

1.0 INTRODUCTION

Keltic Petrochemicals Inc. (Keltic) proposes to construct and operate a Petrochemical and Liquefied Natural Gas (LNG) Facility in Goldboro, Nova Scotia, hereafter referred to as the Keltic Development Project (KDP). The primary facilities proposed by the KDP include an LNG regasification facility, a petrochemical complex, a marginal wharf, a marine LNG Terminal, LNG storage, and an electric co-generation facility.

The KDP will be located adjacent to the existing ExxonMobil natural gas plant and the Maritimes and Northeast Pipeline (M&NP) in the Goldboro Industrial Park. The KDP processing facilities in Goldboro will require approximately 460 hectares (ha) of land zoned for industrial use. The KDP location and basic layout are shown in Figures 1.0-1 and 1.0-2.

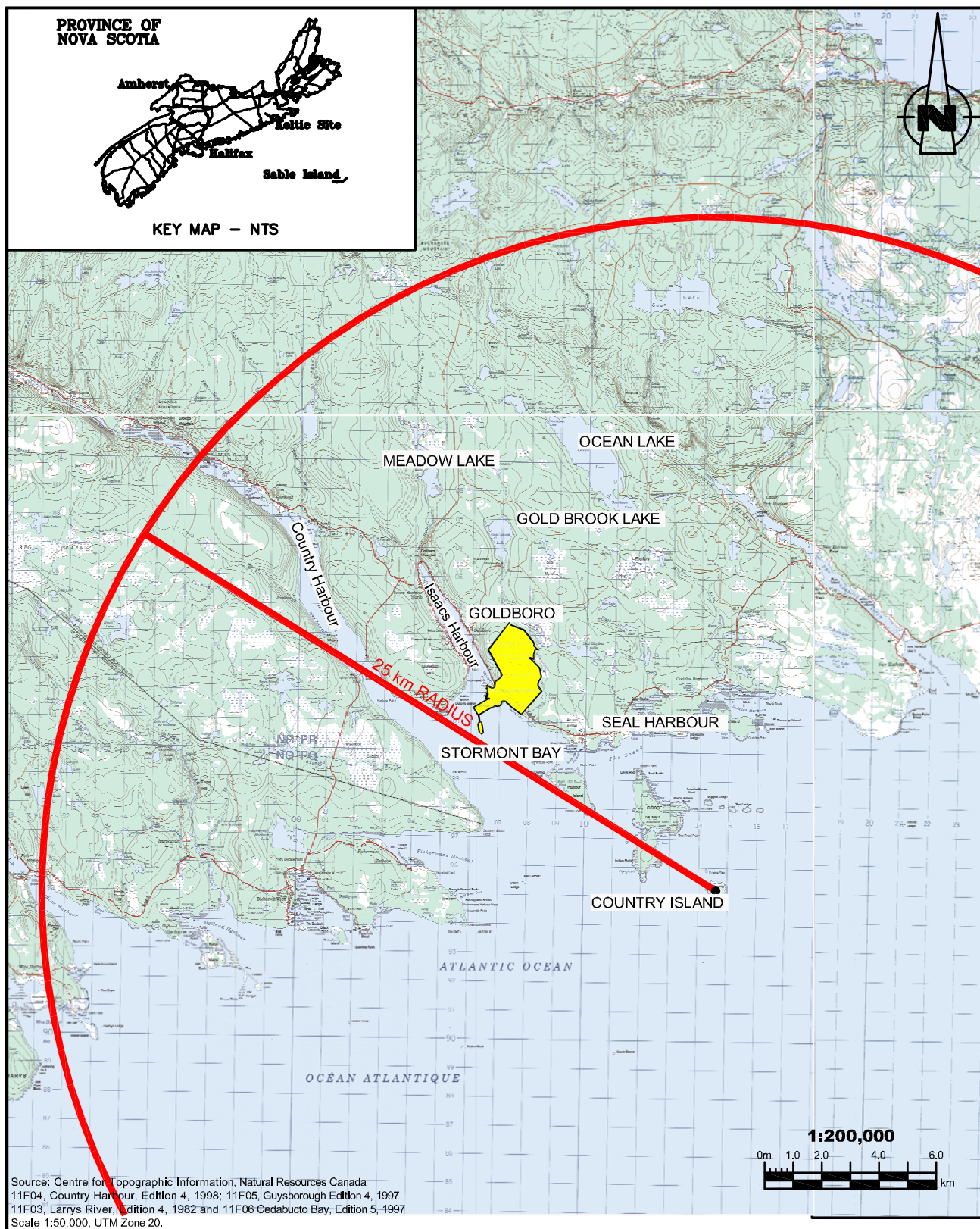
The LNG Marine Terminal will allow for the delivery of LNG and the Marginal Wharf for the import of other feedstock materials and the export of products. The co-generation plant will be fuelled by the natural gas remaining following the extraction of liquids for petrochemical feedstock. The remaining natural gas will be injected into the existing M&NP pipeline in Goldboro. A freshwater supply system is required. This includes the construction of a reservoir at Meadow Lake. A wastewater collection and treatment system, as well as other site infrastructure and maintenance facilities are required for KDP.

