

## EXECUTIVE SUMMARY

### Project Description

#### *Background*

World container traffic is currently growing at a compound rate of over 6 to 7 percent per year and is expected to double in the next two decades. Shippers and beneficial cargo owners continue to seek stable and reliable supply chain routes and are increasingly having goods sent directly to East Coast ports via the Suez Canal. As the first North American landfall on the Trans-Suez route from Asia, Canada has an opportunity to develop a port at Melford, Nova Scotia to serve the growing U.S. markets. The challenge facing North American east coast ports is in responding to this growing demand without duplicating the problems of congestion and landside constraint found today on the west coast of North America. Halifax, Montreal and the U.S. north eastern ports are already located in highly urbanized harbours that offer little, if any, additional expansion potential. To answer these challenges, Melford International Terminals Incorporated (MITI) is proposing the creation of a new deepwater port and state-of-the-art intermodal rail container logistics terminal (Melford International Terminal (MIT) (the Terminal) (the Project)) on the Strait of Canso at Melford Point, Nova Scotia.

#### *Location*

The proposed MIT is located approximately 242 km northeast of Halifax and about 10 km southeast of Port Hawkesbury. The 217 ha site is situated on the southeast shore of the Strait of Canso and offers a deep-water, ice-free harbour with sufficient depth for the largest current and forecasted container ships. The site is part of the Melford Industrial Reserve, which is owned by the province of Nova Scotia, and is a larger parcel of land zoned as industrial by the Municipality of the District of Guysborough.

#### *Components*

The proposed Project will consist of the following key components:

- Container Terminal;
- Intermodal Rail Yard;
- Logistics Park;
- Running Track; and
- Security, Customs and Cargo Services.

Access to the site will be provided via rail and road. The rail services (running track) will be established through construction of approximately 24 km of new line and reactivation of about 10 km of existing rail bed. The rail line will connect the site with the Canadian National Railway Company (CN) track leading to Antigonish and on to the rest of the country. Road access to the site will be provided via the existing Highway 344, a two-lane unlimited access highway that maintains an alignment roughly parallel to the Strait of Canso throughout the Project area. Electric power will be delivered to the facility by a dedicated 138 kV transmission line from the Nova Scotia Power Incorporated (NSPI) grid, a distance of 20.36 km. The RoW for the transmission line will be 51 m wide.

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### *Schedule*

Subject to MITI receiving all required regulatory approvals and permits it is anticipated that construction will begin in 2008 and that operation of the terminal will commence by spring 2011.

### *Proponent*

The Project proponent is Melford International Terminal Incorporated (MITI).

### *Regulatory Requirements*

The proposed MIT requires a *Canadian Environmental Assessment Act* (CEAA) screening level environmental assessment. This assessment is triggered since the project involves federal permits and authorizations. In particular, the Project requires an authorization / permit pursuant to the *Fisheries Act* (Authorization under S. 35(2)) and the *Navigable Waters Protection Act* (NWPA).

Further, the Project requires a Provincial Class I Environmental Assessment Registration under the Environmental Assessment Regulations of the *Nova Scotia Environment Act* (NSEA). This Registration document is needed since the Project is expected to affect more than 2 ha of wetland.

Given that both the provincial and federal environmental assessment legislation is triggered, the federal and provincial regulators have agreed to review the proposal jointly and to harmonize each respective assessment process.

This Environmental Impact Statement (EIS) aims to address the federal Screening Environmental Assessment and the Provincial Class I Registration requirements.

### *Cost and Labour Requirements*

The MIT is expected to generate initial annual expenditures in Nova Scotia and the rest of Canada of about \$1.1 billion (based on operation levels during the first year); initial operation is expected to see annually in the range of 95 to 150 ship visits, depending on size. Assuming the lower figure, which reflects the larger super post-panamax ships as the trend is towards larger and more fuel-efficient vessels, this will result in an average of 8,000 twenty-foot equivalent units (TEU) per ship and a total of 760,000 TEUs per year. At full operation, again assuming the larger vessels, the Terminal is expected to handle about 188 ships annually and a total of 1.5 M TEUs. About 1,800 direct person-years (PY) (annual) are created in Nova Scotia during initial operation, with 2,000 spin-off jobs created elsewhere in the economy for a total of 3,800 PY. These numbers rise as the Terminal reaches full capacity.

### **Existing Environment**

As part of the environmental assessment work, an inventory was conducted related to the biophysical (terrestrial, freshwater and marine) and socio-economic environments in the study area. Further studies are undertaken during the 2008 early and late summer season for wetlands, rare species, and breeding birds. These surveys focus on the rail and transmission corridor. Results will be issued in a technical report.

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The study area for the biophysical assessment includes the proposed terminal, logistics park and the proposed transmission and rail corridors. The fieldwork encompassed surveys for plants, birds, rare species, fish and fish habitat, marine benthic communities and marine habitat. Additional field work for wetlands, rare species, and breeding birds is being conducted in 2008. The results of the 2008 survey work will be presented in a technical report.

### *Terrestrial Environment*

Most of the study area and surrounding lands are forested. Other existing habitats include built up areas, agricultural lands, riparian habitats, and miscellaneous un-treed sections. Several rare plant species, and lichen species of interest, were identified during the field surveys. One rare plant species of conservation concern was found (yellow lady slipper - *Cypripedium parviflorum*, NSDNR Yellow).

A wide variety of wetlands were mapped within the study area. Treed bogs were identified as most common, closely followed by shrub bogs. Only a small number of the wetlands are in contact with, and thus potentially impacted by, the proposed project infrastructure.

A review of the Nova Scotia Department of Natural Resources (NSDNR) significant habitat (SigHab) database revealed that no significant habitats are known to exist within in the footprint of the proposed Project, including the rail and transmission corridors.

Bird species breed, migrate and over-winter within the study area. A total of 92 different species of breeding birds were identified during surveys. Fifteen (15) species of special status were observed within the study area and two (2) raptor species were among the confirmed breeding birds.

Few migratory shorebird species were observed within the study area during surveys. This is likely due to the poor shorebird habitat. Overall, only two (2) shorebird species (sandpipers) were identified. There were no species of special concern identified in the study area and no species of special status were found during the shorebird surveys.

The waters in the study area are known as poor habitat for wintering waterfowl due to the rapidly increasing depth. Furthermore, these waters are not known to produce large numbers of wintering waterfowl. Historic survey data confirms the overall low significance of the area to wintering waterfowl populations.

Past surveys (2005-2007) of wintering land birds identified species considered to be common visitors to the area. Only one species of wintering waterfowl with special status was identified, Barrow's goldeneye (*Bucephala islandica*) during the historical data reviews.

### *Freshwater Environment*

Melford Brook and the associated tributaries drain most of the area of the Logistics Park footprint. Most watercourses are relatively small (0.5 to 2.5 m wide). The one exception is Melford Brook, which has a width of about 10 m (average depth about 40 cm). The existing railbed and the proposed new rail line section cross over numerous watercourses. Selective water courses within the new rail line corridor were field surveyed. Additional supplemental surveys will be performed to confirm and

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solidify the baseline information and will be undertaken as part of the detailed design phase. The named watercourses that are indicated on 1:150,000 topographical maps include Melford Brook, Byers Brook, East Brook, West Brook, Berrys River and Murray Brook. Channel widths of the surveyed natural watercourses ranged from 0.2 to 5.5 m (average depth about 12 cm).

Reservoirs are also a common occurrence in the area and include: Grant Lake Reservoir, Goose Harbour Reservoir, and England Lake Reservoir. Grant Lake Reservoir is the drinking water resource for the town of Mulgrave.

### *Marine Environment*

The marine habitat at and in the vicinity of the proposed terminal is typical of Chedabucto Bay. The habitat in the terminal footprint varies widely according to depth. An underwater benthic habitat survey revealed that the nearshore areas are comprised mainly of rock and cobble which turns into a mix of cobble, sand and silt approximately 250 m from shore. In areas where rock dominates, there is a high degree of marine flora cover (60-100 percent). Some kelp (5-20 percent cover) is seen in the deeper transect areas and the amount of vegetation is expected to be minimal at the deepest areas of the footprint.

The collected sediment samples revealed negligible levels of PAHs, BTEX/TPH, DDT and metals in comparison to established ocean and land disposal criteria.

The region has supported a strong commercial fishery which includes cod, haddock, pollock, American plaice, white hake and Atlantic herring. Herring and mackerel also support a bait fishery in the area. The lobster is currently the most important commercial invertebrate that is fished in the area. Fisheries for sea scallop, rock crab, and soft shell clams fisheries also exist, albeit to a lesser extent than the lobster fishery.

