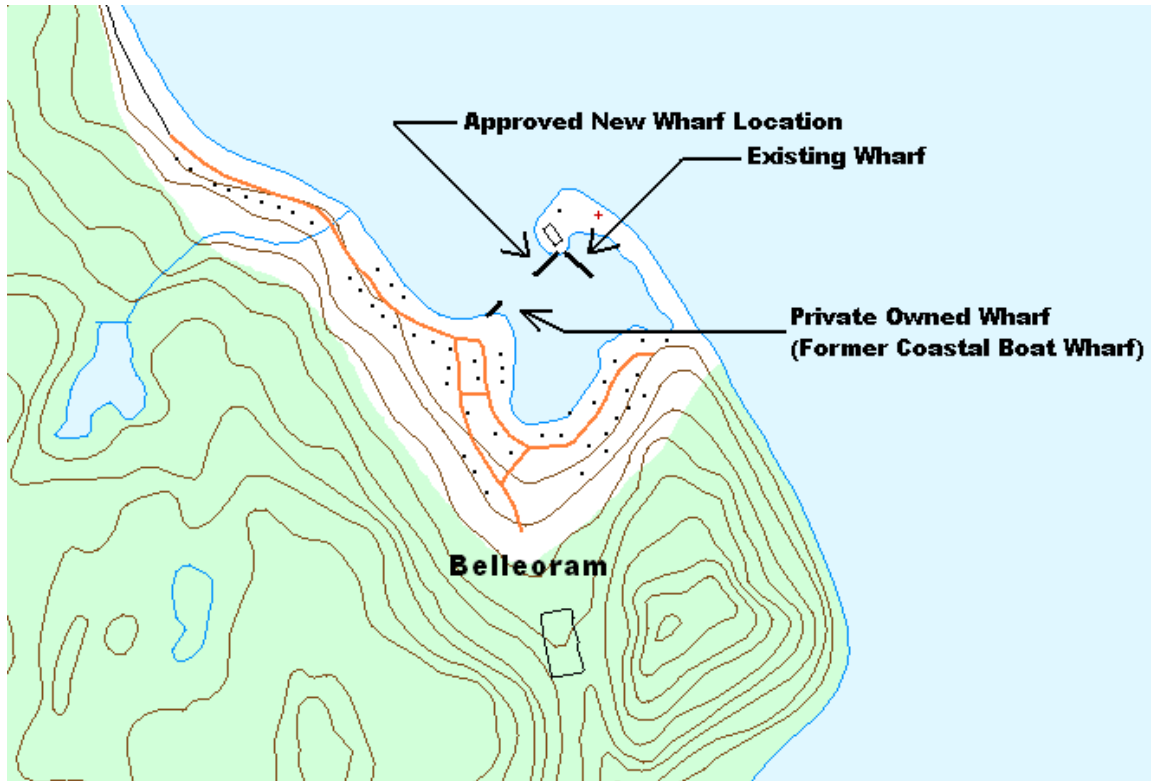
4.2.2 Existing Marine Infrastructure

4.2.2.1 General

At present, marine facilities available for public use in Belleoram consist of a wharf facility, a slipway and several floating wharves located on the north side of the harbour. A former Coastal boat wharf on the south side of the harbour was divested by Transport Canada in recent years and is now owned by private interests. As such, the only facility available to the aquaculture industry for loading, off-loading and berthing activities is the public wharf on the north side of the harbour. This structure is also used by commercial fishers and recreational boaters.

Approval has recently been granted by DFO to construct another 50 m long wharf adjacent to the existing one to relieve congestion at the facility. It is expected that this new facility will be

constructed in 2009. A number of privately owned wharves, slipways and stages are also located in the harbour which are used by the traditional fishers.



4.2.2.2 Public Wharf

The public wharf at Belleoram is constructed of timber piles, and was built to accommodate the traditional fishery many years ago. The structure measures 54 m long x 7 m wide and has a floating dock secured at its head. Several other floating dock structures are positioned between the existing wharf and the shoreline to accommodate additional berthing of boats.



Photo 4.2.2.1 – Photo of public wharf taken from the former Coastal Boat Wharf with fish plant visible in left background

The current wharf is used for loading, off-loading and berthing commercial fishing, aquaculture, and recreational vessels. Water depths on the seaward side of the structure range from 1.3 m near shore to 5.4 m at the head. Water depths on the leeward side range from 0 m near shore to 3.4 m at the head. Approximately 10 m of the structure is unusable for berthing due to low water depths.

A natural breakwater and gravel access road connects the wharf to the community's main road. A fish plant and several storage sheds are located nearby, on the approach to the wharf. Electrical services and lighting are available at the approach and on the wharf structure.



Photo 4.2.2.2 – Photo of public wharf

4.2.2.3 Uplands/Parking Area

The approach to the public wharf is relatively large, and used for parking vehicles and storing supplies and equipment for both traditional fishers and aquaculture users. The approach and access road are both located on a natural sandy barasway, which shelters the harbour from the Atlantic. The seaward side of this barasway is protected from erosion by a cribwork retaining structure and spraywall as seen in the photo below.



Photo 4.2.2.3 – Existing wharf access road showing harbour to the left and retaining wall/spraywall to the right

4.2.3 Current Vessel Operations

4.2.3.1 Commercial Fishing

Commercial fishers use the wharf daily on a seasonal basis for loading, off-loading and berthing of vessels. There are a number of long-liners which tie-up to the existing wharf year round measuring approximately 12 m in length.

4.2.3.2 Aquaculture

At present the only aquaculture company operating out of Belleoram is Cooke Aquaculture (CA), which has fourteen (14) salmon growing sites located in the outlying area. These sites are shown on Fig. 4.2.3.1.

To run these sites, CA operates five (5) long-liners measuring between 11-12 m each, a 27 m long vessel, a 9 m long vessel, five (5) skiffs measuring 6 -7 m long each, two (2) aluminum skiffs measuring 8 m long and several maintenance vessels. The company also has a 40 m long feed delivery vessel which is used to transport feed to feed distribution barges located on site. At present these vessels have to tie-up three abreast, or moor up in the harbour, due to lack of space

at the existing wharf facility. The new wharf to be built this year will relieve much of this overcrowding by providing a second location where boats can dock.

Cooke Aquaculture uses the existing wharf for all of its loading, off-loading and berthing activities. Vessels berth at the wharf for feed deliveries approximately two to three times a day, and smolt are normally delivered during the summer and fall months. CA's feed is typically delivered to Belleoram by a feed vessel which arrives every ten to fourteen days. Harvested fish are brought in from the farm sites for processing, and dirty nets are off-loaded at the wharf as well.

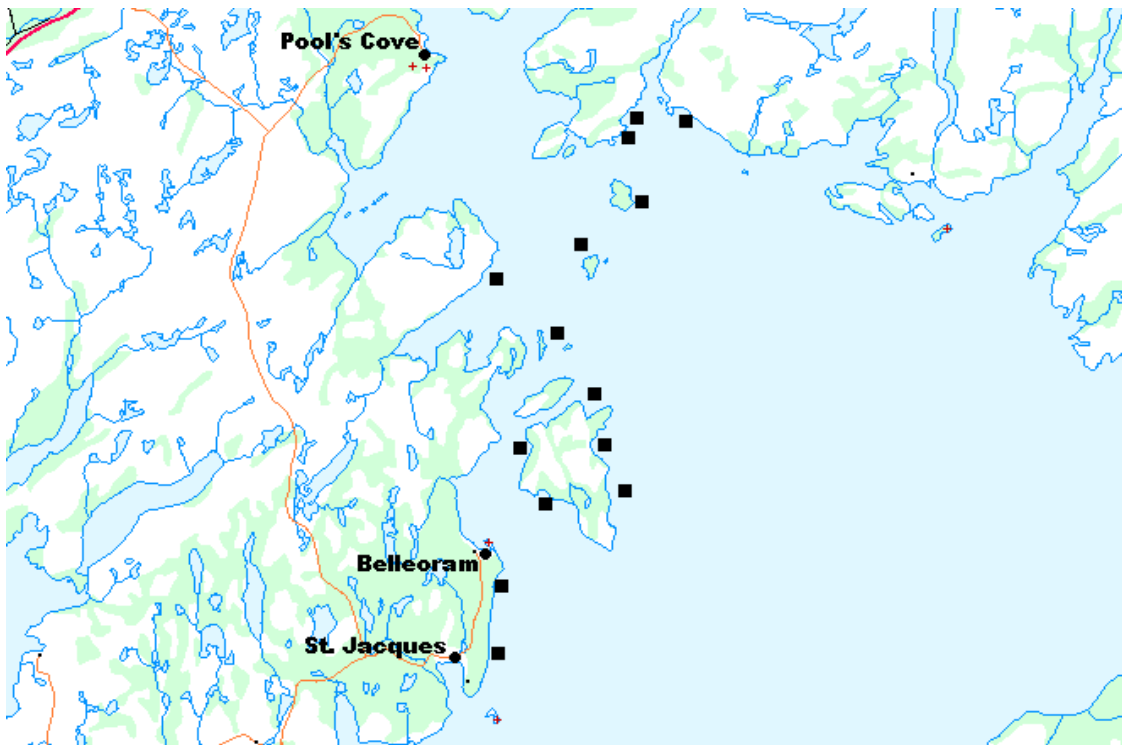


Figure 4.4.3.1 – Location of Cooke Aquaculture Operations in Belleoram

4.2.4 Aquaculture Issues Raised at Meetings

The major issue raised during industry consultation meetings was the lack of a clean 'inflow' facility and available storage facilities for feed. Limited berthing space at the existing wharf site was also raised, but the construction of another 50 m wharf is expected to address this problem. Aquaculture operators also expressed a need to upgrade the existing access road and adjacent retaining structure to protect the road better. Storms in the past are reported to have washed out the road.

4.2.4.1 Clean Inflow Facilities

From a bio-security perspective, the existing public wharf in Belleoram is classified as a dirty or 'outflow' facility. This is due to the wide range of commercial fishing and aquacultural activities

it currently accommodates. Feed, smolt and nets are all delivered to the aquaculture sites through this facility which exposes them to the risk of cross-contamination from other operations such as fish harvesting and processing. Due to the proximity of the proposed new wharf to the existing structure, and the plan to use this new facility for the same activities as are carried out at the present wharf, the new wharf will also be classified as an 'outflow' structure from an aquaculture perspective. Consequently, a separate inflow facility for aquaculture use will be needed for clean use purposes. This structure will need to be located far enough away from the existing facilities to minimize potential cross-contamination between the sites.

Several locations in the harbour were investigated for this purpose. Local operators suggested one potential location across the harbour from the existing wharf, adjacent to the Town's municipal building. Although sufficient space and water depths exist at this site to build a structure, the harbour is not very large and any structure built there would still be relatively close to the outflow facilities, which could still result in the clean wharf being subject to potential contamination. An alternate location was examined in the nearby community of St. Jacques, located just south of Belleoram. This location is on the west side of the harbour as shown below. Constructing a facility here would physically and geographically separate the two wharf sites such that 'inflow' and 'outflow' activities are isolated from each other. A partial access road/pathway leads to this site, and electrical and water services can be accessed nearby. The principal disadvantage of the site is that the harbour is fairly exposed to the Atlantic Ocean and would thus require the development of a breakwater structure to provide protection for the aquaculture facilities.

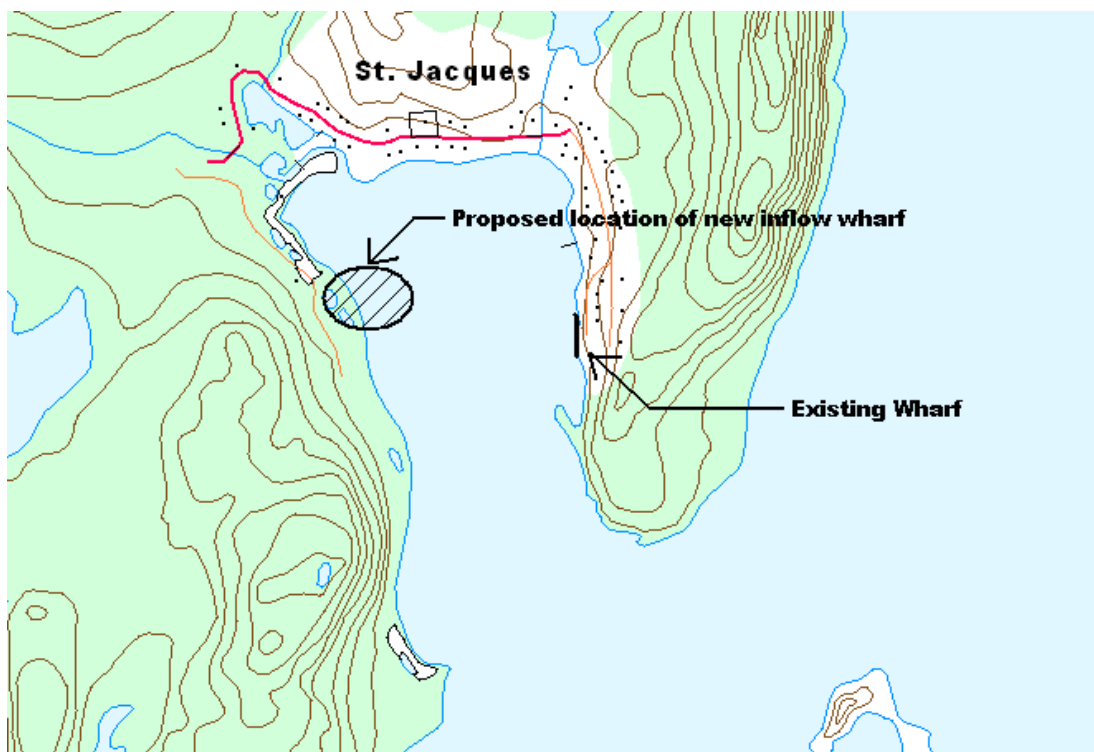


Figure 4.2.4.1 – Proposed New Inflow Site Location



Photo 4.2.4.1 – Photo looking at possible new inflow site at St. Jacques



Photo 4.2.4.1 – Photo looking at possible new inflow site location at St. Jacques

4.2.4.2 Outflow Facilities

With the new 50 m finger pier being built at Belleoram in 2009, the ‘outflow’ wharf capabilities here should be adequate to meet present and near future needs of the aquaculture industry. Apart from some upgrading to the existing access roadway, no other immediate repairs or improvements are needed at this time.

4.2.4.3 Protected Lay Down and Storage Areas

As part of a clean wharf facility, an area needs to be developed for on-shore storage of gear and equipment as well as a protected facility for storing feed. This can be accommodated at the approach to the new clean inflow wharf noted above.

4.2.5 Infrastructure Assessment

4.2.5.1 Existing Infrastructure Condition

The existing wharf at Belleoram appears to be in good condition and not in need of any immediate repairs or upgrades to accommodate present usage by aquaculture operators. However, CA did indicate that some upgrading should be done to the existing access road and retaining wall structure at the spraywall to improve protection to the access area.

4.2.5.2 Existing Infrastructure Capacity

From an aquaculture perspective the existing wharf facilities at Belleoram are classified as 'outflow' structures because of the multiple activities and users it accommodates. With commercial fishing long-liners and CA's fifteen vessel fleet utilizing the facility, berthing requirements cannot currently be met by the existing wharf. Even with vessels moored three abreast, the 110 m of available berthing space is still insufficient. Construction of a proposed new wharf in 2009 by DFO will effectively double the available berthing space when it is completed, however, and should alleviate most of the congestion which currently exists. Construction of a new 'inflow' wharf elsewhere in the area for aquaculture use should further reduce berthing needs at these facilities by re-locating aquaculture vessels to the inflow site.

Feed storage remains an issue at the existing site, however, and needs to be addressed as part of the development of the new 'inflow' site.

4.2.5.3 New Infrastructure Needs

At present, infrastructure required at Belleoram to meet present and future needs of the aquaculture industry consists of a new 'inflow' wharf, complete with lay down area, and a potential feed storage area.

This 'inflow' wharf needs to be designed as a breakwater structure to provide weather protection for loading, off-loading and berthing vessels. This wharf will primarily be used for the delivery of feed, smolt, nets and personnel to the outlying farm sites.

The feed storage facility would need to be constructed on the protected lay down area adjacent to the new wharf. This facility would allow operators to obtain feed deliveries in larger shipments, ideally by seaborne vessels, thereby minimizing exposure of feed in future to potential cross-contamination vectors, as well as deterioration related to outdoor storage.

The recommended location and layout for this wharf is as follows:

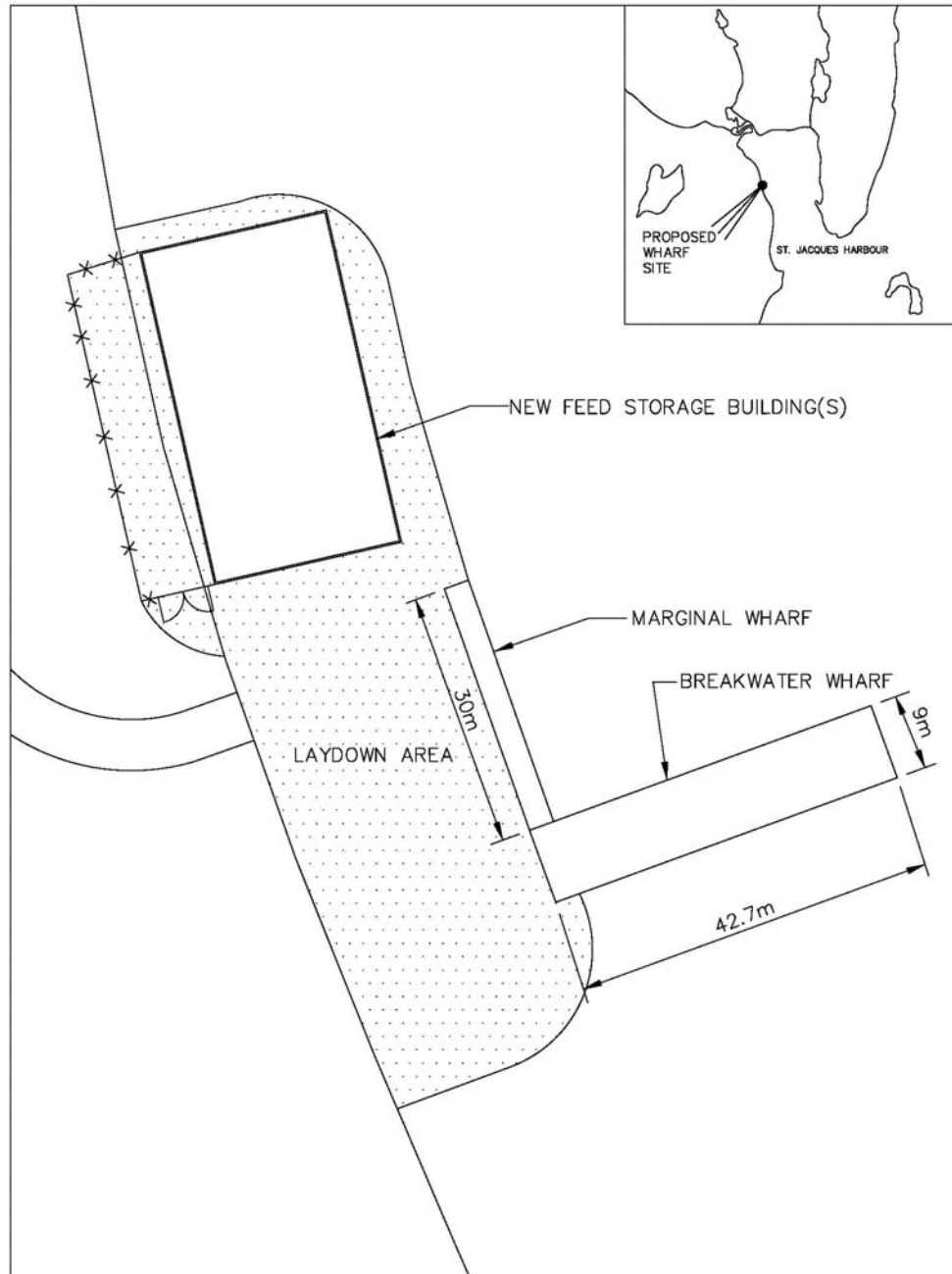


Fig 4.2.5.1 – Plan of Proposed New Inflow Wharf and Storage Bldg. Development

4.2.6 Cost Estimates

Several options were examined for possible location of this development. The location at St. Jaques was deemed to be the best alternative from a bio-security perspective standpoint.

The cost of the development is estimated as follows:

**Table 4.2.6.1
 Cost Estimate
 New Inflow Wharf, laydown area and Feed storage building in St. Jacques, plus upgrading
 of access road at Belleoram**

Item	Description	Units	Quantity	Unit Price	Total Price
1	Road Construction	L.S.	-	-	20,000
2	Rock and gravel Fill	m ³	12,000	13	156,000
3	Armour Stone	m ³	1,200	60	72,000
4	Cribwork	m ³	4,400	250	1,100,000
5	Dimension Timber	m ³	32	2,000	64,000
6	Concrete Deck	m ²	460	250	115,000
7	Mooring Cleats	ea	12	2,000	24,000
8	Feed Storage Building	m ²	900	860	774,000
9	Class "A"	t	630	30	18,900
10	Asphalt	t	370	150	55,500
11	Fencing	m	100	150	15,000
12	Area Lighting/Electrical	L.S.	-	-	80,000
13	Water Supply	L.S.	-	-	40,000
14	Upgrade access road – Belleoram	L.S.	-	-	\$150,000
Total Estimated Construction Cost					\$2,684,400
Engineering & Inspection (10%)					268,400
Total Project Cost (excluding HST)					2,952,800
HST (13%)					383,900
Total Project Cost (including HST)					\$3,336,700

The infrastructure requirements noted above have varying degrees of urgency for the aquaculture industry, with the need for some being more immediate than others. For this reason, the above work is broken down into three separate projects with different priorities as follows:

- Priority #1** – New Inflow wharf and laydown area – \$2,188,200
- Priority #2** – New Feed Storage Bldg. – \$962,000
- Priority #3** – Upgrading of access road at Belleoram - \$186,500

4.3 Harbour Breton

4.3.1 General:

Harbour Breton is the largest community in the region having a population over 2000. It is located on the Connaigre Peninsula which separates Bay d'Espoir on the west from Fortune Bay on the east. It has a well protected harbour and is heavily involved in the commercial fishery.

