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7.0 SOCIO-ECONOMIC ASSESSMENT

Rationale for VECs Chosen

This section examines the Project’s effect on a number of Valued Environmental Components that make up this EIS. These VECs have been chosen based on previous experience of similar large scale construction and operation projects, issues scoping within the Study Area in which a number of concerns have been raised by the public, and the experience of consultants that have conducted numerous similar EIAs. The VECs chosen are: Economy, Employment, Education and Training, and Business; Land and Resource Use: the Fishing Industry; Physical Infrastructure; Municipal and Social Services Infrastructure; and Heritage Resources.

Some overlap occurs among the components that make up the various socio-economic VECs. For example, education is an important component of community life, but in order to view education and training as a continuous progression of labour force development, education has been placed in the Economy, Labour Force, and Business VEC. Obviously physical infrastructure is an important part of the quality of a community life, but in order to reduce the complexity of each VEC, Physical Infrastructure and Municipal and Social Services Infrastructure have been separated into two VECs.

Application of Evaluation Criteria for Assessing Socio-economic Effects

Several criteria were taken into account when evaluating the nature and extent of environmental effects. These criteria are described in Table 7-1 (CEA Agency 1994):

Table 7-1: Definitions of Attributes Used in the Effects Assessment Process

Attribute	Definition
Direction	<ul style="list-style-type: none"> describes the ultimate long-term trend of the effect
Magnitude	<ul style="list-style-type: none"> describes the severity or intensity of the effect; typical measurements of magnitude indicate gains or losses in features or changes in conditions
Geographic extent	<ul style="list-style-type: none"> describes the area over which the particular effect will occur and is similar to the spatial boundaries of the assessment
Duration	<ul style="list-style-type: none"> refers to how long an effect will occur and is closely related to the project phase or activity that could cause the effect
Frequency	<ul style="list-style-type: none"> is associated with duration and refers to the number of occurrences that can be expected during each phase of the project
Reversibility	<ul style="list-style-type: none"> is the ability of the human community (i.e., economy, society and culture) to return to conditions that existed prior to the adverse project effect
Level of Confidence	<ul style="list-style-type: none"> enables the analyst to assign a level of confidence to the prediction based on an understanding of the limitations of the prediction exercise
Certainty/likelihood of occurrence	<ul style="list-style-type: none"> enables the analyst to assign a level of probability that the effects will occur
Mitigation/effects Management Success	<ul style="list-style-type: none"> mitigation is the suggested method by which an adverse effect can be made less severe. In the case of socio-economics, mitigation is often referred to as “effects management” because the term addresses both positive and negative effects and encompasses methods by which those effects can be positively managed (and enhanced) or mitigated (in the case of negative effects)
Significance	<ul style="list-style-type: none"> Definition



The assessment process itself involved use of:

- quantitative analysis of indicator variables;
- informed source opinions obtained by interviews with officials, public service providers and practitioners;
- advice and input from potentially affected groups and individuals through the public and stakeholder consultation program running concurrently with the assessment;
- relevant literature; and
- professional judgment based on the training and experience of the analysts.

The effects attributes noted above were used to describe the residual effects that could occur as a result of Project interactions with the VECs. The term ‘residual’ indicates attention is given to assessing the effect after implementation of specified mitigation and/or enhancement measures.

Careful assessment of residual effects is critical to the determination of their significance, especially in the absence of threshold values with respect to socio-economic effects specified in standards, legislation, or regulations.

Table 7-2 presents assessment ratings for each of the ten effects attributes used in the MITI SEIA. In addition, definitions are provided for terms employed in describing mitigation success and significance. In the following sections, the suggested level of significance is noted in connection with each residual effect.

Table 7-2: Effects Ratings Used for Assessing Residual Socio-Economic Effects

Direction	
Adverse	Effect is worsening or is not desirable
Positive	Effect is improving or is desirable
Magnitude	
Negligible	Does not have a measurable effect on valued socio-economic components.
Low	Has a measurable effect on socio-economic components but is of short-term duration.
Medium	Has a measurable effect on socio-economic components but is of medium duration.
High	Has a measurable and sustained effect on socio-economic components.
Geographic Extent	
Local	Effect is limited to specific population groups or a few communities close to the mine site.
Regional	Effect extends to the Socio-Economic Regional Study Area.
Territorial	Effect extends to the Northwest Territories.
Sub-National/National	Effect extends beyond the Northwest Territories.
Duration	
Short-term	Effect is expected to last less than two years.
Medium-term	Effect is expected to last between two and ten years.
Long-term	Effect extends throughout operation phase or beyond.
Frequency	



Table 7-2: Effects Ratings Used for Assessing Residual Socio-Economic Effects

Rare	Effect occurs infrequently and is difficult to predict.
Intermittent	Effect occurs infrequently but when it will occur can be predicted.
Continuous	Effect occurs continuously.
Reversibility	
Yes	VSEC is capable of returning to an equal, or improved, condition once the disturbance has ended.
No	VSEC is not capable of returning to an equal, or improved, condition once the disturbance has ended.
Level of Confidence	
Low	Information provided should be considered as having a low probability of being absolutely accurate.
Medium	Information provided should be considered as having a medium probability of being accurate.
High	Information provided should be considered as having a high probability of being accurate.
Certainty/Likelihood of Occurrence	
Low	The effect can be considered to have a low probability of occurring.
Medium	The effect can be considered to have a medium probability of occurring.
High	The effect can be considered to have a high probability of occurring.
Mitigation Success	
Highly effective	No change in socio-economic indicator, i.e. it returns to its original condition or socio-economic enhancement is evident.
Moderately effective	Measurable change in socio-economic indicator but no permanent negative impact.
Minimally effective	Major change in socio-economic indicator and permanent negative impact.
Significance	
Insignificant	No effects.
Minor	Low-level effects are distinguishable. These are usually limited to the short-term and are geographically circumscribed but are not considered disruptive to normal socio-economic conditions even if widespread and sustained ¹ .
Moderate	Effects are clearly distinguishable and result in elevated awareness or concern among stakeholders or materially affect the well-being of defined populations/communities. Usually are short- to medium- term in duration and are amenable to management if they occur over the longer term.
*Significant	Effects are highly distinguishable and result in strong concern/reassurance among stakeholders or result in substantive changes in the well-being of defined populations/communities. Usually are long-term in duration and not/very easily managed.

*Can be positive or negative in case of socio-economic effects

¹ Typically, minor socio-economic effects are not considered to require mitigation or management action to either enhance benefits or control adverse impacts. Both moderate and significant effects require cooperative and coordinated impact management on the part of the proponent, governments and affected populations. Moderate effects can typically be managed by such action to result in a range of outcomes that is acceptable to most key stakeholders. Significant effects require decisive management action to either reduce adverse or optimize beneficial impact outcomes.

7.1 DEMOGRAPHIC CONTEXT FOR VALUED ENVIRONMENTAL COMPONENTS

The Primary Study Area is from the immediate proposed project location at Melford, Guysborough County, along Route 344 to Highway 104 at Mulgrave, along with the proposed location of the new highway/railroad corridor to Highway 104. The Employment Catchment Area includes the Primary Study Area and all other communities within a 50 km radius or driving distance of the Project site.

Statistics Canada (in cooperation with local municipalities) groups various small communities into subdivisions for Census evaluations. In the region, these subdivisions are made up of partitions of the Counties of Antigonish, Guysborough, Inverness, and Richmond and the population of each is between 3,500 and 7,800. There are also four towns within the Study Area: Antigonish (4,200), Canso (911), Mulgrave (879), Port Hawkesbury (3,517) (www.statcan.ca). Together these all make up the larger Study Area which is quite similar to the Employment Catchment Area.

Much of the Study Area is rural with a total population of approximately 45,000 (down almost 5,000 from 1996) within a nearly 6,000 km² area. Port Hawkesbury, one of the largest towns in the Study Area with a population of approximately 3,500 (down almost 300 from 1996), is the industrial/commercial hub for the surrounding area. The other major towns are Canso, a well-known and old fishing community with a population of just over 900 (down almost 200 from 2006) and Mulgrave, a marine service centre population 880 (slightly below its level of ten years ago) (www.statcan.ca).

While Mi'maq people have traditionally used the resources of the area of Guysborough County especially the Strait of Canso and Chedabucto Bay, the only current Native Reserve within the Study Area is Paq'tnek First Nation at Pomquet and Afton in Antigonish County (www.aboriginalcanada.gc.ca). The present population originates from mixed descent of United Empire Loyalists as well as Acadian, Scottish, English and Irish settlers (www.richmondcounty.ca, www.invernessco.com, www.antigonishcounty.ns.ca, and www.geocities.com).

Detailed information about the Study Area (e.g. transportation, power supply, water supply, waste management, municipal planning, emergency response, education, recreation and housing) is provided in the Baseline section. Demographic change is important both in terms of past change and its implications for capacity of existing infrastructure and services, and the context within which future change (e.g. through any project-related in-migration) may occur.

Effects of Construction

Approximately 3,000 direct and 2,000 indirect person-years or work will be required during the construction phase of the Project (Gardner Pinfold 2008). Since unemployment is high, and the region has experienced a population decline of more than 10 percent in the last ten years, it is unlikely that speculative in-migration will occur. The demand for employment during the construction phase will be short-term and can most likely be filled by the existing regional labour force. Since no large construction projects, that would retain these employees, are anticipated for the area in the future it is unlikely that construction workers and their families would move into the region on a permanent basis. Construction workers have a history of commuting to projects throughout Nova Scotia and the Maritime provinces and, therefore, would most likely retain their existing residences and either commute or find temporary accommodations in local rooming houses.

Effects of Operation

The terminal would provide approximately 1,750 person years of direct employment and 2,100 person years of indirect employment (Gardner Pinfold 2008). It anticipated that the majority of workers will commute from the Employment Catchment Area. Some individuals in senior and other positions may move to the Study Area with their families and some families may return to the Study Area as a result of long term prospects of employment at the Project, but given the 10 percent population decline during the past ten years and the low birthrate, these families may not replace the recent population loss (www.statcan.ca).

Due to population loss, much of the infrastructure and business capacity is underutilized. It is anticipated that new business opportunities caused by the Project could be filled by the existing population.

7.2 FIRST NATIONS COMMUNITIES

There are no First Nations reserves close to the Primary Study Area. Therefore, with the exception of possible employment and business opportunities, potential interactions between the Project and the First Nations are likely to be limited. Nonetheless, MicMac First Nations have a blanket claim to all Nova Scotia Crown lands and a well-established negotiation process is underway between the First Nations, Nova Scotia and Canada to achieve a mutually acceptable settlement. MITI has contracted the Confederacy of Mainland Mi'kmaq to conduct a Mi'kmaq Knowledge study of current land and resource within a five km radius of the proposed Project site. An interim report has indicated that while the Confederacy of Mainland Mi'kmaq has an interest in the entire area, there were no issues of concern identified in the area examined (Confederacy of Mainland Mi'kmaq 2007, 2008).

7.3 EFFECTS MANAGEMENT

The Project's socio-economic effects will mostly occur through:

- The direct effects of Project activity (e.g. Project employment and contracts, the transportation of materials, goods and personnel);
- The multiplier effects of Project activity (e.g. indirect and induced effects of Project employment and expenditures); and
- Project-related demographic change (with the in-migration of individuals and their families to avail of Project-related opportunities).

In a socio-economic context, the objective of effects management is to avoid adverse effects where possible and to mitigate them where they cannot be avoided, to levels where the effect is not significant. Where effects are potentially beneficial, the objective is to try generating or enhancing those benefits. Effects management has become an increasingly important component of the environmental assessment process and of planning processes that have evolved outside of the environmental assessment process, and will be so for this Project.

Effects management can be achieved in a variety of ways. They include:

- Project design: for example, to avoid a large influx of construction workers, that would cause social disruption in a rural area, a proponent chooses to use a work-camp to avoid potential adverse effects (Storey 1995)
- Benefits Plans which are comprehensive documents outlining in detail a proponent's approach, policies and procedures with respect to local industrial benefits (e.g. supplier

development, procurement, education, training, succession planning, technology transfer)

- Diversity and equity plans
- Monitoring and follow-up

7.4 ECONOMY, EMPLOYMENT, TRAINING, AND BUSINESS

7.4.1 Valued Environmental Component Rationale

This VEC includes several key indicators that form the economic and employment foundation of any community: the economy, employment, education and training, and business. As such this VEC is seen as fundamental to any examination of the effects of the Project on the lives of individuals, families, and groups that live in the Study Area and will be the key driver for other VECs to be discussed later in this section.

The main underlying causal factors that will drive changes are Project expenditures and Project employment. Hiring a workforce and purchasing goods and services has implications for the province as well as for the towns and communities within the Study Area. In some cases, the Study Area will be affected directly (e.g. employment resulting from construction, operations, and decommissioning activities). In other cases, the Study Area will be affected indirectly (e.g. the use of support services during the three project phases).

Effects are also reported for another indicator, the economy, and the direct and spin-off effects to the provincial gross domestic product. Training is also included in this sector because there will be effects from the Project on the ability to hire an educated and skilled workforce. For continuity and ease of reading the potential effect on education as a result of some people moving into the Study Area is also included in this section.

7.4.2 Economy, Employment, Training, and Business Boundaries

7.4.2.1 Spatial and Temporal

The Economy, employment, and business boundaries include the Study / Employment Catchment Area and the province as defined in Section 5.11, the Baseline Study. The effects of the Project on the economy, employment, training, and business will occur mainly during the construction and operations phases both within the province and the Study Area. In some cases, VECs will be affected locally and directly (e.g. training). In other cases, they will be affected indirectly (the economy as a whole) or through demographic change (e.g. people and businesses moving into the Study Area). Thus, the assessment boundaries vary depending on the nature of, and availability of, data for specific indicators and the potential geographic range of the effect in question.

The temporal scope of the assessment is the construction and operations of the Project. Decommissioning is discussed in Section 7.13.

7.4.2.2 Administrative and Technical

The basic units are the province as whole and the Study Area in particular.

7.4.3 Existing Knowledge

Worldwide container traffic is growing at a compound rate of over 6 to 7 percent per year. Shippers require stable and reliable supply chain routes from China, India, and Southeast Asia, to North American markets. Ports along the west coast of North America provide the

gateway for much of the cargo destined for the east coast, but operate with significant congestion (Gardner Pinfold 2008).

East coast ports have limited capacity to accept the world's largest ships now coming through the Suez Canal. It will be difficult to meet rising demands with many existing ports on the east coast including Montreal, New York, and other Northeastern US destinations facing barriers to expansion in their highly urbanized settings. In order to meet these challenges, Melford International Terminals Inc. is proposing to create a new deepwater port and intermodal rail container logistics terminal at Melford Point on the Strait of Canso, Nova Scotia (Gardner Pinfold 2008).

7.4.4 Existing Conditions

The population of the province in general, as well as the Study Area, is largely rural with the exception of the Greater Halifax Region. Rural areas of the province continue to face systemic challenges associated with seasonal employment, low incomes, and a high dependency on government transfers. Rural areas are also highly dependant on resource-based industries in which fluctuations can cause serious economic challenges.

Sustaining future labour supply presents a number of challenges in the province. Demographic trends demonstrate that the population is both declining and aging, as a result of low birthrates, out-migration, and other factors. These same projections demonstrate that the labour force will shrink as older workers, now aged 55-64, retire over the coming decade (www.statscan.ca).

The Nova Scotia economy grew by more than six percent between 2000 and 2005 (NS Department of Finance, Economics and Statistics Division 2007, 1). The regional economy is not as strong. For instance, while the province's employment rate rose from 52.5 percent to nearly 60 percent between 1997 and 2006, that of the Cape Breton and Northern Regions combined rose from about 45 percent to a little over 51 percent during the same period (NS Department of Finance, Economics and Statistics Division 2007, 2). The Study Area economy also differs from the provincial economy in that employment is strongly dominated by retail and wholesale jobs. However, similar to the province, the local labour force and participation rate have also recently increased.

Average annual personal income of residents of the Study Area is lower than that of their provincial counterparts; the median in the Municipality of the District of Guysborough is \$13,850, compared with the provincial median of \$18,735. The amount of personal income that is derived from government transfers such as employment insurance and social assistance is higher than the average rate of the Province. This is to be expected of a slower economy and particularly one that has a stronger presence of seasonal natural resource based industries such as forestry and fisheries (www.statcan.ca).

In all age groups from 25-64 years, residents of the Study Area have a higher rate of education in skilled trades when compared to their peers province-wide. Older Study Area residents tend to have a lower education level than younger groups. Those in the youngest age sets have higher rates of university education than their provincial peers (www.statcan.ca).

The Study Area has some capacity in early childhood education centres (Berthier, Cormier, Grace, Marchand, Melong-Brow, Pollard, Uloth, Vincent, pers.com.). However, there are no facilities in the Primary Study Area or in Inverness County (www.cccns.org). The primary and elementary school population of the Study Area is in consistent decline (NS Department of Education). This has resulted in school closures and amalgamations (Strait Regional School

Board). This may result in increased school capacity in the short term as well as additional school amalgamations and closures in the long term.

There are two post secondary educational institutions in the Study Area. St. Francis Xavier, which does not offer specialized industry courses or programs, is at full capacity. In contrast, the Strait Area campus of the Nova Scotia Community College has student capacity, would expand to meet need, and offers trades and technical programming in response to industry requests. Cape Breton University in Sydney has both the capacity to accept new students and to offer specialized programming (Lewis, MacGregor, Rose, pers.com).

The Strait of Canso is an industrial and service centre. A number of the major employers are involved in mining, manufacturing, and shipping (www.straitsuperport.com, www.strait-highlands.ns.ca). Government services employ people in health care, social programming, and education (www.statcan.ca). There are eight industrial parks in the Study Area. Most are full but both the Port Hawkesbury Richmond County Joint Industrial Park and Melford Industrial Reserve have capacity for additional industries and companies (www.targetnovascotia.com).

7.4.5 Potential Interactions, Issues and Concerns

The proposed MIT will occupy 217.4 hectares. The proposed facility will include all components necessary for operation of a state-of-the-art marine and intermodal container logistics terminal including:

- *Container Terminal* – full build-out capacity for large container volumes and designed to feature the largest container gantry cranes with dense container storage in the storage yard;
- *Intermodal Rail Yard* – the primary landside distribution mode for MIT containers including a switching yard designed to accommodate heavy cars and high volumes to serve the MIT facility; also a series of rail working tracks extending towards the wharf
- *Logistics Park* – a multi-use logistics park to allow for integration of rail, truck, transload and intermodal services with distribution and warehousing, including container laydown and handling areas warehouse facilities as well as cargo storage and segregation facilities. The project will include an initial park development of 129 ha with a further 478 ha reserved in the backlands for future expansion of the park.
- *Running Track* – a new single line rail connection to the existing Cape Breton and Central Nova Scotia railway;
- *Security, Customs and Cargo Services* – to provide a one-stop security and customs check in the port zone that will enable containers to be pre-cleared for direct transit to destinations in the U.S. and Canada, and.
- *Realigned Highway 344* - realigned existing coastal road to minimize interference between local traffic and terminal activities.

The project will interact with the economy, employment, education and training and business in numerous ways. Project expenditures and their associated multiplier effects, particularly through the construction phase, have the potential to significantly increase earned income levels in the province generally and in the Employment Catchment Area and Study Area specifically. In addition, the project will affect individual income taxes, corporate taxes, payroll taxes, and Worker's Compensation premiums. The Project also has the potential to provide significant benefits to the province, the Employment Catchment Area and the Study Area specifically



through employment associated with the construction of more than 3,000 person years and operation of the Project (1,750 person years). The magnitude of the employment will cause interaction between the Project and education and training institutions within the province as a whole and the Employment Catchment Area and the Study Area specifically, both during the construction and operations phases and for short and long-term education and training. Finally, the project will have direct and indirect direct interactions with existing businesses in the Province as a whole and the Study Area specifically and will provide opportunities for new businesses (Gardner Pinfeld).

While area residents recognized that this Project would have a positive and long lasting effect on the economy, employment, training and business as a whole, they did raise some questions, issues and concerns at public meetings (see Section 3). These questions and concerns included how local residents would be employed both during construction and operations, would they be given preference over “outsiders”, where they could obtain training and how local businesses would be given an opportunity to provide support services to the Project.

7.4.6 Project Socio-Economic Effects and Effects Management

Overview

The Melford Terminal will generate substantial positive effects in Nova Scotia and Canada during its construction and operations. Effects will be concentrated in the Strait of Canso area, thereby intensifying their relative economic significance.

The full array of overall effects (direct and spin-off) are summarized in Table 7-3.