Six species of cetaceans have been identified as possibly occurring in the Strait of Canso and Chedabucto Bay area. In addition, two marine mammal species that are listed as Endangered could also potentially occur in the vicinity of the Project.

As far as marine fish are concerned, there are three species found in the general area of the project that are listed by the Committee on the Status of Endangered Species in Canada (COSEWIC). These are Atlantic wolffish (Special Concern), winter skate (Threatened), and Atlantic cod (Special Concern).

### *Socio-Economic Environment*

The socio-economic study area includes parts of the Counties of Antigonish, Guysborough, Inverness, and Richmond. The population of each of these 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). The main service centres for the study area are Guysborough, Antigonish, and Port Hawkesbury. There are no First Nations reserves in the study area at or near the Project site however, the Paq'tnkek Band reserve is situated approximately 47 km to the west by road, and the Chapel Island Band reserve is about 82 km distance by road to the east and north on Cape Breton Island.

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Over the last 10 years, the study area experienced a population decline of slightly more than 10 percent. Overall the regional economy is dominated by the service producing sectors at nearly 78 percent, compared to Nova Scotia as a whole at less than 20 percent. The regional employment rate is currently above 51 percent (Nova Scotia is less than 58 percent). Over 22 percent of personal income in the study area comes from government transfers while the provincial rate is slightly over 16 percent. A less vibrant economy in the study area necessitates greater reliance on government support such as employment insurance and social assistance.

The Strait of Canso, an ice-free deep-water port, is home to a number of industrial sites and significant employers. Other major employers in the study area include the district health authority, the Strait Regional School Board, and St. Francis Xavier University.

Fishing and forestry are the primary resource uses in the area. The forestry industry within the region (North eastern Nova Scotia) produces 50 percent of the Province's pulpwood and 41 percent of its lumber. The area's active commercial fisheries involve lobster, mackerel, shrimp, and snow crab fishing. According to the Guysborough County Inshore Fishermen's Association several lobster fishers place traps near Melford and more than 30 fishers and crewmembers currently operate in the area. Fisheries and Oceans Canada (DFO) indicates that in 2005 and 2006 there were 4 commercial fishery licenses for these species in the Melford area.

In 2006, there were around 1,300 commercial vessel trips (650 vessels) through the Strait of Canso. These included dry/liquid bulk carriers including super tankers as well as smaller ships carrying materials such as gravel and gypsum to the Maritimes, Eastern Canada and the eastern seaboard of the US. Also in 2006, the Canadian Coast Guard recorded 637 pleasure crafts in the Strait of Canso. These included small boats of all types along with seven cruise ships.

An archaeological assessment identified some areas of high and moderate to high archaeological significance. These are located along the shoreline of the Strait of Canso and in the area of the proposed intermodal rail yard and marginal wharf. Features identified in the field include remnants of communications towers or beacons, and concrete and stone foundations likely associated with nineteenth century settlement of the area.

### **Effects Assessment and Mitigation**

The effects of the Projects were assessed for the construction, operation and decommissioning phases. The effects assessment focused on the effects of the Project on Valued Environmental Components (VECs). VECs are environmental attributes selected for importance to the public at large, stakeholders and/or regulators; these VECs occur within the study area and could be affected by the proposed Project works and activities.

As part of the Project numerous design and operational features will be implemented in order to avoid and minimize adverse environmental effects (Table ES-1). The effects assessment assumes the implementation of these environmental management features and develops further mitigation measures where required to ensure that effects remain within acceptable levels. The effects

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assessment was conducted for each one of the VECs and with respect to all relevant works and regular activities of the construction phase, operation phase and the decommissioning phase. For a VEC-specific listing of mitigation measures refer to Tables ES-2 to 5.

**Table ES-1: Environmental Management Features**

<b>Environmental Management Feature</b>	<b>Description</b>	<b>Objective</b>
Surface water management systems; site drainage	<ul style="list-style-type: none"> <li>On-site storm water management system</li> <li>If required, controlled outlet structures with monitoring point(s)</li> </ul>	<ul style="list-style-type: none"> <li>To limit post development site-run off to pre-development levels</li> <li>Monitoring of effluent quality</li> <li>To provide shut down mechanisms in case of emergency (spill containment)</li> </ul>
On-site waste water treatment facility	<ul style="list-style-type: none"> <li>On-site treatment facility for waste water stream</li> <li>Controlled outlet structures with compliance monitoring point(s)</li> </ul>	<ul style="list-style-type: none"> <li>To prevent discharge of untreated waste waters to receiving water bodies</li> <li>Monitoring of effluent quality</li> <li>To provide shut down mechanisms in case of emergency (spill containment)</li> </ul>
Dedicated rail track	<ul style="list-style-type: none"> <li>Single track rail spur between MIT and the existing rail line</li> </ul>	<ul style="list-style-type: none"> <li>To minimize use of road infrastructure for container haulage</li> </ul>
On-site emergency response unit	<ul style="list-style-type: none"> <li>On-site emergency response unit equipped and trained to address fires, spills, and hazardous material management</li> </ul>	<ul style="list-style-type: none"> <li>Immediate response in case of emergencies</li> </ul>
Monitoring and maintenance programs	<ul style="list-style-type: none"> <li>Environmental Effects Monitoring (EEM)</li> <li>Environmental Compliance Monitoring (ECM)</li> <li>Environmental inspections</li> <li>Environmental audits</li> <li>Routine maintenance and repair (in accordance with maintenance plan)</li> </ul>	<ul style="list-style-type: none"> <li>To review the accuracy of effects predictions, the effectiveness of environmental controls and compliance with applicable Project objectives, standards, guidelines and policies;</li> <li>To provide a trigger for adaptive management actions;</li> <li>Maintenance to ensure the ongoing performance of the environmental management features of MIT and associated infrastructure with prescribed performance standards.</li> </ul>
Project-specific Environmental Management Plan (EMP)	<ul style="list-style-type: none"> <li>EMP for construction phase (incl. erosion and sediment control plan; dust control)</li> <li>EMP for operation phase</li> <li>Contingency and Emergency Response Plan (ERP) including spill prevention and clean-up protocols</li> <li>Training and education plans</li> <li>Communication and reporting protocols</li> </ul>	<ul style="list-style-type: none"> <li>To document all environmental management measures, procedures and protocols relevant for the construction and operation phases of the Project</li> <li>To ensure proper plan implementation, and plan updates</li> <li>To ensure on-going communication with stakeholders and availability of monitoring results</li> </ul>
Health and Safety Plan (HASP)	<ul style="list-style-type: none"> <li>100 percent Radiological and Biological Inspection</li> <li>Project-specific occupational HASP for construction and operation phases</li> <li>HASP related training, education and emergency preparedness</li> </ul>	<ul style="list-style-type: none"> <li>To address national and international security</li> <li>To minimize work related risks for human health and accidents</li> </ul>

## **Significance of Effects**

Residual adverse effects of the Project are those effects that remain following the successful implementation of all mitigation and compensation measures. Identified residual effects for this Project were evaluated with respect to significance. This evaluation was conducted on the basis of a set of criteria involving the magnitude of the effect, geographic extent, duration/frequency, reversibility and ecological/cultural context. All of the residual adverse effects on the VECs were assessed to be not significant. The identified potential adverse interactions between the Project and the VECs are summarized in table format (Tables ES-2 to 5) together with the key mitigation measures and the conclusion on the significance of the adverse residual effects.

## **Malfunctions and Accidents**

In addition to the assessment of the effects from regular activities, the EIS evaluates the potential effects of malfunction and accidents during construction and operation phases. The following potential accident and malfunction scenarios were identified:

### On-shore environment:

- On-site release or spill of fuel, lubricants, chemicals or hazardous materials;
- Facility fire; and
- Off-site rail / road accident with spillage of fuel, chemicals or hazardous materials.

### Marine environment:

- Spill at marine terminal involving a release into the marine environment of fuel, oil, chemicals or hazardous materials;
- Fire on board;
- Failure to properly exchange ballast water;
- Damage to fishing gear; and
- Vessel collision/grounding involving spill of fuel, chemicals and hazardous material.

Strategies to avoid the occurrence, and measures to mitigate adverse effects of any such accident and malfunction scenarios were developed (Table ES-1). This involves the development and implementation of facility-specific spill prevention and ERPs, including plans for on-site equipment, staff training, co-ordination with local and regional emergency response services, communication and reporting. The EIS concludes that with the implementation of these preventative and environmental management tools the likelihood of occurrence of any of these events and associated effects is unlikely.