The petrochemical complex will convert liquids extracted from the Sable Offshore Energy Project (SOEP) at Goldboro combined with the liquids extracted from imported LNG to produce ethylene and propylene in order to manufacture polyethylene and polypropylene pellets. These pellets will be used to manufacture plastic products elsewhere in Canada and the United States of America (USA).

The purpose of the KDP is to increase petrochemical production in North America and to supply natural gas to markets in Eastern Canada and the Northeastern USA. This will help to meet rising demand for polyethylene and polypropylene pellets as well as that of natural gas to the Canadian and Northeastern USA markets. Development of a petrochemical industry in Nova Scotia is in line with the Nova Scotia Energy Strategy (Nova Scotia Department of Energy (NSDE), 2001) and creates added value to the natural gas found offshore Nova Scotia.

The KDP will require an investment of approximately \$5 billion which will be raised through private-sector investors.

This document forms the Comprehensive Study Report (CSR) as required for this Project under the *Canadian Environmental Assessment Act (CEAA)*. Under CEAA, a comprehensive study must take place where a project is described in the *Comprehensive Study List Regulations*. A comprehensive study is therefore required for the LNG Terminal and marginal wharf portions of the KDP, hereafter referred to as “the Project,” as they will be designed to accommodate vessels larger than 25,000 dead weight tonnes (DWT).



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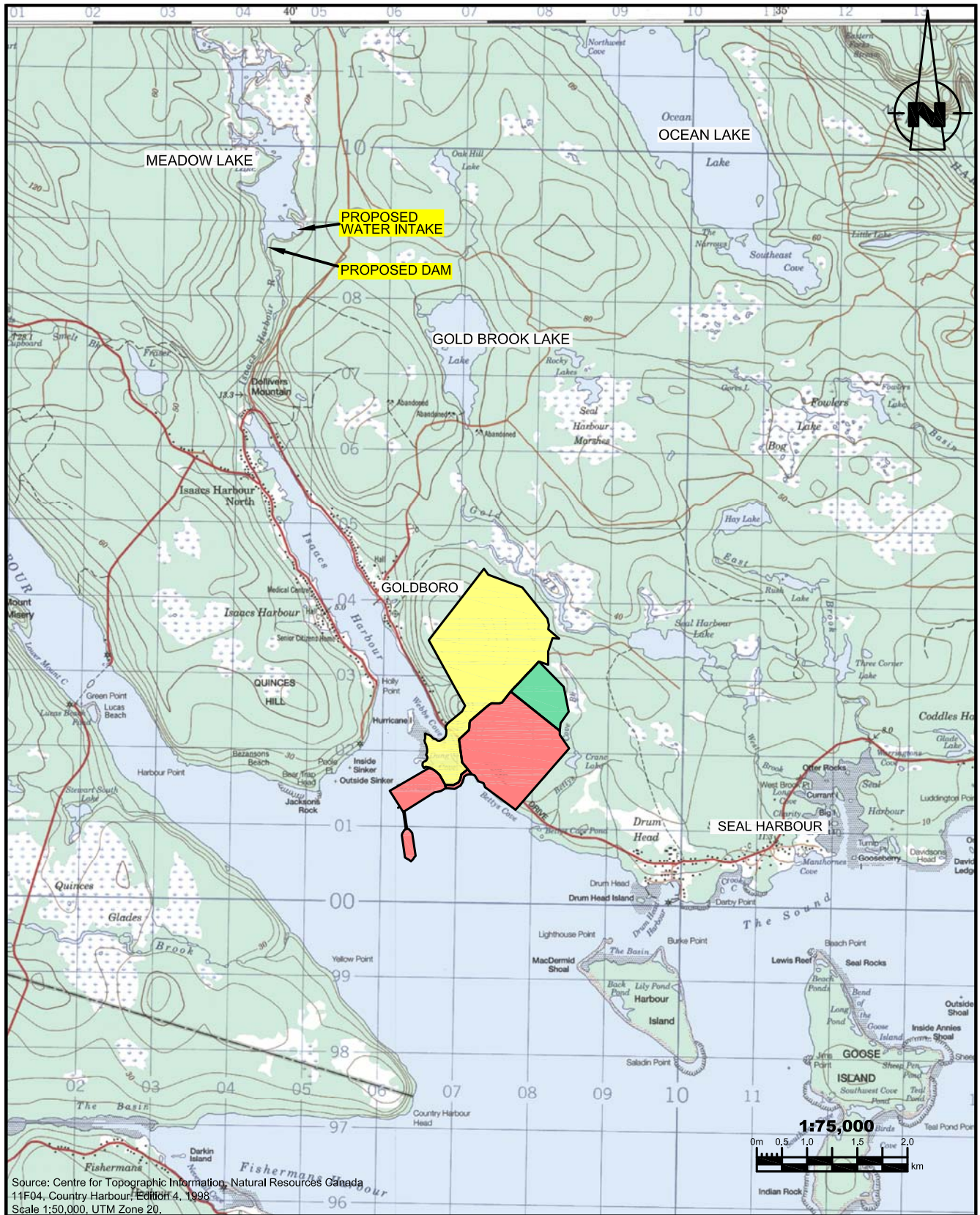
 Keltic Development Project