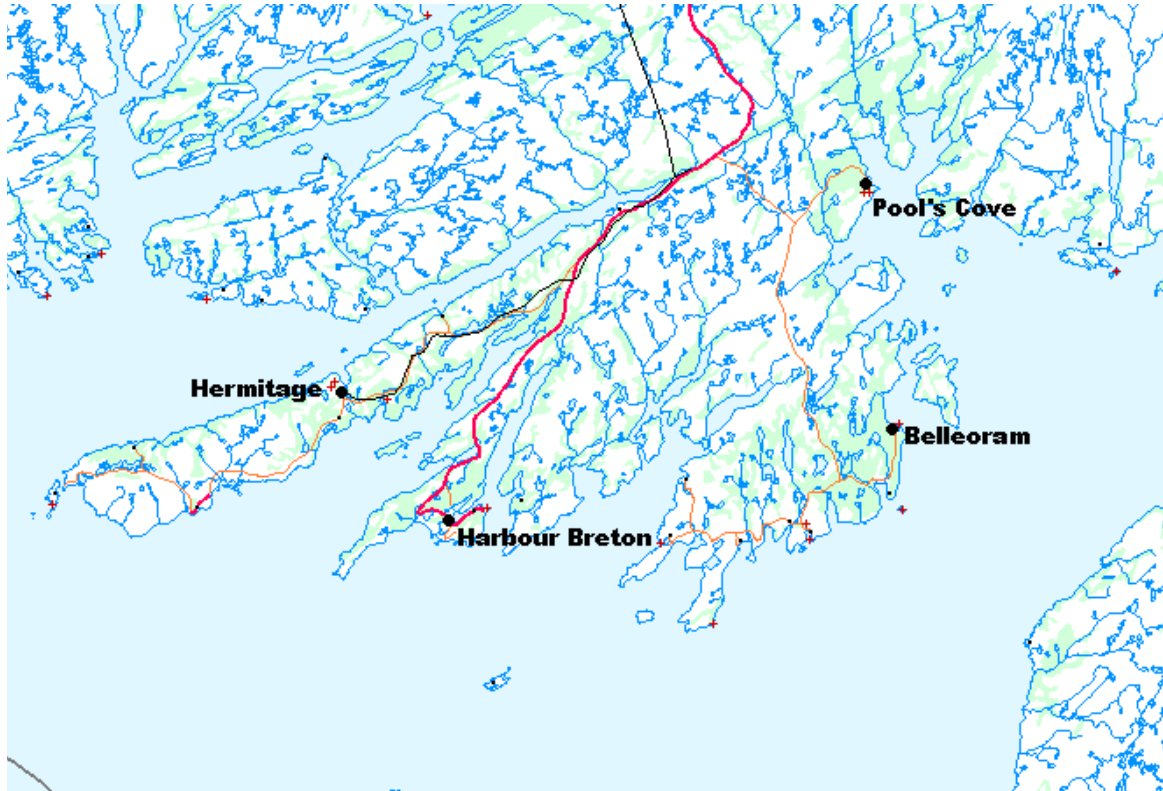


Figure 4.3.1.1 – Location Plan

4.3.2 Existing Marine Infrastructure

4.3.2.1 General

Two (2) public wharf facilities are currently located in Harbour Breton. One of these (wharf #1) is located at the mouth of the harbour adjoining the fish plant, and consists of a finger pier. This pier is attached to a marginal wharf which runs along the face of the fish processing plant. This facility is used by both commercial fishers and aquaculture operators. The second structure is located on the opposite side of the harbour, and consists of a finger pier, marginal wharf, travel lift structure and floating docks (referred to as wharf #2). This site is used mainly by commercial fishers and is not utilized by aquaculture operators. A number of privately owned wharves and stages are located inside the harbour as well.

4.3.2.2 Wharf #1

This facility is constructed of timber piles and measures approximately 94 m long x 7.6 m wide. A new 30.5 m extension was recently made to the structure to relieve congestion. The marginal wharf is a fish plant structure which is joined to the finger pier near a shed owned by the Harbour Authority, and measures approximately 53 m long.



Photo 4.3.2.1 – Photo looking at wharf #1, with fish plant visible in the left background

Water depths along the seaward face of wharf #1 ranges from 5.5 m near the marginal structure to 4.5 m at the head of the wharf. On its leeward side water depths range from 1.2 m near the Harbour Authority Shed to 3.1 m at the head.

There is no direct road to this wharf from the main road, as a parking lot lies between them. A connecting timber wharf structure provides access to wharf #1. A large fish processing plant and storage shed operated by the Barry Group is located next to the parking lot.



Photo 4.3.2.2 – Photo showing finger pier section of wharf #1

Wharf #1 is mainly used for off-loading and berthing commercial fishing vessels, while the fish plant marginal wharf is currently utilized by aquaculture vessels for off-loading and berthing. Area lighting is provided on most of the finger pier wharf.

4.3.2.3 Wharf #2

This facility is not utilized by aquaculture operators at this time. It consists of two (2) L-shaped finger piers measuring 44 m long x 8 m wide, and 48 m long x 7.6 m wide respectively. The marginal wharf measures approximately 133 m long. There is also a travel lift structure located at the end of the marginal wharf for servicing vessels, and several floating docks.



Photo 4.3.2.3 – Photo showing marginal section of wharf #2

4.3.2.4 Uplands/Parking Area

There is a relatively large parking area located on the approach to wharf #1 which surrounds the fish plant. However, access to the wharf is narrow between the fish plant and the parking area. Aquaculture operators utilize an area on the northeast end of the approach for storage of supplies and feed.



Photo 4.3.2.4 – Existing parking area – wharf #1



Photo 4.3.2.5 – Photo showing access to wharf #1 from parking area

4.3.3 Current Vessel Operations

4.3.3.1 Commercial Fishing

Commercial fishers currently use wharf #1 and the fish plant wharf daily on a seasonal basis, for off-loading their catch and berthing. They also use wharf #2 on the opposite side of the harbour for loading supplies and berthing.

4.3.3.2 Aquaculture

There are two (2) aquaculture companies currently operating out of Harbour Breton. These are Cooke Aquaculture (CA) and Northern Harvest Sea Farms (NHSF).

NHSF has two (2) stocked salmon sites and one (1) vacant site located north of the community. It has applied for another site north of the community and three (3) more north of Wreck Cove, as shown below. In 2009 NHSF will have approximately 500,000 salmon growing at its sites in the Harbour Breton region.

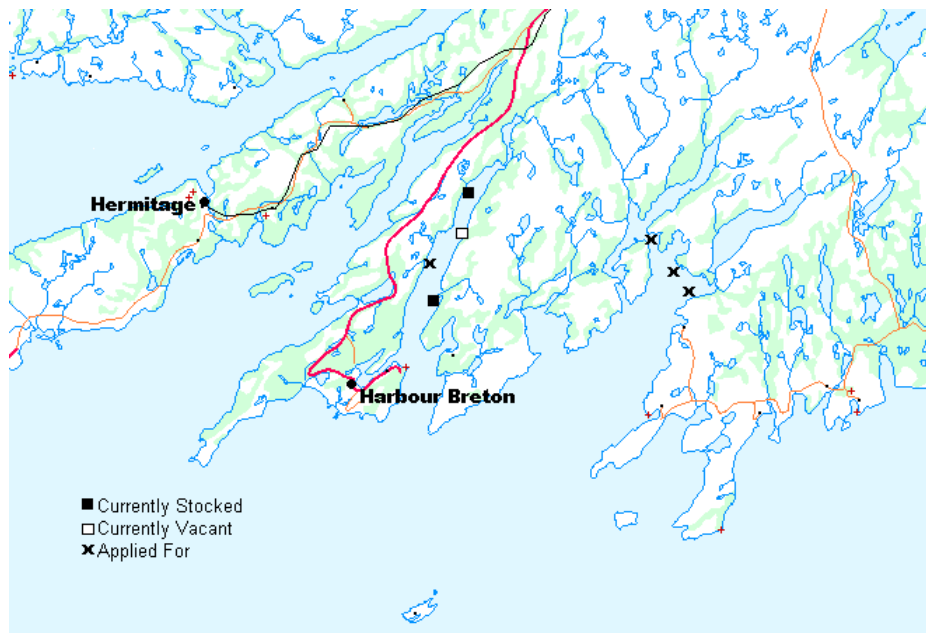


Figure 4.3.3.1 – Location of NHSF’s Aquaculture Operations at Harbour Breton

At present NHSF uses the fish plant wharf and wharf #1 for all of its ‘inflow’ and ‘outflow’ activities. ‘Clean’ activities typically carried out here include building cages and storing feed and nets adjacent to the existing fish plant. Feed is normally delivered by transport truck and transported to the sites by long-liners. ‘Dirty’ activities include off-loading salmon to be processed at the plant or trucked away. The company currently operates several vessels in Harbour Breton including one long-liner measuring 12 m long, a 18 m long steel barge for harvesting and maintenance work, and two (2) 7 m long open boats.

Cooke Aquaculture currently doesn't operate any farm sites out of the Harbour Breton facility but uses it for landing fish and loading feed.

CA currently uses four (4) vessels and/or barges ranging in length from 10 m to 21 m, which berth at the existing wharf. CA has its feed delivered by a 40 m long feed delivery vessel rather than by transport truck. This vessel also moors up to the wharf for off-loading purposes. This vessel normally transports feed directly to the farm sites and off-loads it there to one of CA's four (4) feed distribution barges. Each of these site barges can supply feed for up to four (4) cages at a time with the feeding system they use, and can simultaneously monitor the amount of feed being fed to each cage. A photo of one of the feed distribution barges is shown below.



Photo 4.3.2.3 – Photo showing feed distribution barge moored at wharf #1

CA makes use of the existing Harbour Breton wharf facilities daily for loading/off-loading feed and delivery of harvested fish. The company currently uses a boom truck, forklift, a three tonne truck and transport trucks to carry out their loading and off-loading activities at the facility.

4.3.4 Aquaculture Issues Raised at Meetings

The major issue raised during industry consultation meetings was the need for a clean 'inflow' wharf for aquaculture use. Feed storage capability was also an issue, as the only place available to use for this purpose is a small area adjacent to the fish processing plant.

4.3.4.1 Clean Inflow Facility

Both wharf #1 and wharf #2 are classified as dirty or 'outflow' sites from a bio-security perspective. This is mainly due to their proximity to the fish plant, as well as the fact that multiple users currently use the sites. Another issue raised during industry discussions was the need for a building to allow protected storage and handling of feed. In discussions with the

Town, a potential site for such a facility was identified on the north side of the harbour at Piercey's Point, as shown below.

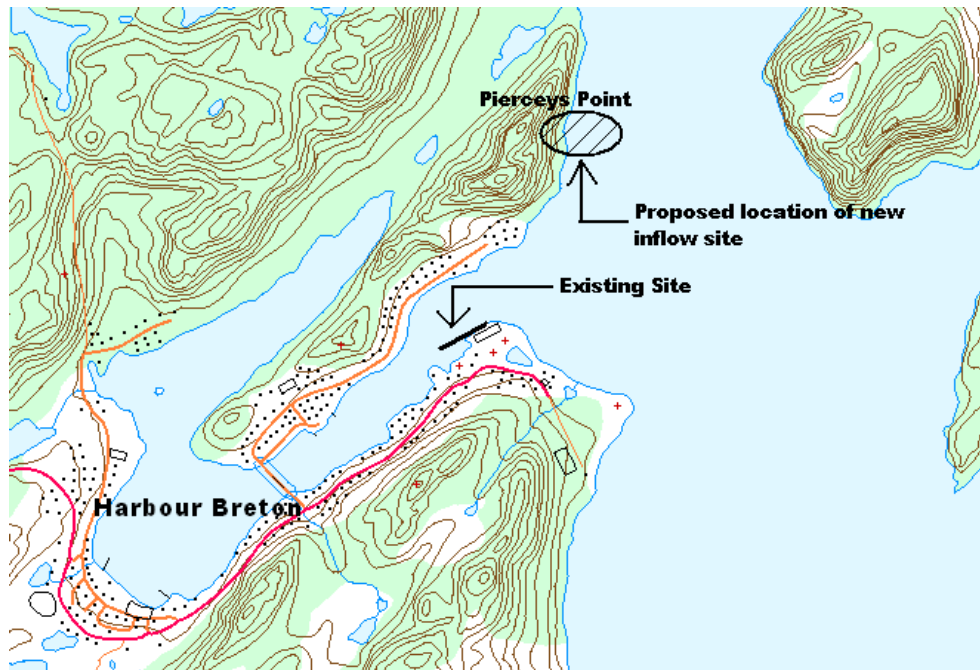


Figure 4.3.4.1 – Proposed New Inflow Site Location

This site is located a fair distance from the existing wharf facilities, which will help reduce the potential for cross contamination between sites. However, it cannot be accessed from the Town's current road system.

4.3.5 Infrastructure Assessment

4.3.5.1 Existing Infrastructure Condition

Existing structures currently utilized by aquaculture operators at Harbour Breton are generally in good condition.

4.3.5.2 Existing Infrastructure Capacity

Discussions with aquaculture operators in the area indicate that the existing wharf near the fish plant is suitable for 'outflow' activities, and does not require further expansion for this purpose. There is adequate berthing space at the site, and sufficient water depths to moor the operators' vessels. The addition of a new clean wharf site elsewhere in the area will improve this further, as feed vessels and barges would relocate to the new facility.

4.3.5.3 New Infrastructure Needs

New infrastructure required to accommodate the needs of the aquaculture industry in this area consists of a new 'inflow' wharf, with room for a feed storage building and a lay down area. This wharf should be capable of accommodating docking and off-loading of large feed delivery

vessels, and provide protection from the ocean for activities associated with the clean 'inflow' facility.

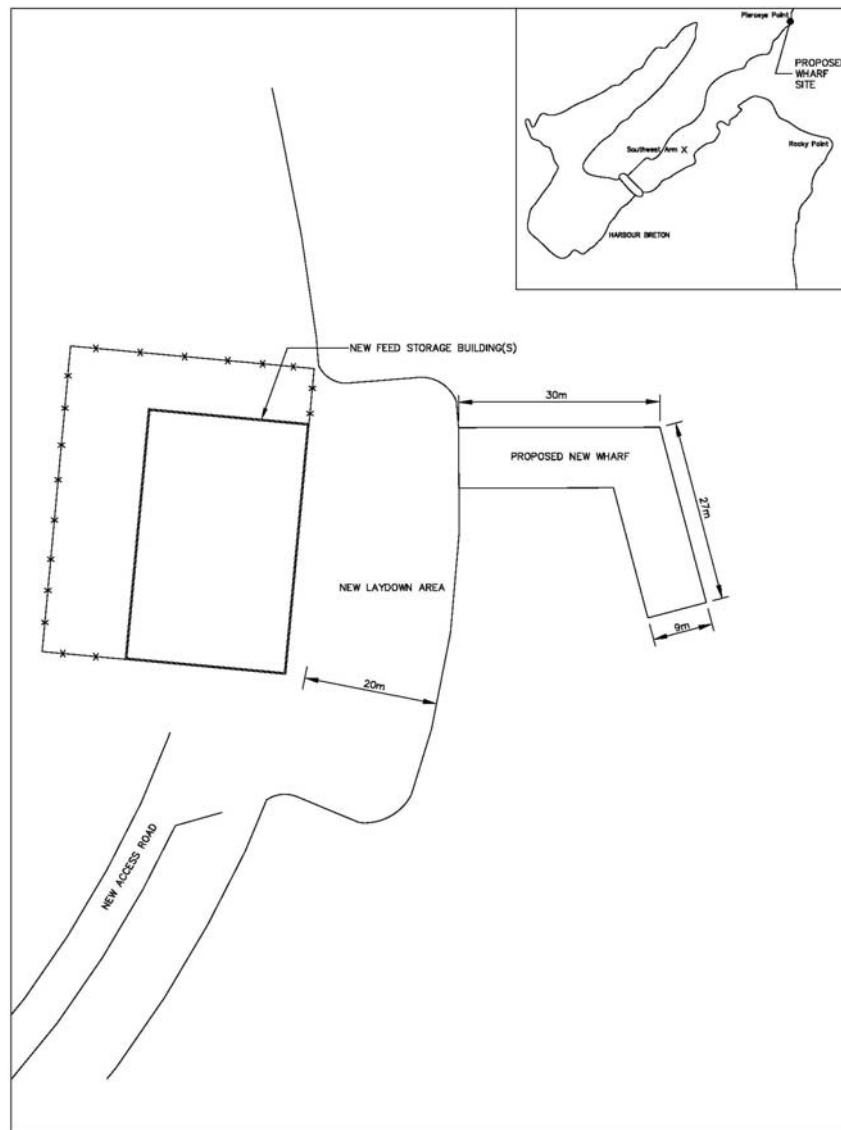


Fig 4.3.5.1 – Concept Plan of Proposed New Inflow Wharf and Storage Bldg.

4.3.6 Cost Estimates

The suggested location for the inflow wharf at Harbour Breton is in an area that is difficult to access, as seen from the photo below. Accurate cost estimates for development of the site will require additional information on bathymetry, access and soils conditions in the area. As such, the cost estimate provided herein for this structure should be viewed as a budgetary number only until further information is available.



Fig. 4.3.6.1 – Photo of terrain looking out towards the proposed clean wharf location

The estimated cost of the development is as follows:

**Table 4.3.6.1
 Cost Estimate
 Clean Inflow Wharf, Feed Storage Bldg., Access Road and Laydown Area**

Item	Description	Units	Quantity	Unit Price	Total Price
1	Access Road	L.S.	--	-	500,000*
2	Excavation & Backfill	m ³	6,500	20	130,000
3	Armour Stone	m ³	1,800	60	108,000
4	Cribwork	m ³	4,100	250	1,025,000
5	Dimension Timber	m ³	40	2,000	80,000
6	Concrete Deck	m ²	430	250	107,500
7	Mooring Cleats	ea	16	2,000	32,000
8	Feed Storage Building	m ²	900	860	774,000
9	Class "A"	t	1000	30	30,000
10	Asphalt	t	600	150	90,000
11	Fencing	m	120	150	18,000

11	Area Lighting/Electrical	L.S.	-	-	100,000
12	Water Supply	L.S.	-	-	80,000
Total Estimated Construction Cost					\$3,074,500
Engineering & Inspection (10%)					307,450
Total Project Cost (excluding HST)					3,381,950
HST (13%)					<u>439,650</u>
Total Project Cost (including HST)					<u><u>\$3, 821,600</u></u>

*Note: A detailed cost assessment for constructing an access road to this site has not been completed. As such, this figure should be viewed as budgetary only until further work is done.

4.4 Hermitage

4.4.1 General:

The community of Hermitage is located near the mouth of the Bay d'Espoir estuary. It was incorporated with Sandyville in 1963 to form the community of Hermitage-Sandyville, with a combined population of 499 (2006 census). The community straddles the peninsula separating Hermitage and Connaigre Bays, with Hermitage situated on the Hermitage Bay side. The commercial fishery has been the traditional source of employment for the community. With the decline in the commercial fishery in recent years, aquaculture has become a valuable source of new jobs as well as a source of new product for the local fish plant.

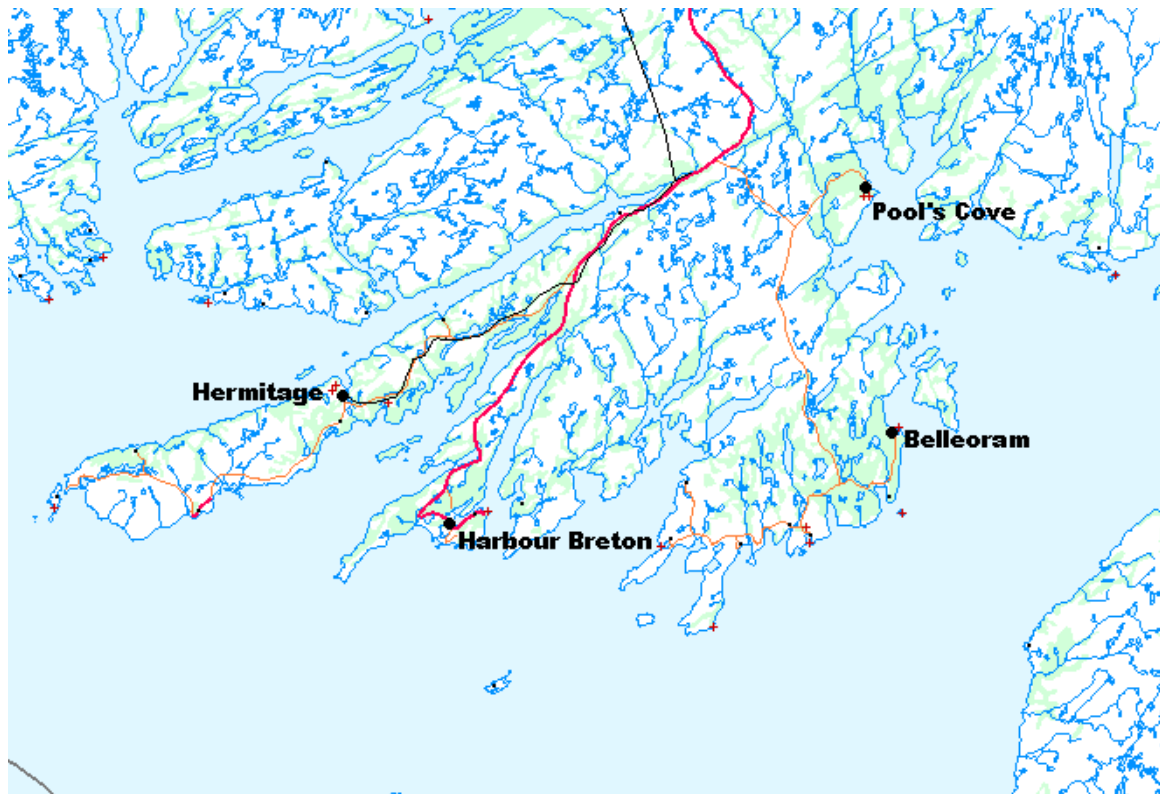


Figure 4.4.1.1 – Location Plan

4.4.2 Existing Marine Infrastructure

4.4.2.1 General

Existing marine facilities located in Hermitage consist of a ferry wharf, a fish plant wharf and a fisherman's wharf. The ferry wharf is used primarily for the South Coast ferry service and various aquaculture operations. An adjoining fish plant wharf provides docking and off-loading space for the fish plant, while most other structures, including the fisherman's wharf and floating docks, are located farther in the harbour and used primarily by commercial fishermen. A few small privately owned wharves, slipways and stages are also located in the inside harbour.