## **Effects of the Environment on the Project**

The proposed Project could be affected by extreme weather situations (high winds, heavy rain falls, fog, flooding), extreme marine conditions (extreme wind and wave conditions, sea level rises), the effects of global climate change and seismic events. In the detailed Project design and engineering stage, extreme weather conditions, extreme marine conditions and effects of climate change will be taken into consideration. In particular, dimensioning of the surface water management system will be based on frequency and severity of future storm events. Elevations and dimensioning of the marine terminal will be based on extreme site-specific marine conditions that are expected to result from climate change effects. No potential for adverse effects from seismic events have been identified due to the infrequent occurrence and limited magnitude of any such events in the region. In addition to Project features inherent to the design, the operation of MITI will include routine inspection, monitoring, and maintenance. This will ensure that damage to any of the design features or operational aspects will be identified and corrected.

## **Consultation**

As part of the assessment process, MITI implemented a comprehensive, on-going consultation program in order to identify issues and concerns of the affected communities, stakeholder groups including commercial fishermen, aboriginal communities, and individuals. This consultation provides a means to solicit local information, traditional ecological knowledge (TEK), and/or expert opinions, and to reach agreements.

Components and techniques applied in the public consultation that have been implemented by MITI include: public notices; public meetings/open houses; stakeholder meetings; meetings with government agencies; and telephone/fax/email-based consultation.

The Environmental Assessment Information Requirements Document was developed in close consultation with the Canadian Environmental Assessment Agency, DFO, Transport Canada (TC) and Nova Scotia Environment (NSE) representatives. This also included the discussion of the scope of the environmental assessment and the scope of factors to be evaluated (project and environmental components, issues and concerns). MITI involved First Nations in the planning process through direct dialogue and by commissioning a Mi'kmaq Knowledge Study by the Confederacy of Mainland Mi'kmaq (CMM); the results of which will be incorporated with the Project implementation, where applicable and feasible.

MITI is committed to an on-going consultation process that extends beyond the approval stage and continues throughout Project implementation. The format and extent of the future consultation activities will be developed in response to public and stakeholder interests.

## **Follow-up and Monitoring**

The EIS identified the need for a number of follow up activities. This includes pre-construction surveys to confirm and solidify environmental baseline information (e.g., supplementary surveys for wetlands, fish habitat and rare species). These supplementary surveys will be undertaken as part of

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the detailed design phase and will be used in the implementation of the proposed compensation measures for effects on wetland and fish habitat. In addition, a comprehensive program will be implemented for monitoring of effects predictions, effectiveness of the mitigation measures (Compliance Monitoring and Effects Monitoring), and of the compensation works. It is envisaged that the monitoring will involve such subjects as effectiveness of the erosion control measures, turbidity in marine environment, storm and waste water discharge quality, and noise levels. The details of these programs (e.g., parameters, locations, frequency, reporting) will be developed as part of the detailed design phase and in consultation with regulatory agencies.

**Conclusion**

The construction, operation and decommissioning of the proposed Project is expected to affect the components of the bio-physical and the socio-economic environment. With the successful implementation of the identified mitigation measures (including compensation) and follow-up activities it is expected that significant adverse effects are not likely to occur.



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**Table ES-2 Summary of Mitigation and Significance of Residual Biophysical Effects– Construction Phase**

VEC/ Interaction with Project	Mitigation (Construction Phase)	Significance of Residual Adverse Effect
<b>Geology</b>		
No effects anticipated	<ul style="list-style-type: none"> <li>No mitigation required</li> </ul>	Not applicable
<b>Soils</b>		
Soil erosion during construction activities	<ul style="list-style-type: none"> <li>Site-specific erosion and sediment control plans</li> </ul>	Not significant
Changes in soil chemistry from ARD	<ul style="list-style-type: none"> <li>Precautionary monitoring for acid-generating rock</li> </ul>	Not significant
<b>Air Quality</b>		
Short term generation of fugitive dust and fuel combustion emissions from the operation of construction equipment	<ul style="list-style-type: none"> <li>Applying dust suppressant when necessary</li> <li>Maintaining speed restrictions on site roads</li> <li>Dust- abatement measures and sediment control measures will be outlined in an EMP</li> <li>Contractors to maintain all equipment in good operating condition, emission control components equivalent to original conditions</li> <li>Cover open hauling trucks with tarps, as necessary</li> <li>Upon completion of construction activity, stabilize disturbed areas</li> </ul>	Not significant
<b>Acoustic Environment</b>		
Increased noise levels due to internal combustion engines, impact equipment and other equipment	<ul style="list-style-type: none"> <li>Adherence to NSE Guidelines for Environmental Noise Measurement and Assessment</li> <li>Ensure that all equipment has appropriate noise-muffling component installed and in good working order.</li> <li>Conduct routine noise monitoring at both the site boundaries and nearby occupied properties as appropriate.</li> <li>Restrict intensive construction activities to the hours of 0700-1900 where practical.</li> <li>Ensure that the public has contact numbers for appropriate construction and government personnel in the case of noise issues.</li> <li>Ensure that the public is given adequate prior notice of blasting activities scheduled to take place.</li> <li>Maintain, where practical, treed buffers between the working site and the public.</li> </ul>	Not significant
<b>Oceanographic Conditions</b>		
Temporary increase in volume of suspended sediments in the water column from dredging and infilling	<ul style="list-style-type: none"> <li>Refer to Marine Environment below for specific measures</li> <li>Dredged materials will be disposed of on shore</li> </ul>	Not significant

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**Table ES-2 Summary of Mitigation and Significance of Residual Biophysical Effects– Construction Phase**

VEC/ Interaction with Project	Mitigation (Construction Phase)	Significance of Residual Adverse Effect
<b>Groundwater Resources</b>		
Siltation of dug and drilled wells and possible permanent decrease in well yield of drilled wells	<ul style="list-style-type: none"> <li>• Conduct pre-blast well survey (if not already sufficiently covered by baseline water well survey)</li> <li>• Establish and implement EMP</li> <li>• Avoid blasting to the extent possible within 500m of residential wells</li> <li>• Consider alternatives to blasting (e.g., ripping techniques) where possible</li> <li>• Remedial action as necessary to restore damaged wells and/or provide temporary potable water as needed</li> </ul>	Not significant
Water level reductions in water wells or damage to / loss of drilled wells during blasting operations	<ul style="list-style-type: none"> <li>• Monitoring and remedial action as necessary to restore damaged wells and/or provide temporary potable water as needed.</li> </ul>	Not significant
Groundwater quality degradation from spills	<ul style="list-style-type: none"> <li>• Establish and implement EMP including Spill Management Plan and Contingency Plan</li> <li>• Proper fuel management</li> <li>• Remedial action as necessary to restore damaged groundwater, wells and/or provide other sources of potable water as needed</li> </ul>	Not significant
Contamination of wells and/or onsite streams from acidic drainage	<ul style="list-style-type: none"> <li>• Precautionary monitoring for acid generating rock</li> <li>• If required, implement acid rock management plan</li> </ul>	Not significant
Stream flow decreases, dry streams	<ul style="list-style-type: none"> <li>• Design to minimize depth of cuts near streams</li> <li>• Fish and habitat compensation, if required – see “Freshwater Environment”</li> </ul>	Not significant
<b>Surface Water Resources</b>		
Impacts from run-off and erosion and potential increase in siltation and turbidity	<ul style="list-style-type: none"> <li>• Establish and implement EMP including erosion and sediment control plan (as per Erosion and Sedimentation Control Handbook for Construction Sites (NSEL 1988)) near surface streams</li> <li>• Restrictions on the removal of riparian vegetation</li> <li>• Establish a buffer zone of 20m around surface waters to be maintained</li> <li>• Dimensioning of stormwater management system, new culvert, bridge structures, and channel profiles for low frequency storm (1 in 100 year, 24 hr rain events)</li> <li>• Consideration of additional stormwater volumes as a result of increased development (Mulgrave Industrial Park) in upstream portions of the watershed in the dimensioning of the stormwater management system and related structures and channels</li> <li>• Stormwater will be collected and treated in a temporary storm water facility prior to discharge into the Strait</li> </ul>	Not significant

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**Table ES-2 Summary of Mitigation and Significance of Residual Biophysical Effects– Construction Phase**

