Hebron

HEBRON PROJECT

Socio-economic Impact Statement and Sustainable Development Report

April 2011

ExxonMobil Chevron SUNCOR ENERGY Statoil nalcor energy

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SOCIO-ECONOMIC IMPACT STATEMENT AND SUSTAINABLE DEVELOPMENT REPORT

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EXECUTIVE SUMMARY

ExxonMobil Canada Properties (EMCP) is the operator of the Hebron Project, an offshore oilfield located in the Jeanne d'Arc Basin 340 km offshore of St. John's, Newfoundland and Labrador in the North Atlantic Ocean. The Hebron production facilities will be installed at the offshore production location 9km north of the Terra Nova oil field and 32km southeast of the Hibernia offshore production platform, with start-up of operations no later than the end of 2017.

The Hebron oilfield will be produced from a concrete Gravity Base Structure (GBS) supporting the Topsides which holds the platform's drilling, drilling support, process and utilities and living quarters modules. The GBS will be constructed at Bull Arm, Trinity Bay, NL, as will some of the Topsides components. Other parts of the Topsides will be constructed elsewhere in the Province or internationally. All of the Topsides modules will be assembled and integrated at Bull Arm before being installed on the GBS. Once complete, the entire structure will be towed to the offshore site.

Management of the petroleum resources in the Newfoundland and Labrador Offshore Area is the responsibility of the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB). As part of the Hebron Project Development Application (DA), a Socio-economic Impact Statement and Sustainable Development report (SEIS) is required. The SEIS is designed to meet the requirements for the socio-economic impact assessment of the Project and to describe its contribution to sustainable development in the Province.

The SEIS adopts the socio-economic assessment approach used in previous offshore petroleum projects in the Province, giving particular attention to those socio-economic issues identified as being of greatest interest and building on the experience gained from other Newfoundland and Labrador offshore projects.

The geographic scope of the socio-economic assessment is primarily provincial, with the Isthmus of Avalon, Marystown and St. John's areas examined in greater detail as areas most likely to experience direct effects from the Project.

The temporal scope of the Project is thirty plus years, from the initial development phase, through installation and operations, decommissioning and abandonment. The main socio-economic effects are expected to be associated with the approximately seven to eight year design, fabrication and construction, installation and commissioning phase, and the long-term production and operations activities.

The assessment began with a review of literature and information from previous offshore oil developments, an analysis of experience from previous

projects, and an issues scoping process, which included stakeholder and public consultations.

These inputs helped determine the selection of the Valued Environmental Components (VECs) that form the focus for the assessment. The VECs identified represent three main socio-economic issue areas: business and employment; community social infrastructure and services; and community physical infrastructure and services. Where appropriate the VECs are subdivided into a number of components. For example, health and education are considered as separate components of the community social infrastructure and services VEC. The Report also provides an analysis of the contribution of the Project to sustainable development in the Province.

For each VEC or VEC component the existing socio-economic conditions and potential socio-economic interactions between the VEC and the Project are described. The socio-economic effects of the Project are then analyzed, taking into consideration any mitigative measures to address potential adverse Project effects as well as measures to create or enhance potential beneficial effects. The results are then summarized as an integrated set of residual environmental effects. Recommendations for monitoring and follow-up for each VEC are then offered.

The assessment of the socio-economic effects of the Hebron Project indicates that it will have a range of positive consequences for Newfoundland and Labrador and its citizens, families and communities. Any potential adverse effects are minor and non-significant and will be addressed through ongoing and constructive engagement with communities and other stakeholders.

The main positive effects relate to its effect on the economy. Hebron will create large amounts of business and employment in the Province during all phases of activity. This will, in turn, create spin-off business and employment, as well as create new revenues for government through personal, business and property taxes.

Municipal governments will also benefit through increased user pay for the use of recreational and other infrastructure and services. The governments of Newfoundland and Labrador and Canada will also benefit from increased tax and / or royalty revenues.

The Project Co-venturers are also committed to contributing to enhanced Research and Development and Educational and Training activities as well as supporting gender equity and diversity in all aspects of the workplace. These effects are discussed in greater detail in the Hebron Project Benefits Plan.

The SEIS also examines the social effects of Hebron on local residents, families and communities. The SEIS considers the potential effects of the Hebron Project on education, health, recreation and security in terms of police and fire response. The assessment also considers community physical

infrastructure and services in terms of ports and airports, industrial and commercial land, and housing.

Experience from previous offshore petroleum projects in Newfoundland and Labrador has shown that a project such as Hebron will bring changes, but these changes are generally acceptable and positive, and where they are not, they are manageable or can be mitigated satisfactorily. EMCP will maintain ongoing, active engagement and communication with Project stakeholders to ensure that key effects are addressed and managed.

Hebron will be Newfoundland and Labrador's fourth stand-alone offshore oilfield development project. As such, it will build on, and further contribute to, the development of a multi-phase offshore petroleum industry in Newfoundland and Labrador providing both local and export opportunities.

Hebron will be 'another' petroleum industry project, rather than a 'first' for the Province. It will use existing industrial and commercial facilities and infrastructure and is unlikely to present any significant new challenges for local residents, businesses or institutions. At the same time experience with past projects allows for a realistic interpretation of the potential outcomes of this project.

The Hebron Benefits Plan builds on, and has been developed with the goal of further advancing, the development of the industry in the Province so that the Project delivers long-term value to shareholders and to Newfoundlanders, Labradorians and Canadians. This includes contributing to the Province being seen as a source of supply, service, construction, fabrication, labour, education, training and research and development capabilities and expertise that are globally competitive in terms of safety, performance, price, quality and delivery.

The Hebron Project will contribute to community and economic sustainability within the Province and, to a lesser extent, Canada. Four underlying commitments for the Project are the cornerstones that will help to achieve this. These are commitments to:

- Achieving the highest levels of safety, health, environment and security performance throughout all phases of the Project;
- Meeting commitments under the Atlantic Accord Acts and Benefits Agreement signed with the Province in 2008;
- Delivering execution certainty and world-class execution;
- Building sustainable relationships with the community.

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1 INTRODUCTION

1.1 The Project

ExxonMobil Canada Properties (EMCP) is the operator (the Operator) of the Hebron Project (the Project)on behalf of the Project co-venturers, ExxonMobil Canada Ltd., Chevron Canada Limited, the Petro-Canada Hebron Partnership through its managing partner Suncor Energy Inc. (Suncor), Statoil Canada Ltd. and Nalcor Energy—Oil and Gas Inc. EMCP is leading the development that will include surveys, engineering, procurement, construction, installation, commissioning, development drilling, operations and maintenance of an offshore oil production system and associated facilities.

The Hebron offshore project area is located in the Jeanne d'Arc Basin (centered at approximately 46^{o}33'N, 48^{o}30'W), 340 km offshore of St. John's and 9km north of the Terra Nova Field and 32km southeast of the Hibernia development (Figure 1.1-1). Water depths in the area range from 88 to 102 m. The Hebron Asset currently contains three discovered fields (Hebron, West Ben Nevis and Ben Nevis) and incorporates four Significant Discovery Licenses that contain the currently assessed extent of the hydrocarbons for the delineated pools within the Hebron Asset. The Hebron asset could be expanded if additional studies, seismic surveys, or exploration and / or delineation drilling proves that economically recoverable hydrocarbon pool accumulations extend beyond the currently envisioned boundaries of the Hebron Asset.

The oil production system will utilize a Gravity Base Structure (GBS) to be constructed at Bull Arm, Trinity Bay. The Topsides modules will be assembled and installed onto the GBS at the Bull Arm location before the entire structure is towed to the offshore site.

Management of the petroleum resources in the Newfoundland and Labrador Offshore Area is the responsibility of the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB), a mandate established by the Canada-Newfoundland Atlantic Accord Implementation Act and the Canada—Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act. These Acts establish the requirements that proponents of offshore development projects must fulfill in order to obtain approval for a Development Application (DA).

The DA is comprised of a Canada-Newfoundland and Labrador Benefits Plan (Benefits Plan) and a Development Plan with ancillary documents. For standalone development projects like Hebron, the following ancillary documents are required: a Safety Analysis and Commitment; an Environmental Impact Statement; a Socio-economic Impact Statement and Sustainable Development Report (SEIS). This document, the SEIS, is

designed to meet the requirements for a socio-economic impact assessment of the Project and its contribution to sustainable development in the Province.

1.2 Socio-economic Impact Statement and Sustainable Development Report Focus

This SEIS discusses the socio-economic effects of the Project. The report focuses on three main socio-economic issue areas, business and employment, community social infrastructure and services, and community physical infrastructure and services. The SEIS also provides an analysis of the contribution of the Project to sustainable development in the Province.

The geographic scope of the analysis is primarily provincial, with those areas most likely to experience direct effects from the Project examined in greater detail as outlined in Section 2.2. The temporal scope of the Project is at least thirty plus years, from the initial development phase, through installation and operations, decommissioning and abandonment. The main socio-economic effects are expected to be associated with the approximately six-year design, fabrication and construction phase, and the longer-term production and operations activities.

1.3 The Newfoundland and Labrador Petroleum Industry

The submission of a Development Application for the Hebron oilfield is the latest step in the growth and maturing of Newfoundland and Labrador's offshore petroleum industry. There has been offshore activity in the Province's waters since the mid-1960s, but since 1990 there has been an acceleration in its pace and scale.

The development of the Hibernia oilfield, including the creation of the Bull Arm construction and fabrication facility, construction of the GBS and some topsides components at Bull Arm, Trinity Bay, started in 1990. The GBS and the topsides were mated and towed to the field in time for first oil production in November 1997. In 1998, Petro-Canada decided to develop the Terra Nova field using a floating production storage and offloading vessel (FPSO), with much of the topsides fabrication and installation occurring at Bull Arm. The FPSO produced first oil in January 2002. The development of a third field, White Rose, also using an FPSO, started in 2002, with first oil delivered in 2005. In 2007 the North Amethyst Satellite Tie-Back Project was approved which will extend the White Rose field. Production from this satellite field commenced in May 2010. Most recently, in February 2010, a formal agreement was signed between the project partners and the Government of Newfoundland and Labrador to develop the Hibernia Southern Extension.