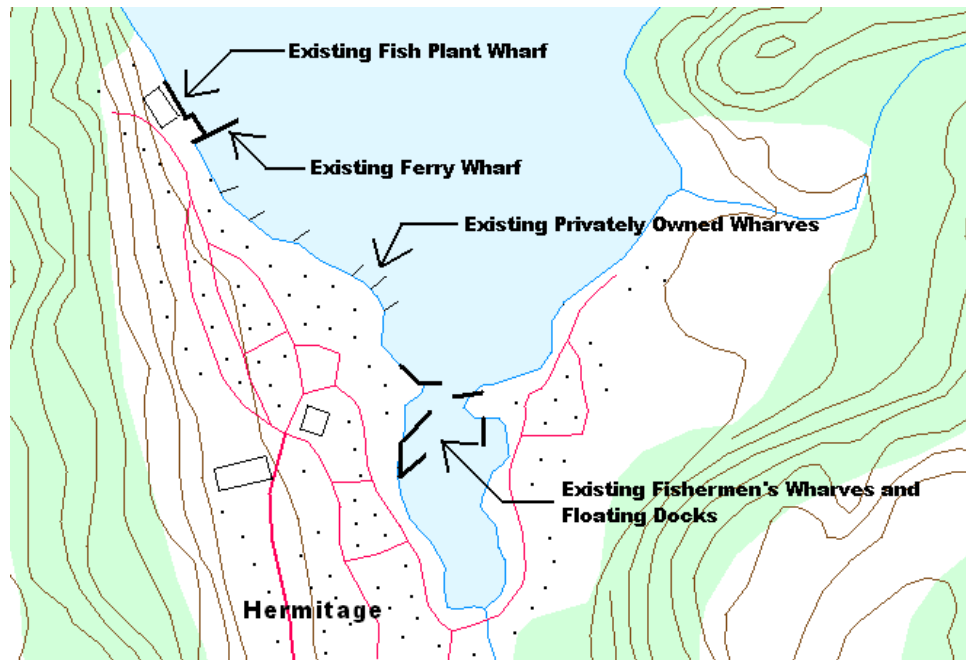


Figure 4.4.2.1 – Existing Structures

4.4.2.2 Ferry Wharf & Fish Plant Wharf

The outermost finger pier wharf at Hermitage was constructed 12 years ago to support the South Coast ferry service. It measures 43.5 m long x 8.9 m wide and is constructed of treated timber cribwork, with a concrete copewall enclosing the perimeter of the structure. The fish plant wharf is a marginal structure attached to the ferry wharf on its seaward side, extending northward for a distance of approximately 114 m. This wharf was built years ago as an off-loading facility for the fish plant. A concrete ramp located on the leeward side of the ferry wharf is installed to assist with loading and offloading operations for the ferry, but is not presently utilized.

The access road to these two structures is paved, and connects to the main road. Two (2) storage buildings and a fish plant are built on the approach. Space at the wharves cannot be used for permanent berthing due to activities of users such as the ferry and fish plant, plus exposure to the wind on the seaward side.



Photo 4.4.2.1 – Photo of ferry wharf finger pier, with fish plant marginal wharf in the right background



Photo 4.4.2.2 – Photo of ferry wharf looking out from the fish plant wharf

The ferry wharf is currently used for docking and berthing two (2) South Coast ferries, as well as loading, offloading and berthing aquaculture vessels when the ferries aren't present. The fish plant wharf is used for offloading fish. Two (2) jib crane hoists are situated on the fish plant wharf. Electrical services, water, and area lighting is currently provided there as well.

4.4.2.3 Uplands/Parking Area

A small uplands area is presently available at the entrance to the ferry wharf, but is required for parking vehicles, and does not allow for any type of aquaculture storage. Road access to the fish plant is located between a steep embankment on one side and the plant on the other side.



Photo 4.4.2.3 – Existing ferry wharf parking area

4.4.3 Current Vessel Operations

4.4.3.1 Commercial Fishing

Commercial fishers currently use the marginal (fish plant) wharf daily on a seasonal basis, for off-loading their catch to the fish plant. Traditional fishers have their own facilities located farther in the harbour for loading supplies and berthing.

4.4.3.2 South Coast and Gaultois Ferry

The M/V 'Terra Nova' ferry arrives in the community up to six (6) times daily, docking on the seaward side of the ferry wharf. This vessel utilizes practically all this side of the wharf when it ties up, resulting in this section of the wharf being off-limits to other users.

The M/V 'Marine Voyager' ferry normally arrives in port twice a week, on Tuesdays and Thursdays, and docks on the leeward side of the wharf. This vessel occupies most of that side of the structure during docking as well. Because it only uses the wharf twice a week, however, aquaculture operators use the facility when it is not there. When both ferries arrive in port at the same time, it often results in significant congestion. If aquaculture operators are tied up at the wharf when the second vessel arrives, one of the ferries sometimes has to wait to dock until the aquaculture boats can move.



Photo 4.4.3.2 – M/V ‘Terra Nova’ ferry tied up on seaward side of wharf

4.4.3.3 Aquaculture

There are currently four (4) aquaculture companies operating or planning to operate out of Hermitage in the near future. These include Cooke Aquaculture (CA), Northern Harvest Sea Farms (NHSF), Grays Aquaculture (GA) and Long Island Resources (LIR).

The reason for the high aquaculture activity lies in the fact that Hermitage is strategically located at the mouth of the Bay d’Espoir Estuary and is centrally located for many farm locations. Also, it doesn’t freeze up substantially in winter.

LIR currently operates four (4) salmon growing sites northwest of the community, and two (2) more northeast of the community (figure 4.4.3.1). They raise a total of approximately 600,000 salmon on these sites. They also operate three (3) cod farming sites, with one (1) being located northwest of the community and two (2) located to the northeast as shown below.

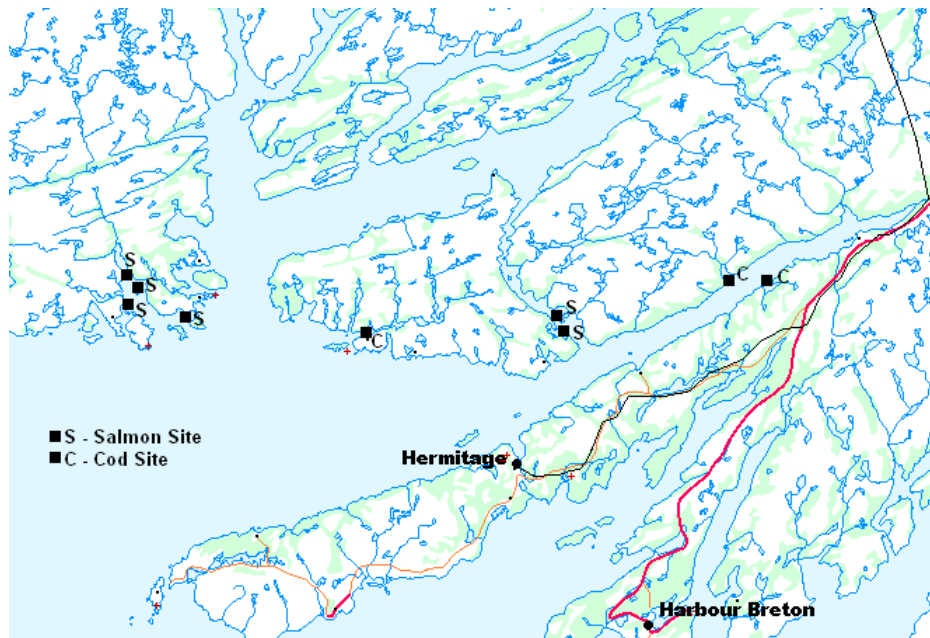


Figure 4.4.3.1 – Location of LIR’s Aquaculture Operations in Heritage

LIR uses two (2) barges and two (2) long-liners in their operations measuring 13 m long each. At present none of these vessels are moored in Hermitage. The company normally ties up their vessels either at St. Alban’s or Gaultois. Gaultois is very centralized to LIR’s farm sites, which makes it a convenient location from which to transport personnel back and forth. They currently use the ferry wharf in Hermitage daily as a location from which to load and transport their feed, smolt and clean nets to the outlying sites. The fish plant wharf is utilized mainly for off-loading harvested fish to be processed at the local plant. Feed arriving at Hermitage which is destined for LIR’s farm sites is sometimes transported on an interim basis to McCallum, where it is stored temporarily until needed. Smolt are brought in through Hermitage in the spring for distribution to the cages.

All of the feed and smolt used in LIR’s operations are delivered to the wharf in Hermitage by transport trucks. Feed is typically delivered in one (1) tonne packaged ‘bales’ which are off-loaded at the wharf by forklift and loaded aboard receiving vessels by a crane mounted onboard.

At present, CA operates four (4) farm sites out of Hermitage. It also plans to open two (2) more sites in the spring of 2009 (figure 4.4.3.2).

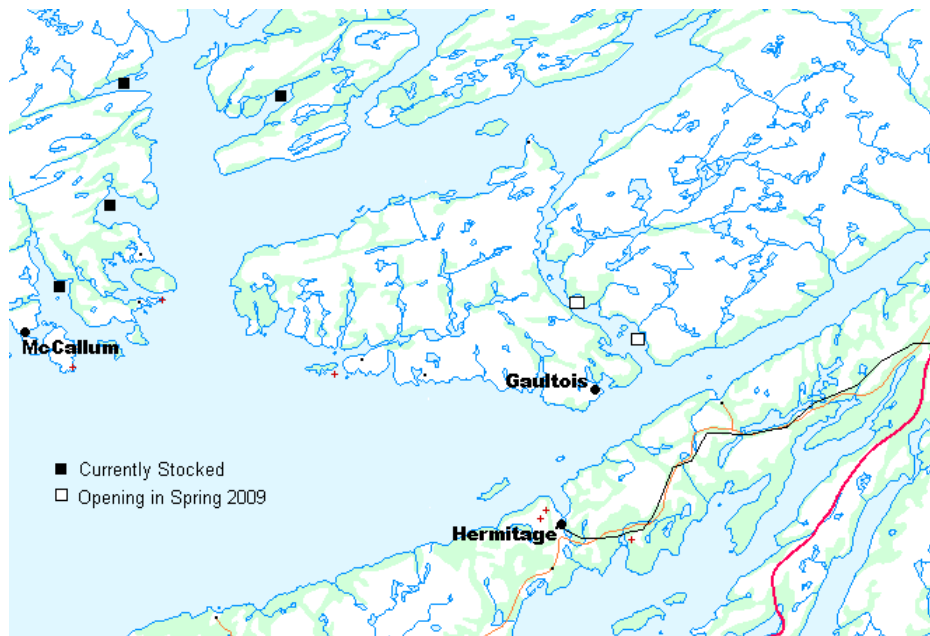


Figure 4.4.3.2 – Location of CA’s Aquaculture operations in Hermitage

The company has a number of vessels which load, off-loading, and berth at the Hermitage facility. This includes six (6) vessels/barges which range from 15 m to 30 m in length. CA also has a 40 m long feed delivery vessel, which also docks at the wharf to off-load feed. In conjunction with the Hermitage site, CA also makes use of the Gaultois wharf to service the above three farm sites. There are an additional three 10-11 m long long-liners, five 8 m long skiffs and a feed raft used by the company to operate these sites, all of which tie-up at Gaultois. The addition of two (2) more sites this spring will result in a need for up to five (5) more vessels to moor at Gaultois. The company has to tie-up their vessels two or three abreast due to the limited berthing space at both the Hermitage and Gaultois.

The wharf at Hermitage is mainly used for loading feed two to three times a day, delivery of smolt in May, June, and October, and loading/off-loading of maintenance gear. Harvested fish are also off-loaded at the fish plant wharf for processing.

CA also utilizes the community of McCallum to service one (1) farm site. This site is shown on Fig. 4.4.3.2 as well. In this location the company operates one 11 m long-liner and two 8 m long skiffs, which all berth at the McCallum wharf. This facility is used two to three times daily for loading feed, and loading/off-loading of maintenance gear. Vessels have to tie-up two or three abreast there due to lack of berthing space at this location as well.

NHSF are not currently operating out of Hermitage, but plan to do so in the upcoming season. The company has a total of eight (8) vacant salmon sites located north of the community and will be using the existing ferry wharf for delivering feed, smolt and clean nets to their farm sites as well (figure 4.4.3.3). They will also be off-loading harvested salmon at the fish plant wharf. These sites are shown below.

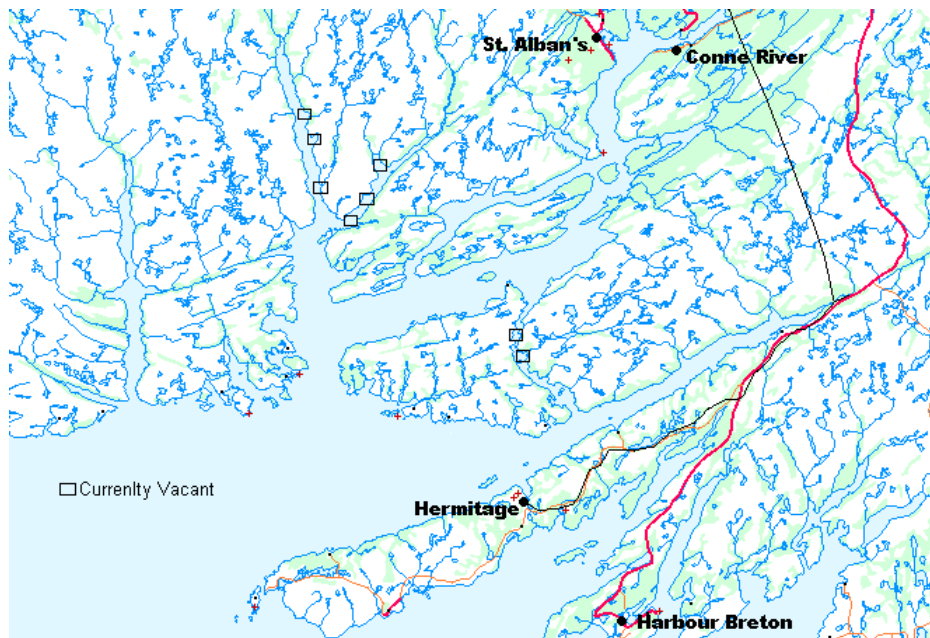


Figure 4.4.3.3 – Location of NHSF’s Aquaculture Operations in Hermitage

NHSF currently operate primarily out of Pool’s Cove, where all of their ‘inflow’ and ‘outflow’ activities occur. They also berth all of their vessels there. Feed and smolt for the company are currently delivered to Pool’s Cove via transport truck, and is moved by forklifts and vessel mounted cranes to receiving vessels for transport to the farm sites. NHSF are currently in the process of having a new 20 m long harvest boat built in Nova Scotia which will be capable of transporting up to two (2) truck loads of harvested salmon at a time. Once NHSF begins operations in Hermitage, the need for clean and dirty wharf facilities for use by the aquaculture industry will become even more pronounced. The existing ferry wharf now being used by operators is not suitable for their needs at present, and further expansion is expected to exasperate this.

4.4.4 Aquaculture Issues Raised at Meetings

The main issues identified during industry consultation meetings regarding Hermitage facilities was the lack of a clean inflow site for use by aquaculture operators, the lack of a suitable laydown/storage area for storing or working on equipment, and the lack of a dedicated outflow wharf for use by aquaculture operators. The need for a feed storage building that could be accessed by multiple users was also identified, in conjunction with development of a clean inflow site.

4.4.4.1 Clean Inflow Facilities

Both the existing ferry wharf and the fish plant wharf in Hermitage are classified as ‘dirty’ or ‘outflow’ wharves from a bio-security perspective, due to the wide range of activities presently occurring at the facilities. Feed, smolt and clean nets are all delivered to multiple aquaculture sites across these facilities, exposing them to potential cross-contamination from other operations,

harvesting activities, fueling of ferries and hauling dirty nets over the structures. A separate clean 'inflow' facility is required for the aquaculture industry separate from other operations, which is situated to minimize potential contamination between 'outflow' sites.

In terms of locating such a facility, the geography of the region does not lend itself well to providing an area which is simple to develop, or biologically separate from all other operations. A number of areas in the harbour were inspected as potential locations for a clean site. Local operators suggested a site on the opposite side of the harbour from existing wharves as shown below.

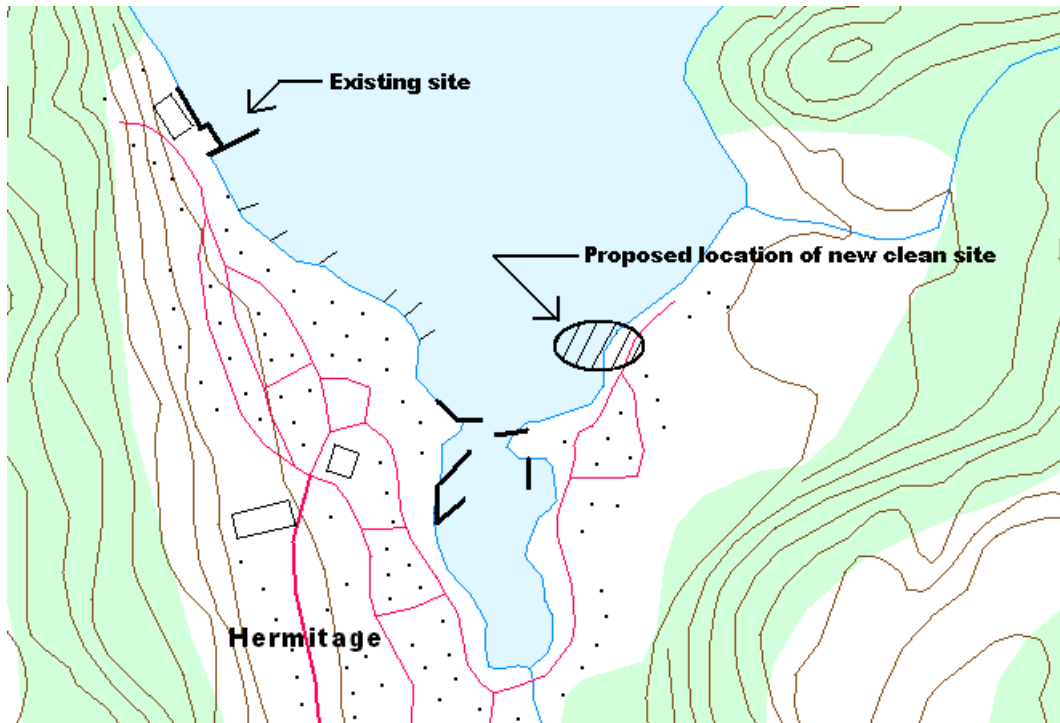


Figure 4.4.4.1 – Proposed Clean Inflow Site Location

This location is accessible via existing roads, and electrical power and water connections are located nearby. This site would provide much easier access for transport trucks delivering feed and smolt than the existing road. It also offers a location which could accommodate additional development in the form of uplands/storage areas and feed storage buildings as required.



Photo 4.4.4.1 – Photo of possible new clean inflow wharf site location



**Photo 4.4.4.2 – Photo looking at potential clean inflow wharf site location
looking across the harbour**

4.4.1.1 Outflow Facilities

In addition to a need for a clean inflow facility in the harbour, there also exists a need for an outflow or 'dirty' structure from which aquaculture operators can work. The existing ferry wharf is presently used by two different ferry operations, and cannot be shared efficiently by aquaculture operators who have to work around ferry schedules to access the facility. Likewise, the fish plant wharf has to be left accessible for off-loading fish by various users. One possible site for situating a new outflow structure was identified during the consultation meetings just north of the existing fish plant on the west side of the harbour as shown below.