VEC/ Interaction with Project	Mitigation (Construction Phase)	Significance of Residual Adverse Effect
Release of ARD from exposed rocks	<ul style="list-style-type: none"> <li>• Use of local fill, which has low ARD potential</li> <li>• Perform pre-cautionary pre-construction survey to confirm absence of ARD</li> <li>• If necessary, develop a management plan in consultation with NSE</li> <li>• Collection and management of storm water quantity and quality to relevant provincial standards prior to discharge into the Strait</li> <li>• Establish and implement EMP including erosion and sediment control plan</li> </ul>	Not significant
Permanent changes to drainage patterns and loss of surface waters (within the Logistics Park footprint)	<ul style="list-style-type: none"> <li>• Maintain 20 m buffer zone around streams and wetlands</li> <li>• Stormwater will be collected and treated to relevant provincial standards in a storm water facility prior to discharge, as per a Stormwater Management Plan</li> <li>• Implement a Habitat Compensation Plan acceptable to DFO, and monitor for success (see Freshwater Environment)</li> <li>• EMP provisions for working in/near watercourses</li> </ul>	Not significant
Impacts from blasting activities	<ul style="list-style-type: none"> <li>• Avoidance of ammonium nitrate and fuel-oil mixtures</li> <li>• Include provisions for blasting in EMP</li> <li>• Adherence to federal guidelines (Use of Explosives in or Near Canadian Fisheries Waters)</li> </ul>	Not significant
Impacts related to water crossings	<ul style="list-style-type: none"> <li>• Adherence to federal and provincial guidelines on watercourse crossings</li> <li>• Establish a buffer zone of 20m around surface waters and restrict the removal of riparian vegetation, where practicable</li> <li>• Establish and implement EMP including erosion and sediment control plan</li> </ul>	Not significant
Impacts related to stormwater	<ul style="list-style-type: none"> <li>• Stormwater will be collected and treated to relevant provincial standards in a temporary storm water facility prior to discharge into the Strait, as per a Stormwater Management Plan</li> <li>• Removed vegetation will be replaced, or such areas will be gravelled, paved, or curbed as soon as practical</li> <li>• Establish and implement EMP including erosion and sediment control plan</li> </ul>	Not significant
Discharge of treated water from the Project	<ul style="list-style-type: none"> <li>• EMP provisions for temporary stormwater management</li> </ul>	Not significant
<b>Marine Environment</b>		
Increased sedimentation in marine environment from dredging, surface runoff	<ul style="list-style-type: none"> <li>• Slow ascent and descent bucket speeds to reduce chance of re-suspension</li> <li>• Attempt to achieve full bucket capacity and thus, fewer loads</li> <li>• Completely empty bucket after material is emptied and before continuing job</li> <li>• Use of a rinse tank to remove build-up</li> <li>• Do not use bucket to level high spots</li> <li>• If necessary, limit dredging activities to periods at which tidal currents are weakest</li> <li>• Use of silt booms or curtains to contain sediment wherever feasible</li> </ul>	Not significant
Loss of marine habitat due to construction of terminal	<ul style="list-style-type: none"> <li>• Implement Habitat Compensation Plan as required by DFO</li> </ul>	Not significant

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**Table ES-2 Summary of Mitigation and Significance of Residual Biophysical Effects– Construction Phase**

VEC/ Interaction with Project	Mitigation (Construction Phase)	Significance of Residual Adverse Effect
Fish mortality and habitat alteration from blasting	<ul style="list-style-type: none"> <li>Adhere to DFO Guidelines for the Use of Explosives in or Near Canadian Fishery Waters</li> <li>If feasible, construction of marginal wharf to occur in stages to facilitate removal of all fishes/molluscs (e.g., after the setting a sheet pile enclosure)</li> </ul>	Not significant
Mortalities	<ul style="list-style-type: none"> <li>Works to be completed during periods of least biological activity / sensitivity, where practicable</li> <li>If feasible, construction of marginal wharf to occur in stages to facilitate removal of all fishes/molluscs (e.g., after the setting a sheet pile enclosure)</li> </ul>	Not significant
Increase in noise due to construction	<ul style="list-style-type: none"> <li>Conduct work at low tide whenever feasible</li> <li>Make use of ramped warning signals</li> <li>Mask noise through the use of bubble curtains, where practical</li> <li>Make use of alternative techniques to pile driving such as vibratory pile driving</li> </ul>	Not significant
Adverse effects of lighting on fish during construction	<ul style="list-style-type: none"> <li>No unnecessary lighting will be used</li> <li>Area lighting will be angled directly at work areas and shielded where possible</li> <li>Implementation of a lighting plan</li> </ul>	Not significant
Decrease in catch	<ul style="list-style-type: none"> <li>Development of a financial compensation plan</li> </ul>	Not significant
<b>Freshwater Environment</b>		
Potential run-off and erosion, siltation and turbidity	<ul style="list-style-type: none"> <li>Use of suitable backfill materials</li> <li>Restrictions on the removal of riparian vegetation</li> <li>Establish a buffer zone of 20m around freshwater habitat</li> <li>Management of storm water quantity and quality to relevant provincial standards</li> <li>Storm water will be collected and treated in a storm water facility prior to discharge into the Strait</li> <li>Establish and implement EMP including erosion and sediment control plan (as per Erosion and Sedimentation Control Handbook for Construction Sites (NSEL 1988))</li> </ul>	Not significant
Impacts from Acid Rock Drainage	<ul style="list-style-type: none"> <li>Precautionary pre-construction surveys,</li> <li>If required, develop a management plan with NSE</li> <li>Stormwater will be collected and treated to relevant provincial standards in a storm water facility prior to discharge into the Strait, as per a Stormwater Management Plan</li> <li>Establish and implement EMP including erosion and sediment control plan</li> </ul>	Not significant
Alteration of drainage patterns and infiltration/runoff	<ul style="list-style-type: none"> <li>Management of storm water quantity and quality to relevant provincial standards</li> <li>Storm water will be collected and treated in a storm water facility prior to discharge into the Strait , as per a stormwater management plan</li> </ul>	Not significant
Non-permanent impacts related to habitat modifications	<ul style="list-style-type: none"> <li>Conduct in-water works during non-critical periods</li> <li>Establish a buffer zone of 20m around freshwater habitat</li> <li>Restrictions on the removal of riparian vegetation</li> <li>Establish and implement EMP including erosion and sediment control plan</li> </ul>	Not significant

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**Table ES-2 Summary of Mitigation and Significance of Residual Biophysical Effects– Construction Phase**

VEC/ Interaction with Project	Mitigation (Construction Phase)	Significance of Residual Adverse Effect
Damage to fish and fish habitat from blasting activities and re-routing of water courses	<ul style="list-style-type: none"> <li>• Include provisions for blasting in EMP</li> <li>• Adhere to Guidelines for the Use of Explosives in or Near Canadian Fishery Waters</li> <li>• Manage timing, location, and technical specifications of blasting operations appropriately, and conduct pre-blast surveys</li> <li>• Avoid ammonium nitrate and fuel-oil mixtures</li> <li>• Use of blasting caps to produce a series of small discrete time-delayed detonations; subdivide large charges</li> <li>• Implementation and compliance with appropriate setback distances from fish and spawning habitat according to substrate types</li> <li>• Deploy noise generating devices to deter fish from blasting site</li> <li>• Complete works during periods of least biological activity/sensitivity</li> <li>• Removal or exclusion of fish (and molluscs) from work area prior to blasting/other intrusive activities</li> </ul>	Not significant
Displacement or loss of aquatic biota; permanent alteration/ damage/ destruction to aquatic habitat	<ul style="list-style-type: none"> <li>• Habitat Compensation Plan</li> <li>• Restore substrates</li> <li>• Complete works during periods of least biological activity/sensitivity</li> <li>• Prior removal or exclusion of fish from work area</li> <li>• Conduct in-water works during non-critical periods</li> <li>• Adherence to federal and provincial guidelines on watercourse crossings</li> <li>• Establish a buffer zone of 20m around freshwater habitat</li> <li>• Restrictions on the removal of riparian vegetation</li> <li>• Establish and implement EMP including erosion and sediment control plan</li> </ul>	Not significant
Impacts to aquatic habitat and biota from wastewater	<ul style="list-style-type: none"> <li>• Stormwater will be collected and treated to relevant provincial standards in a storm water facility prior to discharge into the Strait, as per a Stormwater Management Plan</li> <li>• Utilization of mobile sanitary wastewater treatment units approved under relevant regulations and guidelines</li> </ul>	Not significant
Watercourse crossings	<ul style="list-style-type: none"> <li>• Conduct in-water works during non-critical periods</li> <li>• Adherence to federal and provincial guidelines on watercourse crossings (refer to Section 6.9.4.1)</li> <li>• Establish a buffer zone of 20m around freshwater habitat</li> <li>• Restrictions on the removal of riparian vegetation</li> <li>• Establish and implement EMP including erosion and sediment control plan</li> <li>• Dimensioning of new culvert and bridge structures for low frequency storm (1 in 100 year, 24 hr rain events) and consideration of additional stormwater volumes as a result of increased development (Mulgrave Industrial Park) in upstream portions of the watershed in the design.</li> </ul>	Not significant



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**Table ES-2 Summary of Mitigation and Significance of Residual Biophysical Effects– Construction Phase**