The economic and social benefits to Newfoundland and Labrador from offshore activity have been substantial, though they have fluctuated over time. For example, total annual petroleum industry capital expenditures in the

Province ranged between $1375 (1999) and $808 (2007) million. Capital costs of production have generally increased over this period, but development expenditures have fluctuated as projects have commenced and then been completed. Annual operating expenditures have varied between $136 million (2001) and $621 million (2006), and these expenditures have created a total maximum of 3872 person-years of employment (2004), resulting in total wages, salaries and benefits that reached $262 million in 2004 (PRAC, 2009).

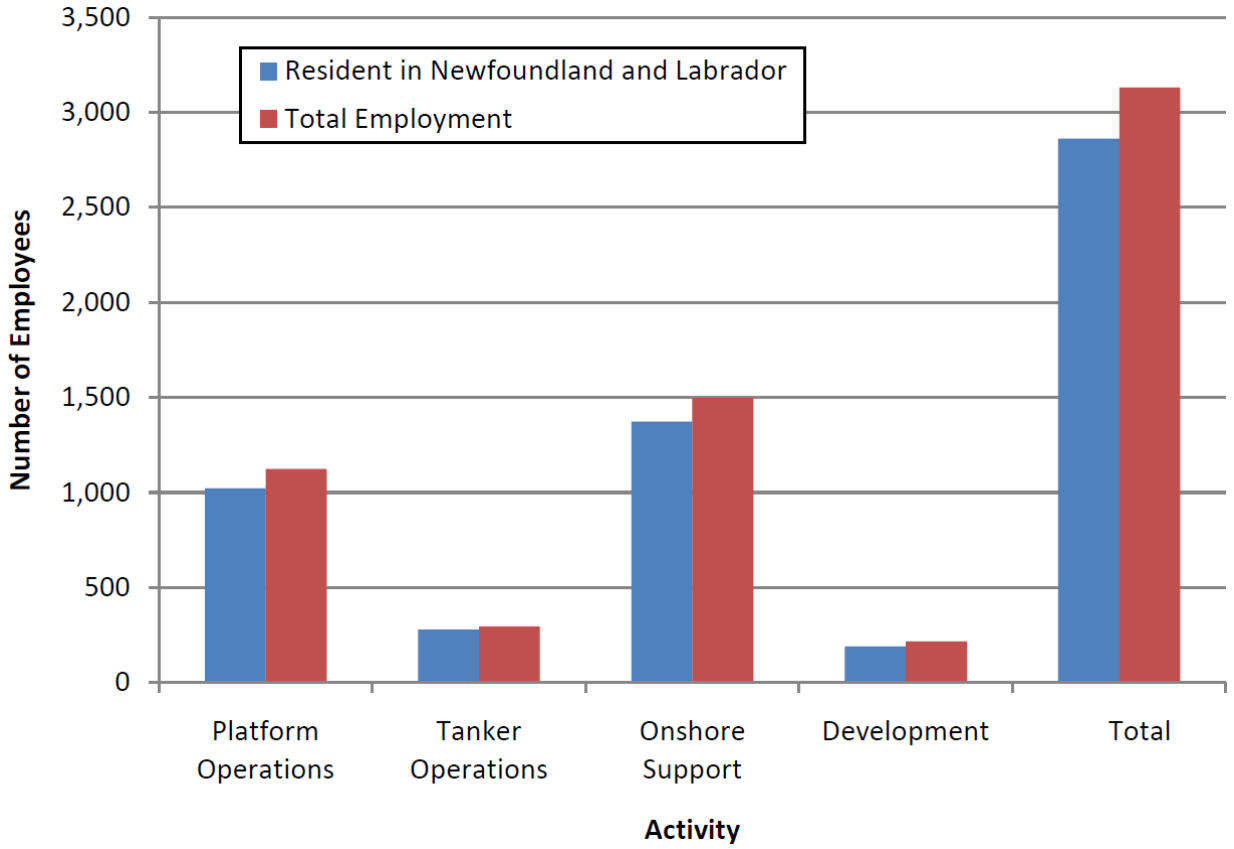
Direct employment associated with development has fluctuated over time, but employment in production remains relatively constant. In 2009-2010 there were 3,131 persons directly employed in operations and development activities of whom 91% were resident in the Province (Figure 1.3-1) (C-NLOPB, 2010a).

These figures relate solely to the direct petroleum industry activity. In addition, there were purchases of goods and services from other industrial sectors in Newfoundland and Labrador. This led to the employment of additional workers and payment of further wages, salaries and benefits. When these indirect effects are included, in 2007 the industry had an annual average direct and indirect Gross Domestic Product (GDP) impact of approximately $5.2 billion, and directly and indirectly created about 7,400 person-years of employment. In 2007 the direct and indirect GDP effects reached approximately $10 billion as a result of high oil prices and high production levels compared with $1.3 billion in 1999. The importance of the petroleum industry to the provincial economy is reflected in the fact that its contribution to total GDP has increased from 12% in 1999 to 40% in 2007 (PRAC, 2009).

Indirectly, local government revenues have been generated from petroleum industry business and property taxes, service providers have seen incomes increase from expenditures by individuals and companies and cultural and non-profit organizations have benefited from company contributions.

In addition local individuals, companies and institutions have developed skills and capabilities that, if competent and competitive, will enable them to undertake work on Hebron and other projects in the Province. These benefits go beyond simply an increase in employment. Growth of the industry has contributed to increased levels of professional and decision-making experience, a stronger safety culture and increased exposure, particularly of young people, to a global industry. Furthermore, these new capabilities and ambitions are not just applicable to the petroleum industry or in Newfoundland and Labrador or Canada. Activity to date has helped make local firms and individuals competitive on other petroleum projects, and on projects in other industries, nationally or internationally, thereby further contributing to the development and diversification of the economy. As such the industry has clearly made, and will continue to make, a very important contribution to the

economy and society of Newfoundland and Labrador, both directly and indirectly. These direct and indirect effects are discussed further in Section 4.3.



Source: C-NLOPB, 2010a

Figure 1.3-1: Direct Employment, Offshore Petroleum Operations 2009—2010

This industry has not had the negative social and economic effects on the fishery, communities, families and the Newfoundland and Labrador way of life that had been feared by some in the 1980s. Rather, it has had a range of positive consequences, directly through the creation of employment and business, and indirectly through multiplier effects and by increasing the Province's tax base.

If approved, the Hebron oilfield development project will continue this trend. Following on the Hibernia, Terra Nova and White Rose projects, it will provide further work to, and further develop the capabilities of companies and individuals working on those projects. In particular, it will allow further development of competitive capabilities which present international employment and business opportunities. Furthermore, the Project will contribute significant direct, as well as indirect, resource revenues. Overall, Hebron will be a major net contributor to the economic and social development of Newfoundland and Labrador.

2 ASSESSMENT SCOPE AND METHODOLOGY

This chapter describes the Project being assessed, the geographic scope of the SEIS and the methods used to assess potential effects.

2.1 Project Concept

The Project concept addresses the current and potential future development of facilities required to develop the four Significant Discovery License (SDL) areas (SDL 1006, SDL 1007, SDL 1009 and SDL 1010) incorporated into the Hebron Project. Initial development in the Project Area focuses on developing crude oil resources from the Ben Nevis, Hibernia and Jeanne d'Arc H and B Reservoirs within the Hebron Field, and the Ben Nevis Reservoir within the Ben Nevis Field. The Hebron Project Development Plan describes the plans to implement a platform development of the Hebron Field resources as well as a subsea tie-back development of the Ben Nevis Field resources. Further development of resources within the Project Area is anticipated with the expectation that these future developments will be from the Hebron platform or subsea tie-backs and utilize storage capacity on the Hebron platform.

The Hebron Project includes a combination of works and activities, onshore and offshore, necessary for the construction and operation of an offshore oil production system and associated facilities to allow the exploitation of the hydrocarbon resource accumulation. The primary drilling and production facilities will sit on top of a stand-alone concrete gravity base structure (GBS)(Figure 2.1-1). The GBS is a reinforced concrete structure designed to withstand sea ice, icebergs, and meteorological and oceanographic conditions at the offshore Hebron Project Area. It will be designed to store approximately 190,000 m^3 (1.2 Mbbl) of crude oil and be outfitted for tie-ins from subsea wells that will tap the areas beyond the reach of the platform drilling rig.

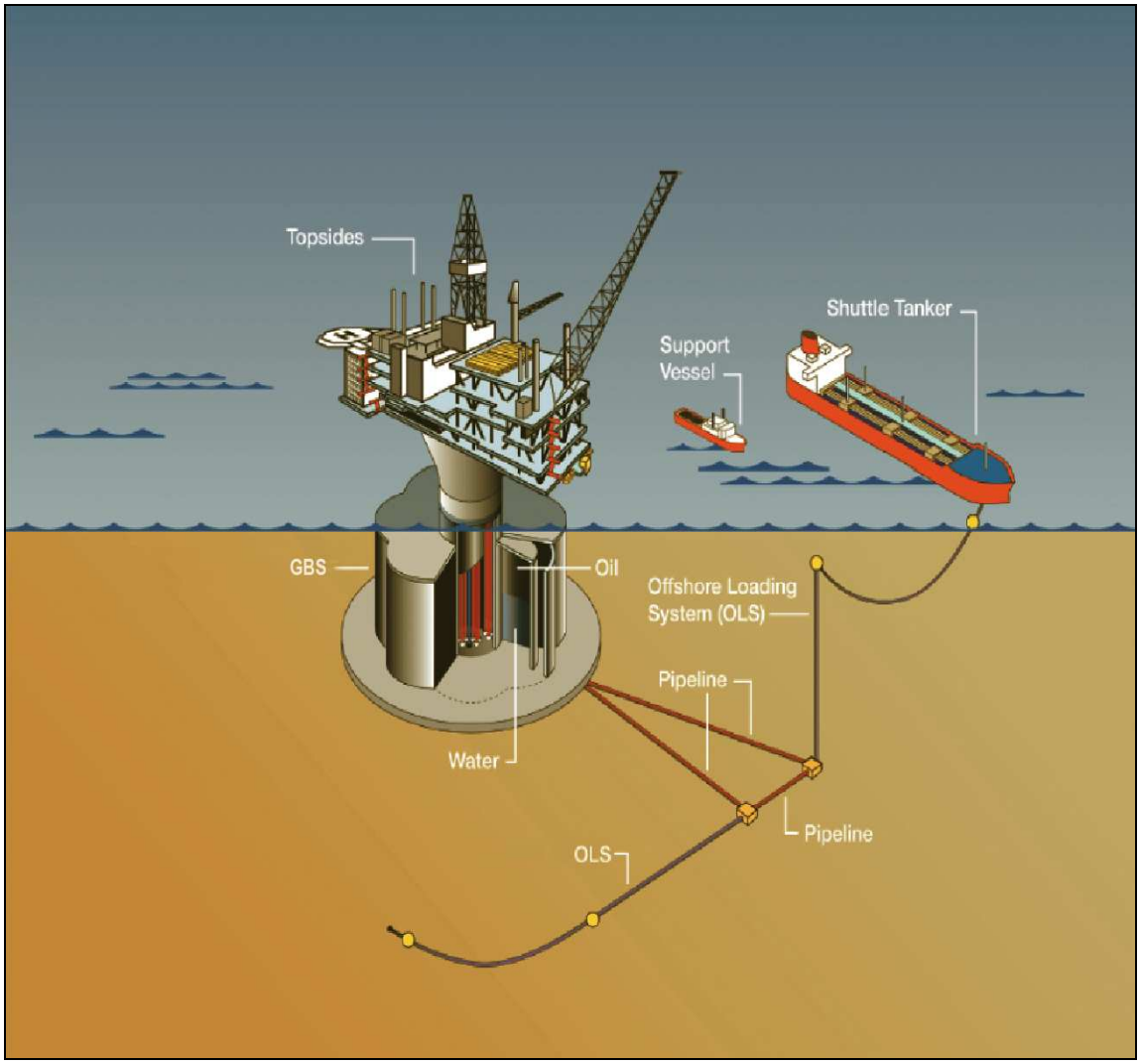
The GBS and topsides facilities will be constructed separately and then mated at an inshore site in Bull Arm, Trinity Bay, prior to towing and installation of the platform on the Grand Banks.