Table 7-3: Economic Effects of the Proposed Melford Terminal

	Construction Impact (1)	Operations Impact (2)
Nova Scotia		
Gross domestic product (\$millions)		
Direct	\$165	\$110
Spin-Off	\$165	\$130
Total	\$330	\$240
Employment (person-years)		
Direct	3,000	1,750
Spin-Off	2,000	2,100
Total	5,000	3,850
Canada (total including Nova Scotia)		
Gross domestic product (\$millions)		
Direct	\$165	\$110
Spin-Off	\$350	\$170
Total	\$515	\$280
Employment (person-years)		
Direct	3,000	1,750
Spin-Off	4,500	2,650
Total	7,500	4,400

Source: Gardner Pinfeld, 2008

(1) Impacts represent the total for the 2-3 year construction period.

(2) Operations figures represent annual impact based on first year of operation. Annual impacts would more or less double when the terminal reaches full capacity.

Highlights of the direct and spin-off effects are described below.

Construction

- Construction will result in an increase of \$330 million in Nova Scotia GDP, and an additional \$170 million in GDP in the rest of Canada.
- Construction will create 3,000 PY of direct employment in Nova Scotia, with another 2,000 generated through spin-off activities in the province. The spin-off activities generate an additional 2,500 PY in the rest of Canada.

Operations

- Terminal operations (year one) will generate a total GDP impact of \$240 million in Nova Scotia, with an additional \$40 million elsewhere in Canada.
- An estimated 1,750 direct PY (annual) jobs will be created in Nova Scotia during operation, with 2,100 potential spin-off jobs created elsewhere in the economy for a total of 3,750 PY. These numbers will rise as the terminal reaches full capacity. For the rest of Canada, industry will benefit mainly from spin-off activities, with an additional 550 PY created, bringing the overall Canadian total impact to 4,400 PY.
- Indirect negative effects could occur for some employers within the Employment Catchment Area who lose their employees to the Project. However, this also results in more job openings within the Employment Catchment Area as a whole.

The Economy

This section addresses potential effects and effects management of the Project on the economy. Because of its size in terms of employment and expenditures, the Project will have immediate and long-lasting effects on the provincial and Study Area economies.

The following descriptions of construction and operation costs are set in 2007 dollars. Expenditures are made within the province of Nova Scotia unless otherwise indicated. All expenditures are assumed to be incremental to the provincial economy.

Construction

Pre-construction activities lay the foundation for Project construction. They range from project development and administration costs, to permitting and engineering, marketing and public relations, as well as legal and consulting services. In total, these are estimated at \$10.3 million.

Total construction costs are estimated more than \$400 million. The terminal (\$275 million) requires construction of two main components: the container terminal (\$245 million) and rail extension (\$30 million), as well as a transmission corridor. The logistics park (\$160 million) requires construction of eight large warehouse facilities at \$20 million each.

Terminal construction is expected to take just over two years and generate 1,500-1,600 person-years of work. Logistics park construction will be phased as required by demand, and is expected to generate 1,300-1,400 person-years of work. By its nature, this work and the associated jobs will occur in the Strait of Canso area (Gardner Pinfold, 2008).



Indirect negative effects could occur for some employers within the Employment Catchment Area that lose their employees to the Project. However, this also results in more employment openings within the Employment Catchment Area as a whole.

Provincial and local companies have the capacity to conduct most or all the construction work (75 percent of total cost), though most of the port and logistical equipment (mainly cranes and specialized carrying devices) would be imported (25 percent of total cost, Gardner Pinfold, 2008).

Operations

The following direct operational expenses were estimated for the container terminal based on projected levels of operation and expected activities. All figures pertain to the first year of operation, which is expected to see approximately 150 ship visits with an average of 5,000 twenty-foot equivalent units (TEU) per ship and a total of 750,000 TEUs for the year. At full operation, the terminal is expected to handle 300 ships annually.

The Melford Terminal would generate initial annual expenditures in Nova Scotia and the rest of Canada estimated at about \$1.1 billion. Expenditures by main category are:

- Terminal operations: \$62 million
- General services: \$82 million
- Bunkering: \$420 million
- Rail shipping: \$470 million
- Logistics: \$64 million

Local effects will be highest for the expenditures associated with terminal operations, general services and logistics because these are mainly on-site activities involving local companies and employees. Bunkering will generate local and regional employment (in refineries), though most of the cost is for imported crude oil. Similarly, there will be some local and regional employment arising from rail shipping, but much of this will occur elsewhere in Canada and in the US (Gardner Pinfold, 2008).

Methods of enhancing the economy are addressed in the following sections that include employment, education and business.

Employment

This section addresses potential effects and effects management of the Project on employment. Based on the experience of similar projects elsewhere, employment would include a range of skills. During construction, MITI anticipates requiring the following trades and professions:

Carpenters
Concrete finishers
Heavy equipment mechanics
Ironworkers/welders
Concrete truck drivers
Crane/boom truck operators
Divers

Electricians
Engineers
Operating engineers
CAD draftsmen
Reinforcing steel rodmen
Geotechnical drillers and loggers
Labourers

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Masons	Plumbers/pipe fitters
Clerical workers	Fish and wildlife biologists
Masters, mates and deckhands	Fuel truck operators
Materials testing technicians	Roofers
Painters	Surveyors and rodmen
Engineers (design)	Health, safety and environment personnel
Pilots	Technologists
Fishermen	

During operations there will be employment associated with the following businesses:

- Terminal operator
- Stevedoring companies
- General services
 - Pilotage authority
 - Tugs and towing
 - Export/import
 - Customs agents including inspection and security
 - Ships chandlers
 - Ships agents, brokers, and freight forwarders
 - Other services (e.g., container repair, freezer maintenance)
- Logistics park operators (warehousing, packaging and crating, container stuffing)
- Rail service
- Trucking companies

A skilled labour shortage may exist, particularly during the construction phase. In order to ensure that employment opportunities are available to the labour force within the Employment Catchment areas, MITI will:

- Build a local workforce by hiring the most qualified people based on an equal opportunity policy, applicable work rules, and provincial employment standards regarding age;
- Fill available positions from within the Employment Catchment Area providing the applicant has the necessary qualifications;
- Give preference to residents who are qualified and members of a trade union;
- Work on labour issues with the Nova Scotia Mainland Trades Association;
- Promote employment opportunities through job fairs, advertisements, job postings, local publications, high schools, and post-secondary institutions within the Employment Catchment Area and through the MITI website;
- Develop an employment profile and strategy that addresses the need for all ages to be represented in the workforce for succession planning purposes;

- Develop strategies to encourage older workers to remain in the workforce beyond early retirement years;
- Share information on types of positions where shortages exist or are anticipated; and
- If skilled labour shortages become apparent, promote the requirement for skilled labour to qualified trades people that may have temporarily relocated to other areas such as Western Canada.

Training

This section addresses potential effects of, and effects management for, the Project on education and daycare systems with emphasis on education and training of workers in the Employment Catchment Area. The Project will generate 2,800 to 3,000 person-years of work during construction and 1,750 direct jobs during operations (Gardner Pinfold). The skills of these workers will range from very experienced to new entrants, depending on the tasks. In each case, MITI will require clear demonstration of literacy and completed technical training such as an apprenticeship, or high school diploma, plus speciality post-secondary training.

There are two major potential effects on education and training. Effects on educational attainment include literacy, completion of high school, trades certification, as well as other post-secondary training. Effects on resources such as education and training institutions include the need to respond to demand for more services.

During construction, it is not anticipated that a significant number of workers (male or female) will re-locate permanently to the Study Area with their families. If they did, sufficient capacity exists within the school system to accommodate them as primary and elementary school enrolment has continued to decline over the past thirty years in the Study Area. Therefore, there will be no significant effect on the education system during construction. However, throughout the operations phase, some workers are expected to relocate into the Study Area with their families thereby increasing the demand for childcare and classroom space.

While increased demand for primary school student spaces can easily be accommodated in the school system, increased demands for child care spaces will likely outstrip supply. While there are 12 licensed daycare centres within the Study Area, there are none in the Primary Study Area. Eight out of the 12 are located in Antigonish, one in each of Canso and St. Peter's and two on Isle Madame. Although some of these centres had capacity in 2007, none are within a 50 km driving distance. There were about 64 day care vacancies within the Study Area, with the most limited capacity in Antigonish. Between the centres in Canso, St. Peter's, and Isle Madame there were 44 spaces (Berthier, Cormier, Grace, Marchand, Melong-Brow, Pollard, Uloth, Vincent, pers.com.). Given that sufficient time exists before the operations phase, this will likely result in new childcare centres opening up in the Study Area to meet demand. It should also be noted that in addition to the formal daycare centres, there is a local custom of stay-at-home mothers in the Study Area taking in children during working hours. While it is not possible to quantify this daycare resource, it is also a daycare resource which will contribute to providing this important function.

With an overall increase in population in the region, there is greater potential for higher student enrolment in post-secondary institutions including the Nova Scotia Community College's Strait Area Campus. This effect will take some time to become evident depending on the ages and number of children. If mature workers with older children relocate to the Study Area, then their children have the potential to enter post-secondary schools much sooner than those of younger families. While the Strait Area Campus of NSCC and Cape Breton University (Sydney) can

accommodate more students, St. FX in Antigonish is at capacity (Lewis, MacGregor, Rose, pers.com.).

There are a number of human resource development strategies that MITI can participate in to ensure that the local labour pool has the required skills and certifications, but they cannot be implemented by the company alone. Unions, post secondary institutions and government must work in partnership to coordinate a comprehensive strategy and execution plan.

In order to ensure efficient well-trained future employees are available to work at the Project site, MITI will undertake specific mitigation measures to manage education and training needs. It will:

- Prepare and implement a Project orientation training strategy to encourage and promote completion of secondary school education.
- Work with ongoing initiatives and school programs to encourage secondary school students to pursue trades occupations for which demand exists;
- As women have been underrepresented in trades occupations and because they represent a good source of potential job entrants in a market for which there is a skill shortage, encourage women to pursue trades;
- Work with government and unions to help identify strategies to streamline the process of trade certification;
- Implement company policies and programs to support apprentices to make the certification process faster, more efficient, less costly, and more successful;
- Build community capacity by encouraging staff to pursue continued education in order to take advantage of direct and indirect MITI work opportunities;
- Place experienced workers in leadership positions to ensure productivity and quality standards; and
- Continue working with the NSCC and the Department of Education to help develop education and training related to employment positions at the Project site.

To help mitigate any potentially adverse effects of increased demands on the NSCC Strait Area Campus and other training institutions, MITI will:

- As soon as possible, provide post-secondary institutions with a list of required skills and certifications so that they may develop courses and recruit instructors; and
- Assist the schools to introduce the required programs.

To help mitigate any potentially adverse effects of increased demands, by MITI workers, on early childhood education services, MITI will:

- Maintain a family-friendly workplace in which allowances are made for family needs; and
- Monitor the need for daycare as a direct result of the Project.

Business

This section addresses potential effects and effects management of the Project on business. The Project will provide a significant opportunity for local businesses in the Study Area which will benefit a region of the province that has recently suffered from a downturn in the fishery.



This economic setback has been particularly evident in Guysborough, Canso, and Richmond County. Out migration that has resulted from lack of employment opportunities further compromises the stability of local businesses that supply goods and services. This Project will provide economic growth to help reverse this current economic trend.

The construction and operation of a new marine terminal facility to receive goods from Asia will increase the Study Area's and Nova Scotia's capacity and reputation as a potential shipping destination. This will result in heightened activity within the Strait of Canso and eastern Nova Scotia which may be manifested in the future expansion of this facility or introduction of other marine related and transportation opportunities.

Preconstruction work provides meaningful business opportunities. The Project has already made a substantial contribution to the economy in the development stage. Companies from the province have been engaged to conduct analyses of economic, environmental, and socio-economic impacts of the Project. In addition, MITI has been working with companies in surveying and design engineering, as well as in emergency response planning.

Construction and operations phases described in greater detail below will provide direct and indirect increased sales for a wide variety of businesses. Many local companies have experience in responding to the needs of large-scale projects and will understand the types of goods and services required as well as issues that will affect their competitiveness.

Direct Business Opportunities

The construction phase of the terminal at Melford will require engineering design services, construction contractors specializing in general contracting and skilled trades (e.g. electrical, plumbing, carpentry, HVAC), as well as large volumes of building supplies. The company will require other support such as excavation services, heavy equipment rentals, and accommodations during construction. While certain specialized goods and services may need to be procured in other areas, it would be feasible and desirable for social, economic, and environmental reasons to buy locally.

MITI will directly acquire a variety of goods and services to support operations (some of these will also be used in the construction stage) at Melford. Some of the following functions might be realized through hiring employees rather than engaging contractors:

- Office supplies and equipment
- Insurance and legal services
- Education and training
- Waste management
- Snow clearing and landscaping
- Environmental monitoring
- Courier services
- Commercial printing
- Cleaning supplies, equipment, and services
- Telephone, Internet, and cellular services
- Customs and broker services
- Maintenance services
- Catering and food services
- Rental vehicles
- Vehicle sales and servicing
- Equipment lease or rental
- Security
- Recruitment
- Public relations
- Trucking
- Wholesales and industrial purchasing
- Tug boat and piloting services

In order to maximize its contribution to the local economy and to enhance local business opportunities, MITI will:

- Follow a local procurement policy;
- Share information regarding anticipated requirements for goods and services, construction schedules, available contracts, and protocols for bidding;
- Distribute the information through the MITI website, local publications, and local opportunity fairs;
- Ensure that the engineering, procurement and construction (EPC) contractor adheres to MITI's local procurement policy and follows standard bidding and contracting practices throughout the life of the construction phase;
- Ensure that the EPC contractor uses standard construction bid processes for various aspects of procurement including advertising in local publications, coordinating or attending business development fairs within the Study Area and elsewhere, communicating business development opportunities and contracts on its Web site;
- Establish a comprehensive supplier outreach and development program that introduces mechanisms to educate local businesses on goods and services that will be required by the Project; outline the criteria that MITI will expect suppliers to meet, and provide advice on measures to assist local businesses in meeting the supplier criteria and in being competitive. Methods might include supplier development seminars, print materials, and other initiatives;
- Undertake supplier development initiatives in partnership with local businesses and economic development groups within the Study Area and the region and provide these groups with the information they need to counsel local businesses;
- Provide direct support to assist businesses in developing their capability to supply goods and services to the Project;
- Undertake site visits and work with potential suppliers to respond to proponent's standards and other requirements;
- Make every attempt to identify capacity gaps as early as possible; and

- Ensure unsuccessful bidders have early access to debriefing opportunities so that they can learn how to increase their opportunities for success.

Indirect Business Opportunities

The influx of workers will result in an associated increase in population. In turn, businesses that provide goods and services to the local population will experience an increase in demand. This will potentially enable some to expand their operations and increase their capacity. Businesses that will be most likely to experience indirect opportunities include, among others:

- Real estate services and accommodations
- Retailers
- Entertainment industries
- Dry-cleaning
- Restaurants and bars
- Household and commercial cleaning
- Auto sales and services
- Personal services providers
- Personal finances and like services
- Health care goods and services (e.g. chiropractic services)
- Bakeries and delis
- Child daycare providers

The Project will also stimulate new business opportunities not always associated with large-scale construction projects. As an example, it will create tourism related opportunities as people are interested in observing the construction of large-scale project and marking key project milestones. This in turn will provide a small boost to local tourism-related businesses such as accommodations and food providers in the Study Area. Further, employment opportunities at MITI and at businesses supplying goods and services to the facility and its employees will lead to increased capacity of the Study Area.

MITI's commitment to purchase goods and services within the Study Area and the province will continue to fuel economic diversification. By maximizing local sourcing, the Project will have a valued impact on stabilizing existing businesses. The Project may also provide opportunities for business expansion and creating new specialized services.

Businesses will need to prepare to respond to opportunities and may need to make adjustments in their business practices in order to serve the Project. Specifically, local businesses providing goods and services will have to work within the normal protocols of a unionized environment.

In order to enhance indirect business opportunities, MITI will undertake specific mitigation measures including:

- Work with Study Area Chambers of commerce to provide regular information regarding indirect business opportunities.

7.4.7 Residual Effects

The Economy

The residual effect of the construction phase on the economy is positive and the magnitude will be high within the Study Area and medium for the province. The geographic extent of the economic benefits will be provincial with an emphasis on the Study Area and will be medium-term for the Study area as well as for the Province. The economic benefits will occur

continuously over the short-term resulting in a positive economic boost to the Study Area. The level of confidence in the Project being positive to the local and provincial economy is high, as is the certainty of the benefits occurring. Mitigation success or enhancement will be highly effective in terms of ensuring that the economic benefits flowing from construction activity are spread throughout the Study Area, the Employment Catchment Area and the province. The economic effect will be significant (positive) in that the Project will provide direct, indirect, and induced benefits throughout the Study Area and the province.

The residual effect of the operations phase of this Project on the economy is positive and the magnitude will be high within the Study Area and medium for the province. The geographic extent of the economic benefits will be provincial with an emphasis on the Study Area and will be long-term for the Study Area as well as the province. The economic benefits will occur continuously and last for many decades on the economy within the Study Area. The level of confidence in this Project as a boost to the regional and provincial economy is high, as is the certainty of the benefits occurring. Mitigation success will be highly effective in terms of ensuring that the economic benefits are spread throughout the Study Area as well as the Employment Catchment Area. The economic benefit will be significant (positive) in that the Project will provide direct, indirect, and induced economic benefits throughout the Study Area and the province.

Employment

The Project will have a significant positive residual effect on employment particularly in the Study Area and the Employment Catchment Area. The amount of new employment is significant in a region that has suffered from lack of opportunities. As a result of construction and operations' labour demand, the direction of this effect will be positive as employment will be available for qualified persons and the magnitude high due to the large number of people required. The geographic extent will be mainly regional but also provincial assuming that the labour demand can be met from within the province if not the region. The duration is medium term but continuous for the two plus years of anticipated construction and long term and continuous for operations. Reversibility is not desired and therefore not assessed.

The level of confidence in the accuracy is medium since the types of jobs required for construction and operations are known but the number for specific occupations are not. The likelihood of occurrence is high because the project will not proceed without workers. Enhancement of the positive effect will be high during construction and operations if the labour demand can be met within the province and by attracting former residents to return to the area. The effect will be significant as 2,800 to 3,000 person years of employment will be created during construction and 1,750 people will be directly employed during operations.

Training

As a result of this Project and the mitigation measures that will be put into place, the residual effect on education and training will be positive and the magnitude will be high because of the increased training capacity within the Province and the increased trained workforce with current in-demand skills. The geographic extent will be regionally specific as the Employment Catchment Area is the primary focus for increased training effort followed by the province. The duration will be long-term in that once given, training becomes a part of an individual's personal skill set. The frequency will be intermittent as long-term training programs will be required prior

to construction and short-term scheduled training programs will be required during construction and operations to meet a particular need.

Reversibility is not desirable and therefore not assessed. Level of confidence in the need and type of training is medium since a thorough skills gap assessment has not been undertaken. However, the certainty that a skills gap will occur has a high probability, based on well documented skills shortages throughout Atlantic Canada and in Canada in general. Enhancement measures can be highly successful if the post-secondary institutions, the unions, and MITI rise to the challenge of meeting the demand for certificated training. The significance of having a trained workforce is high in that as a result of the Project, a substantial portion of the upcoming workforce will be trained to meet the serious training challenges facing Canada.

Business

The Project will have a significant positive residual effect on business opportunities in the Study Area. Some companies will service the Project directly and others will benefit indirectly from increased business associated with local population and household income increases. The significance of the Project is based on the expectation that it will provide increased income security in an area where the economy has struggled. The degree of positive direct effects during the construction phase will depend on the ability of local businesses to competitively provide goods and services to the Project, and the success of such efforts will be somewhat dependant on the influence of supplier development initiatives. During operations, the direct effects associated with increased employment and incomes will be significant to the local economy.

The increase in opportunities experienced by local businesses in the Study Area during construction will have a positive effect of medium to high magnitude, depending on the capabilities within individual communities as well as on a regional and provincial basis. The effect will depend on the nature of the work being contracted and the ability of local firms to respond to tender requirements. Effects could be short-term to long-term, intermittent or continuous depending on the nature of the goods or services being sourced and whether they are required on a one-time basis or ongoing. The effects are reversible and again based on the nature of the goods or services being sourced. A high level of confidence is assigned to this prediction and there is a high level of probability that the effect will occur.

There are significant opportunities to enhance project effects on local businesses, notability through supplier development initiatives described previously. By successfully working with local suppliers, developing their capabilities, designing tender calls that reflect local scale and capability and thus facilitate local participation, effects could increase and be longer lasting. Depending on the extent of supplier development initiatives and other factors, effects will be moderate to significant (positive).