<b>VEC/ Interaction with Project</b>	<b>Mitigation (Construction Phase)</b>	<b>Significance of Residual Adverse Effect</b>
Impacts to aquatic habitat and biota related to contaminated soils	<ul style="list-style-type: none"> <li>• Stormwater will be collected and treated to relevant provincial standards in a storm water facility prior to discharge into the Strait, as per a Stormwater Management Plan</li> <li>• Remediate contaminated soil promptly (if contaminated soils cannot be treated on site, dispose soils off-site at a licensed hazardous waste hauler)</li> <li>• Spill Control Plan and Contingency Plan</li> </ul>	Not significant
Impacts to aquatic habitat and biota related to improper disposal of waste materials	<ul style="list-style-type: none"> <li>• Excess construction materials will not be deposited in any watercourse/water body, or anywhere they could be introduced into the aquatic environment</li> <li>• Collect hazardous waste for disposal in accordance with an established waste management plan</li> <li>• Oil-water separation and stormwater management system will be designed according to Canadian environmental regulation standards</li> </ul>	Not significant
Accidental discharge and/or malfunctions	<ul style="list-style-type: none"> <li>• Provisions for spill control</li> <li>• Develop and implement Contingency Plan</li> <li>• All on-site fuels, oils, and chemicals stored &gt;50m from freshwater environments</li> <li>• Storm water management system</li> <li>• Spill prevention and clean-up equipment and plans</li> <li>• Train all staff in the handling, storage, and disposal of hazardous materials</li> <li>• Store chemicals and other hazardous substances in designated locations and in accordance with the manufacturers' recommendations and federal and provincial regulations, where applicable</li> <li>• Utilization of an EMP prepared specifically for this phase that will prescribe of environmental management measures, mitigation, spill prevention protocols, contingency measures, responsibilities, supervision, and reporting requirements/measures</li> </ul>	Not significant

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**Table ES-2 Summary of Mitigation and Significance of Residual Biophysical Effects– Construction Phase**

VEC/ Interaction with Project	Mitigation (Construction Phase)	Significance of Residual Adverse Effect
<b>Terrestrial Environment</b>		
Habitat loss or alteration due to site preparation, clearing and grubbing	<ul style="list-style-type: none"> <li>• Minimize Project footprint</li> <li>• Minimize lay-down areas</li> <li>• EMP provisions for clearing, grubbing and blasting</li> <li>• Removal of habitat not during migratory bird (April – July) or owl (February – March) breeding seasons or bat (May-June) breeding seasons</li> <li>• If Northern Goshawk nest is found, a buffer zone must be placed around nest</li> <li>• Construction activity along banks of watercourses should be minimized during odonate emergence period (May 15-July 15)</li> <li>• Trees with diameter of 15 cm or more not to be cut unnecessarily (potential owl habitat)</li> <li>• Snags and hollow trees should not be cut unnecessarily (bat roosting habitat)</li> <li>• Confirmatory rare plant survey during pre-construction phase along rail and transmission routes; if required, implementation of species- / site-specific mitigation measures</li> <li>• When topsoil is removed and retained onsite for use in berms and landscaping, check for use by certain species of migratory birds (e.g. Bank Swallows). I</li> </ul>	Not significant
Fragmentation of mature forest due to clearing	<ul style="list-style-type: none"> <li>• Minimize Project footprint.</li> <li>• Combine transmission and rail corridor ROW to extent possible.</li> <li>• Minimize lay-down areas.</li> </ul>	Not significant
Re-vegetation of disturbed areas	<ul style="list-style-type: none"> <li>• Temporarily disturbed surfaces to be re-habilitated as soon as possible.</li> <li>• Rehabilitation to be based on site-specific landscape plans; plans to favor forest habitat and native plant species typical for the area (same applies for site rehabilitation during decommissioning phase).</li> <li>• Save and store organic soil layer and apply in rehabilitation.</li> <li>• Where applicable, use high quality seed with low probability of containing invasive species.</li> <li>• Apply erosion control measures.</li> <li>• Monitoring of EMP implementation, success of rehabilitation and erosion control measures.</li> </ul>	Not significant
Introduction of invasive species	<ul style="list-style-type: none"> <li>• Construction and transportation equipment to be cleaned from vegetation and soil residues before entering the Project site.</li> </ul>	Not significant
Dust	<ul style="list-style-type: none"> <li>• Implement dust- abatement measures and sediment control measures as per EMP</li> </ul>	Not significant
Noise disturbance due to vehicles and construction equipment	<ul style="list-style-type: none"> <li>• Maintain all machinery in proper condition and in good repair in order to minimize noise emissions.</li> </ul>	Not significant
Disturbance due to human presence, including lighting	<ul style="list-style-type: none"> <li>• Restrict lighting to absolute minimum.</li> <li>• Extinguishing non-essential lights during migration season;</li> <li>• Down-shade and focus essential lights on work areas and/or change colour of lights during migration season.</li> <li>• Restrict activities to a clearly demarcated construction envelope.</li> <li>• Implement good housekeeping at construction camps / Project site (no food items or garbage)</li> </ul>	Not significant

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**Table ES-2 Summary of Mitigation and Significance of Residual Biophysical Effects– Construction Phase**

VEC/ Interaction with Project	Mitigation (Construction Phase)	Significance of Residual Adverse Effect
<b>Wetlands</b>		
Wetland removal or alteration of wetlands as a result of clearing and development activities	<ul style="list-style-type: none"> <li>• Avoidance wetlands during Project design and layout where practical</li> <li>• Minimize project footprint</li> <li>• Combination of rail and transmission corridor to the extent possible</li> <li>• Lay-down areas and construction camps not to be located in or near wetlands.</li> <li>• Establish and maintain a minimum of 20m buffer around wetlands.</li> <li>• Workers will be instructed not to enter wetlands.</li> <li>• Wetlands which will be subjected to partial or total infilling to be formally evaluated in terms of wetland function.</li> <li>• Development and implementation of a wetland compensation plan in conjunction with the wetland alteration approval.</li> </ul>	Not significant
Alteration of wetland hydrology due to alteration of drainage patterns	<ul style="list-style-type: none"> <li>• Stream crossings to be constructed with culverts of sufficient size (also see Section 6.9).</li> <li>• Drainage structures of sufficient size to be constructed where infrastructure cuts across diffuse natural drainage paths, drainage channels, wetland habitat.</li> <li>• Drainage structures to dissipate hydraulic energy and maintain flow velocities sufficiently low to prevent erosion of native soil material.</li> <li>• Crushed rock used for road construction to allow for regular diffuse surface run-off to seep through.</li> <li>• Storm water management plan to maintain pre-construction flow conditions off-site.</li> <li>• Run-off collected along the roads not to enter directly into wetlands.</li> <li>• Runoff from the terminal and logistics park to be collected and treated in a storm water management system before discharge into the Strait of Canso</li> <li>• Maintain vegetation buffers around wetlands.</li> <li>• Implement environmental effects monitoring program to identify any signs of changed hydrologic regime.</li> </ul>	Not significant
Alteration of water quality (through sediments and dust)	<ul style="list-style-type: none"> <li>• Maintain a vegetated buffer zone of 20 m around wetlands wherever possible.</li> <li>• Implement Stormwater Management Plan</li> <li>• Implemented erosion and sediment control plans specifically for the wetland crossings</li> <li>• Implement dust control plan</li> <li>• Monitor efficacy of the erosion and sediment control measures.</li> </ul>	Not significant
Introduction of invasive species into wetlands	<ul style="list-style-type: none"> <li>• Construction and transportation equipment to be cleaned from vegetation and soil residues before entering the project site.</li> </ul>	Not significant

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**Table ES-3 Summary of Mitigation and Significance of Residual Biophysical Effects**