The topsides facility will consist of:

- A drilling rig capable of drilling and completion of wells, plus ongoing downhole maintenance of wells;
- Production facilities for the separation of oil, gas and water, treatment of produced water, compression of gas and injection of water;
- Utility systems including power generation and distribution; and

- Life support and safety systems including personnel accommodation for approximately 230 personnel, platform control system, temporary safe refuge and emergency evacuation and rescue systems.

Crude oil would be stored in the GBS prior to custody transfer metering and subsequent shipment. An offshore loading system (OLS) complete with a looped pipeline and two separate loading points would be installed to offload the oil onto tankers for transport to market (EMCP, 2009).



Note: *Illustration Only—Not to Scale*
Source: *EMCP, 2010*

Figure 2.1-1: Stand-alone Gravity Base Structure Preliminary Development Layout

The Hebron production facilities will have the capacity to handle the predicted life-of-field production stream for 30 plus years. Based on the current initial development phase, it is expected the facility will be designed to accommodate an estimated production rate of 23,900 m^3/day of oil (150 kbd).

It is anticipated that, with de-bottlenecking and production optimization post-start-up, that the total capacity of the facility could potentially be raised to 28,600 m^3/day (180 kbd). The produced water system will be designed to process up to 55,000 m^3/day (350 kbd) of produced water and inject up to 74,000 m^3/day (470 kbd) of water. Gas handling of up to 8,500 km^3/day (300 MSCFD) will be required to accommodate gas re-injection and artificial lift gas.

The current platform development schedule from the present to 2017 is illustrated in Figure 2.1-2.

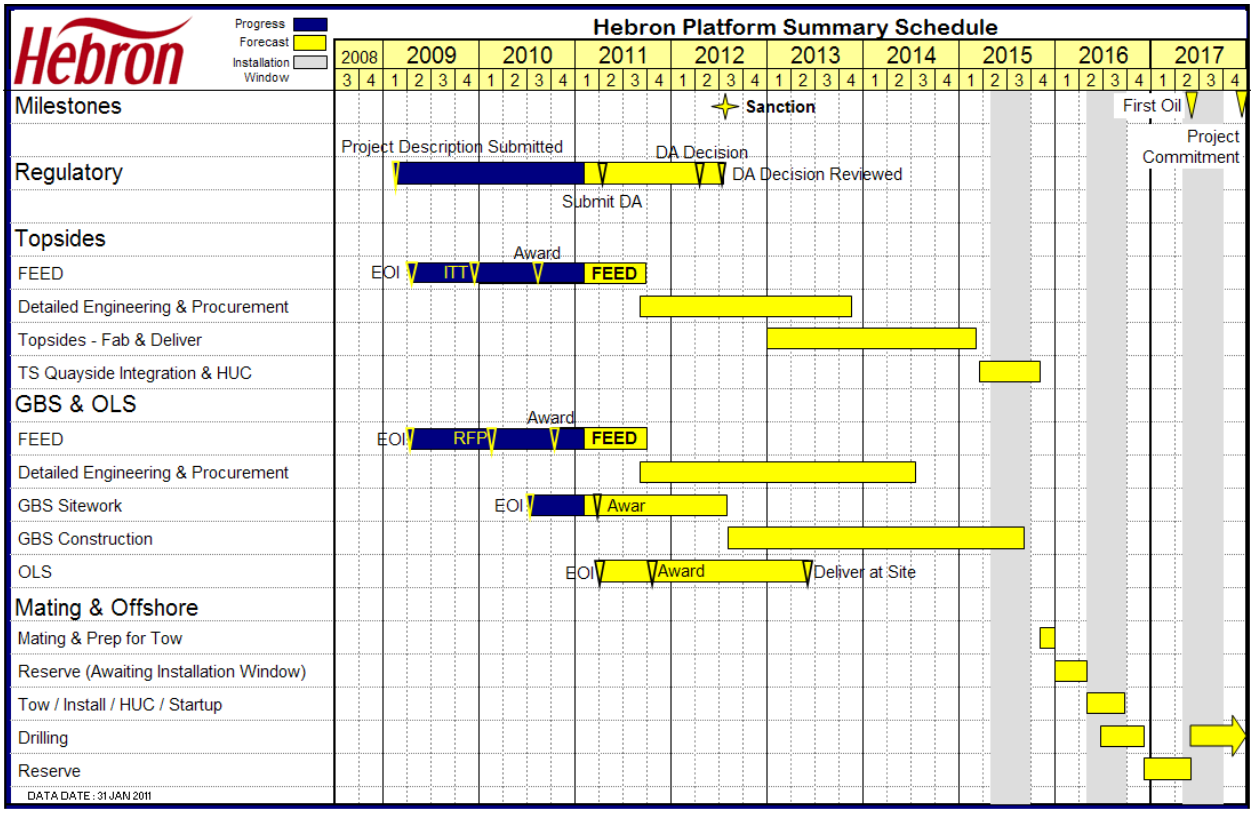


Figure 2.1-2: Hebron Platform Development Schedule (January 2011)

However, as noted above, the Project is currently expected to have a total duration of over 30 years (Figure 2.1-3) and this report covers the entire period.

Figure 2.1-3: Hebron Project Timeline

2.2 Geographic Scope

The location of Project phase activities (construction / fabrication and production / operations) is fundamental to the assessment of socio-economic effects. The locations for long-term operations phase activities are more easily identified than those for shorter-term development phase activities as contracts for construction and fabrication have yet to be awarded. For this reason, the certainty with respect to which areas will be affected by the Project, and to what degree, varies.

Outside of the stated intent to use the existing Bull Arm site, many of the construction / installation phase activities are not tied to specific locations at this stage of Project planning. For example, Marystown is discussed in the SEIS and Project personnel have visited a number of fabrication facilities on the west coast of the island. EMCP, as operator, will meet its benefits plan commitments related to fabrication and construction (see the Canada-Newfoundland and Labrador Benefits Plan). Nonetheless, construction and fabrication of some components for the platform are likely to involve contractors in other countries.

2.2.1 Newfoundland and Labrador

Within Newfoundland and Labrador, experience with previous projects has established a precedent for the likely geographic pattern of activity. While a number of locations could be involved in fabrication, maintenance, inspection and repair functions, those most closely involved with earlier offshore oil and gas projects have been selected for more detailed assessment. This allows for comparisons with these previous projects and an analysis of potential cumulative effects. The areas most likely to experience the main effects of the Project are described in the following sections.

2.2.2 St. John's Area

During the estimated 30 plus year lifespan of the Project, the St John's area (defined here as the St. John's Census Metropolitan Area [CMA]) will be the

administrative, business, technical and transportation centre for the Project. Anticipated effects will be wide-ranging and ongoing. The effects will primarily be beneficial, involving the creation of considerable employment and business. The types of effects expected in the St John's area during this phase would be similar to those associated with the Hibernia, Terra Nova and White Rose projects. The geographic area for effects associated with these activities is taken as the St. John's CMA (Figure 2.2-1).

The CMA is an official statistical unit defined as the region from within which significant numbers of people travel to work daily. The St. John's CMA was one of the areas examined in the Hibernia, Terra Nova and White Rose assessments, allowing comparisons to be made with those projects. Furthermore, any cumulative effects of these and other projects can be determined for this area.

