

SECTION 14.0
ASSESSMENT SUMMARY AND
CONCLUSION



GOLDBORO
LNG

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14.0 ASSESSMENT SUMMARY AND CONCLUSION

Following consideration of this EA, NSE will decide if the Project is or is not likely to cause significant adverse environmental effects. To facilitate the decision making, the following sections provide a summary of the assessment of environmental effects as presented in this EA together with Pieridae's overall conclusions.

14.1 Effects of the Project on the Environment

The effects of the Project were assessed for each of the identified VECs. The assessment took into account all Project works and activities associated with the construction, operation and decommissioning phases and included regular activities as well as malfunctions and accidental events. Based on plausible Project-environment interactions, potential adverse effects were identified.

Relevant Project-inherent environmental management measures were reviewed and additional mitigation measures developed. Considering these management and mitigation measures, residual effects were identified and assessed.

The significance of the residual effects was determined on a set of prescribed criteria. All but one adverse residual effect was considered to be non-significant (minimal, minor or medium) during each of the Project phases (construction, operation and decommissioning phases). The Project contribution to GHG emissions in NS could be regionally significant in combination with other major GHG emitters unless all parties adhere to provincial policies and guidelines. Such impacts are considered further under cumulative effects below (Section 14.3) and mitigation is available to completely address regional climate change issues. It was concluded that the Project is not likely to have significant adverse effects on the environment (see summary tables at the end of the subsections in Sections 10.0). It is predicted that the Project will have major beneficial local and regional economic effects, including major increases in the local and regional employment numbers. In addition, the Project will provide for some improved inventory and knowledge of the site and area resources.

A summary of identified effects and mitigation measures for each VECs is presented in Table 14.1-1, below. The table also includes a conclusion with respect to the significance of the residual adverse effects.

14.2 Effects of the Environment on the Project

The potential effects of the environment on the condition and function of the Project were assessed. The types of natural environment issues or events that were considered to potentially affect the construction or operation of the Project include:

- severe weather;
- extreme marine conditions;
- climate change; and
- seismic events and/or tsunami.

The Pre-FEED design work has taken existing environmental site conditions and predicted future conditions into account. During FEED the understanding of these conditions will be intensified with further site investigations and environmental monitoring. The engineering and design work will be detailed accordingly and in compliance with applicable standards and guidelines. This together with environmental management and mitigation measures outlined in this EA make it unlikely that any interactions between the environment and the Project could have significant adverse effects.

14.3 Cumulative Effects

The EA also assessed the potential for environmental effects from interactions of the Goldboro LNG Project with other existing, planned, and foreseeable future projects. In particular, the team investigated the Project's potential cumulative effects with the realignment of Route 316; the closure of SOEI gas plant, other regional oil and gas developments; future industrial developments in the Goldboro Industrial Park; and provincial and national GHG emissions.

With the exception of GHG emissions, none of the potential residual cumulative effects are considered significant. Although currently not regulated in NS, GHG emissions have been identified as a concern in the context of provincial reduction targets. The EA therefore includes Pieridae's commitments to the development of strategies for GHG management and contributions to GHG offsets.

14.4 Evaluation of Advantages and Disadvantages

In accordance with the TOR for the EA, a justification for this Project is required for identified disadvantages. An analysis of the advantages and disadvantages is provided in Section 11.0 with Tables 11.0-1, 11.0-2, and 11.0-3 summarizing the evaluation of the Project by phase. For the most part, disadvantages of the Project are short-term and localized and associated with environmental effects that were not considered significant. The disadvantages are offset by major socio-economic benefits, which are expected to be long-term and far reaching, i.e., relevant to the local community, the region, and the province of NS.

14.5 Conclusions of the Proponent

Following the consideration of the findings of the studies presented in this EA Report, Pieridae concludes that the Project is not likely to result in any significant adverse residual environmental effects. The Project is expected to generate extensive long-lasting employment and other major economic benefits for the local, regional and provincial economies. The advantages of the Project are considered to outweigh the Project disadvantages. As described in Section 12.0, a monitoring program will be implemented to confirm these conclusions and, if required, trigger adjustments to environmental management and mitigation.