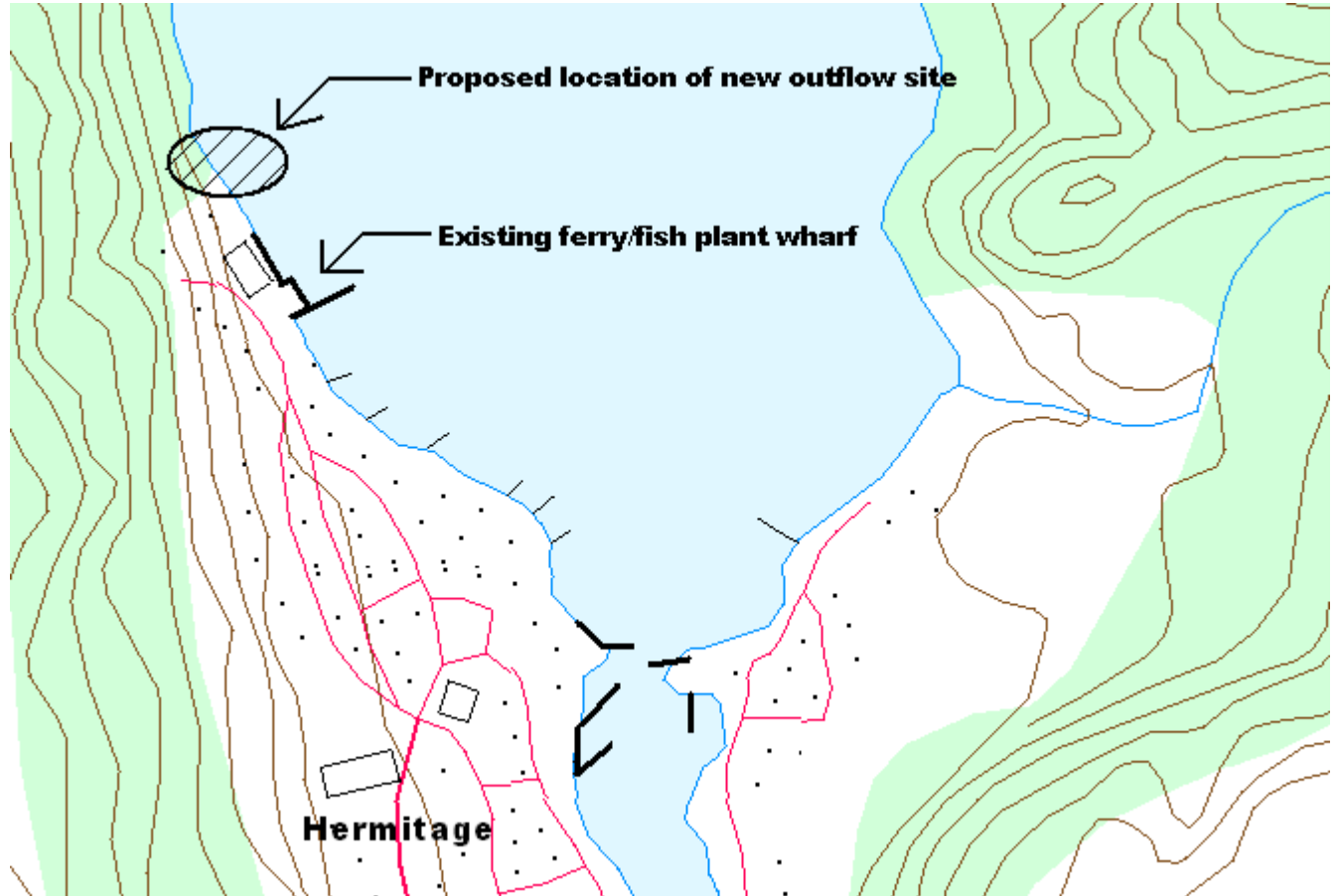


Figure 4.4.4.1 – Proposed New Outflow Wharf Location

This site is proximal to the fish plant and already has an access road leading to it. It could potentially be used for off-loading dirty nets, equipment and harvested fish to be delivered to the plant, for storage of equipment, and for protected berthing of vessels which need to tie up there.



Photo 4.4.4.3 – Photo looking north at possible new outflow wharf site location



Photo 4.4.4.4 – Photo looking south at possible new outflow wharf site location (fish plant in background)

4.4.4.2 Protected lay down and storage areas

In conjunction with a clean inflow wharf, a major issue raised at meetings with current aquaculture operators was a need for suitable laydown and storage facilities for storing and handling equipment and feed going to the farm sites. At present feed is delivered to the ferry wharf in wrapped 'bales', which are subsequently delivered to sites or transferred to other locations such as McCallum because of limited storage space at Hermitage. This creates logistical, operating and expense issues and a need for frequent feed deliveries and related coordination.

4.4.5 Infrastructure Assessment

4.4.5.1 Existing Infrastructure Condition

The existing ferry wharf at Hermitage was constructed twelve (12) years ago and does not appear to be in need of any repairs or upgrading to bring it up to suitable operating standards.

4.4.5.2 Existing Infrastructure Capacity

The existing ferry wharf is classified as an 'outflow' or 'dirty' wharf for aquaculture purposes since it is a multi-use facility. This wharf provides a total protected berthing capacity of 43.5 m on the leeward side when the M/V 'Marine Voyager' is not docked. The seaward side is completely reserved for use by the M/V 'Terra Nova' and has no long term berthing capacity available for the aquaculture industry. With expected expansion of the aquaculture industry in this area, this does not provide any dedicated berthing space for aquaculture needs.

Storage and lay down capacity available to the aquaculture industry is basically non-existent as well.

4.4.5.3 New Infrastructure Needs

Infrastructure required at Hermitage to accommodate development of the aquaculture industry consists of a new inflow wharf complete with a laydown/storage area and new multi-use storage building for accommodating feed delivery to the site, and a new outflow wharf for accommodating 'dirty' activities related to the farms operations.

The 'inflow' wharf needs to be designed to provide wind protection for loading and off-loading, and a secure area for docking and berthing aquaculture vessels. This wharf would be used for loading feed, smolt and supplies destined for the farm sites, as well as transportation of personnel travelling to and from the sites.

The 'outflow' structure needs to be designed to allow for efficient and simple access to off-loading facilities for the aquaculture operations. A timber cribwork breakwater wharf is recommended which would provide both protection from wind, and a location for berthing and off-loading. On the leeward side of this structure an area would be infilled to provide some 'dirty' laydown space.

Storage capacity at the inflow wharf needs to provide both an outside lay down area for storing general equipment, vehicles and gear, and an enclosed building for storing feed. This building would allow operators to receive feed at the site in larger quantities and store it in a manner that protects it from the elements and scavengers until needed. Such a building would allow operators

to maximize quality and life expectancy of their feed, and permit delivery and distribution in a manner which optimizes efficiency of their operations.

The tentative layout and location for these facilities is shown below:

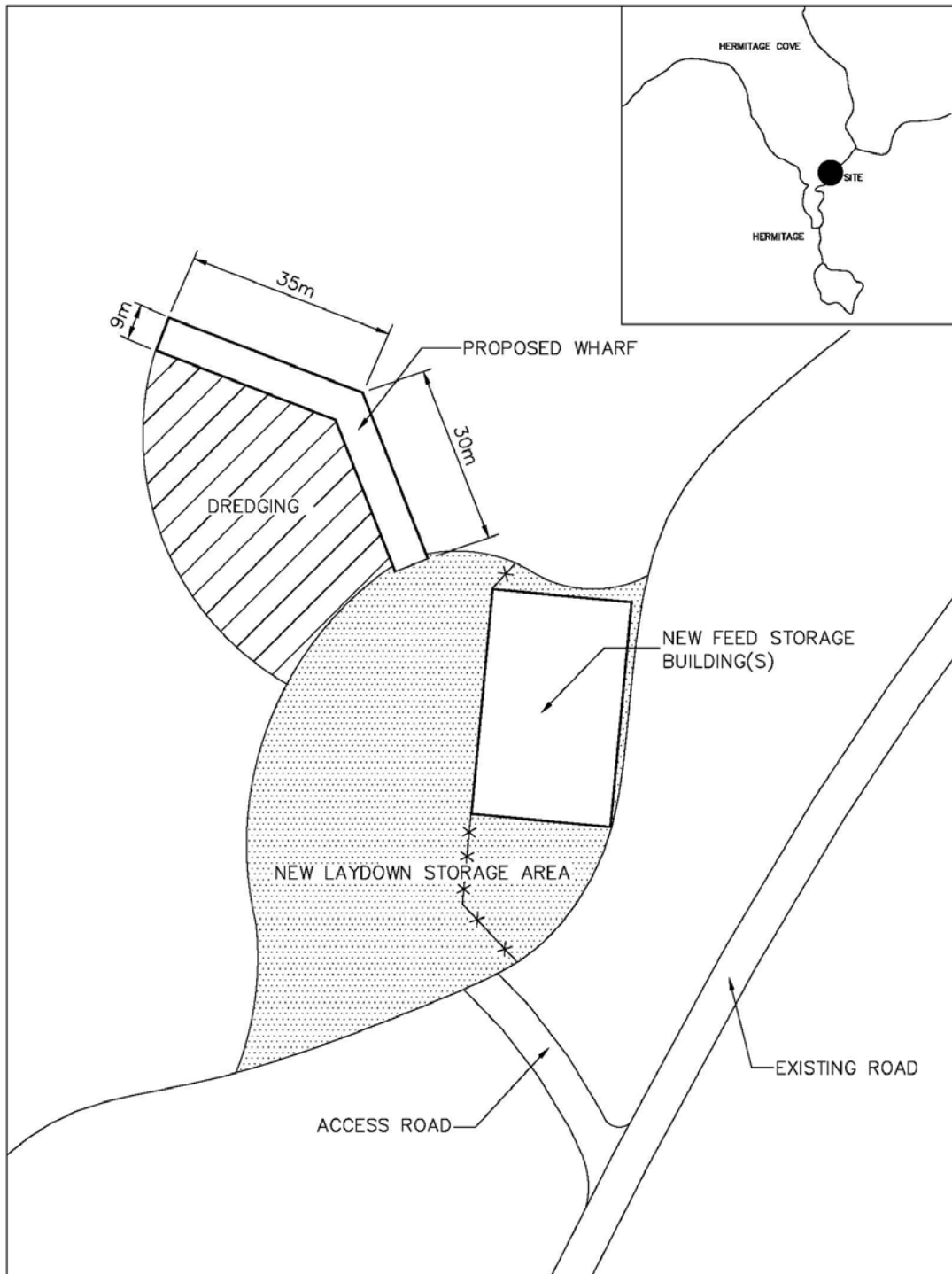


Fig. 4.4.5.1 – Concept Plan for Proposed New Inflow Wharf and Potential Storage Facility

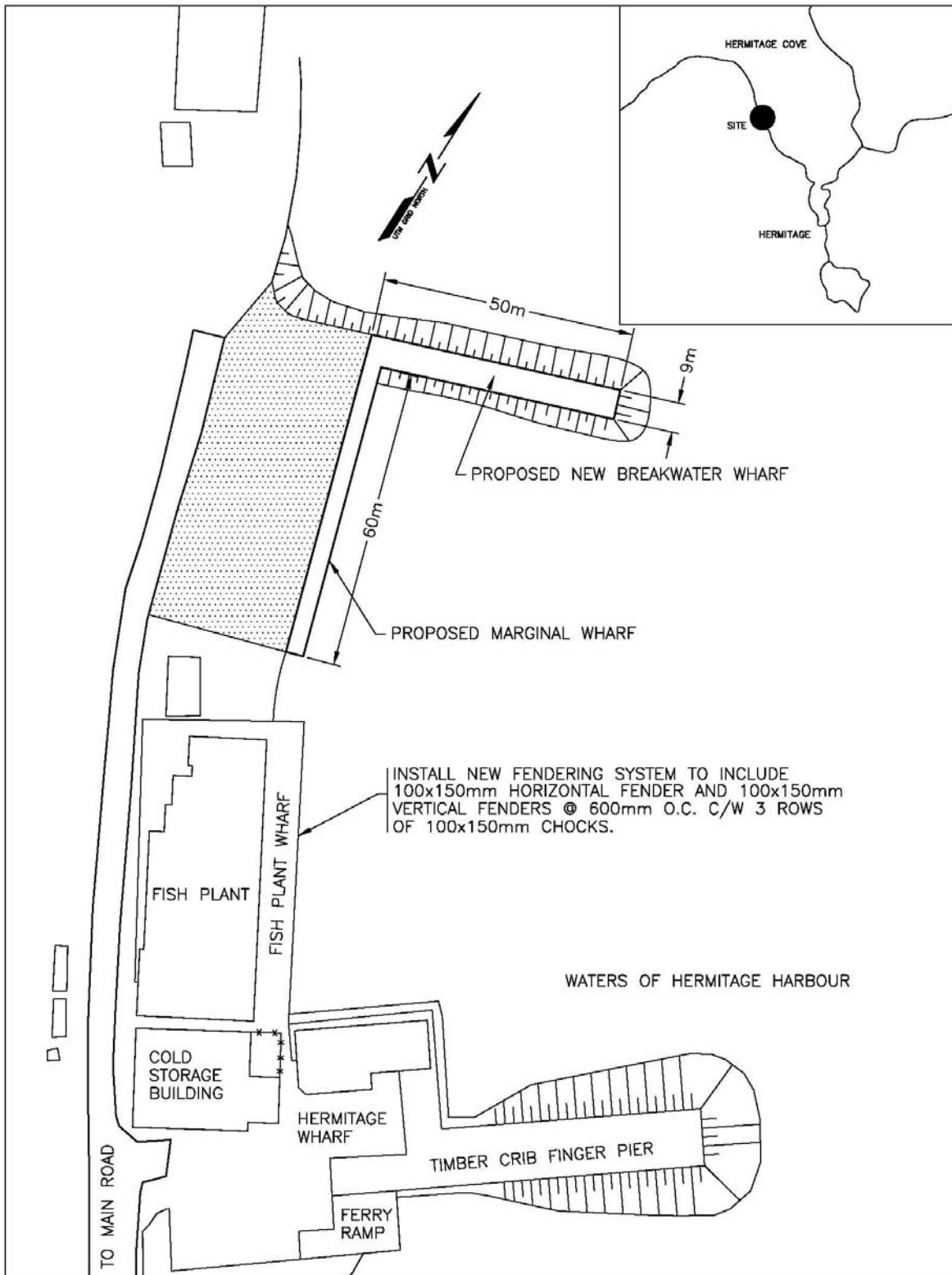


Fig. 4.4.5.2 – Concept Plan for Proposed New Outflow Wharf and Storage Area

4.4.6 Cost Estimates

In reviewing options available for situating new facilities in Hermitage, the east side of the harbour appears to be the only practical location for development of a clean 'inflow' site nearby. While it is still located in the same harbour and consequently subject to potential cross-contamination from circulating sea water, the only other option would be to locate it in another harbour nearby such as Furby's Cove.

Furby's Cove is a re-settled community located approximately 9 km NW of Hermitage by water, and 13 km by road. If funding is approved to construct a new 'inflow' wharf, it is recommended that this location be further assessed at that time with users to determine if it might offer a preferable location for the inflow wharf. For cost estimating purposes, however, it is assumed for now that the facility would be constructed in Hermitage.

In terms of the new 'outflow' site, the location proposed appears to be the most practical location for this facility due to its proximity to the fish plant and shortage of suitable locations elsewhere in the community.

Cost estimates prepared for these options were based on the following assumptions;

- The quantity of materials required are based on water depths obtained from nautical charts;
- Elevations and areal data used in the estimates were obtained from topographical maps;
- Land required for the developments is assumed to be owned by the Province, or available at minimal cost to the project from existing owners;
- The 'inflow' wharf is designed as a cribwork structure capable of providing protected berthing to aquaculture vessels;
- The 'outflow' structure is designed as a breakwater wharf with a gravel upland area, and a marginal wharf for berthing boats;
- A feed storage bldg. is included with the development that would be capable of accommodating storage of 1200 tonnes of feed;
- A fenced storage area is provided to accommodate protected storage of equipment and materials. This area is also paved to permit the operation of forklifts;

The priority for development of each of these facilities was concluded to be as follows:

- Priority 1 – New clean 'inflow' wharf and laydown area.
- Priority 2 – New 'outflow' wharf.
- Priority 3 – New feed storage facilities.

The cost of these developments are estimated as follows:

Table 4.4.6.1
Cost Estimate – Project #1
Clean Inflow Wharf, Laydown Area and Feed Storage Bldg.

Item	Description	Units	Quantity	Unit Price	Total Price
1	Dredging	m3	3,500	40	140,000
2	Rock and gravel fill	m3	18,000	15	270,000
3	Rock Mattress Material	m3	1,500	50	75,000
4	Cribwork	m3	3,900	250	975,000
5	Dimension Timber	m3	30	2,000	60,000
6	Concrete Deck	m2	530	250	132,500
7	Mooring Cleats	ea	13	2,000	26,000
8	Feed Storage Building	m2	900	860	774,000
9	Class "A"	t	1,000	30	30,000
10	Asphalt	t	560	150	84,000
11	Fencing	m	60	150	9,000
12	Area Lighting/Electrical	L.S.	-	-	60,000
13	Water Supply	L.S.	-	-	40,000
Total Estimated Construction Cost					\$2,675,500
Engineering & Inspection (10%)					267,550
Total Project Cost (excluding HST)					2,943,050
HST (13%)					382,600
Total Project Cost (including HST)					<u><u>\$3,325,650</u></u>

Table 4.4.6.2
Cost Estimate – Project #2
Outflow Wharf and Laydown Area

Item	Description	Units	Quantity	Unit Price	Total Price
1	Dredging	m3	1,700	50	85,000
2	Rock Mattress Material	m3	1,900	50	95,000
3	Armour Stone	m3	600	60	36,000
4	Rock and gravel fill	m3	7,000	15	105,000
5	Cribwork	m3	4,500	250	1,125,000
6	Dimension Timber	m3	49	2,000	98,000
8	Concrete Deck	m2	610	250	152,500
9	Mooring Cleats	ea	25	2,000	50,000
10	Area Lighting/Electrical	L.S.	-	-	60,000
11	Class "A"	t	340	30	10,200
12	Water Supply	L.S.	-	-	30,000
13	Jib Crane Hoist	L.S.	-	-	40,000
Total Estimated Construction Cost					\$1,876,700
Engineering & Inspection (10%)					187,670
Total Project Cost (excluding HST)					2,064,370
HST (13%)					<u>268,370</u>
Total Project Cost (including HST)					<u>\$2,332,700</u>

4.5 Conne River

4.5.1 General:

Conne River is a Mi'kmaw community with a population of approximately 800 people. It is situated on the eastern side of the Bay d'Espoir estuary at the mouth of Conne River. The community has been active in developing industries requiring marine infrastructure, including commercial fishing and salmonid aquaculture.

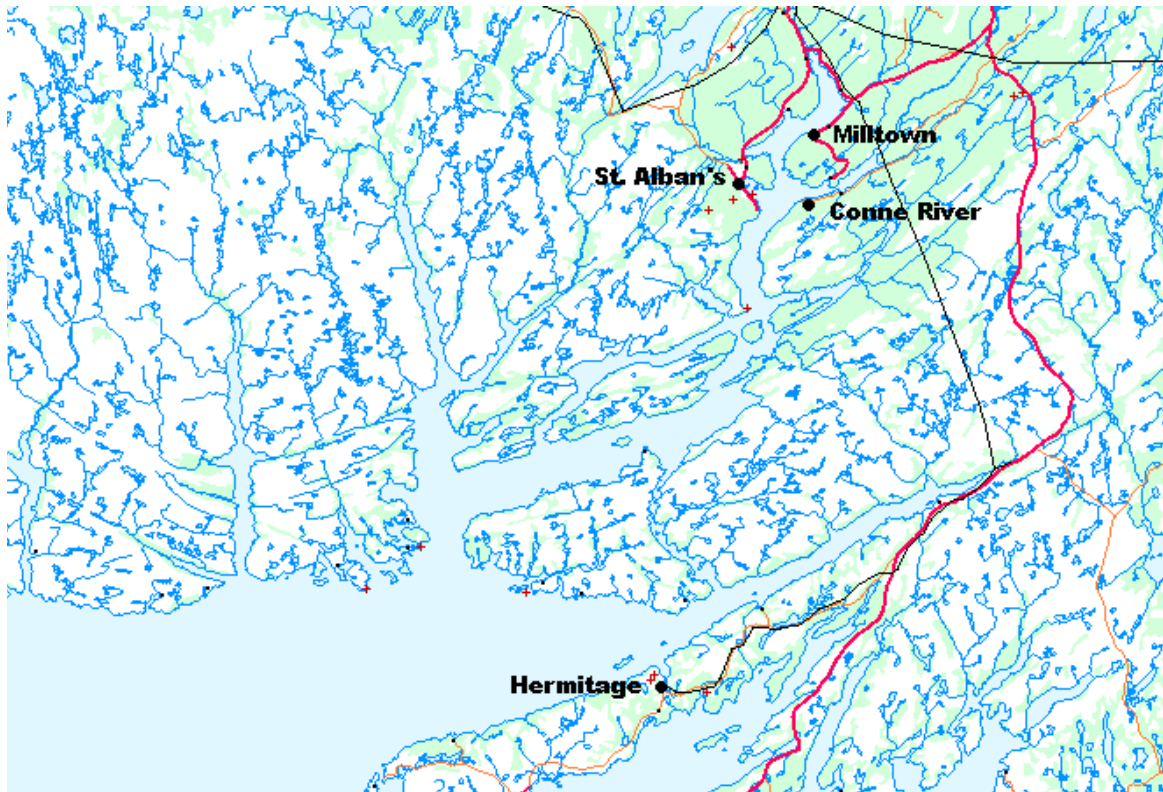


Figure 4.5.1.1 – Location Plan

The municipal authority in Conne River, the local Band Council, holds a commercial fishing quota for crab and groundfish species, and owns and operates its own vessels to prosecute these fisheries. Conne River has been active in supporting aquaculture as well, and hopes to grow this industry in the coming years.

4.5.2 Existing Marine Infrastructure

4.5.2.1 General

Conne River has one wharf in the community which was completed in 2008 to assist with development of its marine industries. Near this wharf is a concrete slipway, large storage/laydown/parking area and a Band Council building. The wharf is a DFO structure which is operated by the MFN Harbour Authority. The slipway was constructed with Band Council funds and is located on Reserve property. The approach road and storage/parking area is also located on Reserve property.

4.5.2.2 Wharf

The new wharf at Conne River is a timber cribwork structure with an L-shaped configuration. The stem section is 40 m long on the leeward side, and the headblock section is 30 m long. A small marginal wharf has been started at the shoreline near the main wharf approach, but has not been completed. The harbour on the lee side of the wharf has been dredged to a depth of 2.5 m below low water (LNT) for approximately 13 m out from shore, and to a depth of 4.5 m for the remaining area behind the wharf. Dredging limits extend approximately 80 m east of the wharf to form a dredged harbour area of approximately 2,400 m².