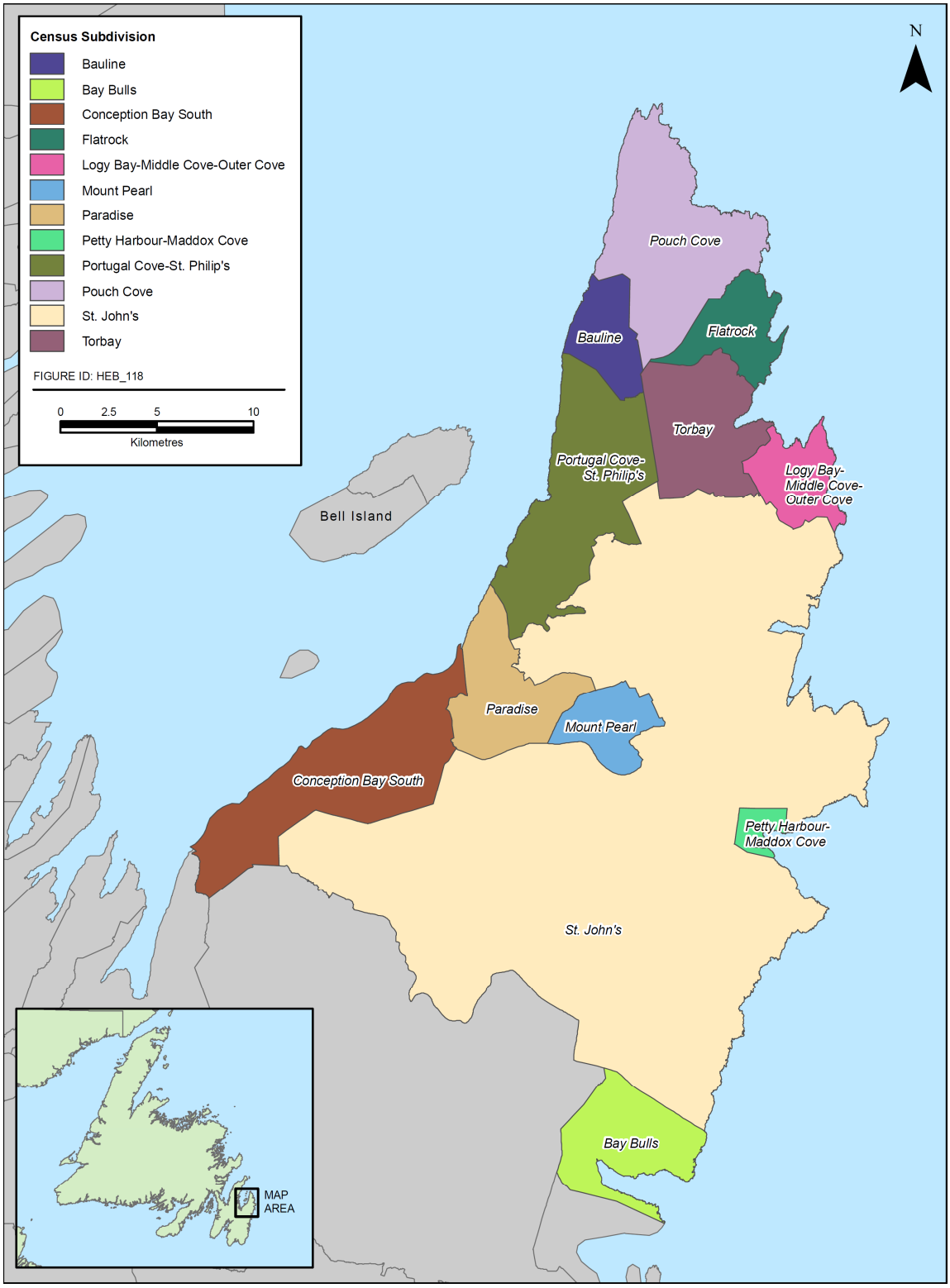


Figure 2.2-1: St. John's Census Metropolitan Area

2.2.3 Isthmus of Avalon Area

The Bull Arm site on Trinity Bay was developed as the construction and fabrication facility for the Hibernia project. It has subsequently been used for fabrication of topside modules and components for both the Terra Nova and White Rose projects, albeit involving lower levels of activity. Bull Arm will be used for the construction of the Hebron GBS, topsides assembly and installation. Additionally, some topsides components may be fabricated at the site.

The Newfoundland Transshipment Terminal is also located on the Isthmus of Avalon, close to the Bull Arm site, although in Placentia Bay rather than Trinity Bay and it may be used to transship Hebron oil from dedicated shuttle tankers to second leg vessels that will take the oil to market. Together with the refinery at Come by Chance, the Isthmus has considerable and long-term familiarity with the construction and operation of a variety of aspects of the petroleum industry.

As with the Hibernia, Terra Nova, White Rose and North Amethyst project assessments, the main local employment and community effects of activity at Bull Arm are assumed to fall within the daily commuting range of the site. While some workers may travel considerably greater distances, the primary commuting zone is assumed to approximate a 50-km zone centered on Bull Arm. For data collection purposes, the boundary of the study area corresponds to those Consolidated Census Sub-Divisions (CCSDs) that approximate the 50-km zone (Figure 2.2-2). The area is the same as that used for the previous project assessments noted above; this facilitates comparison of individual project effects together with any cumulative effects. Not all data regions conform to this study area. Where this is the case, approximations are made, and the differences noted.

2.2.4 Marystown Area

Marystown has the largest shipbuilding and marine repair facility in the Province. In addition, the Cow Head facility provides the capability for fabrication, repair, maintenance and installation of a range of offshore assemblies and vessels. A number of components for the Hibernia project were fabricated in Marystown, rig refitting was carried out for the Terra Nova project, and Marystown was the site of the main White Rose topsides fabrication activity and the installation of the topsides on the White Rose FPSO. These types of work demonstrate that the area could potentially see Project activity.

The study area is also based on a nominal 50-km commuting zone from Marystown and includes all CCSDs that fall within this radius (Figure 2.2-3). The same study area was also adopted for the Hibernia, Terra Nova and White Rose project assessments, and the same approximations are made where data for some variables do not match the selected area.

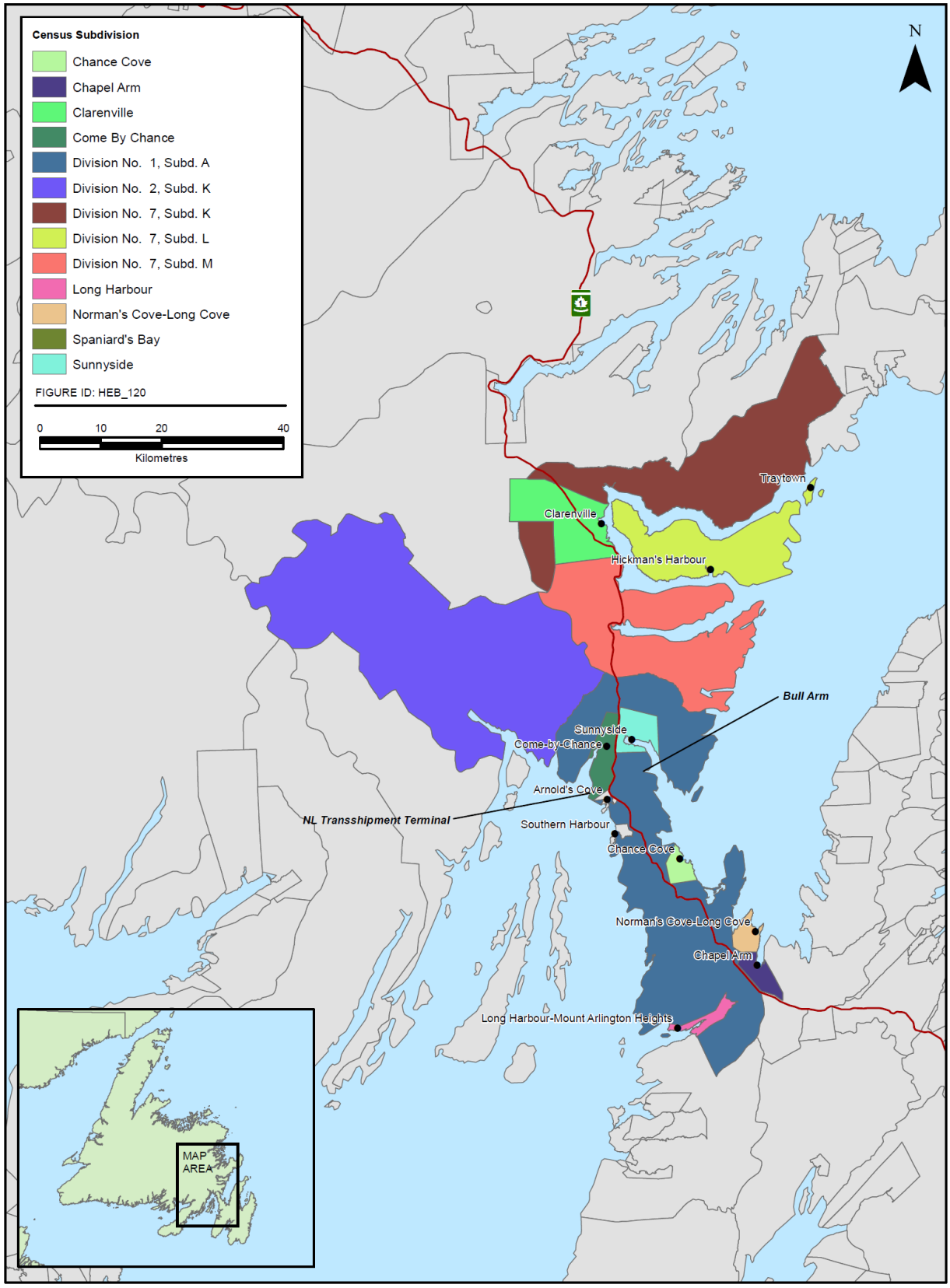

Census Subdivision
Chance Cove
Chapel Arm
Clarenville
Come By Chance
Division No. 1, Subd. A
Division No. 2, Subd. K
Division No. 7, Subd. K
Division No. 7, Subd. L
Division No. 7, Subd. M
Long Harbour
Norman's Cove-Long Cove
Spaniard's Bay
Sunnyside
FIGURE ID: HEB_120
0 10 20 40
Kilometres
N
Traytown
Clarenville
Hickman's Harbour
Bull Arm
Sunnyside
Come-by-Chance
Arnold's Cove
NL Transshipment Terminal
Southern Harbour
Chance Cove
Norman's Cove-Long Cove
Chapel Arm
Long Harbour-Mount Arlington Heights
MAP AREA