Table 14.1-1 Summary: Effects, Mitigation, and Significance of Residual Effects

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
|--|--|---|
| Geology, Soil/Sediments | | |
| Contamination of surface/groundwater from acidic drainage due to the exposure of acid generating rock during construction. | <ul style="list-style-type: none"> • Perform pre- construction survey and inspect excavations regularly. • Sampling from rock excavation areas will be done to determine sulphide mineralization. • Implementation of SBMMP and EMP policies. | Not significant |
| Disturbance of tailings could release arsenic- and mercury-bearing dust and sediment during construction and operation. | <ul style="list-style-type: none"> • Geotechnical site investigations. • Risk Assessment with tailings management plan. • Stabilize barrier beach at Dung Cove. | Not significant |
| Mine workings are conduits for spilled contaminants to surface water/ groundwater during operation. | <ul style="list-style-type: none"> • Design self contained storage for all areas. • Baseline groundwater and surface water sampling. • Implement EMP (with standard spill prevention and response). | Not significant |
| Groundwater Resources | | |
| Siltation of dug and drilled wells and possible permanent change in water quality or well yield of drilled wells from blasting and vibrations during construction. | <ul style="list-style-type: none"> • Avoid blasting to the extent possible within 500 m of residential wells. • Pre-blast well survey. • Remedial action as necessary to restore damaged wells and/or provide temporary potable water as needed. • Implement EMP policies including Hazardous Material Management Plan. | Not significant |
| Water level reductions in dug wells as a result of trenching, site drainage, and large cuts or changes in surface topography during construction. | <ul style="list-style-type: none"> • Monitoring and remedial action as necessary to restore damaged wells and/or provide temporary potable water as needed. | Not significant |
| Contamination of wells and/or on-site streams from remobilized mine tailings/contaminated soils during construction. | <ul style="list-style-type: none"> • Avoidance, where possible, of mine tailings within the Project site. • See Geology, Soil / Sediments. | Not significant |
| Surface Water Resources | | |
| Effects on all on-site watercourses as a result of potential erosion, sediment loading, stormwater discharges, and spills during construction. | <ul style="list-style-type: none"> • Diversion of Unnamed Watercourse to site perimeter; maintain drainage into Dung Cove. • Implement EMP (erosion and sediment control plan, buffer zone, Stormwater Management Plan, hazardous material management plan, and spill prevention and response plan). • Designated fuelling and material storage areas. • See also Geology, Soil / Sediments. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
|--|---|---|
| Effects on all off-site watercourses and Meadow Lake as a result of in-water and onshore works, associated erosion, sediment loading, storm water discharges, spills and contaminated run off during construction. | <ul style="list-style-type: none"> • On-site storm and waste water management systems. • Implement EMP (erosion and sediment control plan, buffer zone, Stormwater Management Plan, hazardous material management plan, and spill prevention and response plan). • Designated fuelling and material storage areas. • Conduct in-water works outside of spawning / fish migration season (June 1st to September 30th), to the extent feasible. • Use of silt curtains. • Rehabilitation of shoreline upon completion. • Excess construction materials not to be deposited in any watercourse/water body, or anywhere they could be introduced into the aquatic environment. • Implement waste management plan (including management of hazardous waste materials). | Not significant |
| Effects on surface water quality as a result of discharges of stormwater, process water, and sanitary wastewater (on- and off-site) during operation. | <ul style="list-style-type: none"> • On-site storm and waste water management systems. • Controlled discharge point(s). • Monitoring of discharge quality (ECM). | Not significant |
| Effects on Meadow Lake hydrology (water levels, fluctuations, flow) as a result of water withdrawal from Meadow Lake during operation. | <ul style="list-style-type: none"> • Monitoring of lake water levels during dry weather periods. • Ensure water withdrawal stays within permitted limits. • Maintain flow required for fish habitat in Isaac's Harbour River. | Not significant |
| Air Quality and Climate Change | | |
| Emissions of gaseous pollutants from the use of internal combustion engines in various equipment and worker commuting vehicles during construction. | <ul style="list-style-type: none"> • Maintaining vehicles and equipment in good working condition. • Maintaining speed restrictions on roads. • Establish work camp adjacent to construction site. • Provide project-specific bus services and car pooling. | Not significant |
| Fugitive dust emissions from activities such as demolition, site preparation, grading and vehicle traffic during construction. | <ul style="list-style-type: none"> • Application of water or dust suppressants. • Covering of haul trucks. • Use of paved roads to the extent possible. • Limiting vehicle speed. • Stabilizing disturbed areas. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
|---|--|--|
| Emissions to air from hoteling of LNG Carrier ships, natural gas compressors, natural gas power turbines, flares, process leakage during operation. | <ul style="list-style-type: none"> • All equipment used on-site is to be properly maintained to ensure exhaust emissions are typical for each piece of equipment. • Equipment will conform to current and future regulated emissions standards for state of the art natural gas combustion engines. • Conform to normal industry practices that are known to reduce emissions such as the use of auxiliary engines for container vessel hoteling. • On-going monitoring during operation to confirm effects predictions of the dispersion modelling and to document compliance. | Not significant |