Photo 4.5.2.1 – Photo of wharf looking west toward the harbour entrance

This wharf can be used for loading/offloading activities on both sides during good weather, but is only suitable for berthing on the leeward side and headblock due to exposure to wind on the other side. A total protected berthing space of approximately 100 metres is available at the facility.

There is no electrical service, lighting or off-loading facilities currently provided at the wharf, but a Contract is reported to have been issued to have this work completed in 2009. Electrical conduits were installed in the wharf during its original construction to accommodate this work. After the electrical work is completed, the wharf will have area lighting provided from two (2) light poles, power availability through two (2) power receptacle pedestals mounted on the wharf, and an operating jib crane hoist.

In addition to the main wharf, floating docks are installed in summer near the eastern end of the dredged area to accommodate berthing of smaller boats. These have been moved in near shore for the winter months and can be seen in the previous photo just beyond the laydown area.

4.5.2.3 Concrete Slipway

A new slipway has been constructed on the eastern end of the site with a concrete ramp and timber retaining walls on the sides. This structure is available for removing vessels from the water and storing them on the adjacent uplands storage area.

4.5.2.4 Uplands Storage/Parking Area

A large uplands storage area has been constructed adjacent to the new wharf covering an area of approximately 4,000 m². This area is available for storing equipment and boats as required.



Photo 4.5.2.2 - Eastern end of laydown area with access road to the right and harbour and wharf to the left

4.5.2.5 Band Owned Building

A Band Council building is located on the site with a footprint size of approximately 170 m². This structure is a two (2) storey building containing a garage area, washrooms and office space. It is currently being used by both Netukulimk Fisheries Ltd. and Gray Aqua Ltd. (who are renting space on the lower level of the building).



Photo 4.5.2.3 - Band Council bldg. in background with wharf and laydown area to the right

4.5.3 Current Vessel Operations

Operations currently using the existing wharf facilities at Conne River include commercial fishing operations, aquaculture operations and recreational boaters. These are described below.

4.5.3.1 Commercial Fishing

The Band Council currently holds commercial fishing quotas for crab and groundfish species, and owns the vessels and gear needed for fishing the quotas. They currently operate five fishing vessels for this purpose under the name 'Netukulimk Fisheries Ltd'. The vessels consist of four (4) long-liners measuring 13.7 m long each and one (1) small boat measuring 6.7 m long. Two of these larger vessels are currently tied up at the Conne River wharf for the winter while the others are tied up at other ports.

Because most commercial fish stocks prosecuted under these licenses are located a long distance from Conne River (outside the Bay d'Espoir estuary) the vessels typically prepare for fishing in Conne River but operate from other ports in the summer which are located closer to the fishing grounds, such as Harbour Breton or Fortune.

The existing 70 metre wharf in Conne River is generally satisfactory for the needs of this fleet under its current operating arrangements, but berthing capacity is a concern in winter when other vessels are using the structure. Potential expansion of the commercial fishing fleet in future is a possibility, and some consideration has been given to possibly building a fish processing facility in the community at some point. If either of these eventualities occur it could negatively impact the current capacity of the existing wharf.

4.5.3.2 Aquaculture

At present there is one full time aquaculture operator stationed in Conne River, named Gray Aqua Ltd. This company operates a salmon growing operation located southwest of Bois Island, near McCallum (see figure below).

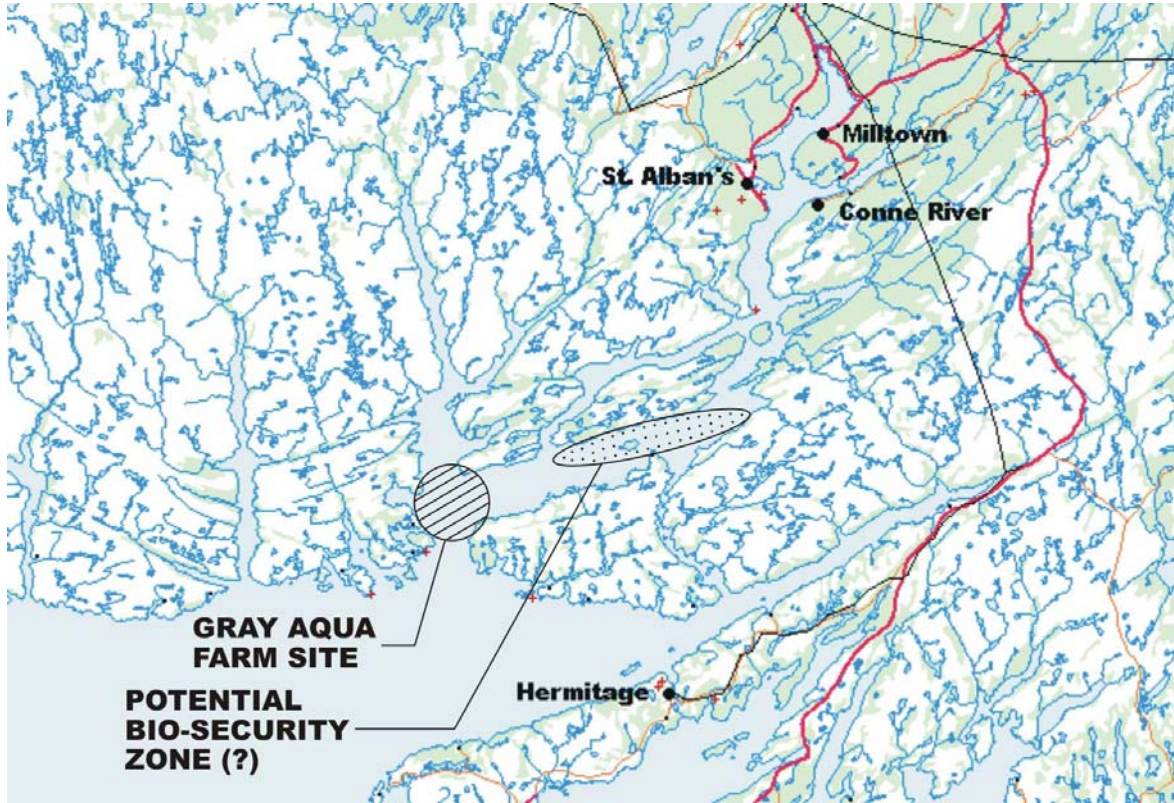


Figure 4.5.3.1 – Location of Gray Aqua’s Farm Operation

This operation currently farms 1 million smolt per year.

Gray Aqua’s operation uses one 12.8 m long-liner vessel, one 18.3 m long barge, and three 6.1 m long open boats. Because the grow-out operation is located a substantial distance from Conne River, most of the farm work is carried out right at the farm site. The principal services required in support of the operation is for loading feed aboard the barge, personnel transport, storage of equipment and berthing of vessels.

The company’s longliners tie up at the Conne River wharf for the winter months. Combined with the Band Council’s commercial vessels tied up there as well, these vessels occupy most of the berthing space currently available at the wharf in winter, so any expansion to the current operation sizes would cause capacity issues at the existing wharf structure.



Photo 4.5.3.1 – Gray’s barge tied up on outside of wharf with three long-liners tied up inside

The proposed means of providing this extra berthing space in future is to construct a breakwater on the seaward side of the existing wharf. This would provide protection for the existing structure from waves, and allow vessels to tie up on both sides of the wharf, increasing available berthage space accordingly. Extension of the marginal wharf along the shoreline of the laydown area is also proposed to allow smaller boats a place for tying up without occupying the deep water space at the main wharf.

4.5.4 Aquaculture Issues Raised at Meetings

Several issues were raised during industry consultation meetings concerning bio-security issues. One of these pertained to the need for a ‘clean’ inflow wharf facility to accommodate the activities of aquaculture operations. The other pertained to the potential establishment of ‘bio-security zones’ in the Bay d’Espoir estuary which could significantly impact future development in this area.

4.5.4.1 Clean Inflow Facilities

The existing wharf facility in Conne River would be classified as a ‘dirty’ or ‘outflow’ wharf from a bio-security perspective as it accommodates all types of activities from commercial, aquacultural and recreational operations. To provide a clean ‘inflow’ facility for aquaculture use would require a separate facility constructed solely for the aquaculture industry. This facility would need to be far enough removed from the existing structure biologically to eliminate or minimize potential cross-contamination occurring between the two sites. A proposed location for this new wharf is upstream of the existing structure, in the area shown below.



Figure 4.5.4.1 – Proposed New Clean Inflow Wharf Location

In this location fresh water entering from the river (to the right) flows in a western direction past this site towards the existing wharf facility. This current would help prevent any contamination from the dirty wharf migrating to the inflow wharf via ocean currents. The proposed site is close to an existing road for access purposes, and electrical power is nearby as well if needed.

Alternatively, if a new clean inflow wharf is built at Milltown to service the Milltown/St. Alban's area, aquaculture operators from Conne River could potentially utilize that facility.



Photo 4.5.4.1 – Proposed Clean Inflow Wharf Location

4.5.4.2 Bio-security zones

Some concern was expressed during stakeholder meetings regarding the possible establishment by Gov't of a new 'bio-security zone' in an area south of Bois Island (see fig. 4.5.3.1). It was understood by those present that the purpose of such a zone may be considered in order to provide a bio-secure area for trout farming/fingerling operations in the inner reaches of the Bay. It was unknown at the time by those present whether this plan was under serious consideration or not, or if so, what operational restrictions it might entail. From an industry development perspective at Conne River however, the concern expressed was that such a measure might prevent future movement of non-trout species through this zone. If so, it could prevent the movement of salmon to and from Gray Aqua's farm site and Conne River, and consequently necessitate that their farming activities be moved to Hermitage. If this occurred, it could significantly impact the need for further infrastructure facilities at Conne River, and the potential for developing aquaculture operations there.

4.5.5 Infrastructure Assessment

4.5.5.1 Existing Infrastructure Condition

The existing wharf facilities at Conne River are very new and in excellent condition, having just been completed in 2008. As such, no upgrading or repairs to the facilities are currently needed.

4.5.5.2 Existing Infrastructure Capacity

The existing wharf at Conne River is a multi-use facility being used by different industries, and is classified as a 'outflow' wharf for the aquaculture industry. This wharf provides a total protected berthing capacity of 100 m, which is insufficient to accommodate both Gray Aqua's two vessels and the Band Council's four vessels if all were to tie up there at the same time. This hasn't caused a problem to date because two of the Band Council's vessels have been tied up at other ports. However, it suggests that there is little surplus capacity available at the wharf to accommodate other users or further growth in the aquaculture industry from a berthing perspective. This may be seen in earlier photos where Gray Aqua's barge plus three long-liners currently occupy most of the space available.

4.5.5.3 New Infrastructure Needs

The amount and type of new infrastructure required at Conne River to accommodate further development of the aquaculture industry needs to be examined from both a short and long term perspective. From a short term perspective, the only new structure presently required, based on discussions with users, is a clean inflow wharf. A potential site for this facility has been proposed upstream of the existing wharf as shown in previous figures.

The primary need for this wharf would be for loading feed, equipment and personnel to go to the farm. As such, a structure capable of accommodating berthing and loading of a barge and some smaller support vessels would be the primary need at present.

No bathymetric or geotechnical data is currently available at this site to identify water depths or underwater soil conditions to be encountered, so it is assumed that similar conditions will be found as were encountered during construction of the public wharf here. On that basis some dredging will be required to remove weak soil from underneath the structure and provide greater water depths around the wharf for vessel usage.

A concept plan for such a facility is provided below.

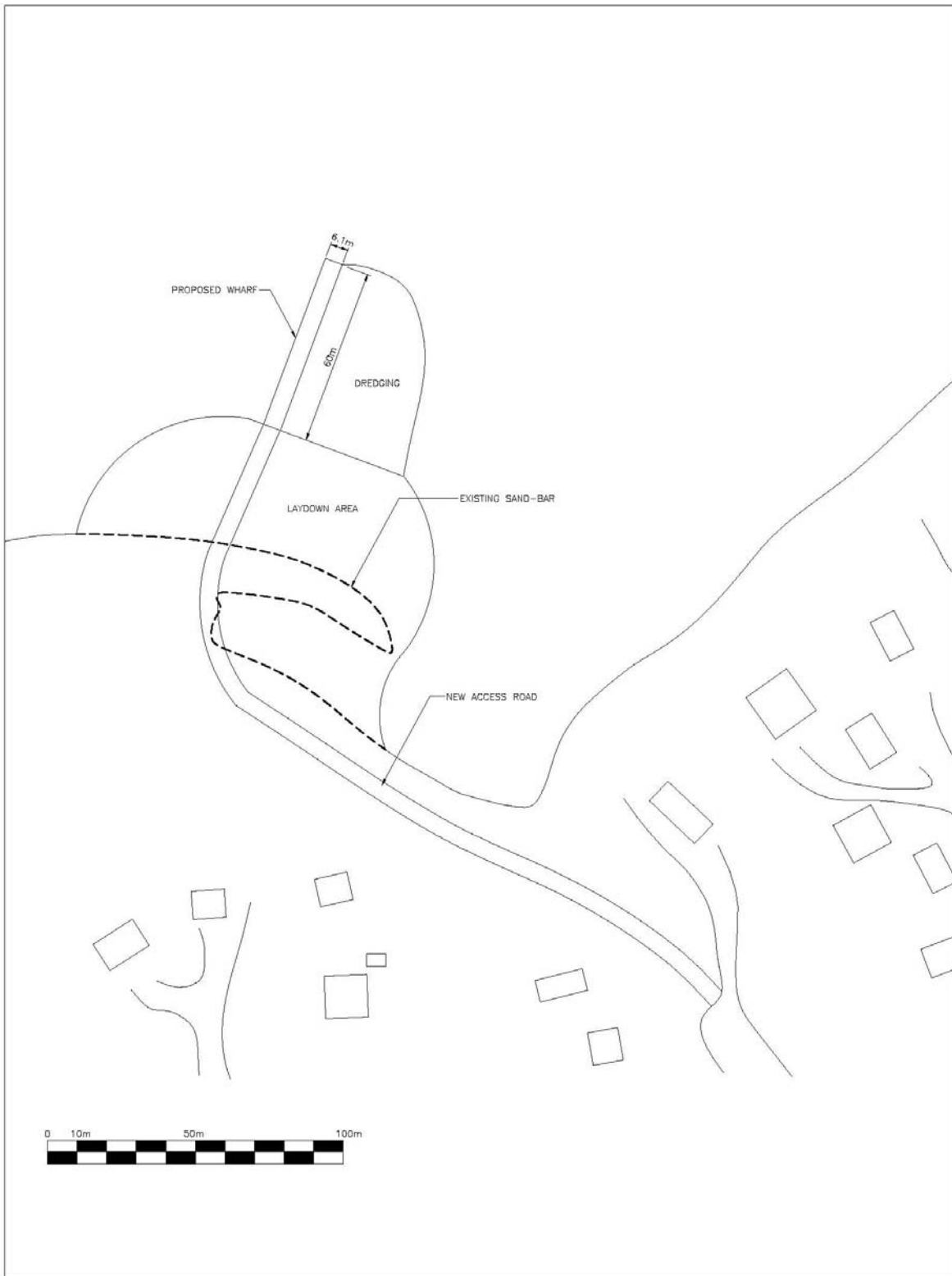


Figure 4.5.5.1 – Concept Plan for Proposed New Inflow Wharf

From a longer term perspective it will be necessary to discuss the potential establishment of bio-security zones to identify any effects this could have on long term development options for the community.

In terms of future berthing needs, the proposed marginal wharf near the existing wharf facility will eventually need to be completed to prevent congestion at the main wharf, and a new breakwater and dredging completed on the seaward side of the wharf to provide more berthing space. These are shown below.

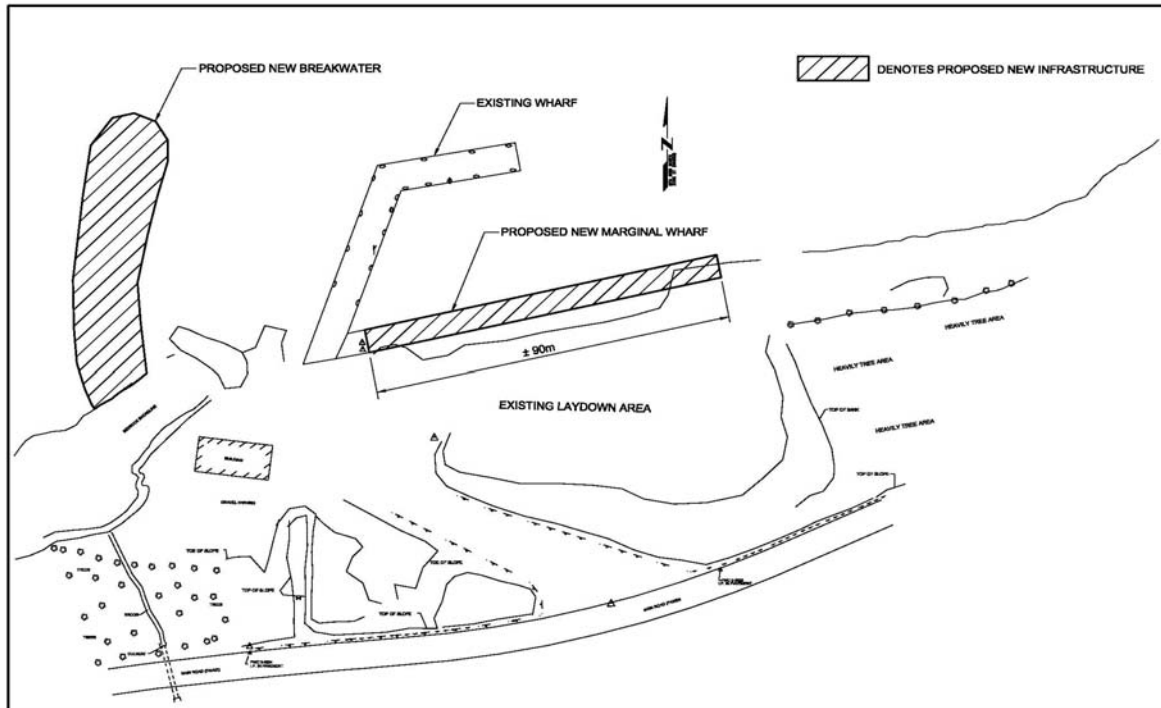


Fig 4.5.5.2 – Plan View of Proposed Marginal Wharf and Breakwater

4.5.6 Cost Estimates

Facilities required at Conne River may thus be summarized as;

- Priority #1 - A clean inflow wharf;
- Priority #2 – Completion of marginal wharf structure; and
- Priority #3 – Construction of breakwater and completion of dredging on the seaward side of the existing wharf.

The first of these is related to short term needs of the aquaculture industry, while the remaining projects comprise longer term needs which are not specific to the aquaculture industry.

Cost estimates for construction of these facilities are based on the following;

- Infrastructure quantities are based on assumed water depths obtained from nautical charts and/or data available at the existing public wharf;
- Elevations were obtained from topographical maps;
- Land required for the developments is assumed to be publically owned by the Reserve, and available at no cost to the project;
- A fenced laydown and storage area would be provided at the inflow wharf to accommodate storage of bulk equipment and materials for the aquaculture operations. This area is paved to permit operation of forklifts;

Table 4.5.6.1
Cost Estimate – Project #1
Clean Inflow Wharf for Aquaculture Use

Item	Description	Units	Quantity	Unit Price	Total Price
1	Dredging	m3	4,800	50	240,000
2	Rock Mattress	m3	2,700	45	121,500
3	Rock and gravel fill	m3	9,300	13	120,900
4	Cribwork	m3	3,920	250	980,000
5	Dimension Timber	m2	33	2,000	66,000
6	Concrete Deck	m2	520	250	130,000
7	Mooring Cleats	ea	20	2,000	40,000
8	Class “A”	t	700	30	21,000
9	Asphalt	t	460	150	69,000
10	Fencing	m	100	150	15,000
11	Area Lighting/Electrical	L.S.	-	-	60,000
12	Water Supply	L.S.	-	-	40,000
Total Estimated Construction Cost					\$1,903,400
Engineering & Inspection (10%)					190,340
Total Project Cost (excluding HST)					2,093,740
HST (13%)					272,190
Total Project Cost (including HST)					<u><u>\$2,365,900</u></u>

**Table 4.5.6.2
 Cost Estimate – Project #2
 Construct Marginal Wharf at Existing Wharf Site**

Item	Description	Units	Quantity	Unit Price	Total Price
1	Dredging	m3	1,800	50	90,000
2	Excavation & Backfill	m3	3,000	13	39,000
3	Cribwork	m3	2,200	200	440,000
4	Dimension Timber	m3	25	2,000	50,000
5	Concrete Deck	m2	270	250	67,500
6	Mooring Cleats	ea	16	2,000	32,000
Total Estimated Construction Cost					\$718,500
Engineering & Inspection (10%)					71,800
Total Project Cost (excluding HST)					790,300
HST (13%)					102,700
Total Project Cost (including HST)					\$893,000

**Table 4.5.6.3
 Cost Estimate – Project #3
 Rubble Mound Breakwater and Dredging at Existing Wharf Site**

Item	Description	Units	Quantity	Unit Price	Total Price
1	Dredging	m3	2,700	50	135,000
2	Rubble Mound Breakwater Fill	m3	14,000	45	630,000
Total Estimated Construction Cost					\$765,000
Engineering & Inspection (10%)					76,500
Total Project Cost (excluding HST)					841,500
HST (13%)					109,400
Total Project Cost (including HST)					\$950,900

Of the above projects, the clean inflow wharf is the most immediate priority. The other structures will be multiple use facilities to be shared with other industries, and would be regarded as priorities 2 and 3 from an aquaculture perspective.

4.6 Milltown

4.6.1 General:

Located at the head of the Bay d'Espoir estuary Milltown is the most northerly community in the study area. Incorporated with the community of Head of Bay d'Espoir it has a combined population of approximately 900 people. Residents in the area are mainly dependent on the forestry, aquaculture and hydroelectric industries.