During operations, procurement of goods and services will change and become somewhat more predictable and stabilized. The extent of direct procurement from local businesses is difficult to predict but is expected to continue providing steady and consistent business in some areas. Opportunities for businesses during this period will depend to some extent on the success of supplier development initiatives in the construction phase, the relationships that have developed with the Project, and how local businesses have developed their operations to respond to Project requirements. Overall, the continuing effect for businesses in the Project area is expected to be positive and medium to high in its magnitude and continuous. The effect is

reversible when the Project has concluded. A medium level of confidence is assigned to this prediction and there is a medium to high probability that the effect will occur.

Local businesses that do not rely on the Project for direct sales and service but rather on the general population (e.g. retailers, personal services) will experience a decline in related business as the workforce associated with construction activity declines. However, the workforce associated with operations will still be significant and stable, continuing to provide meaningful effects in sustaining local businesses. Overall, the continuing effect for businesses realizing indirect effects is expected to be positive and medium in its magnitude. The effect is reversible and will occur when the Project has concluded. A medium level of confidence is assigned to this prediction and there is a high probability that the effect will occur. The overall effect is expected to be of minor to moderate significance (positive) and sustained throughout the life of the project.

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Table 7-4: Summary of Project Effects on Economy, Employment, Training, and Business

Project-Socio-Economic Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation/Effects management Success	Significance Criteria for Socio-Economic Effects					Likelihood of Occurrence	Significance
			Magnitude	Geographic Extent	Duration/Frequency	Reversibility (R=reversible NR=Not reversible)	Level of confidence/certainty		
Construction/Operations									
Economy	P (C) P (O)	High	Medium-high	R-P	Medium term continuous (C); Long term continuous (O)	R	High	High	Significant (Positive)
Employment	P (C) P (O)	High	High	R-P	Medium term continuous (C); Long term continuous (O)	NA	Medium	High	Significant (Positive)
Education & Training	P	High	High	R	Long term intermittent	NA	Medium-High	High	Significant (Positive)
Business	P (C) P (O)	Medium	Medium-High	R	Short to long term; Intermittent or continuous	R	High	High	Moderate to Significant (Positive)

7.5 LAND AND RESOURCE USE

7.5.1 Valued Environmental Component Rationale

Land and resource use can be defined as the land surrounding a project and the use of that land. The Land and Resource Use Valued Environmental Component (VEC) is seen as fundamental to any examination of the effects of the Project on that land.

The main underlying causal factor that will drive land and resource use changes is the railway expansion (utilizing the old rail bed) which will occur between Melford and Mulgrave. In some cases, land and resource use will be affected directly (i.e. construction). In other cases, effects will be experienced through the need for some of the natural resources (e.g. aggregate), or through demographic change (e.g. the Project will employ a large number of people who may wish to engage in leisure activities within the Study Area when not working).

7.5.2 Land and Resource Use Boundaries

7.5.2.1 Spatial and Temporal

The effects of the Project on the Land and Resource Use VEC will occur mainly during the construction phase and in those communities nearest Project activities. However, for some indicators (e.g. mining of aggregate), the effects may be experienced over a larger geographic area. Thus, the assessment boundaries vary depending on the nature of, and data availability for, specific indicators (e.g. mining) and the potential geographic range of the effect in question.

The temporal scope of the assessment is construction and operations of the Project.

7.5.2.2 Administrative and Technical

The basic units for information pertinent to the Land and Resource Use VEC are geographic data regions (e.g. communities or census subdivisions) defined by Statistics Canada. The site itself is bounded on the northwest by a mix of Nova Scotia Crown land and privately owned parcels, and to the west, south and east by lands of the Melford Industrial Reserve. The site is traversed in a northwest to southeast direction by Highway No. 344, as well as the Melford Loop Road which is entirely within the area to be developed. Land and resource use boundaries include the Primary Study Area as defined in Section 5.11, the Baseline Study.

7.5.3 Existing Knowledge

The 1955 completion of the Canso Causeway resulted in a new ice-free port in eastern Nova Scotia. Government recognized the importance of this opportunity and in 1959 it opened, and still operates, the Point Tupper Heavy Industrial Park (Town of Port Hawkesbury). As a result of this development, many new heavy industries have located on the Strait of Canso. Currently, operations include a pulp and paper mill, power generating facility, gypsum wall board plant, oil storage and transfer facility, oil fractionation plant, several mines, an aggregate quarry, and a variety of marine shipping terminals. These developments have created a service and supply industry.

Being directly adjacent to Point Tupper, the Town of Port Hawkesbury developed (in the 1960's) a business park for commercial and light industrial uses that would support heavy industry (Town of Port Hawkesbury). This has served to segregate this commercial industrial activity to one area of the community, limiting the impact of noise, dust, and traffic on other areas of the community such as residential neighbourhoods, schools, and recreation areas.

During this period of industrial expansion the population of the Town of Port Hawkesbury grew by about 115 percent between 1966 and 1976 (Town of Port Hawkesbury). Subsequent developments have included housing, retail services, and recreation facilities. Following changes in industrial activity, the Town's population has declined to about 3,500 presently (www.statscan.ca). However, many of the same planning issues remain and it is important to note that the Strait of Canso area, particularly the Town of Port Hawkesbury, has recent experience in managing land and resource use conflicts that have arisen as a result of industrial expansion.

7.5.4 Existing Conditions

The region of Melford Point is located in an Industrial Resource M-3 zone. Part 9 of the North-eastern Guysborough Planning Area Land Use Bylaw lists marine/container terminals, including wharves and storage facilities, as acceptable developments for property designated as Industrial Resource M-3. This designation was approved by the Municipality of the District of Guysborough on February 8, 2006, following public consultation in the District, as part of a broader updating process of the original zoning bylaw. It was signed by the Director of Planning on May 17, 2006 as of which date the bylaw came into effect (Municipality of the District of Guysborough).

The Strait of Canso region is an industrialized area supporting such large scale industries as gypsum mines (Little Narrows, Sugar Camp, Melford), aggregate quarry (Auld's Cove), power station (Point Tupper), paper mill (Point Tupper), and a fish processing facility (Arichat) (www.straitsuperport.com, www.strait-highlands.ns.ca). The proposed Project site is adjacent to an extensive waterfront area with few competing or congested land uses.

7.5.5 Potential Interactions, Issues, and Concerns

Key indicators selected for the Land and Resource Use VEC include traditional land use; planned land use; agriculture; forestry; mining; protected areas; tourism, recreation and culture and aesthetics. The Project will interact with each of these indicators in different ways and to varying degrees.

Traditional land use includes subsistence activities such as wood cutting for domestic use. Also, people who live in rural areas may supplement their diet with country foods (wild fish, game, edible plants and berries, and home garden produce). Several types of berries (blueberries, raspberries, strawberries, and cranberries) grow in the Study Area and are possibly gathered by local people. An interim report indicates the Confederacy of Mainland Mi'kmaq has not yet identified any traditional land use issues related to the immediate Project area (Confederacy of Mainland Mi'kmaq 2007, 2008).

Effects on human health due to consumption of country food that has been affected by Project activities are not anticipated for several reasons. No use of country foods has been noted with respect to the Project site, other than possible vegetable gardens grown by residents on Melford Loop, residences which will be removed. During construction and operation of the facility, the site will have controlled access which will preclude hunting and gathering and exclude potential human receptors.

Residents use the logging roads for walking and biking. Recreational boating was also noted during field visits. The extent that subsistence activities occur within the Study Area is unknown.

Therefore, the extent that Project activities are likely to interact with these subsistence activities is also unknown.

Since planned land use of the proposed site has already been designated as Industrial Resource M-3 Zone which includes marine/container terminals, wharfs and storage facilities, the proposed project is an acceptable use of land for this area. Since Project effects and effects management are the subject of this entire EIS, no further assessment is undertaken of the Project on this specific VEC.

There are no farms in the Study Area and, therefore, no Project interaction with farming activities.

NewPage Inc. (formerly Stora Enso, Port Hawkesbury), a pulp and paper mill in Port Hawkesbury, holds Crown Licenses for cutting of a large portion of the Primary Study Area (Stora Enso). Therefore, it is likely that the Project will interact with some of NewPages's forestry activities.

There are five mining operators within the Study Area, but each mines and manufactures products not in demand for Project construction or operations (www.straitsuperport.com, www.strait-highlands.ns.ca). As much as possible aggregate (e.g. rock and gravel) for construction will be manufactured from resources found on the Project site.

Within the Study Area, three Wilderness Areas and four Nature Reserves exist (NS Department of Environment and Labour). Under Nova Scotia's Wilderness Areas Protection Act, mining, forestry, road building, and other commercial resource development are prohibited as well as using a vehicle, building structures or trails or damaging or removing plants. Nonetheless, since there will be a significant increase in employment in the Study Area during both the construction and operations phases potential exists for this increase in population to mistakenly misuse the resources within the wilderness and nature reserves.

The project will interact with tourism as business people will come to the area to work with MITI, stay in local accommodations, eat in restaurants, buy at local stores and occasionally attend local events. During construction a potential exists for a slight increase in industrial tourism as people from outside the Study Area may come to see the site, spend money at nearby restaurants and/or buy from local stores.

An increase in approximately 3,000 direct construction jobs and 1,750 operational jobs will have an effect on cultural and recreational facilities and activities if people move into the area from elsewhere. Workers on vessels may also frequent local bars, restaurants, recreational, and cultural events and facilities.

The Project will interact with visual aesthetics as the container terminal will be visible from the water, as will aspects of the logistics park. During the public consultations a land owner was concerned about possible construction south of Melford.

Project interactions on the Land and Resource Use VEC are fairly minimal which was also reflected in the limited public concerns expressed regarding this VEC. The only associated issue raised during the public consultation process was on ensuring protection of watershed areas.

7.5.6 Project Socio-economic Effects and Effects Management

In general, the major effects upon Land and Resource Use will occur during the construction phase. Operational effects different from, or over and above, construction effects will be so noted.

Traditional Land Use

The new Project site rail line will be constructed in areas that might be used for current subsistence or recreation activities (e.g., obtaining terrestrial and/or aquatic country foods for sustenance or recreational purposes including fishing, hunting, gathering edible plants such as berries and mushrooms), thereby making these areas less available to traditional users. Other potential adverse effects on these uses and country food as a resource include the possible consequences of a malfunction or accident involving a spill that extends beyond the property boundary and effects terrestrial, freshwater, and/or marine resources. This could render the resource (e.g., berries or fresh and/or marine fish) unsafe for human consumption. Given the lack of data on the extent of the current use of country foods (Section 5.11.4.1) and the practice of traditional land uses, the significance of such an effect is unknown. The likelihood of these scenarios to occur is very low based on the Project design and the proposed emergency response planning (see Section 8).

The Project will use part of an abandoned rail line (closed in 1977) that runs through the community of Frankville. When the rail line becomes active during construction and operations, Project activities may prohibit use of the rail bed for recreational purposes that have existed for more than 30 years. That may not be an issue, as there exists now a network of primary, secondary, and tertiary roads, woods roads, and trails allows access to a great deal of this part of Guysborough County. To mitigate adverse effects on traditional land use of the area, MITI will:

- fence off the container terminal and logistics park to ensure the safety of traditional users of the area;
- not limit traditional uses outside of the container terminal and logistics park except for reasons of safety or security; and
- implementation of emergency response plans for the Project site and associated rail corridor and its operation.

With respect to influences on other land uses, the reactivation of the rail line will have an impact on adjacent woodland owners with respect to loss of convenience, and the potential loss of access to portions of their property if crossings are prohibited or financially onerous to procure. To further mitigate any adverse effects, the proponent will initiate discussions among, the future rail operator and current users of the rail bed and other potentially affected paths and road ways.

Forestry

The Project might use some of the land designated for forest cutting by NewPage in order to develop the new portion of the rail ROW. Once the rail ROW is confirmed, MITI will mitigate any adverse forestry effects by:

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- Reviewing project clearing locations with the Department of Natural Resources to ensure no wastage of forest resources occurs and that clearing occurs in timelines to not cause harm to wildfowl (i.e. during bird nesting);
- Discussing any land rights with NewPage; and
- Discussing needs and interests in any wood salvage with nearby local residents and make arrangements to distribute as appropriate.

Mining

The Project will require aggregates during construction for roads and part of the rail line, the logistics park, and container terminal. It is anticipated that all of the aggregate needed will be available on site. New borrow pits may be required for the rail line construction (part of the rail bed is existing). Some of the aggregate could come from the quarry at Auld's Cove within the Study Area. MITI is committed to using local goods and services when and where possible and will communicate its needs and tendering requirements to local suppliers following Project approvals.

Some interaction could occur between mining related and container port vessels. This interaction is addressed in Section 7.7., Physical infrastructure.

Protected Areas and Nature Reserves

Increased population in the area, particularly among construction workers, could cause increased pressure on Protected Areas and Nature Reserves. This can be managed by:

- Informing workers of out of bounds and environmentally sensitive areas;
- Working with municipalities and provincial government to ensure that the Project does not compromise the integrity of Protected Areas and Nature Reserves, and

Culture, Tourism, and Recreation

Given that the population of the Study Area has decreased over the past ten years, it is likely that excess capacity exists for tourism, culture, and recreational facilities. The effects on tourism and recreation during construction can be mitigated given that successful foresight and planning practices are followed.

As a result of business people travelling to the Study Area, an increased demand for accommodations, restaurants, and bars will occur in the Strait of Canso area both during the construction and operational phases. Tourism opportunities will also arise as MITI may become a limited tourist attraction in and of itself with tourists combining seeing the site with participation in cultural and recreational opportunities within the Study Area.

An increase of workers in the area during construction may increase the use of recreational facilities. However, the majority of workers will commute or will live temporarily in the Study Area and will be working long hours. Sufficient trails, boating opportunities, camping, and golfing exist within the Study Area to absorb any increase in population as a result of construction activities.

During operations some additional families will move to the Study Area. They will use and support recreational swimming pools, play hockey in local Arenas, participate in a myriad of sporting and recreational activities at the Port Hawkesbury civic centre. They will visit historic areas such as Guysborough or the Canso Islands and attend cultural events such as the Stan Rogers Folk Festival in Canso. Increased family participation in local sports and recreational

organizations can strengthen teams and community cohesion and leadership, both of which contribute to a sustained high quality of life.

However, to decrease any potential negative effects on tourism and recreation in the Study Area, MITI will:

- Inform Project workers about environmental sensitivities and stewardship in the area; and
- Work with local recreation and tourism organizations by providing employment numbers and receiving input into possible recreational needs if a large number of construction workers choose to live temporarily in the Study Area.

Because of the increased number of large container ships that are likely to enter the Strait of Canso during operations, increased pressure could be placed on recreational boating resulting in safety concerns. Therefore, MITI will mitigate adverse effects by:

- Discussing the level of recreational boating use and safety with area residents and consider their suggested mitigation measures.

Visual Aesthetics

From an aesthetic viewpoint, the Strait of Canso is an industrial area within a rural region. Many other large scale projects including an open pit quarry and a power generation plan are visible from both the land and sea and from the only road entrance to scenic Cape Breton Island, one of Canada's most popular tourism areas. Apparently this industrial area has not negatively affected tourists' interest in Cape Breton. Both the container terminal and the logistics park will be a maximum of one storey or one storey plus a mezzanine for offices. This may be visible from Hwy 344. In keeping with the rural and tourism nature of the region external to the Strait of Canso, MITI will ensure that:

- Landscaping of the area occurs immediately outside the fence, which will soften the industrial effect of the Project over time; and
- Ongoing property maintenance and clean-up occurs at the property's perimeter.

There are several parks along the coast including Port Shoreham Provincial Park (Clam Harbour Bay), Eddy Point Marine Park (Eddy Cove/Point), Venus Cove Marine Park (Mulgrave). These facilities offer swimming, picnic areas, and docking facilities for small boats. Port Shoreham Provincial Park and Venus Cove Marine Park are located at a distance of 10 and 9 km respectively. Due to topography and vegetation MITI is not expected to be visible from the Port Shoreham Provincial Park. From Venus Cove Marine Park, someone searching for the development may be able to visually identify the container terminal in the distance. Given the distance (8 to 9 km), the terminal however will not dominate any view and blend in with the background. It is expected that, from Eddy Point Marine Park, the proposed MITI will be clearly visible. If required, screening of views by vegetation will undertaken by the MITI at this location in consultation with the community and users of the facility. It is of note that the MITI is in accordance with the municipality's land use strategy and objectives for the Melford Industrial Park.

Table 7-5 summarizes the various project interactions on Land and Resource use by project activity.

Table 7-5: Potential Socio-economic Effects of the Project and Land and Resource Use

Project Activities	Change in Land and Resource Use
Construction	
Container Terminal	Loss of access to marine areas, increased pressure on Protected Areas, increased industrial tourism
Intermodal rail yard and rail line	Loss of access to traditional areas, increased access to wilderness areas, increased access to forestry, increased pressure on Protected Areas, increased industrial tourism
Logistics Park	Loss of access to traditional areas, increased access to wilderness areas, increased access to forestry, increased pressure on Protected Areas, increased industrial tourism
Operations and Maintenance	
	Loss of access to traditional areas, increased access to wilderness areas, increased access to forestry, increased pressure on Protected Areas, increased industrial tourism, negative visual aesthetics

7.5.7 Residual Effects

Table 7-6 provides a summary of the impact assessment of residual project effects on the Land and Resource Use VEC. Residual effects on natural resource use overall are neutral either due to the Project not overlapping with a particular use or in the case of traditional uses, due to the effectiveness of mitigation measures and the relatively small amount of land base removed from use. The residual effect to quarries is positive since it may contribute to long-term activity and planning. There should be no significant adverse residual project effects on Land and Resource Use primarily because few natural resources occur in the Study Area and the immediate Study Area has been designated for industrial use.

Traditional Land Use

The residual Project effect is considered neutral (adverse due to removal of a small area for use, but positive due to increased access for use). The effect is considered low to moderate in magnitude, local and short-term in duration. Frequency of the effect is seasonal during traditional harvesting periods and is reversible. The level of confidence in the assessment is medium, as is certainty of effect. The likelihood of occurrence is moderate, the mitigation success is considered high and overall significance is considered minor.

Planned Land Use

The direction of the effect is positive and the magnitude is low as it is an acceptable land use activity (the area has been reserved for industrial activity since 1975) and it will have a sustained effect. The geographic extent is local, duration is long term and frequency is continuous during both construction and operations. In theory the effects are reversible as a requirement exists to decommission and rehabilitate the Project site. The information is accurate and the need for a rail line is firm, so there is a high probability. Mitigation is through ongoing communication between area residents and the Project and can be considered to be highly effective. The effect is considered insignificant because the area had been zoned as industrial use.

Forestry

Project effects on forestry are neutral in direction, negligible in magnitude, local in extent, of long-term duration, rare in frequency and reversible once the Project is decommissioned. The

level of confidence and certainty of prediction is medium since no direct consultation with the Department of Natural Resources or NewPage has occurred on this issue and the final possible roadway alignments have not been determined. Mitigation success is expected to be highly effective since forests will re-generate following decommissioning.

Mining

Residual Project effects on quarries are positive in direction and high in magnitude since Project demands may help sustain the sector in the short-term. Geographic extent is likely to be regional, and long-term in duration. Frequency of the effect will vary with Project phases with continuous effects during construction of the container terminal, logistics park, storage areas, and rail line.

The effect is positive and therefore reversibility is not assessed. However, since aggregate resources are finite, the extraction is not reversible. The level of confidence in this rating is high since rock and gravel will be excavated and manufactured for the rail line. Certainty of the effect is also medium. Mitigation success is not applicable to this situation, since the Project effect is positive to the sector and enhancements to the effect will be implemented. Significance of the effect is considered minor.

Protected Areas

It is expected that residual Project effects are neutral with negligible effects. The geographic extent is local, confined to the Protected Areas, and short-term in duration (most visits, if any, could occur during construction when a higher number of workers, and thus potential visitors, exist). Frequency is intermittent, during summer and fall week-ends. The effect is reversible and the level of confidence in the rating is medium. The certainty of the effects is also medium and mitigation success is considered highly effective since management protocols are in place for protecting these areas. The significance of the effect is considered minor.

Tourism, Recreation and Culture

During the construction period, adverse residual effects on recreation and tourism could be significant through intense short-term use. These effects are considered low in magnitude, local in geographic extent and short-term in duration. Frequency of the effect will be intermittent with various uses and seasons. The effect is reversible following the construction period. The level of confidence in this rating is moderate and the probability of occurrence is also moderate. Mitigation success is moderate, and significance of the effects is considered minor.

During operations, a positive residual effect will occur with the increase in regional population and/or increase in income providing long-term stability to recreation programs and to a lesser degree tourism. The effect is low and regional with long-term duration. The frequency of the effect is continuous over the life of the Project. Reversibility is not assessed. The level of confidence in this rating is high, with high probability of occurrence. Enhancement measures are not being implemented and therefore not assessed. Significance of the effect is moderate.