| Project contribution to GHG emissions (CO ₂ and equivalent) during operation. | <ul style="list-style-type: none"> • GHG management plan (long-term reduction commitment). • Use high efficiency equipment and “low carbon” natural gas fuel. • LNG Tankers to run low emissions auxiliary diesel engines at jetty. • On-going air quality monitoring. • Mitigation measures for other emissions above also apply to GHGs. • Restore carbon sink capacity by wetland compensation and planting trees. • Development of/ contribution to GHG emission offsets. | Significant (Provincially). Not Significant (Globally). |
| Acoustic Environment (Noise) | | |
| Disruption of residences around property by site preparation (blasting, earth moving) and construction of marine and on-shore components. | <ul style="list-style-type: none"> • Ensure machinery has working noise muffling equipment. • Conduct routine noise monitoring. • Restrict intensive construction activities to daytime hours between 0700 and 1900. • Supply public with contact numbers in case of noise issues. • Give public prior notice of blasting. • Maintain treed buffer between worksite and public. | Not significant |
| Disturbance of nearby residents by noise from Pieridae operations (e.g., vessel engines, compressors, turbines). | <ul style="list-style-type: none"> • Minimize on and off-site noise levels through design, site layout, and selection and operation of equipment. • Maintenance of equipment and noise mufflers. • Piping, fittings, valves and feed systems will undergo frequent examination and maintenance. Operational plans will include adequate inspection procedures and maintenance logs. • Establish mechanism to address complaints response procedures. • If required, supplement on-site measures with off-site noise abatement/management measures. • Noise monitoring program (including nearest occupied properties). | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
|--|--|---|
| Terrestrial Habitat and Vegetation | | |
| Direct plant mortality, habitat removal or alteration due to site preparation, clearing and grubbing. | <ul style="list-style-type: none"> • Minimize Project footprint. • Minimize lay-down areas. • Implement EMP provisions for clearing, grubbing and blasting. | Not significant |
| Indirect plant mortality as a result of potential erosion, sediment loading, stormwater discharges, fugitive dust emissions and spills during all phases of the Project. | <ul style="list-style-type: none"> • Temporarily disturbed surfaces to be re-habilitated as soon as possible. • Rehabilitation to be based on site-specific landscape plans. • Save and store organic soil layer and apply in rehabilitation. • Implement dust- abatement measures (see Air Quality). • Implement EMP (including erosion and sediment control plan, hazardous material management plan). • Monitor success of rehabilitation using ECM and EEM. | Not significant |
| Displacement or loss of suitable habitat due to the introduction of invasive species during all phases of the Project. | <ul style="list-style-type: none"> • Re-vegetate or seal disturbed surfaces as soon as possible. • Construction and transportation equipment to be cleaned from vegetation and soil residues before entering the Project site. • Discourage workers from entering off-site areas. • Implement a program of identification, monitoring (EEM) and removal of noxious weeds. | Not significant |
| Increase in levels of toxic and deleterious substances due to infrastructure maintenance (herbicides and salt) during operation. | <ul style="list-style-type: none"> • Vegetation growth should generally be regulated by physical cutting. • Approved herbicides may be used for maintenance only if necessary. • Herbicides, if used, will be applied according to regulations and manufacturer's instructions. | Not significant |
| Wetlands | | |
| Wetland removal or loss of wetland functions as a result of infilling and development activities. | <ul style="list-style-type: none"> • Avoid wetlands during Project design and layout where practical. • Minimize Project footprint. • Lay-down areas and construction camps not to be located in or near wetlands. • Workers will be instructed not to enter wetlands. • Wetlands which will be subjected to disturbance by the final water pipeline route to be formally evaluated in terms of wetland function. • Develop a wetland compensation plan in conjunction with the wetland alteration approval. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
|---|---|---|
| Alteration of wetland hydrology and water quality. | <ul style="list-style-type: none"> • Stream crossings to be constructed with culverts of sufficient size. • Drainage structures of sufficient size to be constructed where infrastructure cuts across diffuse natural drainage paths, drainage channels and wetland habitat. • Drainage structures to dissipate hydraulic energy and maintain flow velocities sufficiently low to prevent erosion of native soil material. • Crushed rock used for road construction to allow for regular diffuse surface runoff to seep through. • Stormwater Management Plan to maintain pre-construction flow conditions off-site. • Runoff collected along the roads not to enter directly into wetlands. • Waste water and potentially contaminated site runoff to be collected and treated in a waste water management system before discharge into the surrounding environment. • Maintain a vegetated buffer zone of 20 m minimum around wetlands that are to remain in place. • Implement EEM program to identify any signs of changed hydrologic regime. | Not significant |