Figure 2.2-2: Area within 50-km Radius of Bull Arm

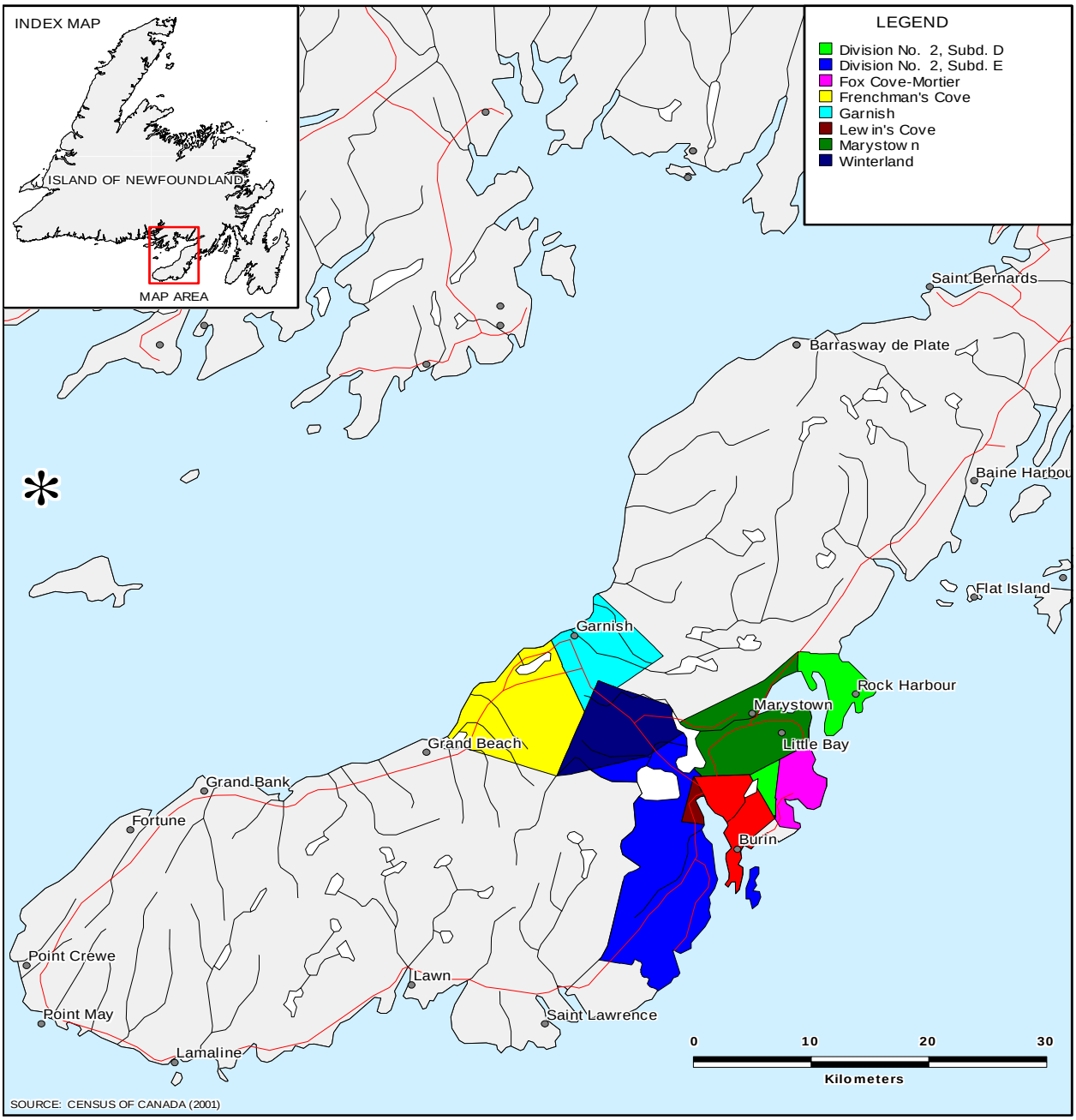


Figure 2.2-3: Area within 50-km Radius of Marystown

2.2.5 Regulatory Requirements

The Development Plan Guidelines (C-NLOPB, 2006a) offer a starting point for determining the scope of the Project. A key change from the earlier Guidelines (C-NOPB, 1988) is the requirement to include a thorough assessment of sustainable development. As the Guidelines note:

"Sustainable development has been defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' These concepts are clearly intertwined, particularly in the context of large developments for the exploitation of a non-renewable resource in a relatively small society and economy like Newfoundland and Labrador. It is an intent of the legislation (C-NAAIA, 1987; C-NLAAIANLA, 1990) in section 45 and elsewhere, that oil and gas developments be implemented and managed in a manner that creates a lasting economic legacy for the people of the Province" (C-NLOPB, 2006a: 1.3.3).

This requirement was first addressed in the assessment of the North Amethyst project (Husky Energy, 2007) and the C-NLOPB reviewers accepted the approach adopted there. This assessment builds on that approach to ensure that the Project contributes to the long-term development of a strong and vibrant economy in Newfoundland and Labrador.

2.2.6 Literature and Information from Previous Offshore Oil Developments

Various materials from other offshore developments in Newfoundland and Labrador were reviewed for direction in completing the DA and socio-economic assessment, and for any information of relevance to the Project. These include:

- Socio-economic impact assessment documents prepared for the Hibernia (Mobil, 1985), Terra Nova (Petro-Canada, 1995),White Rose (Husky Oil Operations, 2000) and North Amethyst (Husky Energy, 2007) projects;
- Panel (HEAP, 1986; CEAA 1997) and Commissioner's (Public Review Commission, 2001) reports;
- Decision reports (e.g. C-NOPB, 1986; 1997; 2001; C-NLOPB, 2008a) prepared in response to the development applications for these projects;
- Commissioned studies (e.g. HMDC, 1999; PRAC, 2003; 2009); and
- Other industry and academic reports and papers (e.g. Storey, 1995; Jones, 1998).

2.2.7 Experience from Previous Projects

The Hebron socio-economic assessment has been strongly influenced by experience with past offshore oil projects in Newfoundland and Labrador. The Hibernia, Terra Nova and White Rose projects have provided a

significant level of understanding of the types and nature of the socio-economic effects of offshore development in Newfoundland and Labrador and on specific communities. Many of the concerns that were raised in the 1980s, at the time the first Development Application Guidelines (C-NOPB, 1988) were being drafted and before the start of the Hibernia project, have since been shown to be of minor significance to the public and the regulators.

For example, at the public consultation sessions for the Terra Nova project, the Newfoundland Transshipment Terminal, White Rose and Hebron projects, such issues as the effects on crime and demands on local services, which many participants in the Hibernia consultations viewed as being potentially highly problematic, had largely disappeared as concerns. The focus of public attention has thus shifted in the light of experience.

Similarly, while it was an issue subject to considerable discussion in the 1980s, there is now little concern about the ability of municipal governments to deal with offshore-related projects. The Hibernia, Terra Nova and White Rose projects clearly demonstrated that they are able to, and local governments appear to be well prepared to deal with future projects. No concerns regarding the capacity of municipal governments were raised either prior to approval of the Terra Nova and White Rose projects, or in connection with Hebron.

As a result of this experience, some of the concerns that it was thought necessary to address in earlier assessments were not given detailed attention in the White Rose or North Amethyst SEIS (Husky Oil Operations, 2000 and 2007). A smaller number of locally valued environmental components, referred to as Valued Environmental Components (VECs) were identified and drew attention to particular elements of concern within them. This focused approach, which was accepted by the public review Commissioner (Public Review Commission, 2001), the C-NOPB Decision Report (C-NOPB, 2001) and the subsequent C-NLOPB Staff Analysis Report on the North Amethyst Project (C-NLOPB, 2008a), is also adopted here.

Not only has there been reduction in public concern, but project assessments have also indicated, and subsequent events confirmed, that with appropriate management strategies in place, the socio-economic effects of oilfield development projects are almost entirely positive. For example, the Terra Nova SEIS (Petro-Canada, 1995) concluded that the project would have no significant adverse social effects, and the Terra Nova Development Project Environmental Assessment Panel agreed: 'The Panel is satisfied that the Proponents have supplied sufficient information for the Panel to determine that the development will not have significant negative social impacts' (CEAA, 1997). The 28 socio-economic recommendations of the Panel Report on that project all relate to benefits and worker safety issues; none are concerned with effects on communities or the Province as a whole.

Similarly, the White Rose Comprehensive Study SEIS (Husky Oil Operations, 2000) found that that project would have no adverse effects, because any changes would be within local capacities. It also concluded that project-related employment and business would result in significant positive effects on the economy and hence society. These conclusions were accepted in both the report of the public review Commissioner (Public Review Commission, 2001) and the C-NOPB Decision Report (C-NOPB, 2001). These reports contain very limited discussion of, and no recommendations respecting, the community effects of the project, other than as relate to Canada-Newfoundland and Labrador benefits and worker safety.

The North Amethyst SEIS (Husky Energy, 2007) concluded that, while much smaller than the White Rose and Terra Nova projects, it represented another important step in the development of the Province's oil and gas industry. Project benefits included provision of local employment, training, business and R&D opportunities, together with the development of provincial expertise and capabilities that would contribute to sustainable economic development and generate a lasting economic legacy for the people of the Province. At the same time no significant social services or infrastructure problems were expected for local communities. The C-NLOPB Decision Report (2008a) makes no reference to the SEIS, but the C-NLOPB Staff Analysis Report on the project concluded that the findings of the SEIS were reasonable (C-NLOPB, 2008b).

2.2.8 Issues Scoping

The focus (or scope) of an environmental assessment must be identified early in the environmental assessment process. The scope of the project to be assessed and the scope of factors to be considered are important for conducting an effective and efficient environmental assessment (CEAA, 1998). The components of the environment that are valued by society, interpreted in its broadest sense to include the socio-economic, cultural and biophysical environments, are the recommended focus of an assessment (Beanlands and Duinker, 1983). These are referred to as Valued Environmental Components (VECs). The Project VECs are described in Section 2.2.7.

Issues scoping is the process used to focus the assessment on issues and concerns identified by the public, technical experts and regulatory agencies. The comments received through an issues scoping process are organized and evaluated to identify the VECs that can serve as indicators of socio-economic change. This enabled EMCP to identify the VECs that are the focus of the socio-economic assessment conducted for the Project.

The issues scoping process included:

- Reviewing relevant legislation and guidelines;

- Reviewing documents prepared for other oilfield developments and major projects in the study areas;
- Stakeholder information and consultation sessions;
- Reviewing issues raised during the Hibernia, Terra Nova and White Rose development environmental assessment review processes;
- Tracking relevant articles / stories in the media; and
- Using professional judgment based on the particular characteristics of the Hebron oilfield development.

2.2.9 Stakeholder Consultations

The stakeholder consultation program for the SEIS provided key input to the issues scoping process for the assessment and provided input to the more general public consultation and communications process. SEIS stakeholder consultation involved:

- Consulting community, business, women's and non-governmental organizations through key informant workshops and meetings / presentations;
- Meetings with government departments and agencies;
- Distributing project information; and
- Documenting issues and concerns, and following up when necessary.

Socio-economic comments received from the stakeholder consultations were mostly related to employment and business matters that are addressed in the Hebron Benefits Plan. Comments that fell into the areas addressed in the SEIS concerned:

- Physical infrastructure including:
  - Road safety associated with project-related commuting and materials movement, especially during winter months;
  - Concern that local infrastructure (roads, wharves) are not adequate to accommodate industrial use without incurring damage;
  - Lack of cell phone coverage on the Burin peninsula highway;
  - The capacity of local communities to house in-migrants and the effect on housing / rent prices;
  - Waste from the construction sites may exceed capacity of local waste management sites;
- Social infrastructure including:
  - Health and social service requirements resulting from the project; and

- Concerns regarding women's employment and access to childcare.