<b>VEC/ Interaction with Project</b>	<b>Mitigation (Operation Phase)</b>	<b>Significance of Residual Adverse Effect</b>
<b>Geology</b>		
No effects anticipated	<ul style="list-style-type: none"> <li>No mitigation required</li> </ul>	Not applicable
<b>Soils</b>		
No effects anticipated	<ul style="list-style-type: none"> <li>No mitigation required</li> </ul>	Not applicable
<b>Air Quality</b>		
Generation of combustion emissions from container ships, tugboats, container handling equipment, locomotives, and trucks visiting the Terminal	<ul style="list-style-type: none"> <li>Maintaining regulated operating conditions for efficient combustion</li> <li>Maintaining vehicles and equipment in good operating condition, emission control components equivalent to original conditions</li> <li>Compliance with provincial ambient air quality objectives (annual maximum) for TSP, NO<sub>2</sub>, SO<sub>2</sub> and CO</li> <li>Adherence to MARPOL 73/78/97 shipping emissions regulations</li> <li>Conform to normal industry practices that are known to reduce emissions such as the use of auxiliary engines for container vessel hoteling</li> <li>Conform to current and future regulated emissions standards for combustion engines</li> </ul>	Not significant
<b>Acoustic Environment</b>		
Increased noise levels from container terminal operations (general equipment noise and intermittent penetrating noise such as ship horns and warning sirens)	<ul style="list-style-type: none"> <li>Adherence to NSE Guidelines for Environmental Noise Measurement and Assessment</li> <li>Ensure that all equipment has noise suppression component equivalent to original equipment and in good operating condition</li> <li>Noise monitoring (site boundaries and nearby occupied properties) as appropriate;</li> <li>Establish mechanism to address complaints response procedures;</li> <li>Maintenance, where practical, of treed buffers;</li> <li>If required, obtain approval by CTA as per Section 98(1) of the Canadian Transportation Act.</li> </ul>	Not significant
Railway noise and vibration	<ul style="list-style-type: none"> <li>Adherence to Canadian Transportation Agency guidelines for noise and vibration</li> <li>Implementation of and adherence to "Guidelines for the Resolution of Complaints Related to Railway Noise and Vibration" under the Canadian Transportation Act</li> </ul>	Not significant
<b>Oceanographic Conditions</b>		
No effects anticipated	<ul style="list-style-type: none"> <li>No mitigation required</li> </ul>	Not applicable
<b>Groundwater Resources</b>		
Groundwater quality degradation from spills	<ul style="list-style-type: none"> <li>Application of EMP including Spill Control Plan and Contingency Plan</li> </ul>	Not significant

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**Table ES-3 Summary of Mitigation and Significance of Residual Biophysical Effects**

<b>VEC/ Interaction with Project</b>	<b>Mitigation (Operation Phase)</b>	<b>Significance of Residual Adverse Effect</b>
	<ul style="list-style-type: none"> <li>• Proper fuel management</li> <li>• Remedial action as necessary to restore damaged groundwater, wells and/or provide other sources of potable water as needed</li> </ul>	
Salt contamination and/or chemistry changes in down-gradient groundwater from on-Site roadways	<ul style="list-style-type: none"> <li>• Implementation of a Site-specific EMP including Spill Control Plan and Contingency Plan</li> <li>• Re-fuelling and maintenance for mobile equipment will be located away from open water (&gt; 20 m) and will be designed with low-permeability collection systems</li> </ul>	Not significant
Alteration of groundwater flow and control of surface water runoff from terminal operation	<ul style="list-style-type: none"> <li>• A storm water management system to allow collection and treatment of runoff</li> </ul>	Not significant
Degradation of groundwater, surface base flow and well-water quality due to accidental spills	<ul style="list-style-type: none"> <li>• Application of EMP contingency planning (spill containment, recovery, etc.)</li> <li>• Remedial action as necessary to restore damaged groundwater, wells and/or provide other sources of potable water as needed</li> </ul>	Not significant
<b>Surface Water Resources</b>		
Discharge of treated water from the Project and storm water discharges	<ul style="list-style-type: none"> <li>• EMP provisions for stormwater management</li> <li>• Use of a stormwater management system that meets all regulatory requirements</li> <li>• Monitoring of storm water effluent quality</li> <li>• On-site sanitary wastewater treatment</li> <li>• Use of road salts to be carried out in accordance with Environment Canada guidelines (“Code of Practice for the Environmental Management of Road Salt” and “Best Management Practices for Salt Use on Private Roads, Parking Lots and Sidewalks”)</li> </ul>	Not significant
<b>Marine Environment</b>		
Increased noise and propeller wash from cargo vessels disturbing marine habitat and biota	<ul style="list-style-type: none"> <li>• Follow standard vessel operating procedures</li> <li>• It is anticipated that fauna will habituate to the modest increase in vessel noise</li> <li>• Depth is such that wash is not expected to be an issue; if it is, vessels will be docked with the assistance of tugs</li> </ul>	Not significant
Release of ballast water in marine environment	<ul style="list-style-type: none"> <li>• Vessels will comply with all federal guidelines for the release of ballast water</li> </ul>	Not significant
Stormwater runoff entering marine habitat	<ul style="list-style-type: none"> <li>• Implementation of a stormwater management plan</li> </ul>	Not significant

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**Table ES-3 Summary of Mitigation and Significance of Residual Biophysical Effects**

VEC/ Interaction with Project	Mitigation (Operation Phase)	Significance of Residual Adverse Effect
<b>Freshwater Environment</b>		
Contamination, erosion, turbidity, and siltation of the freshwater environment from discharge of water and/or surface water run-off	<ul style="list-style-type: none"> <li>Erosion and Sediment Control Plan</li> <li>Stormwater will be collected and treated to relevant provincial standards in a storm water facility prior to discharge into the Strait, as per a Stormwater Management Plan</li> <li>Oil-water separation and a stormwater management system will be designed according to Canadian environmental regulation standards</li> <li>Use of road salts to be carried out in accordance with Environment Canada guidelines (“Code of Practice for the Environmental Management of Road Salt” and “Best Management Practices for Salt Use on Private Roads, Parking Lots and Sidewalks”)</li> </ul>	Not significant
Accidental discharge and/or malfunctions	<ul style="list-style-type: none"> <li>Provisions for spill control</li> <li>Development and implementation of EMP and Contingency Plan</li> <li>All on-site fuels, oils, and chemicals stored &gt;50m from freshwater environments</li> <li>Storm water management system</li> <li>Spill prevention and clean-up equipment and plans</li> <li>Train all staff in the handling, storage, and disposal of hazardous materials</li> <li>Store chemicals and other hazardous substances in designated locations and in accordance with the manufacturers’ recommendations and federal and provincial regulations, where applicable</li> </ul>	Not significant
<b>Terrestrial Environment</b>		
Disturbance due to human presence	<ul style="list-style-type: none"> <li>Discourage use of habitat adjacent to facility (e.g., for lunch time recreational use); establish on-site green space or establish formal designated trails.</li> </ul>	Not significant
Noise disturbance due to vehicles and operational equipment	<ul style="list-style-type: none"> <li>Ensure operational equipment is in good working order and has appropriate noise-muffling equipment installed</li> </ul>	Not significant
Lighting effects and bird and bat collisions with equipment and structures	<ul style="list-style-type: none"> <li>White lights with short durations, the minimum number of flashes per minute and the briefest flash duration allowable should be used.</li> <li>Use minimum amount of pilot warning and obstruction avoidance lighting (only strobe lights on tall structures at night.</li> <li>Avoid use of solid-burning or slow pulsing red warning lights at night.</li> <li>Avoid or restrict the time of operation of exterior decorative lights such as spotlights and floodlights and turn during the migratory season and during periods when Leach’s storm-petrels will be dispersing from the colonies.</li> <li>Shield lighting for the safety of the employees to shine down and only to where it is needed, without compromising safety; shield parking lot lighting.</li> <li>Tinted or frosted glass windows are recommended</li> <li>Monitoring of bird strikes; in case of abnormal incidences, consider lighting or operating adjustments</li> </ul>	Not significant
Wildlife collisions with vehicles	<ul style="list-style-type: none"> <li>Large diameter open box culverts at stream crossings and potentially wetland crossings</li> </ul>	Not significant



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**Table ES-3 Summary of Mitigation and Significance of Residual Biophysical Effects**

<b>VEC/ Interaction with Project</b>	<b>Mitigation (Operation Phase)</b>	<b>Significance of Residual Adverse Effect</b>
Disruption of wintering shorebirds, waterfowl, seabirds/ aerialists	<ul style="list-style-type: none"> <li>• None identified – area is not an important habitat for wintering seabirds</li> </ul>	Not significant
Increase in levels of toxic and deleterious substances due to infrastructure maintenance (herbicides and salt)	<ul style="list-style-type: none"> <li>• Vegetation growth will generally be regulated by physical cutting.</li> <li>• Approved herbicides may be used for the maintenance only if necessary.</li> <li>• Herbicides will be applied according to legal regulations (NSE).</li> <li>• Measures are outlined in an EMP.</li> </ul>	Not significant
<b>Wetlands</b>		
Increase in levels of toxic and deleterious substances due to infrastructure maintenance (herbicides and salt)	<ul style="list-style-type: none"> <li>•Vegetation growth generally to be managed by physical cutting.</li> <li>•Approved herbicides may be used for the maintenance only if necessary.</li> <li>•Herbicides to be applied according to legal regulations (NSE).</li> <li>•Implementation of mitigation measures for the protection of watercourses (see Section 6.9.1)</li> <li>•Mechanical vegetation management for transmission corridor within Grant Lake watershed</li> <li>•Implement all measures of EMP.</li> </ul>	Not significant
Introduction of Alien and Invasive Species	<ul style="list-style-type: none"> <li>• Monitor and remove noxious weeds in restored/ newly created wetlands</li> </ul>	May be significant, but unlikely