Visual Aesthetics

The effect is considered neutral as the Strait of Canso is already an industrial area and the height of the Project's buildings are not disproportionate to other buildings in the area. The magnitude is negligible and the geographic extent local. However, the duration is long-term and the frequency is continuous. Following decommissioning the effect will be reversible since the buildings will be removed and the site will return to its pre-Project state. The effect is likely to



occur as the buildings will be constructed and mitigation measures are medium since it will be an industrial site.

Effects on the near-by Eddy's Point Park are considered small scale, localized, and therefore not significant. In consultation with the community and users, MITI will undertake shrub and tree planting to screen block views of the new facility.

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Table 7-6: Summary of Project Effects on Land and Resource Use

Project-Socio-Economic Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation/effects management Success	Significance Criteria for Socio-Economic Effects					Likelihood of Occurrence	Significance
			Magnitude	Geographic Extent	Duration/Frequency	Reversibility (R=reversible NR=Nor reversible)	Level of confidence/certainty		
Construction/Operations									
Traditional Land Use	Neutral	High	Low/moderate	Local	short-term/seasonal	R	Medium	Moderate	Minor
Planned Land use	Positive	High		Local	Long-term/continuous	R	High	High	Insignificant
Forestry	Neutral	Neutral	Negligible	Local	Long-term/rare	R	Medium	unknown	Insignificant
Mining	Positive	Positive	High	Regional	Long-term	NR	Medium	Unknown	Minor
Protected Areas	neutral		Negligible	Local	Short-term/intermittent	R	Medium	Moderate	Minor
Tourism, Recreation and Culture	Adverse (c); Positive (o)	Moderate Moderate	Low Low	Local Local	short-term/intermittent short-term/intermittent	R R	Moderate Moderate	Moderate Moderate	Minor Minor
Visual Aesthetics	Neutral	High	Low	Local	Long-term/continuous	R	High	High	Moderate

7.6 FISHING INDUSTRY

7.6.1 Valued Socio-economic Component Rationale

This VEC includes several key indicators related to the fishing industry: commercial fisheries, seafood processing, and aquaculture. The main project causal factors that will drive changes to the fishing industry are project related marine traffic in and around the Strait of Canso, loss of access to fish habitat during both construction and operations, and construction debris.

7.6.2 Fishing Industry Boundaries

7.6.2.1 Spatial and Temporal

This section discusses the effects, during construction and operations, of the Project on indicators that make up the Fishing Industry VEC. The main focus will be on the Primary Study Area around Melford but effects will be assessed for part of Chedabucto Bay as well as the Strait of Canso where appropriate.

The temporal scope of the assessment is construction and operations. Decommissioning is discussed in Section 7.13.

7.6.2.2 Administrative and Technical

The basic units of information pertinent to the Fishing Industry VEC are port data supplied by Fisheries and Oceans Canada and include registered fishers, fishing vessels, and value of catches. For this assessment, port data for District 14, Guysborough to Mulgrave including the Primary Study Area, were used. Some information was derived from Guysborough County Inshore Fishermen's Association and Aquaculture Association of Nova Scotia, as well as seafood processors.

7.6.3 Existing Knowledge

In various regions of the world, important marine ports and channels have (for many years) successfully managed mixed use conflicts from competing industrial users such as fishing and transport. This includes the Strait of Canso. A good comparative marine area that has been studied in detail in the various aspects of industrial development is Placentia Bay, Newfoundland where ocean-related activities (direct, indirect, and induced effects) are estimated to contribute to almost 50 percent of employment, compared to 25 percent for the province of Newfoundland and Labrador.

Direct labour income from ocean-related activity averaged about \$111 million annually from 2001 to 2004. In order of largest to smallest, the most important industries are fish harvesting and processing and offshore oil and gas production and development (Newfoundland and Labrador Refinery Project 2007). Placentia Bay has a crude oil refinery, an oil transshipment terminal, a ship yard, and two fabrication facilities. Current proposed or developing projects include a nickel processing facility, a second oil refinery, and a LNG transshipment terminal. Like the Strait of Canso, one of the most important features is the lack of ice in Placentia Bay.

In order to successfully manage competing marine uses in Placentia, a vessel traffic management system was established in the 1960's. Now organized into a Vessel Traffic Separation System (similar to that of the Strait of Canso) under the Canada Shipping Act, marine vessel activity is managed primarily by Transport Canada in Argentia (Newfoundland and Labrador Refinery Project 2007).

The Placentia Bay Traffic Committee, which was established by users of the Bay (fishers and other industries) to manage issues affecting shared use of the Bay, is an effective forum for addressing marine traffic issues with a focus on quick action to resolve potential or actual conflicts. Throughout its existence, the Committee has addressed issues through a combination of voluntary policies and procedures as well as monitoring regulation implementation. Membership is open to all marine users of Placentia Bay (Newfoundland and Labrador Refinery Project 2007).

Discussions with several agencies in the area indicate that no such marine users committee exists in the Strait of Canso (Hadley, Long, Ozon, pers.com). As major shipping traffic in the Strait increases, it may be beneficial to all users to institute such a system. Placentia Bay is but one model and MITI is fortunate that there are numerous examples and information is easy to find. It will not be difficult to find appropriate models of good integrated marine management policy, process, and practice.

7.6.4 Existing Conditions

The Study Area has active commercial fisheries for a variety of species. Fishers in the Strait of Canso catch lobster (the most lucrative fishery in the area), mackerel, shrimp, and snow crab. Fisheries research also includes larval tows in the Strait of Canso (Boudreau, pers.com.).

Although there are 273 registered fishers and an active seafood brokering and processing business operating in the Strait of Canso / Chedabucto Bay area, activity is limited around Melford. Fisheries and Oceans data indicate that no fishers registered in Melford or Middle Melford from 2004 to 2006 (DFO). However, the Guysborough County Inshore Fishermen's Association reports that several fishers place lobster traps near Melford (Boudreau, Guysborough County Inshore Fishermen's Association, pers.com.). No fish processing or active aquaculture exists in the Primary Study Area (MacDonald, pers.com.). However, there is an inactive site off Melford, an active operating site (#0826) located six km from Melford at Sand Point in the direction of Chedabucto Bay and several sites near Isle Madame, approximately 30 km from Melford (Bent, pers.com. , www.gov.ns.ca/fish/aquaculture/aquamap).

In 2006, there were 278 registered fishing vessels in the Strait of Canso and Chedabucto Bay area (from Canso to St. Peters including Isle Madame) (DFO). Between 22,000 and 27,000 smaller vessels (under 80 ft) use the Canso Canal each year, meaning that they use the Strait of Canso on at least one segment of their trip (Benoit, pers.com.). The Canal, located on the eastern side of the Canso Causeway, includes a ship lock to allow the passage of seagoing traffic. There were 1,300 commercial vessel trips in the Strait in 2006. In addition, in 2006 the Canadian Coast Guard (CCG) recorded 637 pleasure crafts, seven of which were cruise ships (Keltic Petrochemicals). Using a conservative estimate of 25,000 vessels of all sizes, fishers in this area currently operate in conjunction with a high volume of marine traffic. The 300 estimated ships (600 vessel trips) that will transit to and from MITI each year at the Project's peak is proportionately small but a meaningful addition to the already busy area.

7.6.5 Potential Interactions, Issues and Concerns

The key indicators for the Fishing Industry VEC are fisheries, seafood processing, and aquaculture.

Potential interactions could occur between Project related vessels and fishing vessels as well as fish species. Interactions could also occur between Project related debris, fishing vessels and

fish species. Construction activities including increased traffic will result in loss of access to the immediate Project area. Construction vessel traffic and debris may also cause damage to fixed fishing gear and vessels. Debris and siltation from construction and operations may have negative effects on aquaculture gear, infrastructure, and local water quality. In addition, farmed and wild seafood species may be disturbed by construction noise.

The Guysborough County Inshore Fishermen's Association and Melford area fishermen are concerned about loss of access to fishing areas and their ability to replace their loss by establishing in other lucrative fishing areas. They are also concerned about damage to fishing gear from conflicts with marine traffic, the proposed widening of marine traffic lanes (neither a result of this proposed project nor within the scope of this assessment), financial compensation for their losses, and better communications with MITI (Guysborough County Inshore Fishermen's Association).

Concern about negative effects of marine related construction and operations activities on the Melford Area lobster fishery was also expressed during the public consultation process (February 21, 2008 Open House).

7.6.6 Project Socio-Economic Effects and Effects Management

Potential exists for adverse effects on the Fishing Industry as a result of Project construction and operation activities in the Strait of Canso. It is also important to note that some of these effects are current ongoing concerns due to the high level of industrial activity in the Strait of Canso.

Commercial Fisheries

Construction and operation of the marine terminal could temporarily disrupt or permanently displace fishing activity off Melford. The proposed marine terminal and intermodal yard is projected to cover about 77 hectares, of which 22 is in the marine environment (AMEC). DFO reports that no residents of Melford or Middle Melford were registered as fishers from 2004 to 2006 (DFO). However, the Inshore Fishermen's Association states that more than 30 fishermen and crew members are in the Melford area (Guysborough County Inshore Fishermen's Association), which may encompass a somewhat larger area than does the DFO information. In addition to loss of opportunity to catch lobster near Melford, avoidance of the immediate Project area may cause longer transit times to fishing sites and associated increased expenses.

During construction, vessels and construction debris may cause damage to fixed fishing gear. Construction noise, especially underwater, could disturb some fish species from their traditional habitat, thereby affecting catch levels. However, vessel noise is not expected to be greater than the noise associated with current vessel traffic from fishing boats and other marine industries.

Increased marine traffic during construction and operations will disrupt fishing vessels as they move in or near the traffic lanes and carry out fishing activities. This is particularly important for fishers of snow crab because this species is fished in deep water which is also required for shipping lanes. Fishers may not have sufficient time to set and haul gear between vessel passages. Interaction with large ships may result in loss of or damage to fixed fishing gear. Also sharing traffic lanes with large vessels may cause personal safety concerns for fishers. Figure 7.6-1 shows the proposed shipping routes for the Project determined by other activities in the Strait as well as water depth. It is important to note that the final shipping routes will depend on aspects such as weather conditions and pilot decisions.

Vessels more than 20 m long are required to report via VHF radio to MCTS Sydney Traffic. They are also asked to report incidents and close calls with other vessels. While fishers are recommended to also use radar or keep a listening watch while in or near traffic lanes, these measures can be difficult when deploying or hauling gear.

To mitigate adverse effects of Project activities (during construction and operations) on commercial fisheries, MITI will:

- Proponent will obtain the services of a fisheries consultant should activities result in demonstrable adverse effects upon the local fishery, to aid in identifying those affected by the activities, and aid in the development of acceptable resolutions;
- Provide for habitat compensation for the marine terminal area and comply with all applicable federal and provincial permits;
- Provide fair and timely compensation for actual economic loss due to temporary exclusion, interference, or lost opportunity to harvest and/or lost catches as a direct result of interactions;
- Participate in established forums or work to develop one for marine users as one of many industrial marine users in the Strait of Canso,;
- Help establish a forum for liaison with fishers in the area to facilitate communications, and to advise on Project interactions with fishers, to address issues, and to maximize safety and effectiveness for all parties;
- Work with Melford fishers (Primary Study Area) to develop communications and operations protocols, gear and vessel damage policies, and compensation arrangements;
- Select construction materials and techniques to minimize excessive noise and ensure that the construction period is as short as possible;
- Establish a construction safety zone delineated by buoys to create awareness so that fishers may travel around it, and to prevent damage to gear and vessels;
- Take measures to control silt and debris from marine and on-land activities;
- Address the effects of noise in the Environmental Protection Plan (EPP) and comply with all applicable federal and provincial permits; and
- Provide fair and timely compensation for damage to fishing gear, equipment or vessels resulting from an incident involving contact with Project vessels or debris.

Seafood Processing

An Arichat seafood brokering and processing business purchases fresh seafood from fishers in Cape Breton and Richmond Counties. This does not include fishers in the Primary Study Area so quantity of supply will not be affected. As this operation receives most of its supply by vessel, delays or inefficiencies may occur due to increased marine traffic (Woodrow, pers.com.). However, marine traffic will only increase by a small percentage as a result of this Project. All products leave the Arichat site by truck so the Project will not affect product shipping. This operation also offloads fishing boats which could be disrupted or delayed by increased vessel traffic.

To mitigate adverse effects of Project activities (during construction and operations) on seafood processing, the proponent will:

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- Encourage vessel owners and operators to work with local vessel traffic management authorities to provide schedules of ship arrival and departure; and
- Provide fair and timely compensation for actual economic loss as a direct result of Project interactions.

Aquaculture

An aquaculture site, that raises fin fish (trout and salmon), is located near Sand Point six km south east of Melford towards the mouth of the Strait of Canso. Off Melford, there is an inactive licence/lease (approved for Atlantic salmon and Rainbow trout) that expires in July 2010. This operator could commence operations at any time prior to lease expiration. However, in order to maintain access to the site, he will need to reapply for another 5-year lease (Vezina, pers.com.). Five others are located about 30 km across the Strait of Canso off Isle Madame. Four of these raise shellfish and one raises fin fish (www.gov.ns.ca/fish/aquaculture/aquamap, Bent, pers.com.). The Isle Madame sites are not close to Melford but they are close to the shipping lanes.

Water quality issues and aquaculture gear or infrastructure damage may result from the presence of silt or debris from construction activity. Farmed fish and seafood species may be disturbed by increased noise or vibrations from construction activity.

To mitigate adverse effects of Project activities (during construction and operations) on aquaculture, the proponent will:

- Work with local fisheries committees including the Guysborough County Inshore Fishermen’s Association to provide schedules of ship arrivals and departures;
- Take measures to control silt and debris from marine and on-land activities;
- Provide fair and timely compensation for actual economic as a direct result of interactions; and
- Provide fair and timely compensation for damage to gear, infrastructure, or vessels resulting from an incident involving contact with Project vessels or debris.

Table 7-7. summarizes the potential Project Effects on the fishing industry.

Table 7-7: Potential Project Effects on the Fishing Industry

Project Activities	Change in Fishing Industry
Construction	
Marine Terminal	Increased marine traffic (materials and equipment delivery) causing interference, damage to, or loss of, fixed fishing gear or vessels; personal safety of fishers; displacement from the fishing area; noise from construction activity scaring fish making them difficult to catch; debris and poor water quality affecting aquaculture; uncontrolled debris from on-land construction
Operations and Maintenance	
Marine Terminal	Increased marine traffic (container delivery) causing interference, damage to, or loss of, fixed fishing gear or vessels; personal safety of fishers; permanent loss of fishing area or aquaculture site at Melford; debris and poor water quality affecting aquaculture at Sand Point

7.6.7 Residual Effects

Commercial Fisheries

Project effects on lobster fishing in the Melford area could be adverse in both the construction and operations phases. With any required mitigation, residual effects will be moderate as communications measures, construction controls, vessel traffic management, habitat replacement, and financial compensation will have positive impacts. The magnitude of these effects will be moderate and the extent, regional as impact may be felt throughout the Strait of Canso, particularly with marine traffic increases.

While construction is temporary, many of the effects will be long term and continuous for the length of time that the Project exists, but reversible at the end of the Project if the marine terminal is removed. While some fish habitat will be lost by the construction of the terminal, compensation will minimize or eliminate the effect. The level of confidence of these effects on commercial fisheries is high as current activities and interactions show similar patterns. The likelihood of occurrence is high as there is fishing activity near the immediate Project area, but the impact is moderate as mitigation will address the issues of individuals currently fishing in the area.

Seafood Processing

Project activities in both construction and operations will have a neutral effect on the fish processing facility at Arichat as this facility does not purchase its fresh products from Melford area fishers. Mitigation success will be high as measures include enhanced communications regarding vessel traffic schedules to reduce potential vessels delays among all vessels using the Strait of Canso during both the Project operations and construction phases. Also, other operators will be compensated for actual losses as a result of Project activities.

The magnitude is low as supply would not be affected but scheduling could be. The extent will be regional as this processor is outside of the immediate Project area but located in the Strait of Canso region. The effect will be long term but intermittent and reversible as the processor will not likely be affected during construction except for increased traffic, and in the longer term will only be impacted when a fishing vessel bound for its facility is delayed by a Project related vessel in the traffic lanes. The level of confidence is medium as the schedule of vessels is unknown. The significance is moderate as less than half of the fresh seafood arrivals and departures are by sea.

Aquaculture

The residual effects on aquaculture in the Strait of Canso area will be low. The current active sites will not be affected for the most part and the success of mitigation measures will be high as the techniques are proven and effective. The magnitude is low as the site that would be displaced has a current license/lease but is not operating. The active sites are fairly distant from Melford resulting in the effects being regional as sites are located in the Strait of Canso. The duration is short term and continuous during the construction period and the increase in traffic will be long term but not likely to cause relatively major increases when compared to the current situation. The effects are reversible upon Project decommissioning. The level of confidence is medium but the likelihood of occurrence is low and the effects insignificant.

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Table 7-8: Summary of Project Effects on the Fishing Industry

Project-Socio-Economic Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation/effects management Success	Significance Criteria for Socio-Economic Effects					Likelihood of Occurrence	Significance
			Magnitude	Geographic Extent	Duration/Frequency	Reversibility (R=reversible NR=Not reversible)	Level of confidence/certainty		
Construction/Operations									
Commercial Fisheries	Adverse (C); Adverse (O)	Moderate	High	Regional	Long term/continuous	R	High	High	Moderate
Seafood Processing	Neutral (C); Neutral (O)	High	Low	Regional	Long term/intermittent	R	Medium	Medium	Low
Aquaculture	Adverse (C); Adverse (O)	High	Low	Regional	Short term/continuous	R	Medium	Low	Insignificant

7.7 PHYSICAL INFRASTRUCTURE

7.7.1 Valued Socio-Economic Component Rationale

This VEC includes several key physical indicators that form the infrastructure of a community including: transportation, water supply, solid waste and waste water management, public utilities, and communications. As such, physical infrastructure is seen as fundamental to any examination of the effects of the Project on the lives of individuals, families, and groups who live in the Study Area. The movement of workers, materials, and equipment through the Study Area to the project site has implications for specific areas and for regional infrastructure and services generally. Therefore, it is considered in this assessment.

The main underlying causal factors that will drive community changes are Project expenditures and Project employment. Transport of workers, materials, goods, and equipment through the Study Area to the Project site has implications for specific towns and for Study Area infrastructure and services. Therefore, it is also considered in this assessment.

In some cases, the Study Area will be affected directly (e.g. transportation infrastructure and services will be directly affected by the movement of workers, materials, goods, and equipment through the region). In other cases, effects will be experienced through the pathway of demographic change (e.g. the Project will employ a large number of people, but the main community effects will be those associated with transportation (e.g. daily commuting or in-migration either on a temporary or permanent basis). Workers who relocate transiently (e.g. boarding on a weekly basis) or workers and their families who relocate on a temporary or permanent basis and businesses that establish or expand in the Study Areas will be the main source of any effects on physical elements of community infrastructure and services. Accordingly, the potential consequences of Project-related in-migration and business development are an important focus of this assessment.

Some overlap occurs among the components that make up the various socio-economic VECs. For example, physical infrastructure and services includes some social elements and vice-versa. Physical infrastructure also includes some elements of the economy, labour and business and vice-versa.

7.7.2 Physical Infrastructure Boundaries

7.7.2.1 Spatial and Temporal

The effects of the Project on indicators that make up the Physical Infrastructure VEC will occur mainly during construction and operations phases and in those towns nearest to Project activities (e.g. major effects on roads are expected mainly in the Strait of Canso area). However, for some indicators, effects are likely to be experienced more widely (e.g. transportation system effects may be seen over a larger geographic area). Thus, the assessment boundaries vary depending on the nature of, and some data availability for, specific indicators and the potential geographic range of the effect in question.

The temporal scope of the assessment is the construction and operations phases of the Project.

7.7.2.2 Administrative and Technical

The basic units for information pertinent to the Physical Infrastructure VEC are geographic data regions (e.g. communities or census subdivision) defined by Statistics Canada. Information from Department of Transportation and Public Works, Target Nova Scotia, Canadian Coast Guard, Nova Scotia Department of Health was also used.

7.7.3 Existing Knowledge

All large scale industrial projects have a local impact on physical infrastructure such as transportation, water supply, solid waste and wastewater management, public utilities, and communications. Following the development of industrial activity in the Strait of Canso in the 1960's, the communities and the new businesses have dealt with sharing road infrastructure and marine shipping lanes. Standards for public water supply, wastewater, and solid waste management are fairly high in Nova Scotia and industrial / commercial activities are subject to these rules. Power supplies have adequate capacity and expansion potential for industry's needs. The supply of modern communications systems is on par with the rest of the province and expanding. The existence of standards and infrastructure in a developed industrial area where land and marine space is available makes a desirable fit for development in the Strait of Canso.