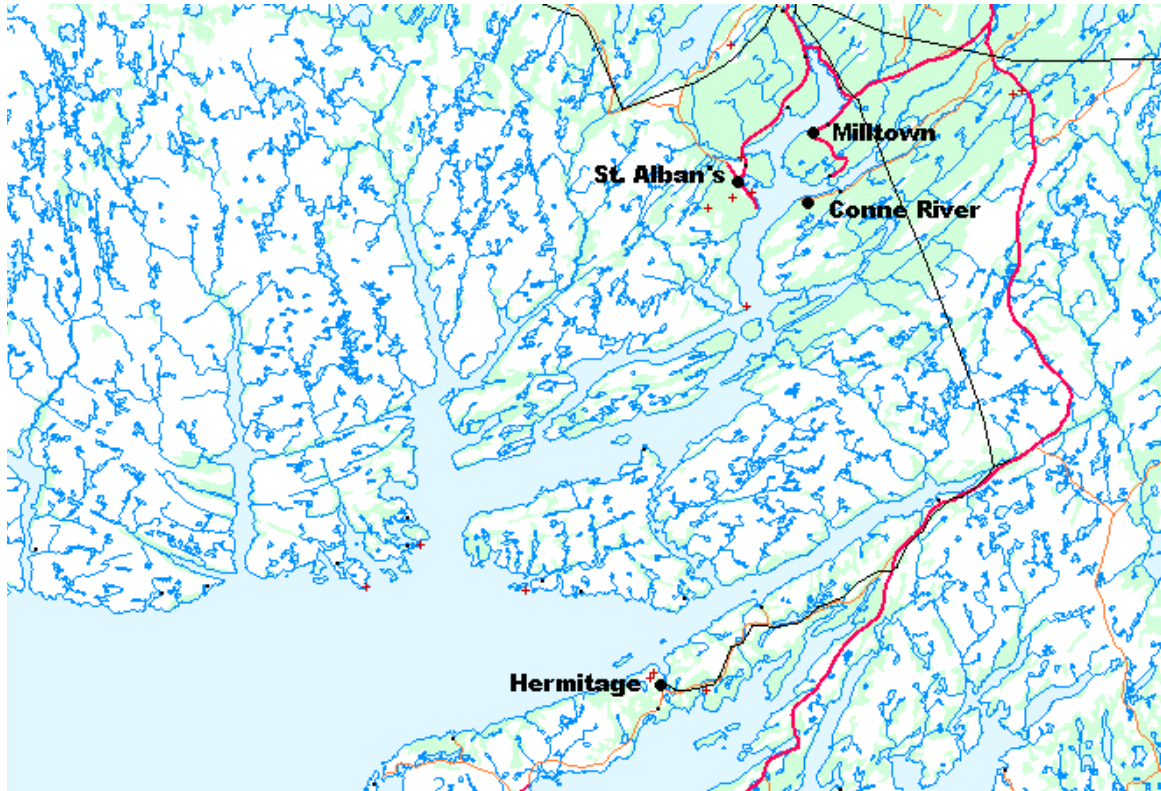


Figure 4.6.1.1 – Location Plan

The community is currently pursuing upgrading of the existing barricaded Transport Canada wharf to support expansion of the aquaculture industry in the area. Aquaculture operators have expressed a need for the development of further infrastructure in this location.

4.6.2 Existing Marine Infrastructure

4.6.2.1 General

There are currently two (2) marine facilities available for use in Milltown consisting of a public Transport Canada wharf and a recreation/commercial fishing wharf. The Transport Canada wharf has been barricaded to traffic for the past several years.

4.6.2.2 Transport Canada Wharf

The Transport Canada wharf at Milltown is a finger pier structure supported on creosoted timber piles which was built many years ago to accommodate the docking of Coastal boats. It measures approximately 60 m long, and ranges in width from 16.5 m at the approach to 13 m at the head. In recent years Transport Canada has been divesting itself of marine structures which it no longer uses, and this structure had been targeted for demolition. In the interim, warning signs were erected on the wharf prohibiting its use by the general public. There are currently eight (8) concrete barricades, a wooden fence and several large rocks blocking access to the wharf.



Photo 4.6.2.1 – Photo of leeward side of wharf showing approach and storage shed to the right

There is a concrete slab approach at the wharf and a paved access leading to the main road. An existing storage shed is constructed on the approach measuring 9.2 m x 15.3 m. This shed is currently being leased by an aquaculture operator, Vernon Watkins of Long Island Resources, for storage purposes. Electrical power is provided to the storage shed only. No lighting or water supply is offered on the current facility.

Water depths on the seaward side of the wharf range from 3 m near shore to 7 m at the head of the structure. Due to the orientation of the wharf, wind exposure on the North face prevents long term berthing there. Water depths on the leeward face range from 2 m near shore to 4 m at the head.

Although access to the structure is currently prohibited, aquaculture operators in the area still use this facility as a means of transporting smolt to their vessels and/or cages. This is accomplished by transferring the smolt from transport trucks via pipe extending from the barricades to a vessel docked on the seaward side of the wharf. No diving study has been completed on the structure to confirm its remaining structural capacity, or whether it could be upgraded for re-use. A certain amount of deterioration to the substructure can be seen from visual observations above water,

including damaged fenders, deck and shed components. However, if the piles remain competent, it may be possible to rehabilitate the structure for continued use.



Photo 4.6.2.2 – Photo of wharf showing seaward side

4.6.2.3 Uplands/Parking Area

No lay down area exists at this site for storage or parking. The narrow access road passes between two (2) privately owned dwellings, which leaves very limited space for maneuvering at the site, making it difficult for transport trucks delivering smolt to find anywhere to turn around.



Photo 4.6.2.3 – Existing access road showing wharf in background

4.6.2.4 Recreation/Commercial Fishing Structure

The existing recreation/commercial site consists of two (2) L-shaped finger piers with a slipway constructed in between. These structures are constructed from local untreated timber. There is a significant amount of lay down area available at the site, which is mainly used for the storage of commercial and recreational vessels in the winter months. No aquaculture operations occur at this facility at present. It is located just west of the Transport Canada wharf.



Photo 4.6.2.4 – Photo showing recreation/commercial wharf site

4.6.3 Current Vessel Operations

4.6.3.1 Commercial Fishing

At present there are only two (2) commercial fishing licenses in the community. The associated vessels do not use the Transport Canada wharf. Normally they tie-up at another facility elsewhere, or use the recreation/commercial facility. As a result, commercial fishing vessels do not pose any conflicting use issues at the Transport Canada site.

4.6.3.2 Aquaculture

Currently there are no aquaculture operators using the Transport Canada wharf for extended periods due to its closure to traffic. However, in recent years Cooke Aquaculture (CA), Cold Water Fisheries (CWF) and Long Island Resources (LIR) have used the site for the delivery of smolt to their farm sites in the spring and fall seasons. Northern Harvest Sea Farms (NHSF) also plan to make use of this facility once their farm sites near St. Alban's are up and running later this year.

LIR currently have two (2) trout sites located south of St. Alban's (figure 4.6.3.1). The company is currently forced to deliver feed, clean nets and sometimes smolt over the dirty 'outflow' wharf located in St. Alban's. LIR would prefer to have all of its clean operations occur at Milltown, but

at present this is not possible. If developed as a clean 'inflow' facility, LIR would have their feed and smolt delivered to Milltown via transport truck to be distributed to their trout sites from that location.

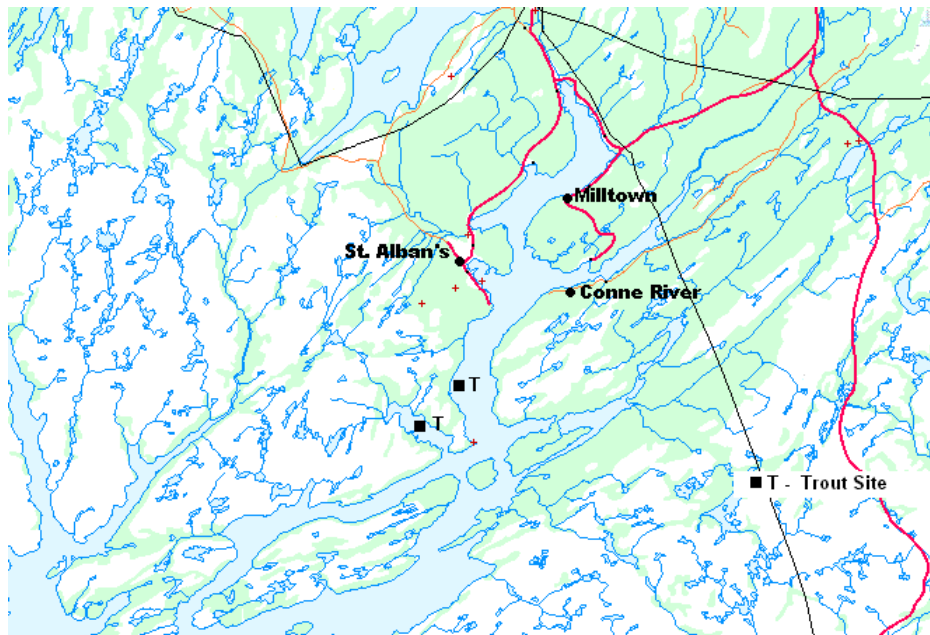


Figure 4.6.3.1 – Location of LIR's Aquaculture Operations in Milltown



Photo 4.6.3.1 – Photo showing pipe shute extending across Transport Canada wharf for smolt delivery in spring and fall

In conjunction with St. Alban's, CA and CWF would also prefer to perform their clean activities at another separate facility such as Milltown. If Milltown is developed as an 'inflow' site, both

companies would delivery feed, smolt and clean nets to this site to transport to their outlying farms. It would also be used as a berthing facility, which would reduce congestion at the St. Alban's wharf. Please refer to the St. Alban's sub-section for a complete description of both company's operations in the area.

NHSF is not currently operating in the head of Bay d'Espoir area and do not use either the St. Alban's or Milltown facilities. However, the company has one stocked site located south of St. Alban's and two (2) vacant sites located between the two (2) communities (figure 4.6.3.2). They plan to fill these sites in the upcoming season and will require the use of local facilities for feed, smolt and net delivery, in addition to off-loading harvested fish. Consequently, a clean facility at Milltown would make it possible to separate the clean and dirty activities.

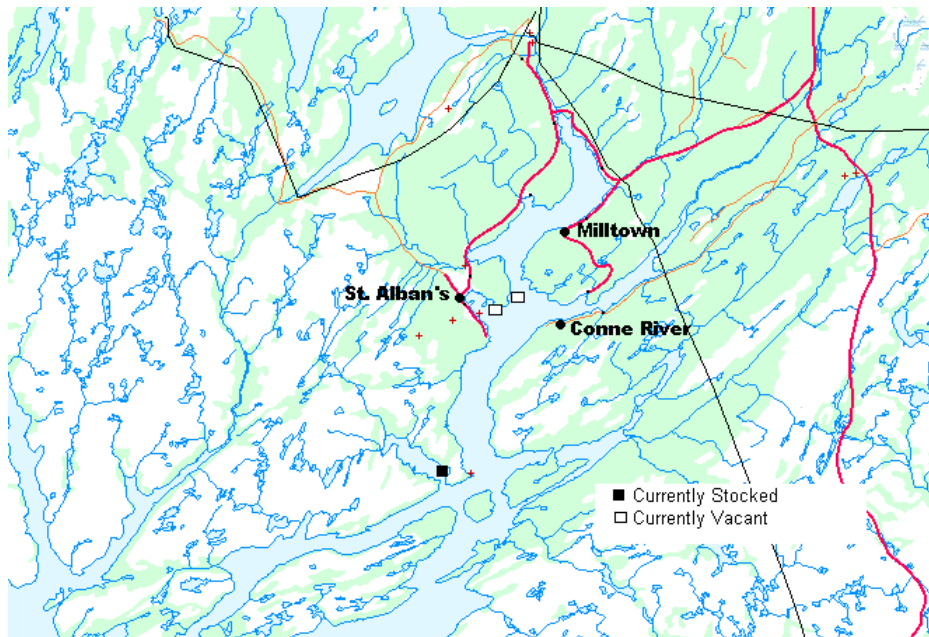


Figure 4.6.3.2 – Location of NHSF's Aquaculture Operations in Milltown

4.6.4 Aquaculture Issues Raised at Meetings

The principal issue raised during consultation meetings with industry users was the lack of clean 'inflow' facilities in the St. Alban's/Milltown area. Due to closure of the Transport Canada wharf in Milltown, the wharf at St. Alban's is the only one left in the area to accommodate all aquaculture activities. The need for a feed storage facility was also raised.

4.6.4.1 Clean Inflow Facility

Due to the multiple use activities being conducted at the wharf in St. Alban's, that wharf is classified as a dirty or 'outflow' structure for aquaculture purposes, which results in the need for a separate 'inflow' wharf elsewhere to address this. Discussions with operators in the area have suggested Milltown as a potential location for this development. This would provide a significant separation from the dirty wharf, as the two locations are approximately 8 km apart, and thus reduce the potential for cross contamination between the two. Also, due to the limited space presently available in St. Alban's harbour, and the smolt delivery already occurring at

Milltown, it would appear practical to select Milltown as a clean site. Since this site already has an access road with utilities nearby, it should minimize the cost of development as well compared to the alternate option of developing a new 'greenfield' site elsewhere. The location of this site is shown below.



Figure 4.6.4.1 – Proposed New Inflow Site Location

4.6.4.2 Outflow Facilities

An 'outflow' facility is required to deal with movement of product to market separate from the clean inflow wharf. It is proposed to locate that wharf in St. Alban's harbour rather than Milltown. Discussion of this requirement is contained in the sub-section dealing with St. Alban's.

4.6.4.3 Protected Lay Down and Storage Areas

As a part of a clean wharf facility, one issue raised during industry discussions was the need for a capability to store and handle feed destined for the farm sites. Currently feed is delivered to the site in one (1) tonne bags wrapped in a covering at the manufacturing plant to protect it during travel. Because Milltown doesn't have a lay down or turn-around area at the wharf, operators cannot receive supplies of feed in bulk, necessitating more frequent visits by suppliers, and difficulties maneuvering vehicles into and out of the site.



Photo 4.6.4.1 – Photo looking at existing structure and possible new inflow site location

4.6.5 Infrastructure Assessment

4.6.5.1 Existing Infrastructure Condition

The existing Transport Canada wharf located in Milltown is currently in a state of disrepair and requires either complete removal, or upgrading supported by a detailed structural inspection of the existing facility. Transport Canada has warning signs placed on the structure to prohibit any use.

4.6.5.2 Existing Infrastructure Capacity

The remaining structural capacity of the Transport Canada wharf at Milltown is unknown, and would require a detailed engineering and underwater diving inspection to assess. In the absence of this, it must be assumed that the structure would need to be removed and replaced if the site is to be developed for future aquaculture operations.

Even if it is found that the structure can be upgraded and restored to operation, the existing facility offers minimal long term berthing space due to the fact that its docking face has significant wind exposure. As well, there is no storage or lay down capacity at the existing site. This deficiency should be addressed in the development of any new inflow wharf.

4.6.5.3 New Infrastructure Needs

The infrastructure required at Milltown to meet both present and near future development of the aquaculture industry for clean inflow purposes includes a new or upgraded wharf facility, a new storage building to accommodate storage of feed, a new uplands/laydown area to accommodate storage of supplies and equipment for the farms and improved maneuvering space for vehicles utilizing the site. This 'inflow' wharf needs to provide a loading and off-loading area as well as a protected berthing area for aquaculture vessels.

The storage building/laydown area will need to provide an outside area for storing gear and equipment, and a building for accommodating interior feed storage.

Two options were examined for providing these facilities consisting of (1) Upgrading and expanding the existing facility and (2) Demolishing the existing facility and building new facilities at the site. The tentative layout of these two options are shown below:

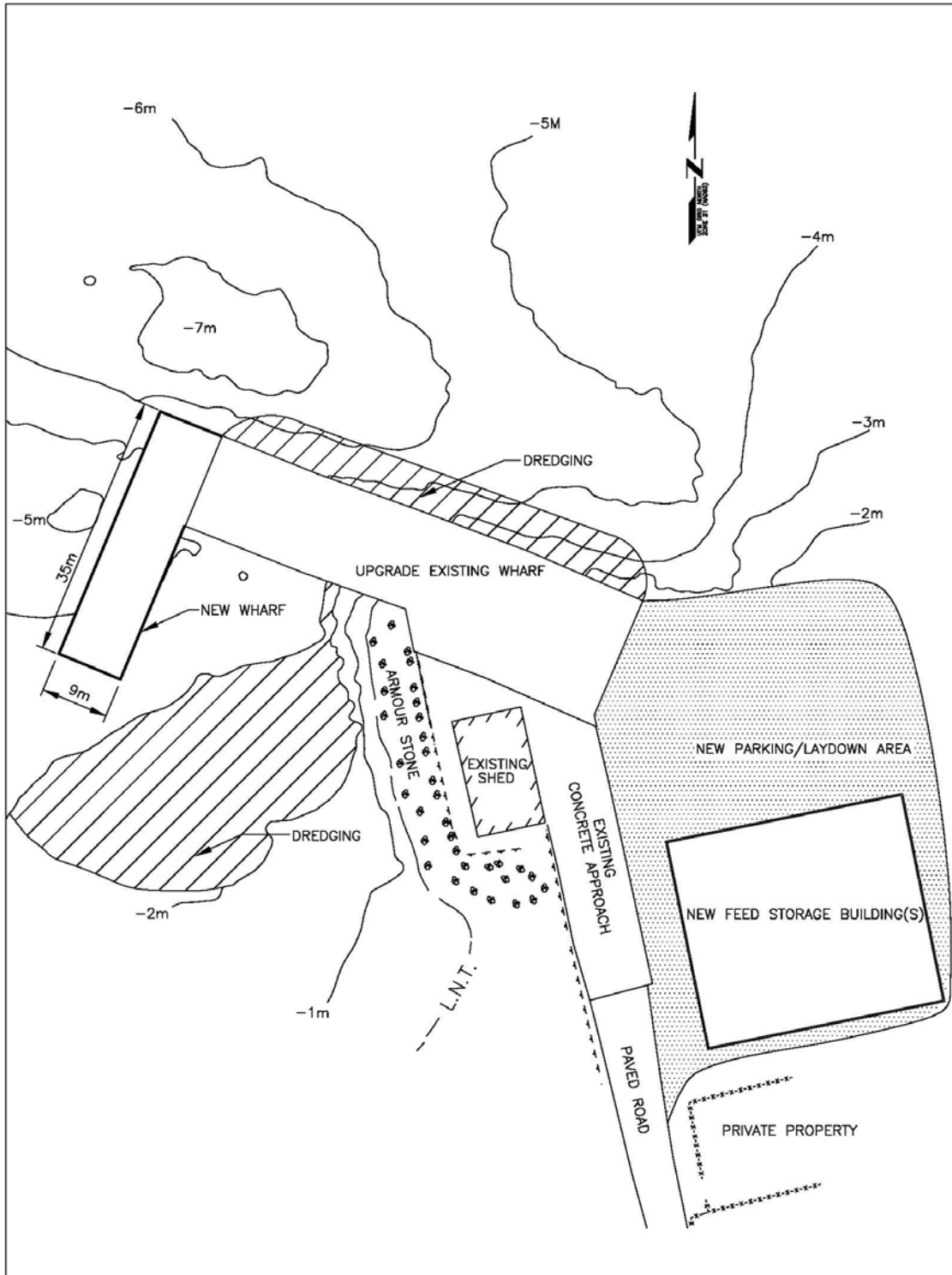


Fig 4.6.5.1 - Option #1
Upgrading and Expanding Transport Canada Wharf
as a New Inflow Structure

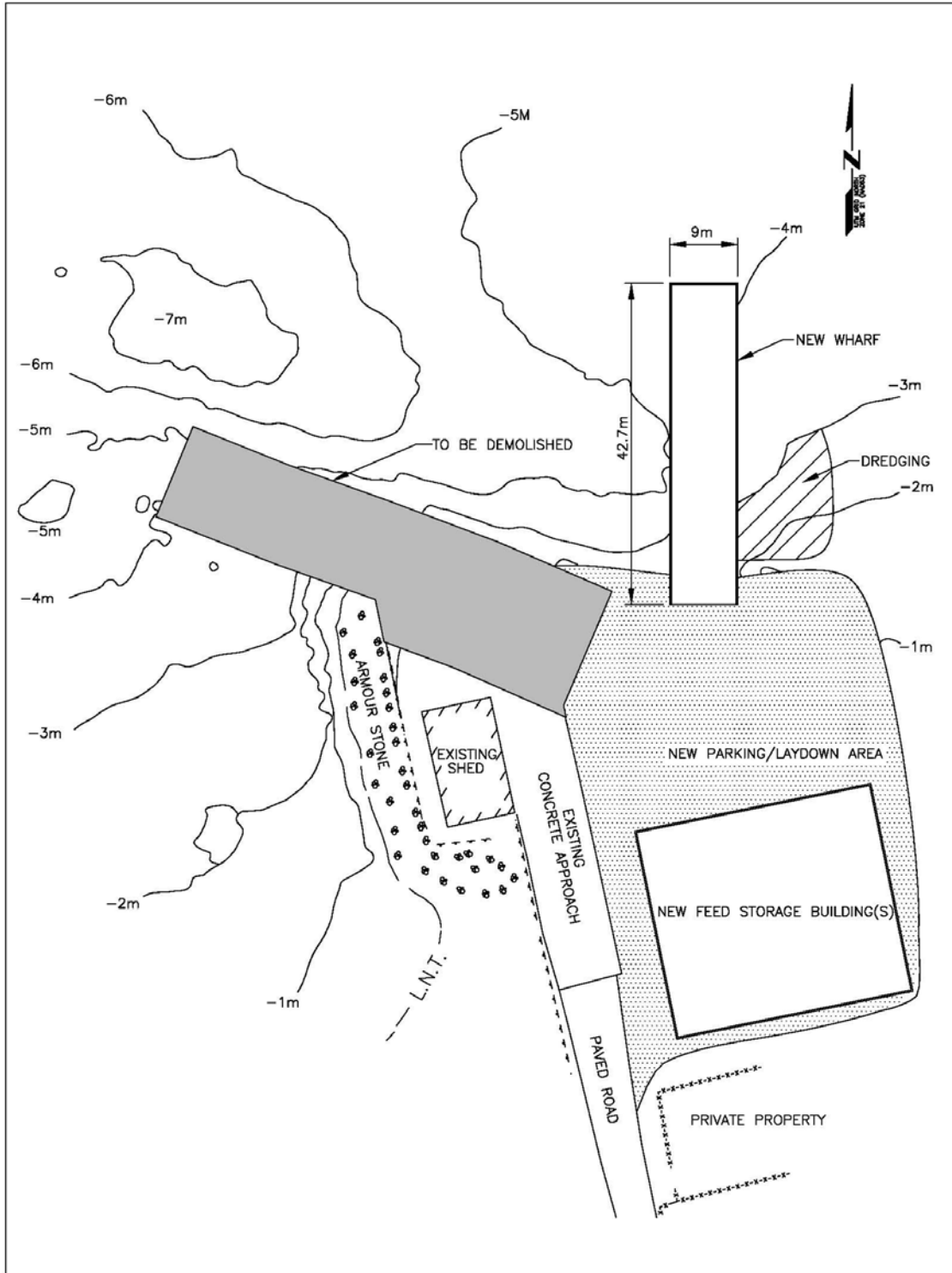


Fig 4.6.5.2 – Option #2
Construction of a New Inflow Wharf and Storage Bldg.