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**Table ES-4 Summary of Mitigation and Significance of Residual Socio-Economic Effects – Construction Phase**

VEC/ Interaction with Project	Mitigation Measures (Construction Phase)	Residual Effects and Significance
<b>Economy, Employment, Training, and Business</b>		
Economy:- GDP increase in NS and Canada	None	Positive - Significant
Employment:- Employment increase in NS and Canada	<ul style="list-style-type: none"> <li>• Local labour force development</li> <li>• Work with unions</li> <li>• Employment strategies</li> <li>• Attract out-migrated workers</li> <li>• Encourage young people to train for trades related work</li> <li>• Encourage women to train for trades work</li> </ul>	Positive - Significant
Education and Training:- Increase demand for training	<ul style="list-style-type: none"> <li>• Participate in training provision</li> <li>• Provide training institutions with information on required trades, and support training development</li> </ul>	Positive - Significant
Business : Increased opportunities	<ul style="list-style-type: none"> <li>• Local procurement policy</li> <li>• Local supplier development</li> <li>• Work with local business organizations</li> </ul>	Positive - Moderate to significant
<b>Land and Resource Use</b>		
Traditional Land Use: Loss of access to marine and wooded areas and old rail bed, Safety of users	<ul style="list-style-type: none"> <li>• Do not limit activities outside of working areas</li> <li>• Fence off working areas</li> </ul>	Neutral
Planned Land Use:- Development within zoning regulations	<ul style="list-style-type: none"> <li>• Communications with area residents</li> </ul>	Positive - Not significant
Forestry: Limit access to forestry cutting areas	<ul style="list-style-type: none"> <li>• Review land clearing plans with DNR</li> <li>• Discuss land rights with NewPage</li> </ul>	Neutral
Mining: Potential increased demand for aggregate	<ul style="list-style-type: none"> <li>• Most aggregate will be developed on site</li> <li>• Committed to buying local when needed</li> </ul>	Positive - Not significant
Protected Areas: Increased pressure on natural areas	<ul style="list-style-type: none"> <li>• Inform workers about sensitive areas</li> <li>• Work with municipal / provincial government to ensure the Project does not impact sensitive areas</li> <li>• Support local stewardship groups</li> </ul>	Neutral

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**Table ES-4 Summary of Mitigation and Significance of Residual Socio-Economic Effects – Construction Phase**

VEC/ Interaction with Project	Mitigation Measures (Construction Phase)	Residual Effects and Significance
Tourism, Culture, and Recreation: <ul style="list-style-type: none"> <li>• Increased demand on accommodations and food services</li> <li>• Increased demand on parks and recreation facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Inform workers about environmental sensitivities and stewardship</li> <li>• In form municipalities and recreation facilities about the number of new construction workers in the area</li> </ul>	Adverse - Not significant
<b>Fishing Industry</b>		
Commercial Fisheries: Disruption of fishing activities Displacement of fishing activities Construction debris may damage fishing gear Construction noise could disrupt fish	<ul style="list-style-type: none"> <li>• Work with fishers and other marine users in organized forums</li> <li>• Minimize construction period</li> <li>• Schedule construction around spawning season</li> <li>• Construction safety zone</li> <li>• Silt and debris control under Erosion and Sediment Control Plan</li> <li>• Environmental Protection Plan</li> <li>• Habitat compensation</li> <li>• Economic loss compensation</li> <li>• Gear loss compensation</li> </ul>	Adverse - Not significant
Seafood Processing	<ul style="list-style-type: none"> <li>• Provide vessel schedules</li> <li>• Economic loss compensation</li> </ul>	Neutral
Aquaculture: <ul style="list-style-type: none"> <li>• Disruption of aquaculture activities</li> <li>• Silt and debris in water</li> <li>• Increased noise or vibrations</li> </ul>	<ul style="list-style-type: none"> <li>• Provide vessel schedules</li> <li>• Silt and debris control, Erosion and Sediment Control Plan</li> <li>• Control silt and debris</li> <li>• Economic loss compensation</li> <li>• Gear loss compensation</li> </ul>	Adverse - Not significant
<b>Physical Infrastructure</b>		
Ground transportation – Road: <ul style="list-style-type: none"> <li>• Increased road traffic</li> <li>• Road deterioration</li> </ul>	<ul style="list-style-type: none"> <li>• Employ local labour</li> <li>• Encourage car-pooling</li> <li>• Use local suppliers</li> <li>• Manage delivery schedule</li> <li>• Share traffic information with Dept. of Transportation</li> <li>• Excavate and/or manufacture rock and gravel on site</li> <li>• Make concrete on site</li> </ul>	Adverse - Not significant
Ground transportation – Rail Increased noise and dust from rail line construction	<ul style="list-style-type: none"> <li>• Share rail line construction information with municipality</li> <li>• Conduct activities in compliance with Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters</li> </ul>	Adverse - Not significant
Ground transportation - Services	<ul style="list-style-type: none"> <li>• Communicate with local business associations about potential demand</li> </ul>	Positive - Not significant

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**Table ES-4 Summary of Mitigation and Significance of Residual Socio-Economic Effects – Construction Phase**

VEC/ Interaction with Project	Mitigation Measures (Construction Phase)	Residual Effects and Significance
Marine transportation: Increased marine traffic from delivery of materials by sea	<ul style="list-style-type: none"> <li>• Comply with regulations</li> <li>• Communicate with marine traffic managers</li> <li>• Participate in integrated marine users groups</li> </ul>	Adverse - Not significant
Air transportation: Potential slight increase in air traffic	None	Neutral
Water Supply: Increased demand for water	None	Neutral
Wastewater: Increased wastewater	<ul style="list-style-type: none"> <li>• Treat wastewater onsite or connect to municipal system</li> </ul>	Adverse - Not significant
Solid Waste Management: Increased solid waste	<ul style="list-style-type: none"> <li>• Recycle as possible</li> <li>• Compost onsite if appropriate</li> <li>• Send waste to landfill using qualified contractor</li> <li>• Follow provincial regulations and municipal by-laws</li> </ul>	Adverse - Not significant
Public utilities: Increased demand	None	Neutral
Communications: Increased demand	None	Neutral
<b>Municipal and Social Services and Infrastructure</b>		
Public Administration: Increased activity at government offices for permitting, development permits, responses to public concerns	<ul style="list-style-type: none"> <li>• Manage own water and sewer</li> <li>• Coordinate with municipalities and Dept. of Transportation for traffic issues</li> </ul>	Positive - Not significant
Housing, Accommodation, and Property Values: <ul style="list-style-type: none"> <li>• Increased demand for housing</li> <li>• Increased housing costs</li> </ul>	<ul style="list-style-type: none"> <li>• Organize commuting incentives through the union agreement</li> <li>• Maintain database of available housing</li> <li>• Temporary housing to workers, if required</li> <li>• Coordinate housing demand with other industrial activities</li> <li>• Support RCMP efforts to control illegal camping</li> </ul>	Positive - Not significant
Public Health and Acute Care Services: <ul style="list-style-type: none"> <li>• Increased demand for health services</li> </ul>	<ul style="list-style-type: none"> <li>• Health, Safety, and Environmental Management System</li> <li>• Employ an on-site medical practitioner, if required</li> <li>• Encourage potential employees to obtain pre-employment medicals in home area</li> <li>• Advise local health care authorities about recruitment schedules</li> </ul>	Neutral

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**Table ES-4 Summary of Mitigation and Significance of Residual Socio-Economic Effects – Construction Phase**

VEC/ Interaction with Project	Mitigation Measures (Construction Phase)	Residual Effects and Significance
Community Well-being and Family Social Services: <ul style="list-style-type: none"> <li>• Increased population resulting in increased demand</li> <li>• Increased income</li> <li>• Lower demand for social services</li> <li>• Increased dysfunctional spending</li> </ul>	<ul style="list-style-type: none"> <li>• Attract former residents</li> <li>• Create positive, family orientated workplace</li> <li>• Employee assistance programs</li> <li>• Referrals to support services</li> <li>• Health and safety plan</li> <li>• Communicate with social service agencies about number of employees and families</li> </ul>	Adverse - Not significant
Public Safety: <ul style="list-style-type: none"> <li>• Increased traffic</li> <li>• Increased security issues</li> <li>• Increased drug and alcohol use</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate project plans with RCMP</li> <li>• Health and Safety plan</li> <li>• Provide security on-site</li> <li>• Control site access</li> <li>• Zero tolerance on drug and alcohol use</li> </ul>	Adverse - Not significant
Fire Fighting, Mutual Aid, Search and Rescue	<ul style="list-style-type: none"> <li>• Emergency Response Plan</li> <li>• Engage with regional emergency response and mutual aid plans</li> <li>• Stand-by fire fighting equipment</li> </ul>	Neutral
<b>Heritage Resources (incl. Archaeology)</b>		
Heritage Resources	<ul style="list-style-type: none"> <li>• Avoidance</li> <li>• Site testing, information gathering, and record keeping</li> </ul>	Adverse - Not significant