FIGURE No. 1.0-1
KELTIC PETROCHEMICALS INC.
KELTIC DEVELOPMENT PROJECT
LOCATION AND REGIONAL SETTING

JUNE 2007



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- Co-Generation Power Plant
- Petrochemical Plant
- LNG Plant and Marine Facilities

FIGURE No. 1.0-2
 KELTIC PETROCHEMICALS INC.
KELTIC DEVELOPMENT PROJECT
LOCATION AND BASIC LAYOUT
 JUNE 2007

This CSR report has been coordinated by AMEC Earth & Environmental, a division of AMEC Americas Limited (AMEC), with input from the technical specialists listed below.

- 4Gas;
- Atlantic Road & Traffic Management;
- CEF Consultants Limited;
- Davis Archaeological Consultants Ltd;
- D. Besner & Associates Inc;
- Dillon Consulting;
- Duncan Cameron;
- Earth-water Concepts Inc;
- MacDonnell Group;
- McInnes Cooper;
- Membertou Geomatics;
- Royal Haskoning, Netherlands;
- Shaw Environmental;
- Strait Engineering;
- Stone & Webster (S&W); and
- Tarandus Associates Limited.

1.1 PURPOSE OF THE COMPREHENSIVE STUDY REPORT (CSR)

Under Section 5 (1) of CEAA, an environmental assessment (EA) of a project is required if a federal authority exercises or performs one or more of the following powers, duties, or functions in relation to a project:

- proposes the project;
- grants money or any other form of financial assistance to the project;
- grants an interest in land to enable a project to be carried out; or
- exercises a regulatory duty in relation to a project, such as issuing a permit or license, which is included in the Law List Regulations (Canadian Environmental Assessment Agency (the Agency), 1994).

Transport Canada (TC) and Fisheries and Oceans Canada (DFO), have triggered a requirement to conduct an EA, and as such, will be responsible authorities (RAs) under CEAA as each department will need to issue a regulatory approval for components of the Project, in order for them to proceed. In addition to the RAs, Environment Canada (EC), Natural Resources Canada (NRCan), and Health Canada have provided specialist or expert information and knowledge to support the comprehensive study process.

The purpose of a federal CSR is to:

- Identify the potential environmental effects of a project whether positive or negative, including the environmental effects of any accidents or malfunctions that may occur in connection with the project and any cumulative effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out.
- Describe measures that are technically and economically feasible to mitigate any adverse environmental effects of the project.
- Report on all public concerns raised in relation to the Project and how they have been addressed.
- Based on the CSR and public comments, provide conclusions with respect to whether the project is likely to result in significant adverse environmental effects.