4.6.6 Cost Estimates

Cost estimates for the two options indicate that an upgraded Transport Canada facility could be slightly less costly than building a new structure. However, this would have to be confirmed by a detailed structural analysis of the facility. Because this was not possible within the scope of this study, it is recommended that option #2 be selected for now, with the merits of option #1 to be studied in more detail if and when funding is approved for detailed design.

Cost estimates for this option are based on the following;

- Demolishing the existing Transport Canada wharf;
- Constructing a new 42.7 m long wharf pointing North, to allow vessels to berth at the facility;
- Dredging the inner side of the new wharf to provide water depths to allow berthing on both sides;
- Importing rock and gravel fill to create a storage/laydown area at the wharf approach;
- Building a new 900 m² feed storage building for storage of feed products;
- Upgrading the existing storage shed for general use.

Table 4.6.6.1
Cost Estimate – Option #1
Upgrade Transport Canada Wharf and add 35 m extension

Item	Description	Units	Quantity	Unit Price	Total Price
1	Demolition	LS	-	-	30,000
2	Treated Timber Piles	ea	105	2,000	210,000
3	Treated Timber Pile caps	m3	15	2,000	30,000
4	Dimension Timber	m3	45	2,000	90,000
5	Reinforced Concrete Deck	m2	300	250	75,000
6	Mooring Cleats	ea	11	2,000	22,000
7	Rock and gravel fill	m3	4500	25	112,500
8	Dredging	m3	2370	45	106,650
9	Class "A"	t	300	30	9,000
10	Asphalt	t	150	150	22,500
11	Area Lighting/Electrical	L.S.	-	-	20,000
12	Repair Concrete Deck	L.S.	-	-	40,000
13	Repair Fenders and Coping	L.S.	-	-	30,000
14	Repair Building	L.S.	-	-	60,000
15	Structural and Underwater Inspection of Existing Structure	L.S.	-	-	60,000

16	New Feed Storage Bldg.	m2	900	860	774,000
17	Water Supply	L.S.	-	-	40,000
Total Estimated Construction Cost					1,731,650
Engineering & Inspection (10%)					173,165
Total Project Cost (excluding HST)					1,904,815
HST (13%)					<u>247,625</u>
Total Project Cost (including HST)					<u><u>\$2,152,400</u></u>

Table 4.6.6.2
Cost Estimate - Option #2
Demolish Transport Canada Wharf and Construct New Inflow Facility

Item	Description	Units	Quantity	Unit Price	Total Price
1	Demolish Existing Wharf	LS	-	-	200,000
2	Treated Timber Piles	ea	120	2,000	240,000
3	Treated Timber Pile caps	m3	20	2,000	40,000
4	Dimension Timber	m3	55	2,000	110,000
5	Reinforced Concrete Deck	m2	360	250	90,000
6	Mooring Cleats	ea	14	2,000	28,000
7	Rock and gravel fill	m3	5000	25	125,000
8	Dredging	m3	1000	45	45,000
9	Class "A"	t	310	30	9,300
10	Asphalt	t	192	150	28,800
11	Area Lighting/Electrical	L.S.	-	-	23,000
12	Repair Building	L.S.	-	-	60,000
13	New Feed Storage Bldg.	m2	900	860	774,000
14	Water Supply	L.S.	-	-	40,000
Total Estimated Construction Cost					\$1,813,100
Engineering & Inspection (10%)					181,310
Total Project Cost (excluding HST)					1,994,410
HST (13%)					<u>259,270</u>
Total Project Cost (including HST)					<u><u>\$2,253,680</u></u>

Based on the foregoing, it is recommended that Option #2 be adopted for this site. When funding is approved to do the work, Option #1 should be reviewed in further detail to see if cost savings could be achieved by upgrading the existing structure instead. At present, however, insufficient underwater information is available to assume this option would be less expensive.

4.7 St. Alban's

4.7.1 General:

St. Alban's is located near the head of the Bay d'Espeir estuary. With a population of 1,278 (2006 census) it is the largest community in the bay. In past years, the town's economy has been centered around the local fishery, logging industry and Newfoundland Hydro Generating Station. Today, much of the local economy is dependent on the aquaculture industry.

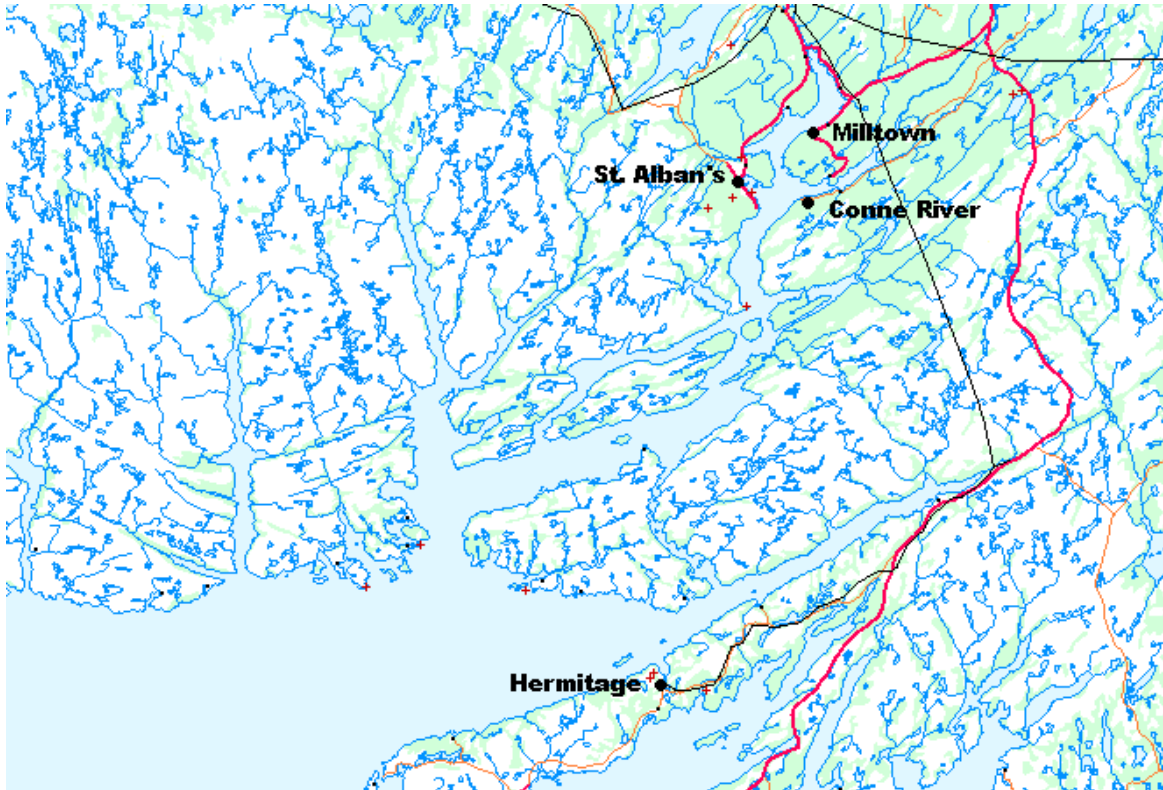


Figure 4.7.1.1 – Location Plan

Both the community and aquaculture companies in the area support the development of marine infrastructure in this area to assist the local aquaculture industry.

4.7.2 Existing Marine Infrastructure

4.7.2.1 General

St. Alban's currently has one public wharf facility located on the south side of the harbour entrance. This structure is used by many aquaculture operators year round, as winter harvesting is an important activity at the site. There are also several structures located further in the harbour which have been developed privately to support aquaculture operations and service companies.

4.7.2.2 Public Wharf

The public wharf at St. Alban's consists of a combination finger pier and marginal wharf structure married together. The finger pier section measures 64m long x 9.2m wide and is constructed of creosote timber cribwork. The marginal wharf section extends 45 m south of the finger pier and then 37 m along the back of the fish plant for a total length of 82 m. It also appears to be constructed of creosote timber cribwork. Recent upgrades to this structure have seen a portion of the marginal deck removed and replaced with reinforced concrete, and new wheelguard has been installed on the seaward side of the entire structure.

The access road to this site is paved, and connects the facility to the local road. There are several storage buildings, a bloodwater treatment facility and a fish plant built on the approach. Water depths on the seaward side of the structure range from 6.5 m on the south end to 9 m at the north end. Water depths on the leeward side range from 0 m near shore to 8 m at the head. Water depths on the back portion of the marginal wharf range from 0 m near shore to 6.5 m on the southeast corner. Approximately 20 m of the structure near shore is unusable for berthing due to low water depths, leaving a usable docking space of 136 m on the seaward side and 63.2 m on the head and leeward side.



Photo 4.7.2.1 – Photo of finger pier looking from access road



Photo 4.7.2.2 – Photo of marginal wharf taken from harbour

The public wharf is currently used for loading, off-loading and berthing aquaculture vessels. Electrical services and water is available at the site. Aquaculture operators have their own electrical and water supplies running along the edge of the wharf for harvesting purposes. There is no lighting provided on the wharf.

4.7.2.3 Uplands/Parking Area

No uplands/laydown area is available for storage or vehicle parking at the existing site except for a small area located around the fish plant which is mainly used for storing fish tubs. A narrow access road travels along the shoreline to the fish plant, which makes it difficult to access for transport trucks. There is no 'turn around' located at the end of the road to permit such vehicles to maneuver, requiring that these vehicles turn around at the main road and back up along the access road to the fish plant so they can get back out afterward.



Photo 4.7.2.3 – Existing access road shown in background, taken from fish plant wharf

4.7.2.4 Privately Owned Structures

There are several privately owned facilities located in the harbour supporting two (2) aquaculture operators and one (1) aquaculture service company. Nordic Salmon (NS) and Long Island Resources (LIR) currently have private structures in place to assist in their loading and off-loading activities, due to overcrowding at the existing public wharf.

NS has a small local timber crib structure built just west of the public wharf along the access road. This structure does not extend far into the harbour, and there is limited berthing space available. In winter months the company ties up two (2) of its barges to this structure to provide more working space, and provide access to its cages for harvesting. The site is accessed from the same road as the fish plant wharf and also has a limited lay down area. NS currently performs all of its 'inflow' and 'outflow' activities from this facility, and does not use the public wharf at all.



Photo 4.7.2.4 – Photo of Nordic Salmon’s private wharf site taken from public wharf



Photo 4.7.2.5 – Nordic Salmon’s private wharf site

LIR also has a private wharf structure and office building located further in the harbour on Birchy Point. This wharf is not very large and does not provide any berthing space for the company’s vessels. A small lay down and storage area is provided around the building, but is not adequate for the needs of the operation. This site is primarily used for refueling vessels, personnel transport and loading equipment. All other activities are carried out at the public wharf, including feed and smolt deliveries, tying-up of cages, and harvesting of trout.



Photo 4.7.2.6 – Photo of Long Island Resource’s private wharf site

Newfoundland Aqua Service Ltd. (NAS) is a privately owned company offering aquaculture operators services in net cleaning, cage building and delivery of feed. They have a privately owned wharf located at the head of Birchy Point, adjacent to LIR’s location. This company has a local crib structure which it uses mostly for small open boats travelling back and forth to the farm sites and for off-loading nets. They currently have an office building located on the approach, along with two (2) feed storage buildings and a net drying building. All of the company’s operations occur at this site.



Photo 4.7.2.7 – Photo of Newfoundland Aqua’s existing site

4.7.3 Current Vessel Operations

4.7.3.1 Commercial Fishing

Use of the public wharf for commercial fishing is minimal at present, with the bulk of activity being centered around aquaculture usage.

4.7.3.2 Aquaculture

At present there are four (4) aquaculture companies operating out of St. Alban's consisting of Cooke Aquaculture (CA), Nordic Salmon (NA) Long Island Resources (LIR) and Cold Water Fisheries (CWF). A fifth company, Northern Harvest Sea Farms (NHSF), is also planning to use the facility in the near future as they have farm sites located in the area which they are planning to fill.

LIR currently operates two (2) trout growing sites in the area, located south of the community (figure 4.7.3.1).

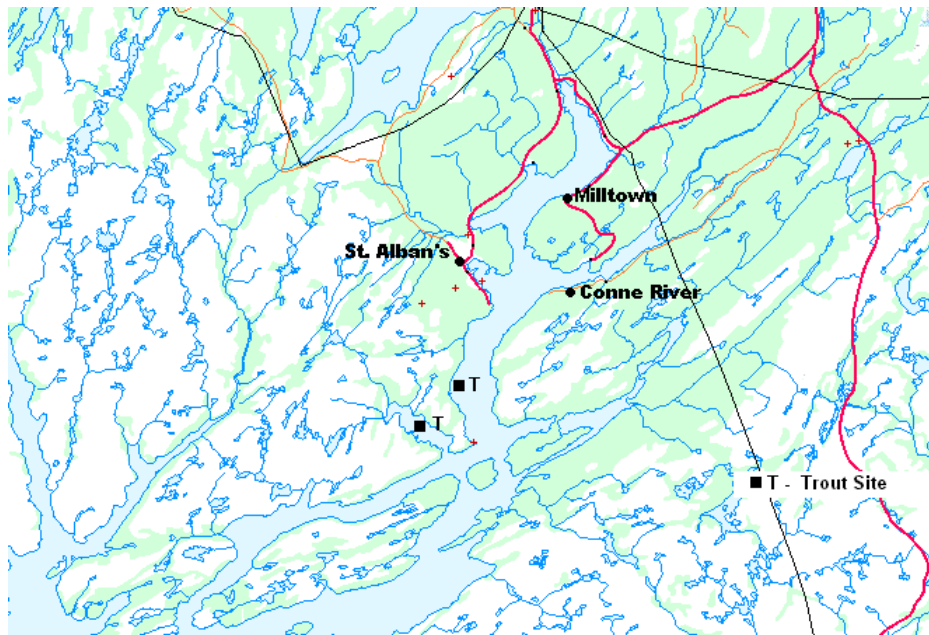


Figure 4.7.3.1 – Location of LIR's Aquaculture Operations in St. Alban's

LIR currently operates two (2) barges and two (2) long-liners measuring 13 m long each. In spring and summer the two long-liners normally tie-up at the public wharf in St. Alban's. In winter they have to use the wharf at Gaultois due to freezing conditions experienced in St. Alban's harbour. The public wharf is generally used for transporting feed, smolt and clean nets to the outlying sites on a daily basis. In the winter months, cages are tied to the wharf and fish are harvested from them directly at the wharf site. Transport trucks normally deliver the company's feed supply, but LIR would prefer if their feed could be delivered by means of vessels. The company's own private wharf is used mainly for fueling their vessels and transporting personnel to and from their farm sites.



Photo 4.7.3.1 – Photo taken at head of public wharf showing cages tied-up at the wharf during the winter months

Presently, Cooke Aquaculture operates seven (7) farm sites in the area (figure 4.7.3.2).

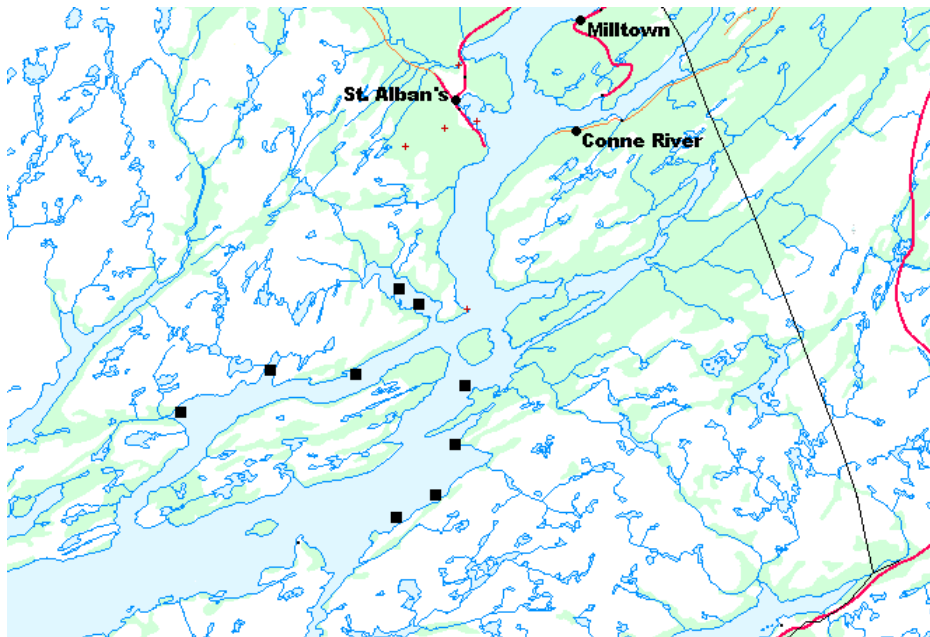


Figure 4.7.3.2 – Location of CA Aquaculture Operations

Each of the above sites will use three (3) vessels plus one service barge this upcoming season to carry out their operations. Currently, CA has a 12 m long service vessel, an 11 m long-liner and up to seven (7) 8 m long open skiffs, which normally berth at the St. Alban's facility. A 40 m long feed delivery vessel is also used by the company to transport feed directly to each of the farm sites and to off-load a portion at the wharf facility as well. Due to the number of present users at the existing wharf, CA is forced to tie-up three abreast in order to moor their vessels.

The company uses the St. Alban's facility for all of its loading and off-loading operations and for berthing. They usually load feed on the wharf to go to farm sites two to three times a day, and the main feed vessel normally arrives every couple of weeks to drop feed off. Smolt are delivered in May and June and again in September and October to be transported to site cages. St. Alban's is also used for processing trout at the local fish plant.

Boom trucks are used to load and off-load feed and nets from the wharf to the receiving vessels. Flat bed transport trucks are used to deliver gear and equipment, and cranes and forklifts are used to transport cargo from vessels to the nearest warehouse.

Nordic Salmon are currently operating three (3) arctic char growing sites in the area, one (1) located just north of Milltown and the other two (2) located south of St. Alban's (figure 4.7.3.3). The company also has seven (7) vacant sites located south of St. Alban's, including three (3) trout sites and four (4) salmon sites. The vacant sites will be stocked this upcoming year with approximately 100,000 trout and 200,000 salmon. All of the sites are shown below.

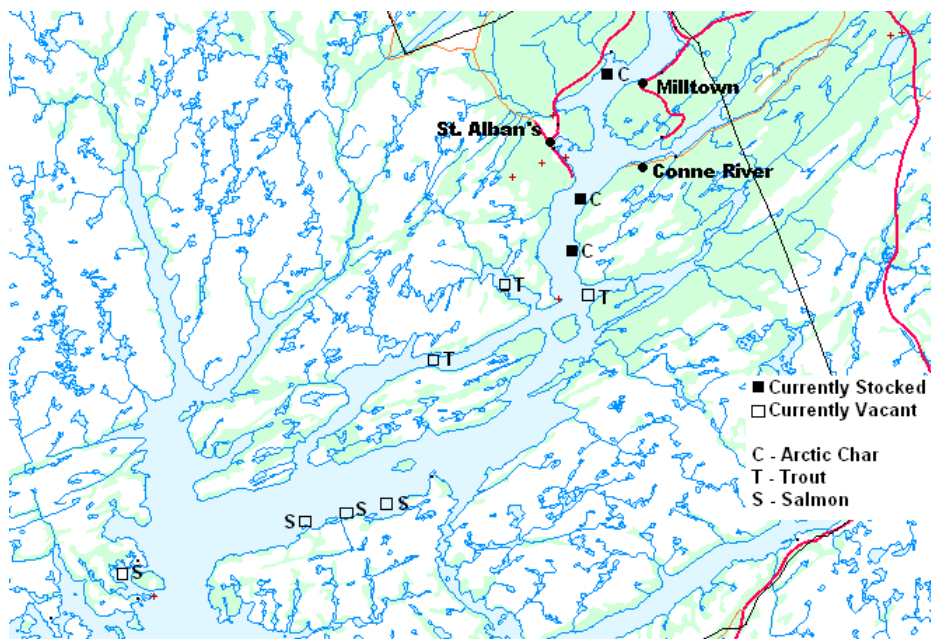


Figure 4.7.3.3 – Location of NS's Aquaculture Operations in St. Alban's

The company operates a number of vessels including a 10 m long steel barge, a 9 m tow boat for moving their two (2) floating wooden barges, and three (3) 6-7 m long open boats. All of the company's 'inflow' and 'outflow' operations occur over its privately owned site located just west of the public wharf. Feed is delivered by transport truck and is normally unloaded by forklift to their boom truck, which then loads the floating barges. Feed and nets are loaded daily at their facility to be distributed to their farm sites. Smolt is delivered at this site and occasionally at the Milltown facility in the spring and summer months. During the winter cages are tied-up to the wharf for harvesting. Due to congestion at the existing public wharf, NS are forced to carry out all of their activities, including berthing, at their own small private site. The company is currently in need of a new 'inflow' and a new 'outflow' facility in the area to operate properly.