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**Table ES-5 Summary of Mitigation and Significance of Residual Socio-Economic Effects – Operation Phase**

VEC / Interaction with Project	Mitigation Measures (Operation Phase)	Residual Effects and Significance
<b>Economy, Employment, Training &amp; Business</b>		
Economy: GDP increase in NS and Canada	None	Positive - Significant
Employment: Increased direct and indirect employment	<ul style="list-style-type: none"> <li>• Local labour force development</li> <li>• Work with unions</li> <li>• Employment strategies</li> <li>• Attract out-migrated workers</li> </ul>	Positive – Significant
Training: Increased demand for: <ul style="list-style-type: none"> <li>• child care</li> <li>• schooling</li> <li>• training</li> <li>• increase in educational attainment</li> </ul>	<ul style="list-style-type: none"> <li>• Family friendly workplace</li> <li>• Support day-care</li> <li>• Participate in training provision</li> <li>• Support apprenticeship</li> <li>• Encourage continuing education</li> <li>• Provide leaders and mentors</li> <li>• Provide training institutions with information on required trades, and support training development</li> </ul>	Positive - Significant
Business: Increased opportunities	<ul style="list-style-type: none"> <li>• Local procurement policy</li> <li>• Local supplier development</li> <li>• Work with local business organizations</li> </ul>	Positive – Moderate to Significant
<b>Land and Resource Use</b>		
Traditional Land Use: <ul style="list-style-type: none"> <li>• Loss of access to marine and wooded areas and old rail bed,</li> <li>• Safety of users</li> </ul>	<ul style="list-style-type: none"> <li>• Do not limit activities outside of working areas</li> <li>• Fence off working areas</li> </ul>	Neutral – Minor
Planned Land Use: Development within zoning regulations	<ul style="list-style-type: none"> <li>• Communications with area residents</li> </ul>	Positive - Insignificant
Forestry: None	None	Neutral – None
Mining: None	None	Neutral – None

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**Table ES-5 Summary of Mitigation and Significance of Residual Socio-Economic Effects – Operation Phase**

VEC / Interaction with Project	Mitigation Measures (Operation Phase)	Residual Effects and Significance
Protected Areas: Increased pressure on natural areas	<ul style="list-style-type: none"> <li>• Inform workers about sensitive areas</li> <li>• Work with municipal / provincial government to ensure the Project does not impact sensitive areas</li> <li>• Support local stewardship groups</li> </ul>	Neutral - None
Tourism, Culture, and Recreation: Increased demand on parks and recreation facilities	<ul style="list-style-type: none"> <li>• Inform workers about environmental sensitivities and stewardship</li> <li>• Inform municipalities and recreation facilities about the number of employees and families</li> </ul>	Adverse – Minor
Visual Aesthetics: Visibility of industrial site	<ul style="list-style-type: none"> <li>• Landscape immediate area</li> <li>• Maintain property</li> </ul>	Neutral - Moderate
<b>Fishing Industry</b>		
Commercial Fisheries: Disruption of fishing activities Displacement of fishing activities	<ul style="list-style-type: none"> <li>• Work with fishers and other marine users in organized forums</li> <li>• Environmental Protection Plan</li> <li>• Habitat compensation</li> <li>• Economic loss compensation</li> <li>• Gear loss compensation</li> </ul>	Adverse – Moderate
Seafood Processing: Disruption of marine traffic	<ul style="list-style-type: none"> <li>• Provide vessel schedules</li> <li>• Economic loss compensation</li> </ul>	Neutral – Insignificant
Aquaculture: • Disruption of aquaculture activities • Increased noise or vibrations	<ul style="list-style-type: none"> <li>• Provide vessel schedules</li> <li>• Economic loss compensation</li> <li>• Gear loss compensation</li> </ul>	Adverse - Insignificant
<b>Physical Infrastructure</b>		
Ground transportation – Road: • Increased road traffic • Road deterioration	<ul style="list-style-type: none"> <li>• Employ local labour</li> <li>• Encourage car-pooling</li> <li>• Use local suppliers</li> <li>• Manage delivery schedule</li> <li>• Share traffic information with Dept. of Transportation</li> </ul>	Adverse - Moderate
Ground transportation – Rail: Increased rail traffic	<ul style="list-style-type: none"> <li>• Share rail line schedule, as required</li> </ul>	Adverse – Moderate
Ground transportation – Services:	<ul style="list-style-type: none"> <li>• Communicate with local business associations about potential demand</li> </ul>	Positive - Moderate

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**Table ES-5 Summary of Mitigation and Significance of Residual Socio-Economic Effects – Operation Phase**

VEC / Interaction with Project	Mitigation Measures (Operation Phase)	Residual Effects and Significance
Increased demand		
Marine transportation: Increased marine traffic by container ships	<ul style="list-style-type: none"> <li>• Comply with regulations</li> <li>• Communicate with marine traffic managers</li> <li>• Participate in integrated marine users groups</li> </ul>	Adverse – Moderate
Air transportation: Potential slight increase in air traffic	None	Neutral – Insignificant
Water Supply: Increased demand for water	None	Neutral – Insignificant
Wastewater: Increased wastewater	Treat wastewater onsite or connect to municipal system	Adverse – Insignificant
Solid Waste Management: Increased solid waste	<ul style="list-style-type: none"> <li>• Recycle as possible</li> <li>• Compost onsite if appropriate</li> <li>• Send waste to landfill using qualified contractor</li> <li>• Follow provincial regulations and municipal by-laws</li> </ul>	Adverse – Insignificant
Public utilities: Increased demand	None	Neutral – Insignificant
Communications: Increased demand	None	Neutral - Insignificant
<b>Municipal and Social Services and Infrastructure</b>		
Public Administration: Increased activity at government offices for development permits, responses to public concerns	<ul style="list-style-type: none"> <li>• Manage own water and sewer</li> <li>• Coordinate with municipalities and Dept. of Transportation for traffic issues</li> </ul>	Positive – Moderate
Housing, Accommodation, and Property Values: <ul style="list-style-type: none"> <li>• Increased demand for housing</li> <li>• Increased housing costs</li> </ul>	<ul style="list-style-type: none"> <li>• Hire local</li> <li>• Organize commuting incentives through the union agreement</li> <li>• Maintain database of available housing</li> </ul>	Positive – Moderate
Public Health and Acute Care Services: Increased demand for health services	<ul style="list-style-type: none"> <li>• Health, Safety, and Environmental Management System</li> <li>• Employ an on-site medical practitioner, if required</li> </ul>	Neutral – Insignificant

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**Table ES-5 Summary of Mitigation and Significance of Residual Socio-Economic Effects – Operation Phase**

VEC / Interaction with Project	Mitigation Measures (Operation Phase)	Residual Effects and Significance
Community Well-being and Family Social Services: <ul style="list-style-type: none"> <li>• Increased population resulting in increased demand</li> <li>• Increased income</li> <li>• Lower demand for social services</li> <li>• Increased dysfunctional spending</li> <li>• Increased demand for addictions services</li> </ul>	<ul style="list-style-type: none"> <li>• Attract former residents</li> <li>• Create positive, family orientated workplace</li> <li>• Employee assistance programs</li> <li>• Referrals to support services</li> <li>• Health and safety plan</li> <li>• Communicate with social service agencies about number of employees and families</li> </ul>	Adverse - Insignificant
Public Safety: <ul style="list-style-type: none"> <li>• Increased traffic</li> <li>• Increased security issues</li> <li>• Increased drug and alcohol use</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate project plans with RCMP</li> <li>• Health and Safety plan</li> <li>• Provide security on-site</li> <li>• Control site access</li> <li>• Zero tolerance on drug and alcohol use</li> </ul>	Adverse - Insignificant
Fire Fighting, Mutual Aid, Search and Rescue: Increased accidents or incidents	<ul style="list-style-type: none"> <li>• Emergency Response Plan</li> <li>• Engage with regional emergency response and mutual aid plans</li> <li>• Stand-by fire fighting equipment</li> </ul>	Neutral - Insignificant
<b>Heritage Resources (including Archaeology)</b>		
Heritage Resources: Damage to or loss of heritage resources	<ul style="list-style-type: none"> <li>• Avoidance</li> <li>• Site testing, information gathering, and record keeping</li> </ul>	Adverse - Various