| Reduction in wetland functionality due to the introduction of invasive species. | <ul style="list-style-type: none"> • Construction and transportation equipment to be cleaned of vegetation and soil residues before entering the Project site. • Monitor and remove noxious weeds. | Not significant |
| Impacts from contaminated site runoff and vegetation management. | <ul style="list-style-type: none"> • Vegetation growth generally to be managed by physical cutting. • Approved herbicides may be used for maintenance only if necessary. • Herbicides, if used, to be applied according to legal regulations (NSE). • Implementation of mitigation measures for the protection of watercourses (see Surface Water Resources). • Implement all measures of EMP including hazardous material management plan. | Not significant |
| Terrestrial Fauna | | |
| Loss and fragmentation of habitat. | <ul style="list-style-type: none"> • Minimize Project footprint; maintaining connectivity between areas of similar habitat where possible. • Make contribution to Mainland Moose Recovery program. | Not significant |
| Disturbance of terrestrial fauna due to construction activities (noise, dust generation, human presence). | <ul style="list-style-type: none"> • Minimize Project footprint and implement all other mitigation relevant to noise and dust. | Not significant |
| Destruction of active migratory bird nests during vegetation clearing. | <ul style="list-style-type: none"> • Avoidance of clearing during the breeding bird season. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
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| Loss or degradation of habitat for aquatic herpetiles and aquatic-nesting bird species (loons, waterfowl). | <ul style="list-style-type: none"> See mitigation for Freshwater Resources and Wetlands. | Not significant |
| Increased lighting attracting and/or disorienting nocturnal wildlife, including migrating birds. | <ul style="list-style-type: none"> Implement lighting plan. Minimizing use of lighting and flaring to the greatest extent possible. | Not significant |
| Increased shipping activity causing disturbance to seabirds and waterfowl. | <ul style="list-style-type: none"> (see Marine Species and Habitat). | Not significant |
| Increased numbers of human-adapted bird species competing with native species. | <ul style="list-style-type: none"> Implementation of EMP. Proper ground and housekeeping practices. | Not significant |
| Freshwater Aquatic Species and Habitat | | |
| Effects on freshwater habitat (on- and off-site) as a result of alteration of habitat features, changes in drainage patterns/volumes, potential erosion and siltation, impacts from acid rock drainage, impacts from storm or wastewater, and run off from improper disposal of waste materials. | <ul style="list-style-type: none"> See Wetlands and Freshwater Resources. | Not significant |
| Damage to fish and fish habitat from blasting activities. | <ul style="list-style-type: none"> Include provisions for blasting in EMP. Adhere to Guidelines for the Use of Explosives in or Near Canadian Fishery Waters. Manage timing, location, and technical specifications of blasting operations appropriately, and conduct pre-blast surveys. Avoid ammonium nitrate and fuel-oil mixtures. Use of blasting caps to produce a series of small discrete time-delayed detonations; subdivide large charges. Implementation and compliance with appropriate setback distances from fish and spawning habitat according to substrate types. If appropriate, deploy noise generating devices to deter fish from blasting site. Complete works during periods of least biological activity/sensitivity where practical. Removal or exclusion of fish from work area prior to blasting. | Not significant |
| Displacement or loss of aquatic biota; permanent alteration/ damage/ destruction to aquatic habitat (including watercourse crossings). | <ul style="list-style-type: none"> Implement freshwater fisheries offset plan. Complete works during periods of least biological activity/sensitivity. Prior removal or exclusion of fish from work area. Conduct in-water works during non-critical periods where practical. Implement fish salvage/removal program. Implement EMP including erosion and sediment control plan. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
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| Marine Species and Habitat | | |
| Permanent loss of habitat through construction of marginal wharf. | <ul style="list-style-type: none"> • Development and implementation of marine fisheries offset plan. | Not significant |
| Noise from pile driving and other construction activities. | <ul style="list-style-type: none"> • Work during low tide. • Work outside sensitive periods where practical. • Induce avoidance by mobile animals with: <ul style="list-style-type: none"> • use of ramped warning signals; and • use of bubble curtains. | Not significant |
| Destabilization or erosion of barrier beaches along shoreline from construction activities. | <ul style="list-style-type: none"> • Adherence to mitigation described in surface water section. • Avoid shoreline work during peak storm periods in late fall/winter. | Not significant |
| Sedimentation from onshore construction activities, construction vessels, LNG vessels, onshore operations. | <ul style="list-style-type: none"> • Adherence to mitigation described in surface water section. • Use of tugs to aid large vessel manoeuvres. | Not significant |
| Release of bilge and ballast water to Stormont Bay. | <ul style="list-style-type: none"> • Adherence to federal legislation. | Not significant |
| Species at Risk (SAR) | | |