At present, CWF is operating three (3) trout sites in the area, all located in the same vicinity, south of St. Alban's (figure 4.7.3.4.1).

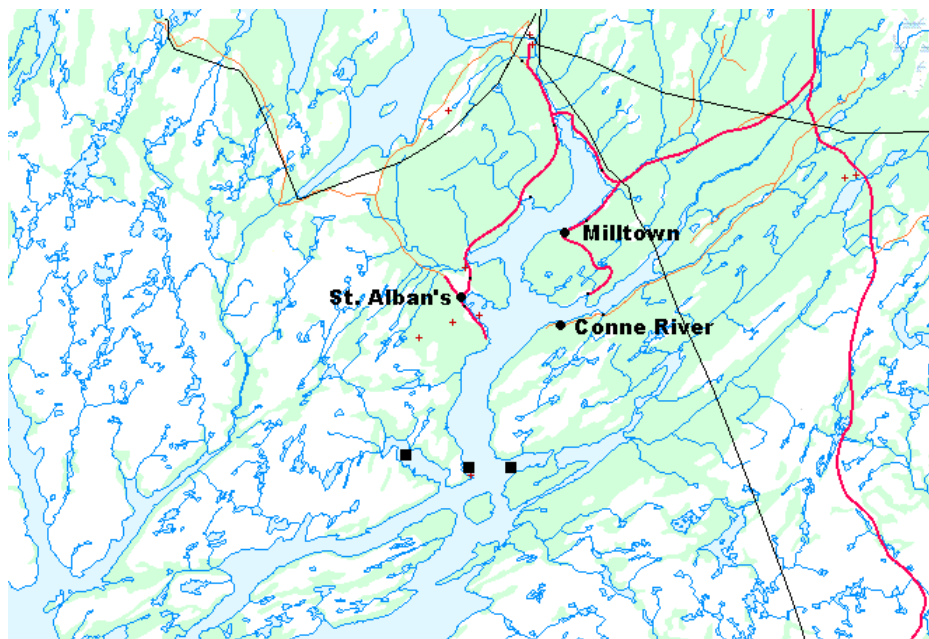


Figure 4.7.3.4 – Location of CWF's Aquaculture Operations in St. Alban's

CWF currently operates a long-liner measuring 10 m long, several small feed barges, and three (3) open skiffs measuring 7 m long. Due to overcrowding at the existing public wharf, the company is forced to tie-up most of its vessels at Birchy Point to a local timber structure located between LIR's and NA's privately owned sites. The company will have a new 20 m long vessel and 15 m long barge this upcoming summer. A majority of CWF's operations occur at the existing public wharf, including feed and clean net delivery, cage tie-up and harvesting of trout. Their feed is normally delivered by transport truck a couple of times a week and loaded to their farm sites daily. In recent years the company has decided to transport its smolt through the Conne River facility due to overcrowding at the St. Alban's wharf and to avoid possible cross-contamination from the fish plant discharge, harvesting, and cleaning of nets in St. Alban's. Smolt are brought in during June, August and September each year by transport truck. Due to the limited storage and lay down area at the existing wharf, the company has to store all of its feed, nets, fuel and equipment at NA's site.

NHSF is currently not operating out of St. Alban's, but has one (1) stocked site located south of the community and two (2) vacant sites located just north of it (figure 4.7.3.5). Once these sites are in full operation, NHSF will be making use of the existing wharf site as well for feed, smolt and net delivery and for off-loading harvested product at the fish plant. This will lead to a need for further berthing space at the existing facility. NHSF currently has two steel barges, four long-liners and several open boats operating out of Pool's Cove to carry out farm activities there.

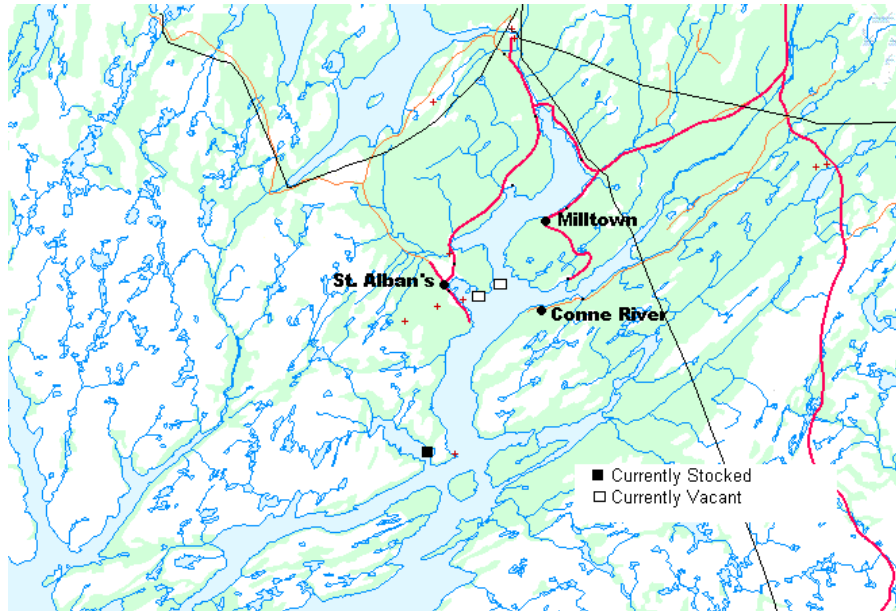


Figure 4.7.3.5 – Location of NHSF's Aquaculture Operations in St. Alban's

4.7.4 Aquaculture Issues Raised at Meetings

The main issues raised during industry consultation meetings in this area were the lack of a clean 'inflow' facility plus overcrowding at the existing public wharf. The need for a laydown area and feed storage facility was also raised during discussions.

4.7.4.1 Clean Inflow Facilities

From a bio-security standpoint, the existing public wharf located in St. Alban's is classified as a dirty or 'outflow' structure. This is a result of the off-loading of dirty nets and harvesting of fish at this location, especially in the winter months. Upwards of forty (40) cages are anchored at this site simultaneously when the harbour freezes over. Since feed and smolt also pass through this facility, a separate clean inflow site is needed to minimize the risk of cross-contamination from different activities. Due to shallow water in the harbour and limited access to the north side, a suitable location for a clean inflow facility does not appear to exist. As a result, many operators have suggested developing Milltown as a clean inflow facility and leaving St. Alban's as an outflow site. (Refer to the Milltown sub-section for further details, including provision of a lay down area with feed storage building.)

4.7.4.2 Outflow Facilities

Due to overcrowding at the existing wharf, there is a significant requirement for a new outflow wharf at St. Alban's to alleviate congestion. With the number of operators now using this site, and a high likelihood of others moving into the area in the near future the need for another wharf is critical. Even in winter, operators currently have difficulty tying-up their cages due to the extent of activity in the area. A possible site location for a new outflow structure was identified during the site visit just west of the existing facility, adjacent to Nordic Salmon's present site. This location is shown below.

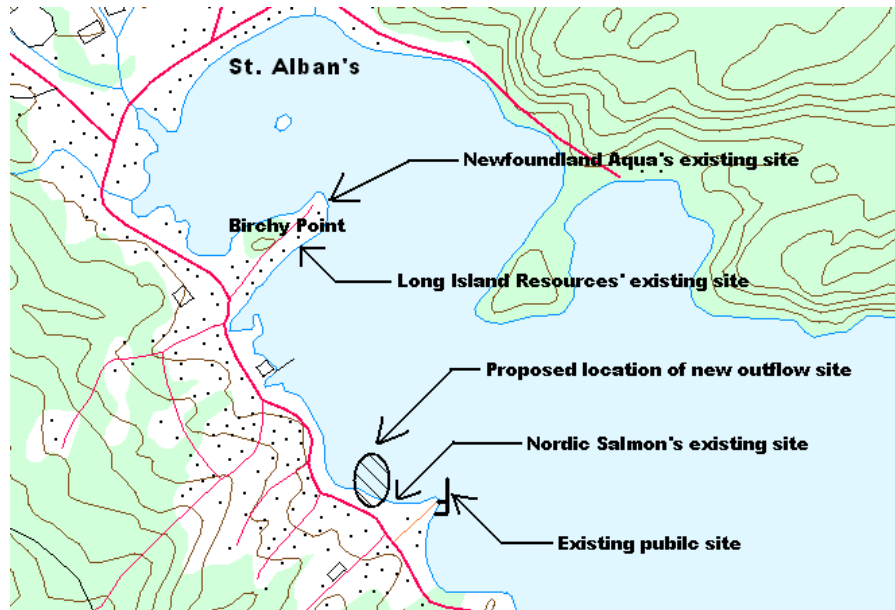


Figure 4.7.4.1 – Proposed New Outflow Site Location

This site is in close proximity to the fish plant and adjacent to the existing wharf access road. It could be used for off-loading dirty nets and equipment and harvesting fish to be delivered to the plant. It would also provide extra berthing and cage tie-up space in the winter months, and provide lay down, storage and vehicle parking spaces for users. Because of its location on the leeward side of the public wharf, it would be well protected from wind action as well.



Photo 4.7.4.1 – Photo showing possible new outflow wharf location looking from Nordic Salmon’s existing wharf

4.7.5 Infrastructure Assessment

4.7.5.1 Existing Infrastructure Condition

The existing public wharf in St. Alban’s is a Transport Canada structure which was originally used for the coastal boat service. Functionally it is in fair condition but will require replacement of some fenders, decking and wheelguard in the near future. The structural capacity of the wharf is unknown at this time.

4.7.5.2 Existing Infrastructure Capacity

The existing wharf is classified as a dirty or ‘outflow’ wharf for aquaculture purposes as it accommodates all types of aquaculture activities and multiple users. With a continued increase in activity expected of the industry in the coming years, there is a large deficiency in protected berthing space at this site. Also, it doesn’t provide a suitable space for handling the winter harvest when a large number of operator’s cages are tied-up to the wharf. This may be seen from an aerial view of the site in winter (see below).



Figure 4.7.5.1 – Aerial view showing fish cages secured to wharf in winter for harvesting

In addition, there is limited working space on the wharf itself once harvesting begins. Construction of a new outflow wharf would significantly improve this situation by re-locating many vessels and cages to another facility.

No storage or lay down capacity exists at the wharf for aquaculture use either. This deficiency needs to be addressed as part of any port improvements as well.

4.7.5.3 New Infrastructure Needs

A new clean inflow wharf for this area is needed for bio-security purposes, but would best be situated in Milltown. Discussions on the recommended design for this structure are documented in the 'Milltown' sub-section of the report.

New infrastructure needed at St. Alban's to accommodate present and future development of the aquaculture industry consists of a new outflow ('dirty') wharf to provide extra vessel capacity, an expanded storage/laydown area and provision of suitable access to the site.

The extra outflow space needed in this area is required to alleviate congestion at the existing facility and reduce costs and delays currently imposed on farmers in trying to find room to tie up and access wharf facilities when needed. To solve this problem, the new wharf capacity already available at the existing wharf needs to be doubled. A secure area for berthing vessels is needed as part of this development, as well as an infill area at the approach and a suitable laydown/storage area for storing and working on nets and equipment.

A concept view of such an outflow wharf and storage area is provided below:

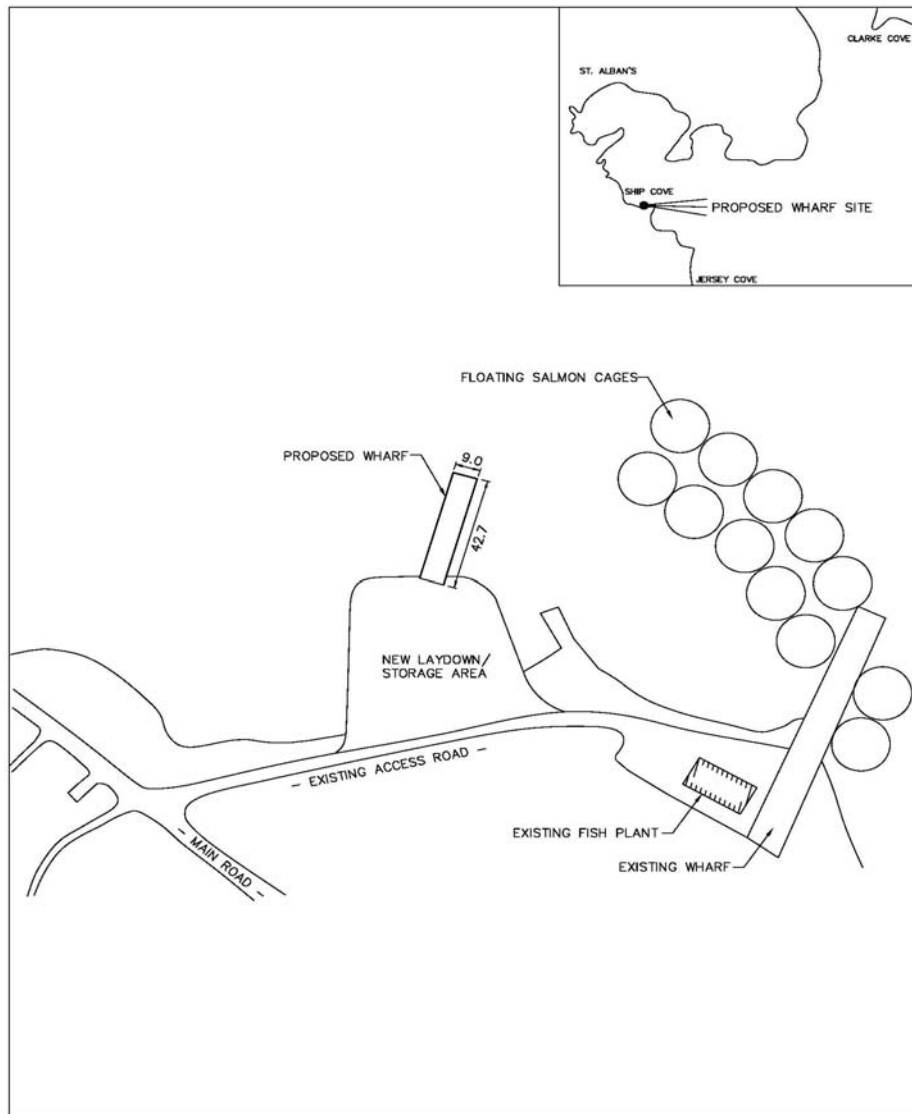


Figure 4.7.5.2 – Concept layout for a new wharf and laydown area

4.7.6 Cost Estimates

In reviewing options for constructing new infrastructure in St. Alban's, it is noted that a number of different locations and arrangements are possible to use which would result in approximately the same cost. Such options should be revisited with users at the design stage if and when funding is made available for the project, when more information on water depths and soil conditions are available. Additional soils data may suggest a different location or orientation to that shown, but for planning purposes the above concept represents the general needs of the port at this time.

Costs estimated for this option are based on the following;

- Water depth information was obtained from sounding surveys available at the existing wharf;
- Ground elevations and areal data were obtained from topographical maps;
- It was assumed that the land needed for the development is available at no cost to the project;
- The wharf would have an unpaved approach/laydown area where shown;
- Space would be provided on both sides of the wharf for accommodating berthing of vessels;
- A jib crane hoist, area lighting, electrical supply and salt water washdown system would be installed on the structure

Based on the above, the estimated cost of this development would be as follows:

Table 4.7.6.1
Cost Estimate
Construct Uplands/Laydown Area and New Outflow Wharf

Item	Description	Units	Quantity	Unit Price	Total Price
1	Laydown/Storage Area	m3	18,900	15	283,500
2	Treated Timber Piles	ea	102	2,000	204,000
3	Treated Timber Pile caps	m3	14	2,000	28,000
4	Dimension Timber	m3	55	2,000	110,000
5	Reinforced Concrete Deck	m2	360	250	90,000
6	Mooring Cleats	ea	14	2,000	28,000
7	Dredging	m3	600	45	27,000
8	Class "A"	t	1100	30	33,000
9	Area Lighting and Electrical	L.S.	-	-	80,000
10	Jib Crane Hoist	ea	1	20,000	20,000
11	Salt Water Wash-down System	L.S.	-	-	50,000
12	Repairs to Existing Wharf	L.S.	-	-	450,000*
Total Estimated Construction Cost					\$1,403,500
Engineering & Inspection (10%)					140,350
Total Project Cost (excluding HST)					1,543,850
HST (13%)					200,700
Total Project Cost (including HST)					\$1,744,600

* Cost based on estimate prepared for Transport Canada in 2008 to upgrade existing structure.

In terms of priorities, the above work may be subdivided into two (2) separate projects as follows:

Priority #1: Outflow wharf & laydown area - \$ 1,144,600

Priority #2: Repairs/upgrading to existing Transport Canada structure - \$ 600,000

5.0 REGIONAL OVERVIEW

5.1 Bio-security

Long term bio-security issues in the region can generally be categorized into two separate areas consisting of (1) Regulatory, planning and policy development initiatives, and (2) Physical infrastructure requirements.

This study deals only with the infrastructure needs. However, industry consultation meetings noted that potential actions in the regulatory area may impact infrastructure needs since new management policies can affect where aquaculture companies can profitably operate. The main concern in this regard was that implementation of 'bio-security zones' in certain locations could make it impractical for companies to operate from certain ports, making the identified infrastructure needs of the community redundant. Consequently, any work proposed to be completed in this category should be expedited where possible so any infrastructure development can be completed with the benefit of having such information in advance for planning purposes.

In terms of physical infrastructure needs identified during the study, these are summarized below.

5.2 Infrastructure Priorities

Some of the infrastructure needs identified herein are bio-security related, others are congestion related, while others are a combination of both. From an implementation perspective it is necessary to determine which are most urgent on a regional basis. To facilitate this, selection criteria were applied to each project identified to determine its relative importance compared to other projects. For this, each project was ranked on a scale of 1 – 10 in terms of how well it met the selection criteria, with one (1) being the least urgent rank and ten (10) being the greatest. Selection criteria used in the process was as follows;

- (1) **Urgency** – projects needed immediately to address existing industry needs received a ranking closer to 10, while projects needed to address future needs received a lower ranking;
- (2) **Bio-security** – projects which address bio-security concerns received a ranking closer to 10, while projects addressing other issues received a lower ranking;

The product of these rankings was then calculated and compared for each project to establish the relative importance of projects on a regional basis. Results of this exercise are summarized below.

Table 5.2.1
Weighted Infrastructure Rankings

Item	Location	Description	Urgency	Bio-security	Weighted ranking	Overall priority
1	Pool's Cove	Inflow wharf and laydown area	9	9	81	3
2	Pool's Cove	Feed storage facility	7	5	35	8
3	Belleoram	Inflow wharf & laydown area	9	8	72	4
4	Belleoram	Feed storage facility	6	5	30	9
5	Belleoram	Access road repairs	4	3	12	12
6	Hr. Breton	Inflow wharf & laydown area	6	8	48	6
7	Hr. Breton	Feed storage facility	5	5	25	10
8	Hermitage	Inflow wharf and laydown area	10	10	100	1
9	Hermitage	Outflow wharf	9	6	54	5
10	Hermitage	Feed storage facility	6	5	30	9
11	Conne River	Inflow wharf & laydown area	6	7	42	7
12	Conne River	Marginal wharf	6	3	18	11
13	Conne River	Breakwater	6	3	18	11
14	Milltown	Inflow wharf and laydown area	10	9	90	2
15	Milltown	Feed storage facility	6	5	30	9
16	St. Alban's	Outflow wharf and lay-down area	9	6	54	5
17	St. Alban's	Wharf repairs	4	3	12	12

5.3 Implementation Recommendations

Based on the priority rankings developed above, following are the projects identified as being required to address bio-security and industry growth issues, in order of priority, at the time the study was completed. It should be noted that this table only identifies needs, not areas that are necessarily eligible for funding. For example, feed storage buildings may need to be industry funded as individual buildings rather than multi-user common buildings as identified above.

**Table 5.3.1
 Implementation Requirements**

Priority	Location	Description	Estimated Cost	Notes
1	Hermitage	Inflow Wharf & laydown area	\$2,363,700	
2	Milltown	Inflow Wharf & laydown area	\$1,291,700	(2)
3	Pool's Cove	Inflow Wharf & laydown area	\$2,290,900	
4	Belleoram	Inflow Wharf & laydown area	\$2,188,200	
5	Hermitage	Outflow Wharf & laydown area	\$2,332,700	
5	St. Alban's	Outflow Wharf	\$1,144,600	
6	Hr. Breton	Inflow Wharf & laydown area	\$2,859,600	
7	Conne River	Inflow wharf	\$2,365,900	
8	Pool's Cove	Feed Storage Bldg.	\$962,000	
9	Belleoram	Feed Storage Bldg.	\$962,000	
9	Hermitage	Feed Storage Bldg.	\$962,000	
9	Milltown	Feed Storage Bldg.	\$962,000	
10	Hr. Breton	Feed Storage Bldg.	\$962,000	
11	Conne River	Marginal Wharf	\$893,000	
11	Conne River	Breakwater	\$950,900	
12	Belleoram	Access Road repairs	\$186,500	
12	St. Alban's	Wharf Repairs	\$600,000	(2)
		Total Estimated Costs	\$24,277,700	

Notes:

1. Estimated costs include HST.
2. Existing facility is a Transport Canada structure.

The costs shown above are variable in some areas and may change depending on the extent to which future growth is factored into structure sizing. The most significant of these variables is the size of feed storage buildings. The above figures assume a capacity of 1200 tonnes/building. However, the need at some sites would be less than others depending on the number of growers and level of activity expected in each area.