A comprehensive list of comments on all aspects of the project and responses is provided in Appendix A.

2.2.10 Public Consultations

EMCP's stakeholder information / consultation program provided valuable information in preparing the DA for the Hebron oilfield development. This program met the requirements of the CEAA, C-NLOPB Development Application Guidelines (2006a), Canada-Newfoundland Atlantic Accord Implementation Act and the Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act (Atlantic Accord Acts). The public information and consultation program was designed both to provide Project information to the general public and to solicit comments about it.

The public consultation process included the following:

- Setting up a Project-specific web site;
- Distributing Project information;
- Hosting forums on specific topics in several locations;
- Presentations to a range of community, school and professional groups;
- Hosting a series of open houses;
- Participating in community forums and petroleum industry conferences;
- Other community meetings and presentations;
- Consideration of issues and concerns raised; and
- Discussions with NOIA and the Building Trade Council.

The following tools were used to provide information and to obtain input:

- Project description as submitted to the C-NLOPB to initiate the DA and environmental assessment processes;
- Project summary cards, which provided an overview of the proposed Project, including information on the production system, offshore loading systems, Project schedule, environmental management, Canada-Newfoundland and Labrador benefits, and environmental assessment and DA process;
- Display boards for the open houses;
- Comment forms (distributed at the open houses);
- Project information telephone number at EMCP's office; and

- Project-specific web site (www.hebronproject.com), which included a virtual open house and a contact address for Project-related enquiries (hebronproject@exxonmobil.com).

The consultation program focused primarily on the geographic areas most likely to be affected by the Project. However, it also reached a geographically wider audience through meetings in other communities, with groups and organizations with a particular interest in the Hebron development, and through the Project web site and the Project information telephone number at the EMCP office.

As with the stakeholder consultations, socio-economic comments received during the public consultations were mostly related to employment and business matters. These are addressed in the Hebron Benefits Plan. Comments that fell into the areas addressed in this report concerned general comments, including the need to incorporate comments from previous offshore assessments, and physical Infrastructure comments, including the accommodation of employees during construction.

A comprehensive list of comments on all aspects of the Project and responses is provided in Appendix A.

2.2.11 Selection of Valued Environmental Components

Using VECs (see definition in 2.2.4) ensures that the focus of the assessment is on the key issues identified by those most likely to be affected by the Project, and that the pathways and interactions among VECs and their components and characteristics can be identified and their effects analyzed.

The socio-economic VECs identified through the issues scoping process described above, and which form the basis for this assessment, are:

- Employment and business;
- Community social infrastructure and services; and
- Community physical infrastructure and services.

Project employment and spending may result in increased incomes and lifestyle changes, or encourage the movement of people into particular communities, leading to increased demands on both social and physical services and infrastructure. Where those infrastructure and service elements are operating at or beyond designed capacity, any incremental demand may negatively affect the quality and quantity of services available to local residents unless a timely response is made by the relevant agencies or organizations. Where there is underused capacity in the system, increased demands may have no significant effects or may help to increase the viability of particular services and infrastructure.

2.2.11.1 Employment and Business

Employment and business are valued by individuals who may benefit directly or indirectly from work in its own right, increases in incomes and standards of living and development of skills and expertise.

The economic benefits from offshore developments continue to be the issue of major importance in Newfoundland and Labrador and they are at the heart of strategies designed to encourage sustainable development. No socio-economic analysis in Newfoundland and Labrador is complete without consideration of employment and business effects of which the key elements are described and discussed here.

New projects are generally beneficial from an economic perspective insofar as more people are employed, and successive rounds of employee and business expenditures generate employment and income multiplier effects in the local and provincial economies. However, particular socio-economic effects can be both positive and negative where different segments of society are differentially affected.

The employment and business effects of the Project will be greatly influenced by EMCP's Hebron Canada-Newfoundland and Labrador Benefits principles, policies and procedures, including its Diversity Plan.

2.2.11.2 Community Social Infrastructure and Services

The community social infrastructure and services identified as important through the issues scoping process are health, education, social services and policing. These form the focus of this assessment. Local residents value social infrastructure and services insofar as their quality and capacity in a community contribute to the overall standard of living and quality of life.

2.2.11.3 Community Physical Infrastructure and Services

The particular community physical infrastructure and services considered in this assessment are air, highway and port transportation-related components, housing, and commercial and industrial land. Local residents and business operators value these elements insofar as their quality and capacity contribute to the overall standard of living and quality of life of the community and the economic opportunities available to its residents.

2.2.12 Socio-economic Effects Analysis Methodology

Five main elements are examined for each VEC.

2.2.12.1 Existing Socio-economic Conditions

For each VEC, the geographic assessment boundaries are defined and the major characteristics of the existing socio-economic environment described. The latter includes discussion of existing literature and data, and any

characteristics or trends which might be expected to influence the nature of the VEC in the future without the Project.

2.2.12.2 Potential Socio-economic Interactions

Project-Environment effects for each VEC are identified in a Project-Environmental Effects Interaction Matrix (see, for example, Table 4.2-1). Potential interactions are considered in terms of project-related activities (engineering, construction, operation and decommissioning) and cumulative effects (past, present and future projects).

2.2.12.3 Socio-economic Effects

The nature of these interactions is then described and analyzed. This includes, as relevant, the potential effects of the Project on the socio-economic environment, the effects of the socio-economic environment on the Project, and any interaction effects between socio-economic and biophysical elements as they relate to the Project.

Where possible, technically and economically feasible measures are identified to avoid or mitigate any negative Project effects and to create and enhance positive ones. Some of these effects management measures are already incorporated into the Project design and others are included in the Canada-Newfoundland and Labrador Benefits Plan to meet these objectives. These and additional strategies designed in response to other effects identified in the Project-Environment Interactions analysis are described as part of the socio-economic effects analysis.

The assessment of cumulative socio-economic effects (that is, the relationship between the Project and other projects and activities that may affect the identified VECs), are treated in an integrated fashion as part of the overall socio-economic assessment (see Barnes and Davey, 1999). The projects and activities considered are those that are ongoing or likely to proceed. Projects within the Province include the onshore effects of the ongoing Hibernia, Terra Nova and White Rose projects, offshore exploration commitments, the development of the Voisey's Bay smelter project at Long Harbour and the proposed Lower Churchill hydro project. These and other projects that could affect the Project are discussed in Section 4.3.

2.2.12.4 Integrated Residual Environmental Effects

Residual socio-economic effects are those that remain after effects management measures have been applied. Project-related effects are described and summarized in two tables for each VEC. The first considers whether the effects are positive or negative and whether any management strategies are appropriate in the case of potentially adverse effects. The second table evaluates the significance of any residual effects after the management strategies have been applied. These evaluations are

undertaken for each Project activity and cumulative effects elements described in the Project-environmental Effects Interaction Matrix.

The basis for the effects evaluation is the following CEAA (1994) criteria:

- *Magnitude* describes the nature and scale of the socio-economic effect for each activity (for example, the number of people likely to be employed in Project construction);
- *Geographic extent* refers to the area affected by the Project (for example, the Province or the defined study area);
- *Duration and frequency* describe how long and, where relevant, how often a project activity or socio-economic effect will occur (for example, how long construction will take, or the life expectancy for project operations);
- *Reversibility* refers to whether the VEC can, or likely will, return to an equal or improved condition at the end of the activity or project lifecycle (most socio-economic effects are not truly reversible in that they will forever change the individuals, communities and institutions that are affected, however, where skills are acquired or infrastructure added as a result of the project the VEC may return to an improved condition at the end of the activity); and
- *Socio-economic context* considers the current status of the area affected by the project in terms of existing environmental conditions and effects (for example, the project may take place in an area where there has not previously been any similar type of activity, or it may occur in an area where there is considerable experience with the activity).

Each of these criteria is rated according to a set of defined values. The results of the analysis for each VEC and specific VEC components are then summarized in tabular form (see, for example, Table 4.2-1).

A magnitude of “1” implies a low magnitude effect, one that is within the capacity of the system in question, while “3” implies a high magnitude effect that exceeds current system capacity.

Geographic extent, duration, frequency, reversibility and socio-economic context are each defined in ways relevant to the community-related VECs. In all cases, the definition adopted is included in a key to each table for each VEC.

From these results, any significant residual effects (that is, those that remain after management strategies are considered), including cumulative residual effects, are identified. The magnitude of an effect is of particular importance in determining significance. An adverse effect assigned a magnitude of “2” or “3”, after mitigation, is considered a significant adverse residual effect and more so where its geographic extent or temporal nature increases, where it is

irreversible, or where it occurs in an area previously unaffected by human activity.

Where the residual effects are beneficial, these too are identified. It should also be noted that in some cases residual effects could be both adverse and beneficial, for example, when the project affects different groups in different ways. These potential outcomes are also identified and discussed.

Each of these findings is then examined in terms of the level of confidence for the predictions made and the likelihood of their occurrence, the latter based on the probability of the predicted outcome occurring, and scientific certainty. The results of the analysis are then summarized by assigning ratings of significance with respect to each Project phase. This overall determination considers all residual socio-economic effects, including Project and other-project cumulative effects, and provides an integrated residual socio-economic effects evaluation in tabular form for each VEC (see, for example, Table 4.2-1).

2.2.12.5 Monitoring and Follow-up

As part of the socio-economic effects analysis, appropriate monitoring and follow-up are described for each VEC. The focus of these activities includes situations where:

- Important or sensitive interactions are identified;
- There is a high level of uncertainty about the socio-economic effects predictions;
- Significant adverse effects are predicted; and
- Commitments have been made as part of the Canada-Newfoundland and Labrador Benefits Plan.

3 ECONOMIC AND DEMOGRAPHIC CONTEXT

An understanding of the economic and demographic context within which the Project will occur is fundamental to the analysis of its potential effects. This section summarizes the economic and demographic context in the Province as a whole, as well as for the St. John's, Isthmus and Marystown areas, the key study areas.