| Flora SAR/SOCC - Direct and indirect plant mortality due to displacement or loss of aquatic biota; permanent alteration/ damage/ destruction to SAR aquatic habitat including alteration of drainage patterns and infiltration/runoff volumes. | <ul style="list-style-type: none"> • Survey for Tape Grass prior to construction. • Conduct BFL survey if Project footprint is expanded beyond current BFL survey areas. • See also Freshwater Resources and Wetlands. | Not significant |
| Flora SAR/SOCC - Displacement or loss of suitable habitat due to the introduction of invasive species. | <ul style="list-style-type: none"> • Construction and transportation equipment to be cleaned from vegetation and soil residues before entering the Project site. • Discourage workers from entering off-site areas. • Re-vegetate or seal disturbed surfaces immediately. • Continue monitoring for noxious weeds as part of EMP. | Not significant |
| Flora SAR/SOCC – Indirect plant mortality as a result of emissions of gaseous pollutants, and fugitive dust emissions from construction activities and vehicle traffic. | <ul style="list-style-type: none"> • See Air Quality. | Not significant |
| Flora SAR/SOCC - Indirect plant mortality due to increases in levels of toxic and deleterious substances due to infrastructure maintenance (herbicides and salt). | <ul style="list-style-type: none"> • Vegetation growth should generally be regulated by physical cutting. • Approved herbicides for the maintenance only if necessary. • Herbicides, if used, will be applied according to regulatory requirements and manufacturer's instructions. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
|--|---|---|
| Terrestrial Fauna SAR/SOCC - Clearing and grubbing will lead to habitat loss, fragmentation or degradation, exposure to contaminants via disturbed contaminated soils. | <ul style="list-style-type: none"> • Pieridae to support Province's Mainland Moose and bat recovery programs. • Minimize Project footprint. • Minimize lay-down areas. • Complete works during periods of least biological activity/sensitivity where practical. • Rehabilitate all temporarily used sites. • See also Geology, Soil/Sediments. | Not significant |
| Terrestrial Fauna SAR/SOCC - Project will lead to increased vehicle traffic in area and may result in direct fauna mortality. | <ul style="list-style-type: none"> • Establish work camp adjacent to construction site. • Provide project-specific bus services and car pooling. • Reduced speed limit on-site. | Not significant |
| Terrestrial Fauna SAR/SOCC - Change in fauna behaviour as a result of noise and light disturbances (including blasting). | <ul style="list-style-type: none"> • See Noise. • Conduct blasting outside of sensitive periods where practical. • Implement lighting plan as part of EMP. • Minimize flaring. | Not significant |
| Freshwater Aquatic SAR/SOCC - Loss of individual Brook Trout and American Eel and their habitat. | <ul style="list-style-type: none"> • Fish rescue exercise prior to removal of Unnamed Watercourse. • Implement freshwater fisheries offset plan. | Not significant |
| Freshwater Aquatic SAR/SOCC - Mortality and reduction in suitable habitat due to erosion effects, sedimentation and siltation. | <ul style="list-style-type: none"> • See Freshwater Resources. • Implement EMP in particular sediment and erosion control plan and hazardous material management plan. | Not significant |
| Marine SAR/SOCC - Loss of fish habitat due to construction of marine wharf and jetty. | <ul style="list-style-type: none"> • Development and implementation of marine fisheries offset plan. | Not significant |
| Marine SAR/SOCC - Habitat degradation due to sedimentation and turbidity from vessels. | <ul style="list-style-type: none"> • Speed restrictions for LNG vessels. • Use of tugs for large vessels during approach/departure. | Not significant |
| Marine SAR/SOCC - Disturbance and potential change in behaviour due to noise from ship traffic. | <ul style="list-style-type: none"> • Speed restrictions for LNG vessels. | Not significant |
| Marine SAR/SOCC - Disturbance and potential change in behaviour due to noise from pile driving and other construction activities. | <ul style="list-style-type: none"> • Work during low tide. • Work outside of sensitive periods where practical. • Use of ramped warning signals. • Use of bubble curtains. | Not significant |
| Marine SAR/SOCC - Degradation in fish habitat due to the release of bilge and ballast water to Stormont Bay. | <ul style="list-style-type: none"> • Adherence to federal legislation. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
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| Marine SAR/SOCC - Mortality as a result of collisions with ships. | <ul style="list-style-type: none"> Ships to approach Project site at significantly reduced speed as per recommendations of TERMPOL study. | Not significant |
| Socio-Economic Environment | | |
| Employment and Local Economy - Potential for temporary shortages in regional services, goods, and labour, during construction and decommissioning. | <ul style="list-style-type: none"> Minimized by coordination with SOEI gas plant owners and other regional LNG and industrial developers, business communities, labour unions, Chambers of Commerce, and regional economic development agencies. | Not Significant |
| Employment and Local Economy - Major spending in provincial and national economies, including \$6.9 billion in NS and \$1.42 billion in the rest of Canada. Annual operations spending to be approximately 40 million in NS, during the life of the Project. | <ul style="list-style-type: none"> Benefits maximized by local procurement practices and coordination with business communities, labour unions, Chambers of Commerce, and regional economic development agencies. | Beneficial (significance not rated). Expected to be long lasting and beneficial to the local, regional, and provincial economies. |