The scope of the Project to be assessed, as separately determined by DFO and TC in accordance with Section 15(1) of CEEA, is provided in Section 2.3 of this document.

1.2 THE FEDERAL REVIEW PROCESS

1.2.1 Comprehensive Study

A draft scoping document was prepared by the RAs on May 24, 2005, (Appendix 1) to allow the public to comment upon the proposed scope and factors to be considered in the federal EA. Comments were also invited from the public on the ability of a comprehensive study to address the issues related to the Project as opposed to referral of the Project to a mediator or a review panel.

Pursuant to Subsection 21(1) of CEEA, TC and DFO invited the public to comment on this draft scoping document on June 1, 2005 and June 3, 2005. Comments were requested to be provided to the RAs by July 3, 2005.

An environmental assessment Track Report was prepared by TC and DFO on October 14, 2005. This report, along with the recommendation to the Minister of the Environment, is intended to assist the Minister of Environment in making a determination under subsection 21.1(1).

On January 5, 2006, the Minister of Environment determined that a comprehensive study is the required level of EA for the proposed Project. Under CEEA, a comprehensive study must take place where the proposal represents a prescribed project or class of project included in the Comprehensive Study List. A comprehensive study is required for marine terminals designed to handle vessels larger than 25,000 DWT (CEEA Comprehensive Study List Regulation, Sept 2006, Part IX Transportation, 28c). This applies to both, the proposed LNG and the proposed terminal wharf.

A finalized scope for the comprehensive study was provided to Keltic on January 6, 2006. As defined in Section 2.3 of this document, each of the RAs has scoped a different project; however, both Projects are subject to a comprehensive study EA process. Since the Project, as scoped by DFO, falls within the Project as scoped by TC and both Projects require a

comprehensive study level EA, it was determined that one CSR would be prepared to meet the requirements under CEAA.

Pursuant to Section 17 of CEAA, the RAs have delegated the conduct of the comprehensive study and preparation of the CSR to the Proponent, Keltic. The departments providing specialist advice have worked together with the Agency and the RAs to provide direction on the federal CSR.

Guidance on the content of the CSR has been provided to Keltic, including provision of a table of contents and comments on draft documents. In addition, TC and DFO have reviewed a provincial EA provided by the Proponent which allowed both RAs to provide additional input regarding their respective content expectations. It was understood that the contents of the provincial EA document were to be used by the Proponent in the preparation of the CSR and subsequent environmental screenings.

The Agency is required to release the CSR for a 30 day public comment period. Following the public review period, the Agency will provide the comments to the RAs for response. The CSR together with public comments and RAs' responses will be provided to the Minister of Environment for review of all the information and subsequent issuance of the EA decision statement in accordance with Section 23 of the Act.

1.2.2 Screenings

The Proponent has been advised that the construction of a dam and impoundment of Meadow Lake for the process water supply for the KDP will likely require approvals from TC under the *Navigable Waters Protection Act* (NWP), Section 5(1) (a), and DFO under the *Fisheries Act*, Section 35(2).

As the dam and impoundment were not envisaged by the Proponent at the time of the federal Scoping Document (May 24, 2005 with revision January 6, 2006), this component of the KDP was not included in the scope of the Project requiring comprehensive study. As the construction and operation of the dam and impoundment are subject to an EA under CEAA, TC, and DFO will address this component of the KDP as a separate screening level assessment.

The screening for the dam and impoundment will be triggered when applications are made by the Proponent to:

- TC for authorization of the dam under the NWP; and
- DFO for authorization of the harmful alteration, disruption, or destruction (HADD) of fish habitat under the *Fisheries Act*.

Any watercourse crossings, storm water, sanitary water, process water, cooling water, wastewater outlets and/or infrastructure within the marine environment will be assessed for compliance with applicable federal legislation, which may result in the requirement for additional EAs.

These applications will be made by Keltic separate from this CSR.

1.2.3 Key Federal Legislation

Table 1.2-1 sets out a list of the key legislation relevant to the Project components. The specific requirement and schedule for application of the legislation are also noted.