7.7.4 Existing Conditions

The Primary Study Area is served by a road system linking to the nearby Trans Canada Highway near the Canso Causeway where traffic is often brisk. The area is also close to the Cape Breton & Central Nova Scotia Railway (CB&CNSR) that links into the Canadian National Railway at Truro. The area has no public transportation services but is served by charter bus, trucking, taxi, vehicle rental, and courier services. Vehicle rentals are limited (www.canada411.com).

The Strait of Canso is busy with 1,300 commercial vessel trips recorded in 2006. Between 22,000 and 27,000 smaller vessels use the Canso lock system each year (Benoit, pers.com). There were also more than 600 pleasure crafts using the Strait in 2006 (Keltic Petrochemicals). Approximately 275 fishing vessels were registered to harbours in the Strait area (DFO). Marine traffic is managed by CCG Marine Communications and Traffic Services in Sydney (www.ccg.gc.ca).

Port Hawkesbury is home to the only commercial airport (www.targetnovascotia). The airport handles private planes, charter and government flights but it has no commercial flights. There are also nine hospital or community helipads located throughout the Study Area (Muir, pers.com., www.goc.ns.ca/ehs).

Nova Scotia communities are served by protected and treated drinking water supplies (NS Department of Environment and Labour 2005). The Melford Industrial reserve has a large water reservoir (www.targetnovascotia.com). There are large capacity water supplies in the immediate area and the nearby Town of Mulgrave has excess capacity in its treated water system. There are no wastewater collection or treatment systems in the Reserve (www.targetnovascotia.com). Solid waste and recycling systems in the Study Area are not on par with the rest of the province (Kenney, pers.com.).

Adequate power supply is available as the Point Tupper generating plant has excess capacity (www.targetnovascotia.com). There is also a small scale hydro generating plant located in the Melford Industrial Reserve (www.blackriver.ns.ca). Many parts of the Study Area are served by high speed Internet services (www.gcrda.ns.ca). Cellular phone service is widely available as is cable television (www.eastlink.ca).

7.7.5 Potential Interactions, Issues and Concerns

Key indicators selected for the Physical Infrastructure VEC include transportation (i.e. rail, air, and marine transportation as well as transportation services). They also include drinking water, wastewater, and solid waste management, in addition to public utilities and communications infrastructure.

Project activities will interact with the existing Study Area physical infrastructure in a variety of ways and to a greater or lesser degree (e.g. Project activities will increase demand for some services which in some cases will accelerate deterioration of the facilities or infrastructure. In other cases, increased demand will contribute to the viability of the service or infrastructure or result in upgrading. This will improve services for local residents).

The Project will interact with transportation because goods and services during both the construction and operations phases will need to be transported from around the province and within the Study Area by road, rail, sea, and occasionally by air. Individuals employed on site during both the construction and operations phase will also use the road system to commute to and from work.

The Project will have limited effect on current supplies of drinking water, public utilities, and communications systems as capacity exists to handle new industrial activity. The disposal of solid wastes will be achieved through the use of Guysborough County's 2nd generation landfill, the only one in north-eastern Nova Scotia. Wastewaters will be treated on-site and thus will have no adverse effect.

A number of physical infrastructures issues were expressed during public consultation, however most of these pertained to a proposed road that has since been removed as part of the project as a result of a recent Traffic Study (Appendix). Additional issues were raised around the rationale for the location of the proposed rail route (west of the lake).

7.7.6 Project Socio-Economic Effects and Effects Management

Construction will see deliveries of materials such as steel, concrete, building supplies, and pre-fabricated infrastructure. While it is not known at this time how many ships or trucks will transport construction materials to the site, costs for all construction Project elements are estimated to be \$460 million suggesting that movement of construction materials will be significant (Gardner Pinfold). It is expected that construction cranes will be delivered to the site by ship, thereby slightly increasing the amount of vessel traffic in the Strait of Canso.

During operations there will be an increase of about 1,750 direct long-term jobs in the Study Area (Gardner Pinfold). The proponent is committed to hiring within the Employment Catchment Area, where practical. Therefore, it is expected that the majority of workers will be current residents of the Area. If the proponent is unable to fill all labour requirements from within the Area, outside workers will be recruited, some of whom will be married and accompanied by families. This will place new demands on Study Area infrastructure and services. However, there is spare capacity in infrastructure and services as a result of declining population.

A number of supply and service businesses will likely establish themselves in the Study Area during operations, thereby increasing the amount of traffic on roads.

Initially, approximately 150 container vessels will be arriving at the container terminal annually increasing upwards to 300, thereby increasing the amount of marine traffic in the Strait of Canso.

Ground Transportation

Project construction materials will arrive on-site by road and sea and in some cases will be generated on-site. MITI estimates that the 70 percent of materials (rock, gravel, and possibly a portion of the concrete) will come from the Project site, 20 percent of materials will arrive by sea, and 10 percent (including major construction elements) will be transported by road. Concrete will come by road, or be produced using a site mounted portable batch plant.

Road traffic also includes workers commuting to the site (an estimated 3,000 person years of construction work during the two-year construction period). During construction, shifts will most likely be on a 10 hour schedule between 7:00 am and 5:00 pm. Traffic will peak approximately 30 minutes before and after each shift.

During operations, transportation to and away from MIT will be by road and rail and can be divided into three categories: shift traffic, internal traffic, and materials delivery/product shipment. It is expected that there will be a maximum of 350 workers on the site at any time. Between approximately 50 and 100 vehicles will move on and off the site every 12 hours associated with the shift changes (Atlantic Road & Traffic Management, March 2008). Contractors and visitors may increase this volume slightly. MITI has estimated that two percent of total cargo will be moved from Melford by heavy duty diesel vehicles and that this will result in an estimated 3,000 trucks visiting the site each year, or about 8 per day, at peak operations.

Project activities during both construction and operations will have adverse effects on road transportation in terms of accelerated deterioration of public roads as well as higher levels of traffic and accident potential, particularly on Route 344 from Mulgrave to Auld's Cove and on the TCH. A transportation study (Appendix 2.0-A) was conducted on behalf of MITI (March 2008). The conclusion of the study was that the existing infrastructure was sufficient for the predicted traffic volume associated with the proposed project. As such, there will be no need to realign Hwy. 344 or to build a separate access road.

Rail is an integral part of the overall port function at MIT, providing the primary inland access mode for international containers. MITI has proposed to construct a new rail line from the terminal to the CB&CNSR. This line will be built to the east of Grant Lake Reservoir. The line will also be built partially along an existing rail bed that was abandoned after the opening of the Canso Causeway in 1955. The old rail bed passes through the small community of Frankville (part of the incorporated Village of Havre Boucher) in Antigonish County. Because this rail line has not been used for more than 30 years, many residents will be unaccustomed to rail traffic (dust, noise, safety concerns, and traffic delays). They also may have used the rail bed for recreational activities and traditional food gathering.

The proposed rail line will be designed and constructed to comply with the Transport Canada Track Safety Rules. Railway car movement at the intermodal yard will be designed to coincide with vessel arrivals and vessel manifest.

During operations, approximately three 5-6,000 foot long freight trains will travel daily along the new rail line between the terminal and just beyond Frankville where it joins up with the CB&CNSR.

To mitigate adverse effects on transportation infrastructure and services during construction and operations, the proponent will:

- Employ local labour as much as possible;
- Encourage car-pooling among workers;
- Use local materials' suppliers as much as possible;
- Ensure that oversized transport truck deliveries occur during off-peak traffic hours where possible;
- Minimize dust and noise in and around communities during construction activities (i.e. rail line);
- Share information about anticipated traffic (car and freight) increases with the Department of Transportation and Public Works so that additional highway upgrade requirements are budgeted and scheduled when and where necessary;
- Excavate and/or manufacture all rock and gravel on site, if possible;
- Use a site mounted batch plant for making concrete, if practical; and

Transportation Services

During both construction and operations, Project activities and the presence of company representatives and staff in the area will result in increased demand for transportation services (air, courier, trucking, bus charters, taxis, vehicle rentals). In the short term increased demand could restrict availability, but will likely improve services as companies expand to meet demand in the longer term. Increased indirect Project related industrial activity may also result in an increase in these types of services in the area. Those who visit the construction site and arrive by commercial flights will do so through Halifax or Sydney Airports where they may access rental vehicles. The local impact on rental vehicle services may be less pronounced than if personnel flew by private jet or charter to Port Hawkesbury airport.

To enhance the positive effects on Transportation Services during construction and operations, the proponent will:

- Continue discussions with local business organizations about the level of potential demand and the types of services required for short term and long term project activities.

Marine Transportation

During construction, the major construction components to arrive by sea will be the cranes. As a result minimal effect will occur on marine transportation during this phase. However, during the first full year of operations approximately 150 ships are anticipated to tie up at MIT and at full operation this could increase to 260 annually. They will arrive and be unloaded at any time of day. The marginal wharf will be 950 m in length and designed for three post-Panamax container ships or two super post-Panamax ships at one time. Containers will be delivered to and from MIT by these vessels.

Because this will be a new purpose-built structure, no impact on existing facilities will occur. However, this Project has the potential to affect marine passenger and freight traffic as well as fishing and recreational vessel traffic by increasing the volume of vessels and movements within the Strait of Canso and Chedabucto Bay by 300 vessels per year at peak. These vessels will use existing shipping lanes in Chedabucto Bay and have the potential to interact with pleasure

craft, other marine terminals in the Bay and the Strait of Canso (e.g. Martin Marietta Materials Bulk Terminal, Mulgrave Marine Terminal, Georgia Pacific Corporation Terminal, NewPage Inc. Terminal, Statia Terminals Canada and the Port Hawkesbury Pier) (www.straitsuperport.com, www.targetnovascotia.com). This has the potential to increase accidents among the various vessels in the Strait.

To mitigate adverse effects on marine transportation infrastructure during construction and operations, the proponent will:

- Comply with the *Eastern Canada Vessel Traffic Services Zone Regulations* of the *Canada Shipping Act*;
- Provide marine vessel volumes and schedules to marine management operators responsible for traffic movement in the Strait of Canso; and
- Participate in any integrated marine management plan committees.

Air Transportation

Because of the size and nature of the activities at MIT, senior management or specialized personnel may be required to be on site at short notice or from locations where a private plane makes the most economic sense. The nearest airport to the proposed site is at Port Hawkesbury. It currently has no commercial flights but can accommodate private and commercial aircraft up to a Boeing 737. This airport, which has night flight capability, handles private aircrafts, charters, and government planes (www.targetnovascotia.com). Since Port Hawkesbury Airport currently has excess capacity, it should be able to accommodate any increase in airplane traffic as a result of MITI activities.

Water Supply, Wastewater, and Solid Waste Management

Project activities will require water supplies for consumption, toilets, and cleaning as well as firefighting if such an incident should occur. Excess water supplies are available in the Melford Industrial Reserve as a 9.4 million gallon per day supply developed along with the Reserve in 1975 remains unused. Goose Harbour Lake, a nearby privately owned water supply, produces 21 million gallons per day (GPD). In addition, the Town of Mulgrave's treated drinking water supply has excess capacity of 150,000 GPD (www.targetnovascotia.com).

Project activities will generate additional solid waste at the site during both construction and operations. The presence of up to 350 workers along with contractors on site will result in a new source of wastewater in the Primary Study Area. The local area has limited wastewater and solid waste management infrastructure and increased solid waste and wastewater will present waste management issues.

To mitigate adverse effects of wastewater and solid waste generation during construction and operations, the proponent will:

- Remove waste from the site (using backhauling where available);
- Send recyclable waste to recycling facilities;
- Return any valuable recyclable materials for credit;
- Remove residual waste to the sanitary landfill at Lincolntonville, Guysborough County using service companies that comply with waste management bylaws of the Municipality of the District of Guysborough as well as the regulations of the Province of Nova Scotia;
- Compost organic waste on site, if feasible;

- Construct an on-site water treatment system ; and
- Construct an on-site wastewater collection and treatment system.

Public Utilities

The Project will increase demand for support services such as public utilities. Excess capacity and potential exists in electricity supply. The Point Tupper generation plant, which serves the Melford Industrial Reserve, was designed to be expanded to meet new industrial demand (www.targetnovascotia.com).

Communications

The Project will increase demand for communications services such as high speed Internet and cellular phone service access. High speed Internet services are currently available along Route 344 and the Government of Nova Scotia has committed to providing access to all residents by the end of 2009 (www.gcrda.ns.ca). Until it is available workers residing in the area may use High Speed Internet at the 35 public access sites and high speed Internet will likely be widely available at homes and rental accommodations (www.nscap.ca). High speed Internet will be available on site. There are two providers of cellular phone access in the Study Area (www.eastlink.ca).

Table 7-9 summarizes the potential socio-economic effects of the project on Physical Infrastructure.

Table 7-9: Potential Socio-Economic Effects of the Project on Physical Infrastructure

Project Activities	Change in Physical Infrastructure
Construction	
Container Terminal	Increased marine traffic (delivery of cranes) and increased road traffic to deliver construction materials and workers, increased demand for transportation services (air, courier, trucking, vehicle rentals); increased demand for support services such as public utilities and communications, and increased solid waste.
Intermodal Rail Yard and Rail Line	Increased road traffic to deliver materials and workers, increased demand for transportation services (air, courier, trucking, vehicle rentals); increased demand for support services such as public utilities and communications, and increased solid waste.
Logistics Park	Increased road traffic to deliver construction materials and workers; increased demand for transportation services (air, courier, trucking, vehicle rentals); increased demand for support services such as public utilities and communications; increased solid waste.
Operations and Maintenance	
	Increased road traffic by employees and deliveries; increased marine traffic by container ships; introduction of a rail line for shipping containers; increased demand for transportation services (air, courier, trucking, vehicle rentals); increased demand for support services such as public utilities and communications, increased solid waste.

7.7.7 Residual Effects

Overall, residual effects on physical infrastructure are generally insignificant because excess capacity exists. In some cases, where current infrastructure may be underdeveloped, the success of mitigation measures using proven techniques will make the final effects insignificant. The increase in marine traffic will be on average less than one container ship per day at peak operations and in the long run this will have a moderate impact on the busy Strait of Canso. These are summarized in Table 7-10.

There will be short term residual effects of dust and noise during the construction of the rail line. There will also be long term impacts from increased traffic on a portion of Route 344 and the Trans Canada Highway in the Canso Causeway area. Increased traffic may contribute to road deterioration and the likelihood of accidents. Also the impact of increased demand on local transportation services (trucking, courier, bus charter, vehicle rental) will result in new business opportunities and likely expansion in these areas.

Ground Transportation

The residual effect is considered to be moderate as daily road traffic has a high likelihood of increase as a result of Project activities. The magnitude is moderate and will have regional effects as people and goods will be transported to the site from throughout the Study Area. The frequency will be long term and continuous, and is certainly reversible upon termination of the project. Mitigation measures will have moderate success.

The rail line will be purpose built for MITI and used exclusively by the company with controlled access. It will introduce regular rail shipments from the Project site to the central rail line. The effects of this activity are expected to be moderate, low in magnitude and regional in extent. The effects will be long term and continuous with a medium level of certainty and are reversible. The likelihood of occurrence is high and the residual significance is moderate.

Transportation Services

The presence of new industrial activity will have a positive effect on businesses that provide transportation services (e.g. courier, trucking, bus charter, and vehicle rentals). Mitigation measures can serve to further enhance these opportunities within the Study Area. These effects, which will be long term and continuous, will be felt regionally and are reversible; the level of confidence is high as these services will be required. This likelihood of this occurring is high and the effect is moderate (positive).

Marine Transportation

The presence of ships to convey large cranes for installation and to deliver containers during operations could have an adverse effect on other marine traffic within the Strait of Canso and Chedabucto Bay. However, mitigation measures are expected to have a high level of success as current regulations and practices already manage marine traffic in the Strait of Canso. The magnitude is expected to be medium as the addition of an estimated 300 container ships annually at peak operations could result in an average of less than one ship per day. The impact will be localized and continuous over the long term. The level of confidence is high as this is the basis of the Project and the effect is reversible if the Project were to discontinue. The residual effect is expected to be moderate and the likelihood of occurrence is high.

Air Transportation

Port Hawkesbury Airport has no commercial flights at this time so it is likely that the Project will have little effect on local air transportation unless company officials choose to arrive by private planes. It is more likely that they would travel via Halifax Airport due to its regional, national, and international connections and the availability of rental vehicles. The magnitude is low and the extent local. The effect will be continuous over the long term and insignificant. The likelihood of occurrence is moderate. There is medium certainty because commercial airlines could choose to schedule flights at Port Hawkesbury Airport and in this case the effect would be reversible.

Water Supply

The effect of the Project on water supply is neutral as there is excess capacity available and no mitigations are required. The magnitude is low, the extent is local, the effect long term and continuous, and reversible. The level of confidence is high. The likelihood of occurrence is high and the long term effect insignificant.

Wastewater

The Project will produce wastewater which can have an adverse effect on local infrastructure, particularly because local infrastructure is limited. The potential of mitigation measures to address this concern is high as technology and opportunities exist. The magnitude is moderate as the Project will result in 3,000 and 1,750 person years of employment during construction and operations phases respectively. However, it is possible to develop an on-site collection and treatment system and/or to work with a nearby municipality to connect to their system. The effect's extent is local, long term, and continuous, it is reversible, and the likelihood of occurrence high. With mitigation, the residual effect is insignificant.

Solid Waste

The Project will produce solid waste during both construction and operations and it will have an adverse effect on local infrastructure, particularly because local waste management programs are limited compared to most areas of the province. The potential of mitigation measures to address this issue is high as management options can be employed. The magnitude is moderate as the Project will result in 3,000 and 1,750 person years of employment during construction and operations phases respectively. Waste management services are accessible and can be self-directed (on-site composting, recycling, waste collection services). The effect's extent is local, long term and continuous, it is reversible, and the likelihood of occurrence high. With mitigation, the residual effect is insignificant.

Public Utilities

Project effects on public utilities will be neutral because excess capacity exists in the Study Area. Mitigations are not required and may also be considered neutral. The magnitude is low and the extent regional. The effect will be continuous over the long term but insignificant. The likelihood of occurrence is high. There is high level of certainty as these services are essential and the residual effect will be insignificant.

Communications

Project effects on communications infrastructure will be neutral because the services exist and are about to be expanded in the area. Mitigations are not required and may also be considered neutral. The magnitude is low and the extent local. The effect of the Project will be continuous over the long term but insignificant. The likelihood of occurrence is high. There is high level certainty that this will occur as communications services will be required by the industry, local businesses, and residents. The residual effect will be insignificant.



Table 7-10: Summary of Effects on Physical Infrastructure

Project-Socio-Economic Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation/effects management Success	Significance Criteria for Socio-Economic Effects					Likelihood of Occurrence	Significance
			Magnitude	Geographic Extent	Duration/Frequency	Reversibility (R=reversible NR=Nor reversible)	Level of confidence/certainty		
Construction/Operations									
Transportation									
• Road	Adverse	Moderate	Moderate	Regional	Long term/continuous	R	Medium	High	Moderate
• Rail	Moderate	Neutral	Low	Regional	Long term/continuous	R	Medium	High	Moderate
• Services	Positive	High	High	Regional	Long term/continuous	R	High	High	Moderate
• Marine	Adverse	High	Low/Moderate	Local	Long term/continuous	R	High	High	Moderate
• Air	Neutral	Neutral	Low	Local	Long term/continuous	R	High	Moderate	Insignificant
Public Utilities									
• Water Supply	Neutral	Neutral	Low	Local	Long term/continuous	R	High	High	Insignificant
• Solid Waste	Adverse	High	Moderate	Local	Long term/continuous	R	High	High	Insignificant
• Public Utilities	Neutral	Neutral	Low	Regional	Long term/continuous	R	High	High	Insignificant
• Communications	Neutral	Neutral	Low	Local	Long term/continuous	R	High	High	Insignificant

7.8 MUNICIPAL AND SOCIAL SERVICES AND INFRASTRUCTURE

7.8.1 Valued Socio-Economic Component Rationale

This VEC includes several key indicators that form the basis of a community including: public administration, housing, public health, social services and public protection. As such, Municipal and Social Services and Infrastructure are seen as fundamental to any examination of the effects of the Project on the lives of individuals, families, and groups that live in the Study Area. At the time of writing MITI was in the process of forming a community liaison committee to consider these issues and potential solutions.

The main underlying causal factors that will drive community changes in this VEC are Project expenditures and Project employment. In some cases, towns will be affected directly (e.g. provision of permits from local administration). In other cases, effects will be experienced through the pathway of demographic change (e.g., the Project will employ a large number of people, but the main community effects will be those associated with daily commuting or in-migration either on a temporary or permanent basis). Workers who relocate temporarily (e.g. boarding on a weekly basis) during the construction phase or workers and their families who relocate on a permanent basis during the operations phase will be the main source of any effects on municipal and elements of community infrastructure and services. Accordingly, the potential consequences of Project-related in-migration are an important focus of this assessment.