| Employment and Local Economy - Inclusion of Aboriginal communities in opportunities for employment and regional economic benefits. | <ul style="list-style-type: none"> Benefits maximized by MOU and subsequent CBA. | Beneficial (significance not rated and dependent on outcome of negotiations). |
| Fishery, Aquaculture and Marine Harvesting - Loss, and degradation of habitat and navigational restrictions through construction and operational activities. | <ul style="list-style-type: none"> Implementation of marine fisheries offset plan. Consultation with local fishers. Adherence to mitigation described in surface water section. | Not significant |
| Fishery, Aquaculture and Marine Harvesting - Release of bilge and ballast water to Stormont Bay leading to degradation of fish habitat. | <ul style="list-style-type: none"> Adherence to federal legislation. | Not significant |
| Human Health - Construction / decommissioning related increased noise levels, dust levels, and potential release of contaminants from mine tailings (in context of clearing and grubbing, blasting, grading) and human exposure via pathways | <ul style="list-style-type: none"> See Air Quality, Geology/Soil Sediments. EMP (including hazardous materials management plan; and risk assessment with specifics on mine tailings, and dust control program). Implement a HASP. | Not significant |
| Human Health - Construction/ decommissioning related increased dust levels and water impairment. | <ul style="list-style-type: none"> See Air Quality. See Surface Water Resources. Implement EMP (including dust control program). Implement HASP. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
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| Visual Landscape - Change in visual character of local landscape from rural to industrial as a result of construction activities; constructed facility components and their operation including flare stacks, LNG vessels, and jetty. | <ul style="list-style-type: none"> • Provide / maintain vegetation screening at roadside and consider screening vegetation at strategic locations and viewpoints. • Ornamental plantings along segments of site perimeter, site entrance and administration buildings. • Good ground and housekeeping at all times. • Dust control during construction. • Properly shielded lighting. • Apply lighting plan during operation. • Establish/operate Information Centre at facility to improve Project awareness, provide for educational / interpretive opportunities and reduce negative perception. | Not significant |
| Existing Land Use | | |
| Effect on land use capacity. | <ul style="list-style-type: none"> • Not required. Project development implements municipality's Land Use Plan objectives. | Not significant |
| Land use capacity reduced due to ROW/lease agreements on private and crown lands for water intake structure and water supply pipeline; capacity fully restored upon decommissioning. | <ul style="list-style-type: none"> • Negotiations with land owners. | Not significant |
| Reduction in mining land use capabilities. | <ul style="list-style-type: none"> • Not required. Project development on designated industrial lands; mineral rights holders must obtain permission of land owner. | Not significant |
| Effects on tourism and recreation opportunities. | <ul style="list-style-type: none"> • Promote environmental awareness among Project workers. • Operation of Information Centre to provide interpretive opportunities / reduce negative perception. • Communication of employment numbers early on to service providers, operators and administrators in recreation and tourism industry and organizations to facilitate business plan adjustments to changes in demand. • Coordination of recreational needs of workforce with local recreation and tourism industry and organizations. • Promotion of environmental awareness among Project workers. • Implementation of all identified environmental mitigation measures and monitoring programs. • Consultation with CLC on additional measures. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
|---|---|--|
| Potential impacts on Mi'kmaq Interests. | <ul style="list-style-type: none"> On-going dialogue with and engagement of Aboriginal communities. Maximizing benefits through MOU .and subsequent CBA. Potential adverse effects on natural resources at and near site mitigated via measures presented for all natural environment VECs. | Not significant (adverse effects). Beneficial effects expected to be significant but dependent on MOU and CBA implementation. |
| Transportation | | |
| Increased traffic volume due to large construction workforce and potential oversized loads or occasional traffic interruptions. | <ul style="list-style-type: none"> Use local and on-site wharf to import large equipment. Establish work camp adjacent to construction site. Provide project-specific bus services and car pooling. Locate spoil areas close to the site. Schedule work related traffic outside peak hours. Road upgrades (by municipality). Relocate Rte 316 around LNG facility (NSTIR). Comply with permits / industry best practices when special moves or traffic interruptions are necessary on public roads. | Not significant |
| Increase in traffic volume due to permanent workforce and potential oversized loads or rare traffic interruptions. | <ul style="list-style-type: none"> Comply with permits and industry best practices when special moves or traffic interruptions are necessary on public roads. | Not significant |
| Archaeological Resources | | |
| During construction, ground disturbing activities in the vicinity of identified archaeological features. | <ul style="list-style-type: none"> Conduct pre-construction surveys and construction monitoring where Project activities threaten identified sites. Additional mitigation may be required, subject to regulatory review. | Not significant |