TABLE 1.2-1 List of Relevant Federal Legislation

Statute/ Regulation	Section Reference	Requirement	Schedule
NWPA	S. 5 (1)	Approval and responsibility of the NWPA program rests with the Minister of TC to construct "work" in navigable waters	Prior to any construction activities below the high watermark.
<i>Fisheries Act</i>	S. 35	Approval required for HADD of fish habitat, specifically the marginal wharf.	Prior to any construction activities below the high watermark.
	S. 22 (1), (2), (3)	Minimum flows must be maintained for fish and fish eggs.	Prior to any construction activities.
	S. 32	Prohibits destroying fish by any means other than fishing. Most relevant if blasting is required in or near waters containing fish or fish habitat.	Should blasting be required, the Proponent will follow DFOs Guidelines for the Use of Explosives In or Near Canadian Fisheries prior to construction activities.
	S. 36	Prohibits deposit of deleterious substance in waters frequented by fish.	Throughout construction, operation, and decommissioning phases
Petroleum Refinery Liquid Effluent Regulation	General	Sets minimum standards for effluent quality from "petroleum refinery" as therein defined.	Throughout construction, operation, and decommissioning phases
CEAA	S. 5(1)	EA required before federal authority may render a decision identified under CEAA.	Prior to any construction activities.
Law List Regulation	S. 6 and 11	S.5 of the NWPA and s. 22 (2), and s.35 of the <i>Fisheries Act</i> are "triggers" for application of CEAA.	
Comprehensive Study Regulation		Specifies whether or not a comprehensive study is required.	
<i>Species at Risk Act</i> (SARA).	General	Provides protection to listed species and their habitat.	Throughout construction, operation, and decommissioning phases
<i>Canadian Environmental Protection Act</i> (CEPA)	Part 5	Regulates the manufacturing and handling of "toxic substance."	Notification to EC within 90 days of acquiring a scheduled substance.
Environmental Emergency Regulations	General	Requires notification to EC that Proponent has control of a scheduled substance. Also requires an environmental emergency plan for the facility that stores or uses the substance.	
National Pollutant Release Inventory (NPRI)	General	Keltic will likely be required to report under the NPRI.	

Statute/ Regulation	Section Reference	Requirement	Schedule
<i>Canada Marine Act</i>	General	Regulation of marine transportation.	Throughout construction, operation, and decommissioning phases
<i>Transportation of Dangerous Goods Act</i>	General	Documenting handling and placard requirements for transport of dangerous goods.	see above
<i>Pilotage Act - Atlantic Pilotage Authority Regulations</i>	General	Establishes pilotage authorities and requirements outside areas where pilots are compulsory.	see above
<i>Canada Shipping Act</i>	General	Detailed code for all aspects of shipping in Canada.	see above
Ballast Water Control and Management Regulations	General	Came into force on June 8, 2006.	see above
<i>Canada Transportation Act</i>	General	Applies to transportation matters under federal jurisdiction.	see above
<i>Migratory Birds Convention Act</i>	General	Provides protection for migratory birds and their habitat	see above
<i>Marine Transportation Security Act and Regulations</i>	General	Regulatory measures for marine and port security.	see above

1.2.4 Technical Review Process of Marine Terminal Systems in Transshipment Sites (TERMPOL)

The Technical Review Process of Marine Terminal Systems in Transshipment Sites (TERMPOL) is a voluntary review process of marine terminal systems for transshipment sites and is initiated by the Proponent. The purpose of this review process is to objectively appraise operational ship safety, route safety, management, and environmental concerns associated with the location, construction, and operation of a marine terminal.

The review is coordinated by TC in conjunction with requirements of the *Canada Shipping Act*. The process is not necessarily limited to the scope of the CEAA review and may involve a more detailed assessment of shipping and navigation issues. The *NWPA* review process is not exclusive of the components of the TERMPOL review process.

It is the policy of TC to initiate the TERMPOL upon request of the Proponent and upon initiation of the federal environmental assessment process for the Project. Keltic initiated TERMPOL with a written request on September 12, 2006. This correspondence was followed up on October 11, 2006; with a letter amending the initial request as the Project subsequently involved two Proponents, Keltic and MapleLNG. As explained in this letter, Keltic finalized the sale of assets related to the LNG facility to MapleLNG subsequent to the initial correspondence. A kick-off meeting was held on December 18, 2006, with TC and others to establish communications, initiate sharing of pertinent information, define the scope of the review, and agree on a schedule. Keltic is in the process of assembling information and undertaking studies outlined in the TERMPOL guidance document. In addition, Keltic is preparing a scoping document for TC's review which will outline its approach to the shipping simulation study.