7.8.2 Municipal and Social Services and Infrastructure Boundaries

7.8.2.1 Spatial and Temporal

The effects of the Project on indicators that make up the Municipal and Social Services and Infrastructure VEC will occur mainly during construction and operations phases and in those towns nearest Project activities (e.g. any effects on housing are expected primarily in the Mulgrave and Port Hawkesbury areas). In general, the Municipal and Social Services and Infrastructure VEC includes the Primary Study Area (e.g. from the immediate proposed project location at Melford, along Route 344 to Highway 104 at Mulgrave and the Study Area which includes the Municipalities of the Counties of Antigonish (Subdivision A and B), Guysborough, Inverness (Subdivision B and C) and Richmond (Subdivision A and C) plus the towns of Antigonish, Canso, Mulgrave, and Port Hawkesbury.

The temporal scope of the assessment is the construction and operations of the Project.

7.8.2.2 Administrative and Technical

The basic units for information pertinent to the Municipal and Social Services and Infrastructure VEC are geographic data regions (e.g. communities or census subdivision) defined by Statistics Canada. However, not all data is available for comparable geographic units (e.g. policing is the responsibility of the Royal Canadian Mounted Police {RCMP}). While data on police resources are available by county, data on offences are only available by Region (e.g. Cape Breton).

7.8.3 Existing Knowledge

Commuting

There is considerable knowledge in Atlantic Canada respecting the community effects of large projects. This includes experience on projects such as Sable Offshore Energy and Hibernia as well as first hand and community knowledge of the effects of construction and operations of large scale projects on the Strait of Canso. This experience and evidence demonstrates that, if managed well, such projects have few if any negative effects on adjacent municipalities or the

surrounding area. Furthermore, it has been shown that increased employment and incomes may have a range of positive impacts on services and infrastructure. For example, increased employment as a result of development reduces requirements for social assistance and employment services, increases municipal revenues, and improves community self-confidence and optimism.

The first phase of this Project is a large construction effort. Construction projects are a familiar sight in Nova Scotia meaning that commuting to a construction site is a familiar work pattern. What has changed in recent decades is that the range of work arrangement types has increased considerably. A combination of factors has contributed to this including improvements in transportation (availability, efficiency, safety, lower relative cost), evolving corporate strategies and cost effectiveness, particularly in the resource sector, and varying union agreements (Shrimpton and Storey, 1992, 1994).

In some cases workers may drive long distances to projects sites and be compensated for that travel rather than using transportation provided by the employer. Others may be housed at existing boarding type arrangements during a shift rotation, going home on the week-ends or at the end of a rotation; others may be housed in a temporary work-camp. What is common to all of these arrangements is the desire to effectively “manage” the influx and attendant outcomes of a large number of workers moving into a relatively rural and thinly populated area within a short time period. By minimizing the interaction between these workers and the towns surrounding a project, the boom-bust scenario and its attendant social problems can be more effectively managed.

In-migration of Construction Workers

In deciding whether a worker relocates to a community close to a project site, a number of factors are usually taken into consideration. They include:

- The role of organized labour;
- Merits of the job;
- Implications of the commute;
- Alternatives to relocation;
- Employment alternatives and other similar factors;
- Length of individual work contract;
- Competition for workers and incentives offered to attract and retain labour for the project;
- Corporate, government, and local community policies (e.g. do the towns want to discourage worker and family relocation to minimize investment in community infrastructure and services not needed when the project is finished, or do they want to encourage it to provide a longer-term basis for sustainable growth and development);
- Cost of living; and
- Personal preferences (e.g. construction work culture, family needs and preferences, personal issues) (Storey 2007).

For purposes of this assessment, it is assumed that this will be a non-work camp Project with workers either commuting on a daily basis from a fairly large region or obtaining local

accommodations for the duration of the Project returning “home” during scheduled non-working days.

7.8.4 Existing Conditions

The existing Municipal and Social Services and infrastructure conditions have been outlined in detail in Section 5.11.7. In general the Study Area is well organized with established land use plans (Municipality of the District of Guysborough). Housing is available within the Study Area (vacancy is listed at 20 percent), property values are below Nova Scotia average (\$78,000 – 2001 versus \$101,500); vacancy rates in temporary housing are low, but many are tourist establishments that operate seasonally and are relatively full during the summer and closed in the winter (www.statcan.ca, www.gov.ns.ca.dtc). Availability of temporary housing (number of apartments and rooming houses) was unavailable.

A usual range of health services are provided within the Study Area. However, the regional hospital is experiencing a shortage of beds (GASHA 2007). The number of physicians and registered nurses per 10,000 population is better than for the province as a whole (NS Department of Health 2006). Most health care inpatient services within the Study Area have a 20 percent capacity to handle additional inpatients (NS Department of Health 2006). Residents served by District 7 health authority exceed the province in certain areas of health indicators (e.g. less smoking and lower instance of diabetes) (NS Department of Health 2005, 2006).

The nearest RCMP detachments are located in Port Hawkesbury and Canso (www.rcmp-grc.gc.ca). The violent crime rate appears to be higher in the Study Area than for the province as a whole. This may be owing to a discrepancy in crime reporting rather than in actual crimes (Halliday pers.com., McNeil pers.com). Two search and rescue organizations are located nearby, one in the Strait of Canso and one in Inverness (www.nss.gc.ca). The nearest fire departments are located at Mulgrave and Port Hawkesbury (www.porthawkesbury.straitareaonline, www.townofmulgrave.ca). Ground ambulances are located in Canso and Port Hawkesbury; all municipalities are required to have emergency response plans (NS Emergency Measurement Act). Mutual aid agreements exist for the Study Area, and the Strait of Canso has a range of marine safety services as well as pilot and tug services (Andrews, pers.com.).

7.8.5 Potential Interactions, Issues and Concerns

The key indicators selected for Municipal and Social Services and Infrastructure include: public administration; housing, accommodation and property values, public health and acute care services; community well-being and family social services; and public protection (policing and safety, search and rescue, fire fighting, ambulance, community response planning, mutual aid, and marine safety services).

The effects of Project interactions with these key indicators will occur depending on the ability or inability of various services and infrastructure to meet demands caused by the Project. For example, Project employment – temporary or permanent - will result in some in-migration to the Study Area, thereby increasing the demand for housing, education, and other social services and infrastructure. This assessment examines whether such increases can be met by existing services and infrastructure or whether actions need to be taken to do so.

It should be noted that socio-economic effects will be experienced differently among different social groups. For example, while young people may welcome growth in a community, with increases in population and new services and infrastructure, these may be regarded as negative

effects by retirees or individuals on fixed income. Similarly, while rental increases may benefit those owning rental units, they will have a negative effect on full-time residents who require rental accommodations, many of whom are on fixed incomes.

Public Administration

Because of the size of the Project, an increase in the amount of permitting required could place extra demands on local administrative staff. There will also be local administrative Project related interactions regarding traffic volume, noise, and wear and tear on roads.

Housing, Accommodation and Property Values

As a result of 3,000 construction workers involved in the Project for just over two years and 1,750 operational employees, the project will interact with housing and accommodations (Gardner Pinfold). At one public consultation meeting, a few residents raised issues regarding property values and housing, expressing concern that values might decrease, although experience with other similar projects has demonstrated that property values experience the opposite effect.

Public Health and Acute Care Services

The project will interact with public health and acute care services because construction workers will require pre-service medicals or have the need for health services as a consequence of accidents or illness that cannot be treated on site. Construction traffic presents the possibilities of accidents, perhaps involving local residents, which could result in requirements for healthcare services. There could also be an increase in infectious diseases, including STDs, due to a few construction workers who take up temporary residence in the area and become involved with local residents. Construction related dust and noise may cause physical discomfort to a few residents.

Community Well-being and Family Social Services

Based on similar previous construction projects in the province, during construction there could be an increase in the demand for social services and infrastructure in the Study Area as result of money management, family, substance abuse or addiction problems.

Public Safety

Regarding health and public safety, whenever a large scale project occurs, the potential exists for an increase in automobile, industrial, and marine accidents as a result of increased population and highway traffic and additional commercial and recreational marine traffic in the Strait of Canso. There is also a possibility of pilferage and other worksite crimes. Given the large-scale international nature of this Project, the potential exists for terrorist attacks. If a large industrial fire should occur, this would put demand on the local fire departments.

7.8.6 Project Socio-economic Effects and Effects Management

Assuming that all Project approvals are met, construction is expected to begin during the third quarter of 2008 and continue until the end of March 2010. During this time, the Project will employ approximately 3,000 direct and indirect workers on site. MITI anticipates that the majority of these workers will come from communities in the Employment Catchment Area, thereby minimizing effects on local services and infrastructure (Gardner Pinfold).

Assuming the above schedule is met, operations are expected to commence in late 2010 and continue for the lifespan of the Project (major Project components are designed for a lifespan of 50 years, although the Project could last beyond that time period) (Gardner Pinfold).

Public Administration

Towns within the Study Area will receive both benefits and adverse effects. Benefits will include an increased tax base, but a possible negative effect of the Project during the construction phase is that neighbouring municipal governments could have an increase in demand for permits and responses to concerns related to noise, traffic, dust and roadway wear and tear.

It is not expected that many additional people will move into the Study Area as a result of the Project and, therefore, little new demand will be generated for municipal services. However, if many workers are brought in from outside the Study Area, an increase in demand for municipal services could occur.

In order to minimize any negative effects on local municipalities, MITI will:

- Make provision for its own water and sewerage as well as its own road and rail systems; and
- Coordinate with local municipalities and the Department of Transportation regarding any unusual construction traffic.

Housing, Accommodation, and Property Value

The majority of construction workers employed on major sites such as this one tend to carpool, as they know they will be working on the same site for one year or more. Communities including Guysborough, Port Hawkesbury, Antigonish, Canso and many smaller communities are also home communities for some of the potential workers and are located within 75 to 120 kilometres of the site. However, it is anticipated that some short-term contract workers on the Project, brought in from outside the Study Area, will live in temporary accommodations such as rooming houses, hotels, or B&Bs. Currently more than 310 beds are located in year round facilities within 50 km driving distance of the Project site (www.gov.ns.ca.dtc).

It is assumed that most of the workers currently live in the Employment Catchment Area. However, if in-migration of workers and their families occurs as a result of the Project, especially during the operations phase, permanent housing will be required. Currently the housing vacancy rate is 20 percent in the Study Area and almost 30 percent in the Municipality of the District of Guysborough, which should be a sufficient supply for new in-migrants, albeit not necessarily of the type desired by each of them (www.statcan.ca). Greater affluence may result in new demand in the housing market and for upgrades and renovations. Given historic patterns, it is expected that most of this demand will be for purchased rather than rental units.

During the construction phase any increase in demand for accommodations has a positive effect on the rental market and increases the municipal tax base. However, it can also place a greater demand for accommodations, which if not met, can lead to illegal or unsightly roadside camping. Increased rental demand can also increase the price of rental units which can negatively affect current renters on a fixed income. Increased demand for housing during the operations phase can also have a positive effect on the real estate industry and the municipal tax base, but it can also have a potentially negative effect on existing residents or individuals on a fixed income by driving up housing values and thus property taxes.

Contractors and sub-contractors servicing the Project could require local office or warehousing space away from the Project site during the construction or operation phases. This may result in increases in land development / construction activity for industrial support services.

Given the decrease in population over the last ten years within the Study Area and the amount of available housing and accommodations within this broader area, there appears to be adequate capacity in the area to accommodate the labour force for both construction and operations phases. There also appears to be sufficient office and commercial space.

Considerable knowledge exists in Canada respecting the effect of large industrial projects on property values (Edmonton Economic Development Corp., Re/Max Limited). In virtually all cases, property values increased as a result of local residents and developers taking advantage of increased demand. Land surrounding development such as terminals becomes more valuable as businesses seek to develop in proximity to the facility. Generally the greatest increases occur in urban areas.

In order to manage any negative effects caused by increased demand for housing, accommodations, and commercial space, these Project related effects will be mitigated and enhanced by MITI through the following measures:

- encourage commuting to work;
- Compile and maintain a database of available housing and accommodation within the Study Area and ensure it is provided to all workers during the construction phase;
- Provide temporary accommodation to some members of the construction labour force including rental accommodation and local hotels;
- Publicize housing demand and supply so that the cost of housing is not unnecessarily increased and the local housing and real estate sector can respond appropriately;
- Encourage workers to commute to the Project site from the Employment Catchment Area during construction or move into the Study Area during operations;
- Support RCMP enforcement of illegal camping and squatting along roadsides; and
- Consult with municipalities and operators of industrial parks about project plans and schedules for accommodation, commercial office and warehousing needs.

Public Health and Acute Care Services

The Project will have some effects on the Study Area's health and acute care services administered by provincial agencies, but these are expected to be minimal primarily due to the fact that these services are designed and resourced, with some limited exceptions, to address needs of a larger population base that, in fact, already houses many of these workers. If and when the demand for these services increases, the public agencies concerned will most likely seek additional resources from the provincial government.

The Project has the potential to directly affect the health care system with an influx of workers, particularly during construction when pre-service medicals will be required. Construction workers may require health services as a consequence of accidents or illness that cannot be treated on site. These incidents will place a demand on Study Area healthcare facilities. However, given recent decreases in population, additional infrastructure capacity currently exists.

Given the demographic profile of the construction workforce (age 22-55), who are mostly middle-aged and in good health, it is not anticipated that worker illness will place undue

pressure on Study Area healthcare services. However, some medical issues may arise for area residents regarding increased dust and noise and limited access to country foods.

MITI holds the health and safety of its employees as one of its core values. To mitigate any adverse effects on the health care system, the company will:

- Prepare and implement a Health, Safety and Environmental Management System (HSEMS) to prevent the need for emergency health services;
- Encourage pre-employment medicals to be conducted in the employee's home community rather than in the Study Area, if the potential employee resides outside the Study Area; and
- Advise the Guysborough Antigonish Strait Health Authority and the Cape Breton District Health Authority about the recruitment schedule well in advance.

The effects of dust and noise from Project activities on residents are discussed in this Section as well as 7.5 and 7.7. The effect of Project activities on country food is addressed in Section 7.5.

Community Health and Well-Being

Positive and negative effects are associated with this Project. To the degree that construction work lowers Study Area unemployment levels and results in greater affluence, it is possible that a reduction in demands for community and family services will occur during the construction period. However, there could be an increase demand for such services during post-construction when some construction workers will be laid off if no other projects occur. As a result of increased incomes, there could also be in some cases some dysfunctional spending patterns (e.g. increased alcohol consumption, substance abuse and gambling) that could place pressures on family, community and health system resources.

To help increase the positive effects of increased wages and family stability, MITI will:

- Encourage former residents currently working away from the area to return for competitive wages, benefits and long-term employment (operations); and
- Offer a positive work environment and a corporate culture that supports family life and enhances quality of life in the community.

To help mitigate any negative social effects, MITI will:

- Implement employee assistance programs;
- Refer employees to existing social services programs in the region;
- Implement a health and safety plan that will promote health living practices and prevention and lessen the need to seek these services in the community; and
- Share Project plans with local social service agencies regarding the anticipated number of employees and families re-locating or returning to the Study Area (during operations) so that they may plan accordingly.

Policing

Law enforcement services in the Study Area are provided by the RCMP. Additional resources may be required to address Project effects due to an increased mobile population during peak construction and operations periods and increased highway personal vehicular and commercial traffic (e.g. it is estimated that of the total construction elements required, 70% will be sourced on-site, another 20% will be delivered by ship, and the remaining 10% will be transported by road; shifts will most likely be on a 10 hour schedule between 7:00 am and 5:00 pm.; traffic will peak approximately 30 minutes before and after each shift.).

The construction workforce will be encouraged to commute to the Project site, which will increase highway traffic and may place increased demands on police and other emergency services through traffic offences and accidents. These impacts are further discussed under Physical Infrastructure. The operations workforce will commute to the Project site. Although less traffic will occur than in the construction phase, there will be significantly more than currently exists.

The potential for workplace accidents has been discussed under Public Health.

To address traffic, security and safety issues, MITI will:

- Discuss Project plans and schedules including security arrangements, work rotation schedules and traffic flow and volumes with the RCMP for the construction and operation phases;
- Develop a health and safety plan for the Project that will identify any security issues and address them through implementation;
- Provide 24-7 security on site;
- Prohibit any unregistered individuals from entering company property; and
- Enforce a zero tolerance drug and alcohol use policy and Code of Ethics, minimizing substance abuse and related safety accidents and deterring related criminal activities.

Search and Rescue

The Project can affect Search and Rescue organizations through an increased potential for search and rescue incidences, accidents related to the Project (e.g. marine vessel accidents) and worker activity in their off-hours recreation.

During construction, minimal effect on Search and Rescue organizations will occur because most equipment, except cranes, will be transported to the site by road. Because the Strait of Canso already experiences high traffic volumes, marine safety services already exist in the area. Since the amount of marine vessel traffic will increase during operations, marine safety services could experience sufficient increased demand to warrant an integrated management plan.

To address and enhance search and rescue effects, MITI will:

- Establish mutual aid agreements with neighbouring industries, municipalities, and other responding organizations;
- Document mutual aid arrangements in the company's Emergency Response Plan; and
- Participate in any Strait of Canso marine safety organizations.

Fire Fighting

The Project can enhance fire safety in the region by introducing risk management systems associated with large scale industrial developments. On the other hand, the risks associated with a large scale development can put additional demands on nearby fire departments (e.g. Mulgrave and Port Hawkesbury) and those industries or organizations with which MITI has mutual aid agreements. There is the potential effect on health and safety of workers and residents of surrounding communities if insufficient response capacity exists, but the baseline study indicates sufficient fire fighting capability with the Mulgrave volunteer fire department and the Port Hawkesbury fire department.

To address issues related to fire fighting and to ensure safety of its workers and the surrounding area, MITI will:

- Provide stand by firefighting equipment (mobile pumps) on site during the construction phase; and
- Develop company Emergency Response Plans with inputs from the Nova Scotia Emergency Measures Organization including the Fire Commissioner's Office to meet provincial standards.

Ambulance

Emergency Health Services maintains ground ambulances at Canso and Port Hawkesbury that can respond to construction related emergencies caused by an increased mobile population and increased highway commercial and personal vehicular traffic (Maynard, pers.com.). Other EHS services can be called upon if required.

Community Response Planning

Nova Scotia municipalities are required to have emergency response plans (NS Emergency Management Act). The Municipality of the District of Guysborough has a plan that can be activated if required to respond to an accident due to an increase of temporary workers and highway traffic. With any industrial construction project, the potential exists for a large scale accident that will call upon municipalities to aid one another to address the situation. A draft Mutual Aid Agreement is in place in the East Zone (Antigonish County east to Cape Breton County) that can be activated if required (Andrews, pers.com.).

To enhance these efforts, MITI is committed to:

- Operate as part of the broader community and provide assistance in emergency situations when it does not jeopardize the safety of its own employees of the Project itself; and
- Participate in and support regional emergency response groups.



Table 7-11: Potential Socio-economic Effects of the Project on Municipal and Social Services and Infrastructure

Project Activities	Changes in Services and Infrastructure
Construction	
Container Terminal	Increased demand for temporary housing, Increased demand for public health and acute care services, Reduced demand for employment counselling services, Increased demand for social services related to dysfunctional spending, Increased demand on public emergency response services
Intermodal rail yard and rail line	Increased demand for temporary housing, Increased demand for public health and acute care services, Reduced demand for employment counselling services, Increased demand for social services related to dysfunctional spending, Increased demand on public emergency response services
Logistics Park	Increased demand for temporary housing, Increased demand for public health and acute care services, Reduced demand for employment counselling services, Increased demand for social services related to dysfunctional spending, Increased demand on public emergency response services
Operations and Maintenance	
	Increased demand for municipal planning and development services, Increased demand for permanent housing, Increased demand for employment counselling related to unemployed construction workers, Increased demand on public emergency response services

7.8.7 Residual Effects

Table 7-12 provides a summary of the impact of residual Project effects on the Municipal and Social Services and Infrastructure VEC. Residual effects on these services and infrastructure overall are neutral due to either the experience of the Study Area with large scale industrial projects or the effectiveness of the mitigation measures. The residual effect to public administration is positive because of the increased tax base. The other services (health and social) should experience no residual adverse project either because of mitigation or because a decrease in population resulting in excess capacity. Police and emergency services should not experience any residual Project effects as long as safety measures are in place.