| VEC and Potential Adverse Effects | Mitigation | Significance of Residual Adverse Effect |
|---|---|---|
| Accidents and Malfunctions | | |
| <p>Effects on Natural Environment VECs, in particular terrestrial, freshwater and marine species and habitat, as well as water resources and air quality as a result of:</p> <ul style="list-style-type: none"> • spill of fuels, lubricants, chemicals or hazardous material; • fire; • LNG leaks and fire; • vessel collision; and • failure to properly exchange ballast water. | <ul style="list-style-type: none"> • Project design, construction and operation in compliance with all applicable LNG specific codes and standards most importantly CSA Z2786 with the objective to contain so that accident consequences are within the property boundary. • Detailed HAZID and qualitative and quantitative Risk Assessments during Pre-FEED and FEED. • Integration of specific accident prevention/mitigation measures (e.g., ESD system, leak and fire detection systems, constructed berms for containment areas; appropriate spacing of equipment; double shell tanks (nickel/steel and concrete; emergency release couplers at loading jetty). • Participation in voluntary TERMPOL review process and development marine designs, safety features, and operational protocols in close cooperation with TC, Pilotage Authority, and Coast Guard. • Development of comprehensive Health, Safety and Environmental Management System including spill prevention plans, emergency response plans, on-site emergency response team and equipment; clean up / remediation protocols, as well as prescribed training, auditing and reporting requirements. | <p>Significant adverse effects not likely</p> |
| <p>Effects on Socio-Economic VECs, in particular human health as a result of direct exposure or exposure via pathways resulting from:</p> <ul style="list-style-type: none"> • spill of fuels, lubricants, chemicals or hazardous material; • fire; • LNG leaks and fire; • vessel collision; • failure to properly exchange ballast water; and • worker accidents. | <ul style="list-style-type: none"> • See Effects on Natural Environment VECs above. • Implementation of comprehensive HASP including provisions on training, auditing and reporting requirements. • Environmental awareness training for facility staff. • Public communication program (including education /promotion of environmental awareness and site hazards). | <p>Significant adverse effects not likely</p> |