Once TC is in receipt of the findings of these studies and simulations, it will prepare a summary report providing recommendations on navigation, pilotage, communications, and emergency response. Provisions of the review are not mandatory, but criteria are used by TC to determine the need for making or revising specific regulations or for implementing special precautionary measures.

1.3 THE PROVINCIAL REVIEW PROCESS

1.3.1 Provincial Environmental Assessment Process

Under the Environmental Assessment Regulations passed under Nova Scotia's *Environment Act*, the proponent of the undertaking is required to register with the Nova Scotia Department of Environment and Labour (NSEL) before proceeding with the final design of an undertaking or commencing work on an undertaking.

A petrochemical plant is designated as a Class II undertaking under the Environmental Assessment Regulations. As a result, an extensive EA, that included consideration by the Nova Scotia Environmental Assessment Board (NSEAB), was required. The generic steps in the Class II provincial environmental assessment process are described below:

- Before proceeding with the final design of the undertaking or commencing work, the proponent must register the undertaking with the NSEL.
- Within 7 days following the registration, the proponent must publish a notice in the newspaper giving certain prescribed information about the Project.
- Within 12 days of the registration of the undertaking, the administrator is required to publish a notice inviting the public to submit written comments for consideration in preparation of the terms of reference for an EA Report. Comments must be received within 40 days of publication of the notice. The proponent is then given 21 days to respond to any public comments and following the final day for comments from the proponent, the administrator is required, within 14 days, to provide final terms of reference for the EA Report.
- The proponent then must produce an EA Report which addresses all of the issues raised in the terms of reference.
- The EA Report is submitted to the NSEL and the Department either accepts the report or requires additional work following acceptance of a final report, there is a 48 day public review period.
- Within 10 days following receipt of the final report, the Nova Scotia Minister of Environment and Labour is obliged to refer the report to NSEAB for consideration. NSEAB then holds public hearings to receive public comments on the EA Report.
- Following the hearings, NSEAB produces a report and recommendations to the Minister of Environment and Labour. This report is to be generated within 110 days of the referral of the EA to NSEAB.
- Within 21 days after the receipt by the Minister of NSEAB's report and recommendation, the Minister advises the proponent in writing whether the undertaking is approved or rejected.

Keltic registered the KDP Development Proposal with NSEL on January 12, 2005, at which point NSEL released a draft terms of reference for public comment. The terms of reference were finalized by NSEL in April 2005.

Keltic submitted the EA Report to NSEL and it was released on August 22, 2006, for public review. The public had until October 30, 2006, to submit comments to NSEAB, following which hearings were held in November 2006.

Following the hearings, NSEAB requested a 60 day extension to the 110 day period they are provided for the preparation of the report and recommendations. This was granted by the Minister and the report and recommendation was submitted on February 21, 2007. The Minister then approved the KDP Development Proposal, subject to terms and conditions, on March 14, 2007.

Public documents related to the provincial EA review can be found at www.gov.ns.ca/enla/ea/kelticpetro.asp.

1.3.2 Key Provincial Legislation

Table 1.3-1 sets out a list of the key legislation relevant to the Project components. The specific requirement and schedule for application of the legislation are also noted.

TABLE 1.3-1 List of Relevant Provincial Legislation

Statute/ Regulation	Section Reference	Requirement	Schedule
<i>Environment Act</i>	S. 50	Prohibits designated activities without holding appropriate approval.	
Environmental Assessment Regulation	Schedule A	Storage facility for liquid or gaseous substances including hydrocarbons with total capacity greater than 5000 m ³ designed as a Class I undertaking requiring registration for Environmental Assessment.	Prior to construction
Activities Designation Regulations	S.(1)(d)(e) and (o)	The installation of certain culverts, a bridge, or other watercourse alteration requires an approval.	Prior to construction of culvert crossings associated with Highway 316 realignment; send-out gas pipeline crossing of Betty's Cove Brook.
	S. 5(1)(g)	The construction of a wharf requires approval.	Prior to construction.
	S. 10(1)(f)	The construction or operation of a site with a chemical storage tank in excess of 2000 litres (L) or 2000 kilograms (kg) requires approval (anticipated to be combined with industrial approvals for the petrochemical facility and LNG facility).	Prior to construction. Can be staged if required.
	S. 12(f)	The construction or operation of a natural gas processing facility.	