Public Administration

During construction, negative Project effects can be mitigated through close coordination with Project personnel to minimize traffic, dust, noise and additional work that may have been experienced by local administrations. The residual Project effect on public administration will be positive as there will be an increase in the tax base, of medium magnitude and local in geographic extent. It is expected to be of long-term duration as the Project will be operating for the foreseeable future and the effect will be continuous. The effect will be reversible but not desirous since tax revenues are important to municipalities. The likelihood of occurrence is high and the significance is moderate.

Housing, Accommodation and Property Values

During construction negative Project effects can be mitigated by encouraging commuting. The residual effects are therefore characterized as positive, high, local and long-term. The effect is continuous throughout the construction phase, is reversible since once the Project is built, construction workers will no longer be required. The level of confidence in, and certainty of, this

assessment is high with moderately effective enhancement success. Significance of the effect will be moderate.

During operations, the effects of the Project are characterized as positive, high, local, and long-term as people will have confidence in the economy, and those working at stable long term jobs may buy, build, or renovate their houses. The effect is continuous throughout the life of the Project, which is reversible since people can sell their houses during decommissioning. The level of confidence in and certainty of this assessment is high, with moderately effective enhancement success (i.e. there will be a measurable change in housing supply and demand but no permanent negative effect since effects will lessen as people become absorbed into the communities). Since housing starts are a key indicator of an economy, significance of this effect will be moderate.

The effect on commercial space and warehousing will be positive as currently there is excess capacity in the neighbouring industrial parks. The magnitude will be medium as this project has the capacity to absorb excess capacity, the duration will be long-term. Reversibility is not desired and therefore not assessed. The level of confidence in medium and the likelihood of occurring is medium and the significance is moderate (positive).

Public Health and Acute Care Services

During construction and operations, the residual Project effects on public health are considered neutral since excess capacity exists in some areas of the system, is low in magnitude, is local and is short-term. Frequency of the effect is intermittent. The effect is reversible and the level of confidence is medium with a medium certainty of occurrence. The mitigation success is considered moderately effective since certain types of health care for an increased population of workers will not be provided by MITI. The significance of the effect is minor.

Community Well-Being and Family Social Services

For both construction and operations, many of the adverse Project effects can be mitigated through measures described previously. However, an increase in population, particularly during operations, will mean more services are required. This lessens over time as new people moving into the region become better integrated into their communities. With steady employment and income as well as more stable communities as a result of the Project, some of the stresses on the Study Area communities will lessen. Therefore, the residual effect on social services is considered adverse, low and local in geographic extent. Duration of the effect is short-medium term and the frequency is intermittent. The effect is reversible and the level of confidence in this assessment is medium, with certainty of the effect also being medium. The mitigation and enhancement success are moderately effective and the significance of the effect is moderate.

Policing

During construction and operations, there are both positive and negative residual effects to policing and emergency services related to the Project. MITI can only help deter criminal activities through company policies. A general increase in population during operations and industrial activity in the region will result in a corresponding increase in the potential for more crime, traffic (marine, road and rail), accidents and situations requiring police services. Therefore, the direction is adverse, low in magnitude, regional, medium term and rare. The effect is reversible for construction, as negative effects could occur if those involved in construction do not obtain future work. The effect is likely to occur and mitigation will be moderately successful. Overall the significance of the effect is likely to be minor.



Firefighting, Mutual Aid, Search and Rescue

During construction and operations, residual Project effects will be neutral as there will be a greater risk of fires and accidents given increased population and industrial activity, but there will also be an increase in the number of people available to respond through company-provided training and MITI's participation in mutual aid agreements and regional safety initiatives and organizations. The residual effect on firefighting, mutual aid and search and rescue is positive, high in magnitude since there is measurable and sustained effect to these types of services. The effects are local in geographic extent, long-term in duration and continuous. The effect is reversible, although this will not likely be desired since it improves conditions and capacity in the region. Mitigation success is not applicable since the residual effect is positive.

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Table 7-12: Summary of Effects on Municipal and Social Services and Infrastructure

Project-Socio-Economic Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation Success	Significance Criteria for Socio-Economic Effects					Likelihood of Occurrence	Significance
			Magnitude	Geographic Extent	Duration/Frequency	Reversibility (R=reversible NR=Not reversible)	Level of confidence/certainty		
Construction/Operations									
Public Administration	Positive	High	Low/moderate	Local	Long-term	R	Medium	High	Moderate
Housing	Positive	Medium	Low	Local	short-term/intermittent	R	Medium	Medium	Moderate
Public Health	Neutral	Neutral	Negligible	Local	Long-term/rare	R	Medium	Medium	Minor
Social Services	Adverse	Positive	Low	Local	Long-term/intermittent	NR	Medium	Medium	Minor
Policing and Safety	Adverse	Neutral	Low	Regional	medium-term/rare	R	Medium	Moderate	Minor
Firefighting, Mutual Aid, Search and Rescue	Neutral	Moderate	High	Local	Long-term / intermittent	R	High	Medium	Minor

7.9 HERITAGE RESOURCES (INCL. ARCHAEOLOGY)

7.9.1 Valued Socio-Economic Component Rationale

Section 5.11, the Baseline Socio-economic section, indicates that no museums or heritage sites are located in the Primary Study Area. Thus these are not further assessed. However, MITI engaged qualified archaeologists to survey an area on and around the proposed Project site. The following section provides the result of this sites survey and supporting research for the purposes of the socio-economic assessment (Davis Archaeological Consultants Limited 2008).

7.9.2 Boundaries

Archaeological resources are those tangible remains of past human activity, whether on or below the surface of land or water, which include portable and non portable objects including structures, features, and artifacts. An archaeological structure is a built standing object such as an abandoned house whereas an archaeological feature is defined as a fixed object such as a house foundation, cemetery, hearth, shipwreck, or mine shaft. Artifacts are those portable remnants of human activity such as stone tools, china, nails, and clothing. In Nova Scotia, archaeological resources are the property of the citizens of the province and are protected and curated by the Nova Scotia Museum under the *Special Places Protection Act (R.S., c. 438, s. 1.)*.

The archaeological assessment was designed to determine the potential for archaeological resources within the boundaries of the study area which include the intermodal rail yard, marginal wharf, logistics park, and the rail routes. A 0.75 km wide buffer zone was included on both sides of the centre line for the rail route.

7.9.3 Threshold for Determination of Significance

Each archaeological resource within the Study Area has been evaluated according to its relative importance based on its cultural and physical integrity, existing documentation, and the expected impact on those resources. Archaeological significance is weighted as low, moderate or high where:

- Low importance indicates that a site has been previously impacted or destroyed so that archaeological context is not present, the site is of an age that is not considered to be of archaeological value (ie. post 1950), or that the site does not contain archaeological resources that can further existing knowledge or research.
- Moderate importance indicates that the site is relatively intact, may contain *in situ* artifacts and/or features, is associated with a cultural or ethnic group or historic period that is under represented in the archaeological record, and may or may not be impacted (in the past, present, or future) by natural or cultural factors.
- High importance indicates that a site contains *in situ* features that are associated with a cultural group or historic period that is under represented in the historic and/or archaeological record, is potentially threatened by natural or cultural factors, and can further existing knowledge or research. On the other hand, highly important archaeological sites may be unique so that their loss or neglect would result in a missed opportunity to observe and study prototypes, anomalies, or attempts at adaptation that cannot be found elsewhere.

It is important to informatively evaluate all archaeological sites that are threatened by development, either as a result of direct impact or as a cumulative or residual effect of development, as archaeological sites are non-renewable resources and impact is permanent. The magnitude of potential residual adverse effects on an archaeological resource is directly

tioned to its archaeological importance. Ground disturbing activities associated with construction, operation, and decommissioning of this Project could have significant adverse effects on archaeological resources. If unmitigated, these activities such as grubbing, grading, and excavation could result in the permanent loss of irreplaceable archaeological resources and the knowledge that can be gained from them. Erosion of coastal features and deterioration of archaeological features as a result of construction, operation, or decommissioning may have the same negative effect. However, in-filling of archaeological features without disturbance to the resource is deemed an insignificant effect, assuming that the location, extent, nature, and importance of the site have been recorded in detail prior to in-filling. Except in the case of coastal erosion and gradual deterioration of archaeological resources, the frequency of significant impacts on archaeological resources is typically a result of a single activity.

7.9.4 Potential Interactions, Issues and Concerns

Because of the localized nature of archaeological resources, the significance of residual adverse effects is dependent on localized impact areas (i.e. building footprints, underground service corridors, transmission and rail corridors including rights-of-way, site grading, etc.). Potential flooding or dewatering of lakes, rivers, and ponds as well as coastal erosion as a result of construction, operation, and decommissioning are also important factors that may impact on archaeological resources.

7.9.5 Project Socio-Economic Effects and Effects Management

7.9.5.1 Construction

Effects

Intermodal Rail Yard

The extent and significance of historic cultural activity near the stream at the shoreline of Canso Strait (*Historic Ceramics, area 1.4*) is not known and the area was deemed to be of high archaeological potential for First Nations resources through predictive modelling. Construction of the intermodal rail yard and marginal wharf may result in impact to potential resources.

Construction of the intermodal rail yard and marginal wharf may result in impact to the two concrete features at Melford Point (*Melford Point 1* and *Melford Point 3*). The features are believed to be related to a late nineteenth century or early twentieth century communications towers or beacons and, therefore, they are believed to be of low archaeological significance.

The rectangular depression at Melford Point (*Melford Point 2*) and the nearby roadway are believed to be of low archaeological significance as they are likely related to mid-twentieth century activity in that area and are likely associated with the *Melford Point 1* and *Melford Point 3* sites. Although construction of the intermodal rail yard and marginal wharf may impact on these features, the adverse effect of that impact is believed to be insignificant.

The concrete and stone foundation behind civic address #134 (*T. Brennan*) is believed to be of moderate to high archaeological significance as it is related to nineteenth century settlement of the area. This feature is likely to be significantly impacted by construction of the intermodal rail yard.

The cultivated field on the west side of Highway 344 opposite civic address #6198 (*R. Power*) is of low archaeological significance as no associated features were encountered. It is likely that, if a house existed, it was destroyed by construction of the highway.

The rectangular depression and nearby stone cistern behind civic address # 186 (*P. Brennan*) is believed to be of high archaeological significance as it is likely related to nineteenth century settlement of the area. Subsurface testing revealed that this house was occupied in the mid to late nineteenth century. Construction of the intermodal rail yard will likely significantly impact these features.

The field stone property boundary at the north end of Melford Loop (*Historic Property Boundary*) is of low archaeological significance as no associated features were encountered.

Construction of the intermodal rail yard is likely to adversely impact the *M. Ryan* barn. The feature is believed to be of moderate archaeological significance as it likely associated with nineteenth century settlement of the area.

The *P. Ryan* and *J. Howlett* houses are believed to be of high archaeological significance as they are likely associated with nineteenth century settlement of the area and may contain significant archaeological deposits which may yield valuable information. These features are likely to be impacted by construction of the intermodal rail yard.

The *C. Stewart House* is of high archaeological significance. Subsurface testing has revealed that this feature was occupied in the mid to late nineteenth century. Again, construction of the intermodal rail yard is likely to adversely impact this feature.

Because the standing houses and outbuildings at Melford Loop are historic structures which are representative of the early settlement of this area, they are considered to be of high historical significance. These buildings will be significantly impacted by construction of the intermodal rail yard and marginal wharf. These properties were not accessible during the field reconnaissance.

Rail Corridor

Much of the proposed rail corridor was not accessible at the time of the surveys in 2007. No significant archaeological features were encountered within those areas that were accessible. Additional survey work will be undertaken once the actual Right-of-Way is finalized, and it will precede disturbance by Project activities.

Marginal Wharf

- Records at the Nova Scotia Heritage Division did not include any reported shipwrecks in the coastal vicinity of the development area, although this may be due to incompleteness of records or lack of previous assessments in the area. Underwater video taken along selected transects in the area of the wharf supported this lack of observed shipwrecks. Construction of the marginal wharf may impact on potential underwater archaeological resources.

Mitigation

Avoidance is the preferred method of mitigation where archaeological resources are threatened. However, if unavoidable adverse impacts are imminent, mitigation measures must be in effect in order to maximize the information that can be recovered from significant archaeological sites before they are impacted. Site-specific mitigation measures are listed below for each of the cultural activity areas discussed above.

Intermodal Rail Yard

- It is recommended that the hill above the stream at the shoreline of the Canso Strait (*Historic Ceramics, area 1.4*) be tested at 5 metre intervals to determine if significant archaeological resources, both historic and First Nations, are present;
- No further mitigation is recommended for the two concrete features at Melford Point (*Melford Point 1* and *Melford Point 3*);
- No further mitigation is recommended for the rectangular depression (*Melford Point 2*) and nearby roadway at Melford Point as archaeological testing indicated that the depression is likely related to late nineteenth or early twentieth century activity which is deemed to be of low archaeological significance;
- Subsurface testing at 5 metre intervals is recommended for the concrete and stone foundation behind civic address #134 (*T. Brennan*) if avoidance is not possible;
- No further mitigation is recommended for the cultivated field on the west side of Highway 344 opposite civic address #6198 (*R. Power*) as any significant archaeological resources associated with the field clearing were likely destroyed by construction of the existing Highway;
- It is recommended that disturbance within a 25-metre radius of the P. Brennan site be monitored by a qualified archaeologist in order to ensure that no associated archaeological features (i.e. barn, well, privy, midden) are disturbed without proper mitigation. It is also recommended that any archaeological resources inside the cistern be salvaged and that the structure be recorded in detail;
- The field stone property boundary at the north end of Melford Loop is of low archaeological significance. Therefore, no further mitigation is recommended;
- It is recommended that the *M. Ryan* barn be tested if avoidance is not possible;
- The *P. Ryan* and *J. Howlett* houses are believed to be of high archaeological significance. Therefore, it is recommended that both features be tested if avoidance is not possible;
- It is recommended that ground disturbance within a 25-metre radius of the *C. Stewart House* be monitored by a qualified archaeologist if avoidance is not possible in order to ensure that no associated archaeological features are disturbed without proper mitigation. Likewise, it is recommended that the barn be tested prior to disturbance; and
- It is recommended that the standing historic houses and outbuildings at Melford Loop be recorded in detail before being demolished.

Rail Corridor

- Because much of the proposed railway corridor was not accessible during the field reconnaissance, it is recommended that the rest of the corridor be surveyed by qualified archaeologists once the route has been flagged and cut.

Marginal Wharf

- Records at the Nova Scotia Heritage Division did not include any reported shipwrecks in the coastal vicinity of the development area and a review of video footage of the benthic survey did not result in the identification of any underwater resources within the marginal wharf development area.

General

- Should any additional archaeological resources be encountered during ground disturbance, it is recommended that all activity in the immediate area cease and the Manager of Special Places, Mr. Robert Ogilvie (902-424-6475) be contacted to determine a suitable method of mitigation; and
- It is recommended that an Archaeology and Heritage Resource Contingency Plan be developed for the preservation and protection of archaeological and / or historical materials uncovered by construction activities.

7.9.5.2 *Operation*

Effects

Impact to archaeological resources occurs primarily during the construction phase. However, developments which may result in flooding or dewatering of watercourses or coastal erosion during construction and / or operation have a significant impact on archaeological resources as well. The property was not accessible at the time of the field survey and, therefore, it is not known if any significant archaeological resources exist on the shoreline opposite PID #35016385 (civic address #82, *Historic Ceramics*). However, if shoreline erosion is an anticipated effect of operation, potential archaeological resources may be impacted.

Mitigation

It is recommended that this area be tested at five metre intervals in order to determine if significant archaeological resources exist.

7.9.5.3 *Decommissioning*

Effects

Decommissioning of the terminal facility is not expected to have any residual adverse effects on known archaeological resources.

Mitigation

No further mitigation is recommended

7.9.6 Follow-up and Monitoring

Coastal erosion as well as lake and river water levels should be monitored in order to minimize adverse effects on potential archaeological resources. The likelihood of changes in water levels as well as coastal erosion is not known at this time.

Changes to, or expansion of, impact areas requires that these areas be subjected to an archaeological resource impact assessment.

7.9.7 Summary of Residual Environmental Effects Assessment

Construction and operation of the intermodal rail yard, marginal wharf, and rail route may have residual adverse effects on archaeological resources. Mitigation measures are designed, first and foremost, to minimize those effects on archaeological resources. However, in the event of unavoidable adverse effects, mitigation is recommended on a site-specific basis in order to maximize potential knowledge that can be gained from those resources before disturbance. Detailed recording, testing, and salvage have been recommended prior to the construction phase. However, the likelihood of adverse effects on archaeological resources within the development zone is not known as effects are generally limited to localized impact areas.

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Table 7-13: Summary of Project Effects on Heritage Resources

Project-Socio-Economic Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation	Significance Criteria for Socio-Economic Effects					Significance	Likelihood of Occurrence	Level of Confidence
			Magnitude	Geographic Extent	Duration/Frequency	Reversibility (R=reversible NR=Not reversible)	Ecological/Social-cultural and Economic Context			
Construction										
Impact on potential archaeological resources on shore of Canso Strait (<i>Historic Ceramics</i>)	A	Testing at 5 m intervals to determine presence/absence	Unknown	Unknown	Construction and Operation Phase	NR	Unknown	Unknown	Unknown	
Impact on <i>Melford Point 1 & 3</i> sites	A	None	Low	c. 35 m ²	Construction Phase	NR	Canadian, late 19 th to early 20 th century.	Low	High	High
Impact on <i>Melford Point 2</i> site	A	None	Low	c. 35 m ²	Construction Phase	NR	Canadian, late 19 th to early 20 th century.		High	High
Impact on <i>T. Brennan</i> site	A	Testing at 5 m intervals	High	Unknown	Construction Phase	NR	Euro-Canadian, 19 th century.	Moderate to High	High	Moderate
Impact on <i>R. Power</i> field	A	None	Low	c. 10 acres	Construction Phase	NR	Unknown	Low	High	Moderate
Impact on <i>P. Brennan</i> site	A	Depression – monitoring within 25 m radius Cistern – monitoring, recording and salvage	High	c. 50 m ²	Construction Phase	NR	Euro-Canadian, 19 th century	High	High	High
Impact on <i>Historic Property Boundary</i>	A	None	Low	c. 30 m	Construction Phase	NR	Euro-Canadian, 19 th century	Low	High	Moderate
Impact on <i>M. Ryan</i> site	A	Testing at 5 m intervals	High	Unknown	Construction Phase	NR	Euro-Canadian, 19 th century	Moderate	High	Moderate
Impact on <i>P. Ryan House</i>	A	Testing at 5 m intervals	High	Unknown	Construction Phase	NR	Euro-Canadian, 19 th century	High	High	High
Impact on <i>J. Howlett House</i>	A	Testing at 5 m intervals	High	Unknown	Construction Phase	NR	Euro-Canadian, 19 th century	High	High	High
Impact on <i>C. Stewart House and Barn</i>	A	House – monitoring within 25-m radius	High	Unknown	Construction Phase	NR	Euro-Canadian, 19 th century	High	High	High

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Table 7-13: Summary of Project Effects on Heritage Resources

Project-Socio-Economic Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation	Significance Criteria for Socio-Economic Effects					Significance	Likelihood of Occurrence	Level of Confidence
			Magnitude	Geographic Extent	Duration/Frequency	Reversibility (R=reversible NR=Not reversible)	Ecological/Social-cultural and Economic Context			
		Barn – testing								
Impact on standing historic houses and outbuildings on Melford Loop	A	Recording	High	c. 20 acres	Construction Phase	NR	Euro-Canadian, early to mid 19 th century	High	High	High
Potential underwater archaeological resources (Canso Strait)	A	Review of underwater video footage by qualified archaeologist	Unknown	Unknown	Construction, Operation and Decommissioning Phase	NR	Unknown shipwrecks	Unknown	Unknown	
Operation										
Impact on potential archaeological resources on shore of Canso Strait	A	Testing at 5 m intervals to determine presence/absence	Unknown	Unknown	Construction and Operation Phase	NR	Unknown	Unknown	Unknown	Moderate
Potential underwater archaeological resources (Canso Strait)	A	Review of underwater video footage by qualified archaeologist	Unknown	Unknown	Construction, Operation and Decommissioning Phase	NR	Unknown shipwrecks	Unknown	Unknown	Moderate
Decommissioning										
Potential underwater archaeological resources (Canso Strait)	A	Review of underwater video footage by qualified archaeologist	Unknown	Unknown	Construction, Operation and Decommissioning Phase	NR	Unknown shipwrecks	Unknown	Unknown	Moderate

7.10 ACCIDENTS AND MALFUNCTIONS

7.10.1 Potential Interactions, Issues and Concerns

The MITI project at Melford involves construction, operations, and decommissioning on land and in the marine environment, transit and berthing of large container ships at the marine terminal, transferring containers using gantry cranes, and moving containers inland via road and rail.