3.1 Newfoundland and Labrador

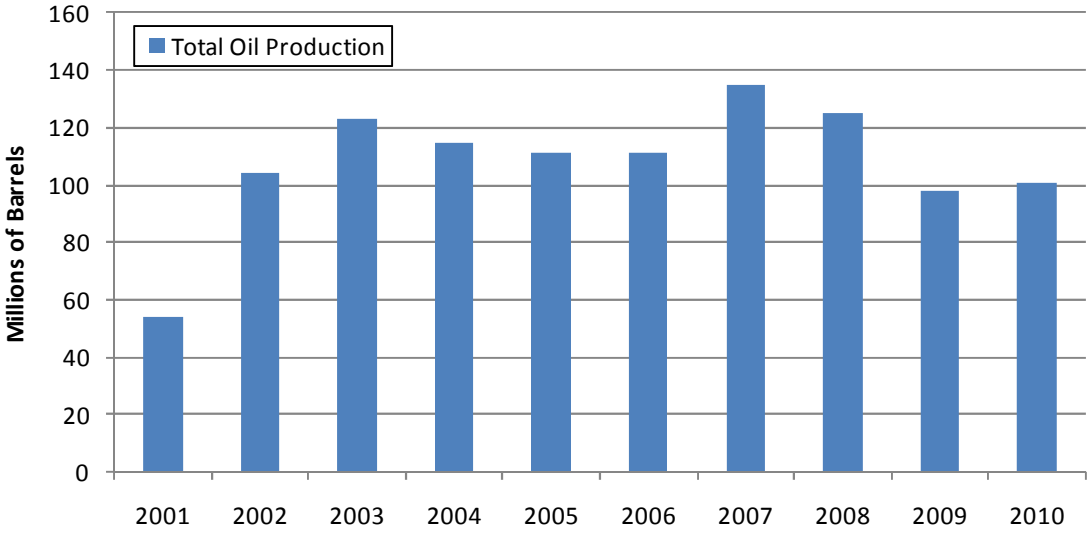
Over the last 20 years, the petroleum industry has become increasingly important to the Newfoundland and Labrador economy. The start of the 1990s saw the beginning of a new phase in the Province's offshore petroleum industry with the commencement of construction of the Hibernia platform at Bull Arm. This project, the largest construction project in North America at the time, created, at peak (in September 1995), some 6,100 jobs in Newfoundland and Labrador (PRAC, 2003), and is reflected in the substantial increase in capital investment in the 1993 to 1996 period. The 1990s also saw the construction of the Newfoundland Transshipment Terminal and preparations for the development of the Terra Nova field. Work on the latter project started in 1998, with most work in Newfoundland and Labrador concentrated in St. John's and at Bull Arm. The completed Terra Nova Floating Production, Storage and Offloading vessel (FPSO) arrived on site at the Grand Banks in August 2001, with production starting in January 2002. Subsequently work on the White Rose FPSO began in 2002 and first oil from that project was delivered in 2005.

Most recently, in 2010, production began at the North Amethyst satellite which will extend the White Rose field. Drilling for West White Rose started on August 12, 2010, following the C-NLOPB's approval of the proposed pilot well scheme. The development strategy and timing of West White Rose are dependent on the outcome of the pilot project (NLDF, 2010a).

In February 2010, the provincial government signed a formal agreement with its industry partners to develop the Hibernia South Extension. This development is expected to return an estimated $13 billion to the provincial government through a combination of royalties, returns on investment (through Nalcor Energy), and corporate income tax revenues (NLDF, 2010a).

The total oil production in the Province, with peak production to date occurring in 2007 is shown in Figure 3.1-1.

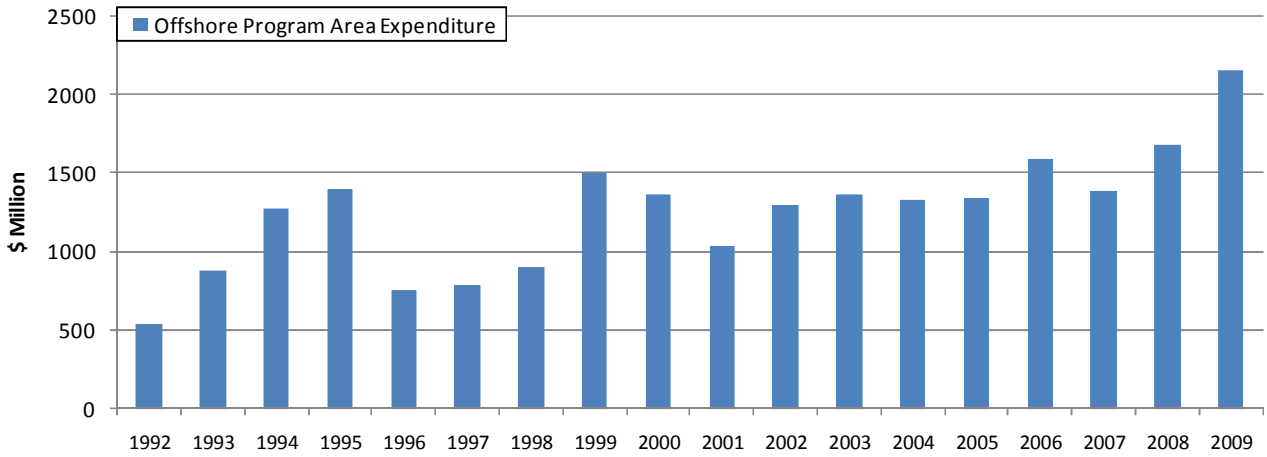
Oil-related expenditure[1] from 1992 to 2009 is illustrated in Figure 3.1-2. Overall, expenditures for offshore exploration, pre-development, development and offshore oil production have increased during this period, reaching a peak of $2,151 million in 2009.



Source: C-NLOPB, 2009; NLDF, 2011a.

Figure 3.1-1: Offshore Oil Production in Newfoundland and Labrador, 2001—2010

[1] Offshore program area expenditure includes all expenditures for offshore exploration, pre-development, development and offshore oil production in Newfoundland and Labrador. Source: C-NLOPB, 2010a.



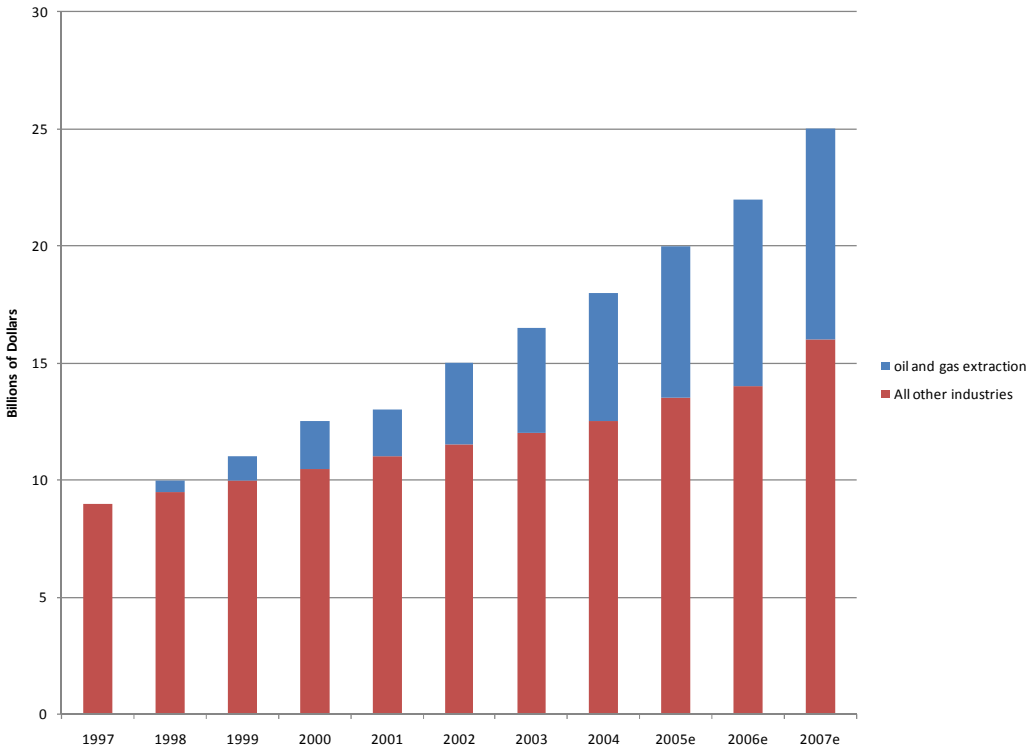
Source: C-NLOPB, 2010b

Figure 3.1-2: Offshore Program Area Expenditure for Newfoundland and Labrador, 1992—2009

The dramatic change in the importance of oil to the economy is reflected in its contribution to provincial GDP (Figure 3.1-3). In 1999, the petroleum sector represented 12% ($1.2 billion) of GDP, but by 2007 its share had risen significantly to 35% ($10 billion). This increase was associated with both increased production and increased prices for oil. In 2008, the industry accounted for almost 40% of the total value of all goods and services produced in the Province and in 2009 approximately 35% of Canada's conventional light crude oil was produced in Newfoundland and Labrador.

In 2009, however, the value of oil production decreased by 48% as a result of reduced production and lower crude prices (NLDF, 2010b). Production decreases notwithstanding, oil production from the Province's offshore was expected to account for approximately 35% of Canada's conventional light crude production in 2010 (NLDF, 2010a).

Other sectors of the economy have experienced mixed success (Figure 3.1-3). In the fishery for example, the collapse of the northern cod stock and the declaration of moratoria on northern cod and a number of other groundfish species after 1992 had major effects on the economy and society.



Note: estimated.
Source: NLDF, 2008.

Figure 3.1-3: Gross Domestic Product Oil and Gas Extraction[2] and Other Industries

Since then the fishery has both recovered, associated with the growth of the crab and shrimp fisheries in particular, and periodically suffered, as a consequence of lower landings, low market prices and a strong Canadian dollar. As indicated in Figure 3.1-4, the value of fish products more than doubled to $1 billion between 1992 and 2002, but 2005 and 2006 were comparatively poor years. The Newfoundland and Labrador fishery recorded a difficult year in 2009 due to low market prices, continued pressure from low cost producers and an appreciating Canadian dollar (NLDF, 2010b).

In 2010 the fishery performed well despite early concerns that the season would be worse than 2009. Snow crab and shrimp prices improved in 2010 as global seafood supply fell. This development helped the industry endure challenges such as the high Canadian dollar, quota reductions and relatively high fuel prices (NLDF, 2010a).