Statute/ Regulation	Section Reference	Requirement	Schedule
Activities Designation Regulations (<i>Cont'd</i>)	S. 21	The treatment or processing of wastewater or wastewater sludge is designated as an activity (anticipated to be combined with industrial approvals for the petrochemical facility and LNG facility).	
Air Quality Regulations	General	Establishes maximum permissible ground level concentrations of contaminants.	During all Project phases
Petroleum Management Regulation	S. 11	Storage tank systems must be registered.	Notify NSEL at least 3 days prior to construction of storage tanks. Within 30 days following installation file a report on the installation with NSEL.
Dangerous Goods Management Regulation	S. 6	Written approval required to store waste dangerous goods.	Prior to any construction activities.
<i>Energy Resources Conservation Act</i> – Gas Plant Facility Regulations	S. 6 (1), (2), 7 (1), (2)	Requires a permit to construct and licence to operate to be obtained from the Nova Scotia Utility and Review Board (NSUARB)	Prior to any construction activities.
<i>Pipeline Act</i> – Pipeline Regulations	S. 4 (1), (2)	Requires permit or licence to construct or operate a pipeline. Establishes standards for design and construction.	Prior to any construction activities.
<i>Crown Lands Act</i>	S 5, 13, 16 (1)	Governs the use and activities on lands owned by the province. Through the Act the province can make crown lands available for the Project through the use of easements, conveyances, leases, or licenses.	Prior to any activities on Crown Lands
<i>Forests Act</i> – Forest Protection Regulations	S 6 (1), (2)	Requires fire suppression equipment as per the regulation when operating within 305 metre (m) of the woods.	During construction.

1.4 THE FEDERAL/PROVINCIAL COORDINATION

As the Project is subject to both provincial and federal EAs, the province and the federal government have agreed to coordinate the processes to the extent possible by their respective legislations and processes.

Some components of the KDP reviewed by the provincial environmental assessment process are not within the scope of federal EA, such as the petrochemical facility, co-generation facility and the dam and impoundment. As the scope of the federal EA is a subset of the provincial EA, a separate document was required for the CSR.

Given the differences in federal and provincial scoping, opportunities for coordination were limited to a shared public review period. The Proponent submitted the EA Report in July 2006 which was commented upon by the public. Public hearings were conducted on the Project in November 2006. The 48 day public review period of the provincial EA Report fulfilled the requirements under CEAA Section 21.2.

The Proponent will receive an independent decision from the federal Minister of Environment as the provincial Minister of Environment and Labour issued his decision on March 14, 2007. Since receiving the Environmental Approval Conditions (Appendix 2) from the Nova Scotia Minister of Environment and Labour, Keltic has been working with the provincial regulators on a practical approach to satisfying the Ministerial Conditions. Keltic is currently developing a phased approach to the permits required to ensure that all conditions have been met to satisfy particular permits at the appropriate time.

Keltic recognizes that there will be additional conditions from a federal government perspective and has begun work on only the conditions that will not be impacted by any federal decisions. Keltic will continue to work closely with the provincial regulators to ensure that the scope of work adequately addresses the Ministerial Conditions.

It is of note that the proposed construction and operation of a dam at Meadow Lake (Meadow Lake Dam and Impoundment Project), which represents a component of the KDP, is being evaluated through another, separate EA process. The Meadow Lake Dam and Impoundment Project has been included in the scope of the provincial EA Report but is not within the scope of the federal CSR. Instead, this Project component is subject to a federal screening pursuant to Section 18 of CEAA. The requirement for the screening is triggered by the federal DFO determination that fish habitat may be altered, disrupted, or destroyed as a consequence of the dam construction and operation. It is anticipated that the screening may also be triggered if TC is required to issue an approval for the dam under the NWPAA. The RAs for the Meadow Lake Dam and Impoundment Project are DFO and TC. The Meadow Lake Dam and Impoundment Project has also been subject the above mentioned public review and hearings.