There is potential for incidents involving container vessels: incidents with other vessels, fuel spills, or hydrocarbon releases. There are health and safety concerns as workers may be injured on ships, at the wharf, or while operating vehicles or machinery. As the Project may cause an increase in population, there may be a slight increase in demand for emergency response effort as result of accidents as workers pursue leisure activities.

7.10.2 Project Socio-Economic Effects and Effects Management

Economy, Employment, Training, and Business

Project related incidents (e.g. spills of chemicals or hazardous materials or marine spills of oil, fuel, chemicals or hazardous materials) might have a positive impact on local businesses that provide goods and services, such as accommodations and meals, required to support response efforts.

Land and Resource Use

Accidents or malfunctions (a spill of chemicals or hazardous materials) may have adverse effects on traditional use of land, forestry, and marine resources as well as Protected Areas. The most significant types of incidents would be spills in the marine environment or fires where residents would temporarily or permanently lose access to forest or barrens.

Fishing Industry

Accidental events (accidental hydrocarbon or chemical releases into the marine environment) may affect various sub-sectors of the commercial fisheries VEC. For fish harvesters, aquaculture operators, and seafood processors, the effects could include loss of access to the resource, lost opportunity, increased operating expenses, damage to gear and equipment, and potential market impacts.

Physical Infrastructure

Accidents or malfunctions might affect physical infrastructure if a chemical or fuel spill as a result of a container car derailment occurred near a drinking water reservoir. The new rail line will pass several reservoirs including those that serve the Melford Industrial Reserve and the Town of Mulgrave.

Municipal and Social Services Infrastructure

Depending on the type and extent of an accident or malfunction, it may create a temporary increased demand on local emergency response services. This could temporarily compromise use of these services by local residents.

7.10.3 Mitigation

MITI has engaged SAIC Canada to prepare an emergency response plan (ERP) which will include emergency event scenarios as well as training needs, special operations, and security management. Safety, security, and operating technologies will also be developed and / or integrated by SAIC as part of a comprehensive solution to enhance security and operations.

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To address issues related to accidents and malfunctions and to ensure the safety and security of its workers and the surrounding area, MITI will:

- Develop company policies, procedures, and incentives for safety enhancement and accident prevention;
- Work with the Municipality to help it fulfill its mandate for community emergency response and its role in regional mutual aid;
- Encourage MITI staff to participate in volunteer community emergency services;
- Develop a database of local companies and agencies that can provide indirect support during an emergency;
- Develop an Emergency Action Plan that will identify a number of events (accidents, malfunctions unplanned events) and MITI’s preventative measures and planned responses;
- Practice emergency responses through mock disaster exercises lead by MITI’s emergency response team;
- Work with the Municipality of the District of Guysborough, as well as fire, police, acute medical, search and rescue service providers, to determine necessary auxiliary equipment and staffing that will be required to implement the Emergency Action Plan;
- In the even of an incident resulting from Project activities, provide direct support to other emergency response workers;
- In coordination with response agencies, maintain a statistical database on all Project-related incidents that involve police, fire, ambulance, acute health, and search and rescue services;
- Provide fair and timely compensation for actual economic loss due to temporary exclusion, interference, or lost opportunity (as a direct result of Project interactions) to fishers and land owners; and
- Provide fair and timely compensation for damage to gear, infrastructure, or vessels resulting as a direct result of Project interactions.

Table 7-14 shows the Project VEC’s for which there are likely to be effects in the event of an accident or malfunction.

Table 7-14: Potential Socio-Economic Effects of Project Accidents or Malfunctions

Project VEC	Potential Effects
Economy, Employment, Education and Training, and Business	Temporary emergency workers will create increased spending on services and supplies
Land and Resource Use	Loss of access to traditional land, marine, forestry, and Protected Areas
Commercial Fisheries	Loss of access to fishing areas or loss of product value
Physical Infrastructure	Contamination of water supply
Municipal and Social Services Infrastructure	Increased demand on emergency response services

7.10.4 Residual Effects

Table 7-15 provides a summary of the impact of the residual effects of potential Accidents and Malfunctions on Project VEC's. Residual effects on services and infrastructure are generally neutral due to either the experience of the Study Area with large scale industrial projects or the effectiveness of the mitigation measures. Land and resource use, as well as commercial fisheries, will recover from adverse effects due to an event. Physical infrastructure effects can be managed by prevention and effective response. Municipal, and social services should experience no residual adverse effects either because of the short term nature of incidents or because a decrease in population resulting in excess capacity.

Economy, Employment, Training, and Business

Project related incidents might have a positive effect on local businesses that provide goods and services, but in the short term and there will be no residual effects. Mitigation success will be neutral as measures will be minor. The magnitude will be local and the geographic extent local. The effects will be short term and intermittent and reversible once the incidents is resolved. The level of confidence in this effect occurring is medium as the extent of an incident is unknown and prevention is likely to be effective. The likelihood of the effect is medium as there would be some economic impact if an event occurred. The significance is low.

Land and Resource Use

Residual Project effects (of accidents and malfunctions) on land and resource use are considered to be important as natural areas damaged by adverse incidents, such as a chemical spill or fire, resulting from Project activities could take a long time to recover. Mitigating measures will have a high impact depending on the scale of the incident. The magnitude would be low. Most incidents would be confined to the Primary Study Area.

While incidents might be intermittent, the effects could last long term. Likewise, though reversible, the resource could take many years to recover. The level of confidence is medium with a medium certainty of occurrence because prevention is an effective management technique and while it is likely that incidents will occur, the type and magnitude is unknown. The success of mitigation is considered high as prevention, preparation, and effective response will reduce the likelihood of occurrence and the scale of the incident. The long term effect is of medium significance (adverse).

Commercial Fisheries

Residual Project effects from accidents and malfunctions may have an adverse effect on commercial fisheries, particularly if these incidents occur in the marine environment. The result could be temporary loss of access or damage to habitat, as well as damage to vessels or fishing gear. Marine incidents could also cause damage to vessels, infrastructure, or gear, as well as fish kills, at aquaculture facilities resulting in loss of income and assets.

Mitigation success will be high because vessels carrying hazardous materials will be required to document contents and carry them in special containers that will control leaks and spills. If an incident did occur, the magnitude could be high as there are about 275 registered fishers in the Strait of Canso area along with a number of other crew members who work with them with an annual catch value of almost \$30 million (DFO). There are also six aquaculture sites within the Study Area, though these are not located within the Primary Study Area. The geographic extent would be most likely local as this facility will deal with container ships rather than vessels like oil tankers.

Incidents would most likely short term, intermittent, and reversible. The level of confidence in such an incident happening is medium as is certainly and likelihood of occurrence and due to the fact that measures to prevent, prepare for, and respond quickly and efficiently will reduce the likelihood as well as the impact of an incident. The residual effect is considered to be of medium significance.

Physical Infrastructure

Project related accidents and malfunctions would have an adverse effect on the water supply portion of the Physical Infrastructure VEC and the effect could be of high magnitude. The effect would be local as these water reservoirs are within the Primary Study Area. The effects would be short term and intermittent and reversible once the incident subsided. There is a medium level of confidence and certainty as incidents will likely be averted through prevention. Mitigation measures would have high impact because prevention is proven to be effective. The residual effect is medium as for the most part incidents will be prevented but there is a possibility that one still might occur.

Municipal and Social Services Infrastructure

Project related accidents or malfunctions will have adverse effects on the demand for emergency response services such as fire fighting, police, ambulance, and acute health care. However, for most types of incidents the demand will be short lived. The magnitude of the effect will be low to medium as capacity (owing to decreasing population) exists in many areas. The geographic extent of the effect will be local and possibly regional depending on the incident, but short term and intermittent. The effect would be reversible as it would cease upon resolution of the incident.

The level of confidence and certainty that this effect would result from an accident or malfunction is high as emergency services would be mobilized upon report of the incident even if the need for their services were was not great. The likelihood of occurrence is medium given that prevention measures will be in place. The residual significance would be neutral as additional capacity would not be added to the system as a result of an incident, though it might as a result of increased population due to the Project.

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Table 7-15: Summary of Effects of Project Accidents and Malfunctions

Project-Socio-Economic Interaction	Potential Positive (P) or Adverse (A) Effect	Mitigation Success	Significance Criteria for Socio-Economic Effects					Likelihood of Occurrence*	Level of confidence/certainty*
			Magnitude	Geographic Extent	Duration/Frequency	Reversibility (R=reversible NR=Not reversible)	Significance		
Construction/Operations									
Economy, Employment, Education and Training, and Business	P	Neutral	Low	Local	Short term, intermittent	R	Low Not significant	-	-
Land and Resource Use	A	High	Low	Local	Long term	R	Medium Not significant	-	-
Commercial Fisheries	A	High	High	Local	Short term, intermittent	R	Medium Not significant	-	-
Physical Infrastructure	A	High	High	Local	Short term, intermittent	R	Medium Not significant	-	-
Municipal and Social Services Infrastructure	A	Neutral	Low-medium	Local-regional	Short term, intermittent	R	Neutral Not significant	-	-

* only evaluated if effect is identified as "significant"

7.11 DECOMMISSIONING

This stage of the Project includes phasing out use of the facility (decommissioning the container port / marine terminal, intermodal rail yard, logistics park, running track, switching yard, access road, and buildings) sale of re-usable machinery, equipment and plant assets and returning the site to its pre-project condition. Based on the design of a state-of-the-art facility and use of current standards, environmental remediation work for site reclamation is expected to be minimal.

7.11.1 Potential Interactions, Issues and Concerns

The life span of the Project is expected to be 30 to 50 years but the facility will be designed for potential expansion and enhancement based on the anticipated growth of the container market. Given these lengthy time frames, it is difficult to predict with any certainty the effect of decommissioning will have on many of the socio-economic VECs. It can be anticipated that there will be some dislocation of the local economy due to the withdrawal of \$240 M annually, the possible out migration of skilled workers and an possibly a slump in the housing market, reduced demand for supplies and services from the local business community, a reduction in the local tax base, and greater demand upon some social services due to potentially higher local unemployment. Such potentially adverse effects can be expected to be offset to some extent by certain benefits, such as short term employment on the decommissioning effort including land use and environmental rehabilitation, possibly less demand for public health and acute care services, less wear and tear on the local road network, and the availability of a skilled work force to supply other local industries and possibly to attract new ones. However, to try to anticipate the mix of possible benefits and non-benefits which might occur in so distant a future, and their relative magnitudes, is not a practical proposition. These effects will become much more apparent at the time when the decommissioning decision has been taken and the decommissioning plan is being developed.

From a pure facility decommissioning point of view, the basic elements of a plan can be formulated. There will be an orderly and comprehensive decommissioning of the facility once it reaches its design life and when necessary upgrades are no longer economical. If no opportunity for utilization of the facility or parts thereof is identified, complete decommissioning will be undertaken, including the removal of all buildings, roads, rail, equipment, storage facilities, and site services. Upon removal of all infrastructures, the site will be rehabilitated. A decommissioning plan will specify decommissioning objectives, approach, activities, schedules, and the site rehabilitation. The plan will be developed in consultation with the municipality and regulatory agencies, and will be in keeping with the regulatory requirements in effect at the time. The elements of such a plan would normally include the following objectives:

- Identify applicable municipal, provincial, and federal regulations and standards;
 - Identify and consider objectives of local municipality and adjacent landowners;
 - Define the decommissioning objective;
 - Protect public health and safety;
 - Rehabilitate the plant site in accordance with regulatory standards;
 - Reduce or eliminate potential adverse environmental effects beyond decommissioning;
- and,

- Develop a material management strategy to maximize reuse/recycling options on and off-site or via a material processing facility, and to avoid/minimize disposal in approved landfills.

7.12 FOLLOW-UP AND MONITORING

Follow-up and/or monitoring programs are proposed wherever a need has been identified. The need for these programs are based on factors such as the identification of significant environmental effects, legislative or regulatory requirements, uncertainty with respect to predictions or the effectiveness of planned mitigation or due to a VECs nature as indicative of the overall health or status of a VEC. Where possible, the measurable parameters identified and used to quantify Project environmental effects are also used to guide the development of the follow-up programs.

In the case of the socio-economic VECs, seven monitoring/follow-up programs are suggested: accommodations, business, economy, employment, fisheries, marine traffic, and safety.

Accommodations

MITI will monitor accommodations needs for both the construction and operations phases. The company will interact with local municipalities, real estate agencies, and other appropriate committees or groups on a regular basis to determine supply, demand and accommodation gaps and methods to fill those gaps that do not artificially inflate accommodation prices. Evaluation of these data will allow a determination of the effectiveness of accommodation strategies adopted by MITI and its contractors as part of its corporate employment strategy.

Business

MITI will monitor expenditures and contract awards and make the aggregate data publicly available on a regular basis. These data will be used to evaluate the business development strategies developed by MITI as part of its corporate industrial benefits strategy.

Economy

MITI will compile, and provide to government, information on expenditures by amount, type, location and contractor. This will allow determination of the proportion of Project expenditures made within the Province and within the Study Area by business type/location. This will be used to evaluate the effectiveness of MITI's efforts and management strategies designed to ensure that economic outcomes from the Project benefit the Study Area and the province as a whole.

Employment

MITI will monitor employment in terms of number employed, location of primary residence, occupational category, and gender status. These data will be made publicly available in summary form on a regular basis. Evaluation of these data will be used to demonstrate the effectiveness of hiring, training, and retention strategies adopted by MITI and its contractors as part of its corporate employment strategy.

Fisheries

MITI will ensure that information about their plans and activities (e.g. vessel traffic movements and schedules, underwater maintenance and construction) will be provided to the Guysborough County Inshore Fishermen's Association and the Project specific fishers liaison committee as well as any Strait of Canso or Chedabucto Bay Integrated Planning Committees (similar to committees in many other regions of the world where fisheries and heavy industry interact) that may be established.

MITI will appoint a senior manager to interact with the fishing industry in ongoing discussions and to participate in a Strait of Canso/Chedabucto Bay Traffic Committee regarding issues such as temporary exclusion, interference, loss of opportunity, silt and debris.

MITI will also establish a multi-faceted environmental effects monitoring program to include sampling fish and shellfish to ensure that terminal construction does not affect quality.

It is expected that DFO's regulation based monitoring will continue and statistics, such as those used in this assessment, will be available.

Marine Traffic

As with fisheries, MITI will ensure that information about their plans and activities (e.g. marine traffic schedules and volumes) is provided to marine management operators responsible for traffic movement in the Strait of Canso. Evaluation of this data will help determine overall traffic volumes, safety issues, size of marine traffic lanes, and need for increased or improved infrastructure.

Safety

MITI will monitor, and provide to the RCMP on an ongoing basis, project plans and schedules including security arrangements, work rotation schedules, and traffic flow and volumes. Traffic flow and volumes will also be provided to the Department of Transportation and Public Works. On-site accidents will be reported to the Nova Scotia Worker's Compensation Board and those of a serious nature will be reported to both the Nova Scotia Occupational Health and Safety Division of the Department of Environment and Labour as well as the RCMP. These data will allow an evaluation of the safety prevention strategies developed by MITI as part of its corporate commitment to operating a safe workplace. Evaluation of traffic data will help the Department of Transportation and Public Works to determine highway safety issues including dangerous intersections, traffic speeds, excessive wear and tear on infrastructure, and signage.

7.13 CONCLUSION

The Strait of Canso is an industrialized area in a rural setting. It has considerably more large-scale industries than any other part of the Study Area. These industrial sites are located in the Strait Area due to its deep water, sheltered and ice free harbours and its proximity to international shipping routes. These factors make the proposed Project site at Melford ideal for developing a marine terminal to deliver shipping containers from Asia to North America.

This marine terminal Project is substantial because of the large number of people that will be employed directly at MIT and indirectly through businesses that support the marine terminal. This will have a positive effect on an area of Nova Scotia that has suffered from decline both in natural resource based industries such as the ground fishery as well fluctuations in industrial activity and related business demand. This Project will have a positive long term impact on the economy, employment, training, and business opportunities both in the region and the province.

This socio-economic impact assessment has documented the existing socio-economic conditions in the communities nearest to the proposed Project site as well as employment, business, land use, fisheries, infrastructure, heritage resources conditions within the Study Area. It also discusses the potential impact of accidents and malfunctions as well as Project decommissioning.

This impact assessment examined the changes, both positive and negative, in human populations, communities, and social infrastructure that could occur as a result of Project development, during construction, operations, and (to a lesser degree) decommissioning. The measures proposed by MITI to enhance positive effects of the Project and to minimize negative effects are based on maintaining or enhancing the quality of life of residents of the Study Area while at the same time operating a large marine terminal and logistics park.

MITI has held at least five public meetings since March 2007 (complete list of meeting included in Section 3). Generally, public response to the Project has been positive. Residents are interested in employment opportunities and positive economic impacts on the local and provincial economy. However, residents are aware of potential adverse impacts, of terminal construction and operation, on waterways, wetlands, drinking water, fisheries, and fish habitat as well as the effects of increased traffic and noise in the rural area.

There are no Aboriginal communities within the Primary Study Area. The Paqtnekek Band reserve is situated approximately 47 kms to the west by road, and the Chapel Island Band reserve is about 112 kms distant by road to the east and north on Cape Breton Island. The Confederacy of Mainland Mi'kmaq has an interest in the entire area. An interim report indicates that they have no issues of concern related to the area within a five km radius of the proposed Project site.

As a result of work related out-migration and a low birth rate, this area has experienced a population decline. For the same reasons, the primary working age group is most affected. The proposed marine terminal will provide significant new employment, both direct and indirect, in the Study Area. In turn, this will promote economic growth, in the Study area and the province.

As a result of negative population growth, primary and secondary school enrolment has declined leading to school closures and amalgamations in the Study Area. Project related population and economic stability in the region will help to keep schools open and limit the need for children to travel long distances for schooling as well as create new opportunities for child care services.

The demand and potential response for training for the Project may create stress on the current capacity that exists in the local community college in the short term. Again, MITI is committed to working with all partners and in this case to ensure proactive and timely information on educational needs.

The Strait of Canso commercial fishery is an active and important industry in the area. The concerns of fishers in the Primary Study Area and Study Area are represented in Section 5 of this document. MITI will continue to work with the fishers, and others, through the Industrial Liaison Committee and the Community Liason Committee. In addition, MITI will address marine traffic related issues through existing forums or by championing the establishment of a marine traffic management committee with local agencies such as Canadian Coast Marine Communications and Traffic Services (Sydney Traffic). The assessment has shown that there will be no residual Project effects on seafood processing or aquaculture in the Strait of Canso.

Physical infrastructure such as transportation (road, marine, and services) will be impacted by increases in road, rail, and marine traffic and there will be increased demand on private services that transport people and goods to and from the area. MITI is committed to taking measures that

will reduce the impact of increased road and marine traffic and will ensure that supplier development activities create local opportunities. MITI will take responsibility for supplying clean water for the Project as well as ensuring that Project wastewater is treated and that solid waste is managed to the Provincial standard.

A wide range of social services and infrastructure is provided to residents of the Study Area. Due to out-migration and low birth rates, excess capacity exists to handle increased demand that might result from new families moving into the area for permanent employment opportunities especially since most operations jobs will be filled by people who already reside in the Study Area. However, public social service systems should not need to be expanded to meet demand caused by large numbers of temporary construction workers in the Study Area. MITI is committed to working with municipalities and service agencies to meet Project related community's needs during the construction period and to enhancing local capacity to meet long term needs.

The ability to benefit from this increase in economic growth and local business opportunities in the Study Area will depend, in part, upon the availability of skilled labour and MITI's ability to attract labour from throughout and possibly beyond, the Employment Catchment Area. The company is committed to working with all partners (unions, business groups, government, and training institutions) to recruit, retain, and train workers as well as to attract and enhance businesses in the Study Area and province.

MITI believes that a part of its long term success will be a desire for quality of life factors such as having secure employment along with proximity to extended family, maritime culture, small community living, and an affordable cost of living that will help to attract or retain workers from Guysborough County and surrounding areas to the Project. As quality of life relates to living in a clean rural environment and enjoying traditional land use activities, MITI is committed to proactive communications of Project interactions with affected parties so that access to, and enjoyment of, natural areas are not compromised by the Project.

In summary, the Project will help to reverse the trend of population decline in the Municipality of the District of Guysborough and surrounding communities such as Canso and Richmond County. It will help provide stability to the populations of communities like Port Hawkesbury that are experiencing population decline but to a lesser degree. This growth will ensure that community services remain strong. The Project will provide employment and business opportunities throughout the Study Area and in the province.

The Project will bring increased support to the physical, social, health, communications and emergency infrastructure; further development to training and educational institutions; growth in business and labour capacity, and enhanced management of the Strait of Canso marine environment.

This assessment has determined that the socio-economic impact of the MITI Project can make a significant positive contribution to the Study Area and the province of Nova Scotia.

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