Another growth area in recent years has been in the value of mineral shipments from the Province. The value of shipments from the Province

[2] Oil and gas extraction includes services to mining and oil and gas industries.

increased from $755 million in 2001 to $4,652 million in 2008 (Figure 3.1-4). This was primarily associated with the Voisey's Bay project, which came on stream in 2005, and the increase in mineral product prices over the last few years. In 2009, however, the value of provincial mineral shipments declined approximately 50% to 1.9 billion. This decrease was due mainly to lower production and prices of nickel and iron ore (NLDF, 2010b). Recovery in 2010 associated with higher production and prices meant that the value of mineral shipments was expected to total over $3.3 billion in that year which would represent an increase of over 72% from 2009 (NLDF, 2010a).

In contrast the forest products sector has not performed well and since 2000 shipment volumes have declined (Figure 3.1-4). In 2005 the mill in Stephenville closed and in March 2009 the mill in Grand Falls ceased production with important regional economic consequences for both of these areas.

Overall, however, the economy has performed well since 1996, with significant growth in GDP and average employment, and an overall general decline in unemployment rates. In 2006, for example, unemployment fell below 15% for the first time in 25 years and by 2008 it had declined further to 13.2%, the lowest rate experienced since the 1970s. Such has been the change in economic circumstances that in April 2008 the Province declared a budget surplus of $1.4 billion, the largest in its history. The strengthening of the economy has meant that Newfoundland and Labrador has now joined the ranks of Canadian "have" provinces, spelling the end of equalization payments on which the Province has depended since Confederation in 1949.

The recession of 2008 set back this growth path. Despite robust growth of capital spending (49.4% in 2007) in first-quarter 2009, plunging energy prices plus declining petroleum production caused the value of the Province's energy exports to drop by 36% from the previous year and total manufacturing exports to fall by 29%. This weakness in resource revenues has had a negative effect on total employment. Compared to a 3% annual growth in total employment between May 2007 and 2008, by May of 2009 it contracted by 5.3%, primarily due to significant drops in employment in manufacturing (-20.4%), public administration (-12.2%), forestry (-11.0%) and retail trade (-10.1%) (Clinkard, 2009).

Employment has since increased. By December 2010, the number of people employed totaled 221,000 – representing an increase of 10,500 persons or 5.0% relative to December 2009. Employment gains were recorded in several industries in 2010, including trade, public administration, educational services, and business building and other support services. Employment decreased most notably in manufacturing and transportation and warehousing (NLDF, 2010b; 2011b).

Despite the progressive weakening in Newfoundland's employment growth in late 2008 and 2009, housing demand has remained quite robust due in part to

a reversal of the Province's chronic pattern of out-migration that started in first-quarter 2008 and continued into 2009. To July 2009, the value of residential building permits was up by 30%. Although sales of existing homes dropped by 12.4% from the previous year, annual average house prices were up by 14.7% between May 2008 and 2009, compared to a 0.2% increase for Canada as a whole (Clinkard, 2009). This trend has continued throughout 2009 and 2010: while new home prices in the country declined by 2.3% in 2009, they rose by 11.5% in Newfoundland and Labrador (NLDF, 2010b). During the first ten months of 2010, the national average MLS residential price increased 6.5% while it increased 15.4% in the Province during the same time period (NLDF, 2010a).

According to a Major Project Inventory compiled by the Atlantic Provinces Economic Council (APEC, 2010), the Province's economic health has and will continue to be reinforced in the near term by the sustained capital spending on projects such as the Vale (formerly Vale Inco) nickel processing facility in Long Harbour; the development of the North Amethyst field (part of the White Rose Expansion), and potential further upgrades to the Come-by-Chance Refinery.

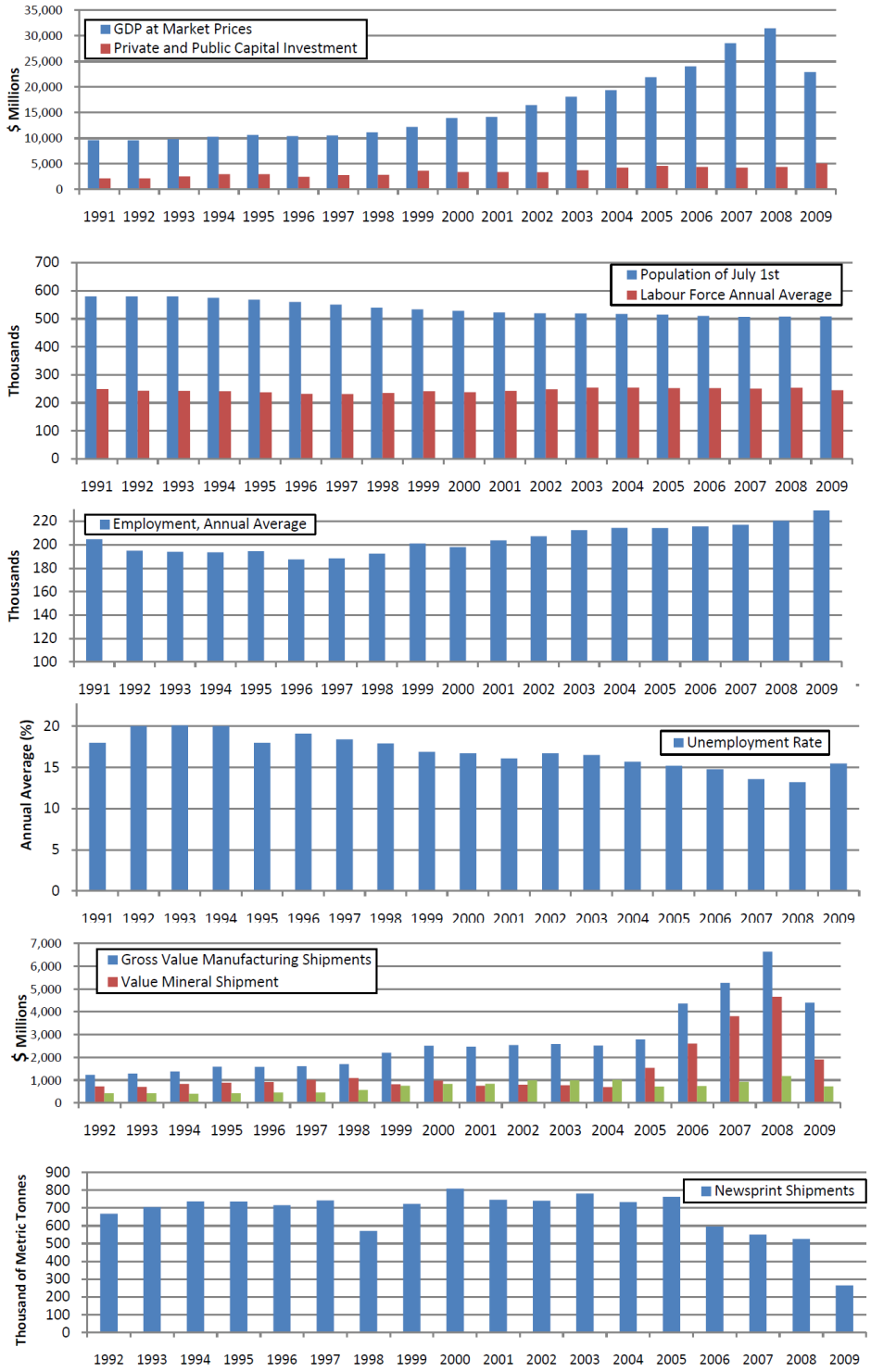
Assuming an increase in petroleum prices, spending to develop the Project, the development of the Hibernia Southern Extension and possibly a decision to go forward with the Lower Churchill hydroelectric project, this economic rebound is expected to continue through 2010 and 2011.

Changes in the economic picture are reflected in the Province's demography. A major consequence of the closure of the fishery in the early 1990s was the decline of the population (Figure 3.1-5). Between 1991 and 1996 there was a net loss of nearly 18,900 people and a further loss of 19,600 and 14,100 between 1996 to 1999 and 1999 to 2002, respectively (Figure 3.1-5). As might be expected, these losses particularly affected rural Newfoundland and Labrador. This blow to the economy was reflected in higher unemployment rates (20.4% in 1994) (Figure 3.1-4), a decline in the labour force, decreases in retail trade, and declining housing starts.

Between 2001 and 2006 the rate of population decline slowed (-1.4%) and in 2008 the pattern of change reversed. In July 1, 2008 Newfoundland and Labrador's population stood at 507,895, an increase of 0.3% compared to July 1, 2007 (Figure 3.1-6). By 2009, the population had increased further to 508,925 (NLDF, 2010b), and as of July 1, 2010, Newfoundland and Labrador's population stood at 509,739, an increase of 0.3 per cent over the previous year. This marked the second consecutive year of population growth after 16 years of decline (NLDF 2010c).

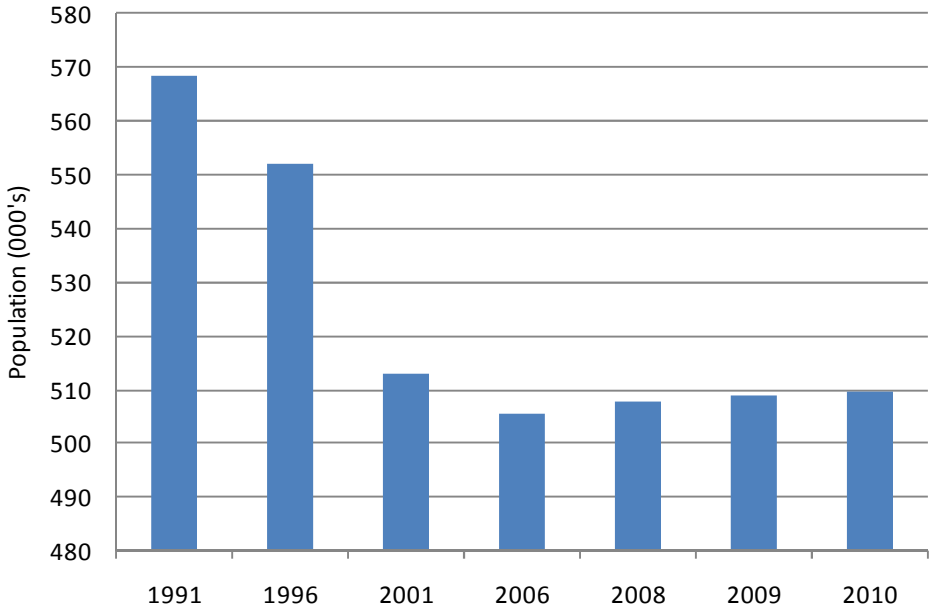
As indicated in Figure 3.1-6, deaths now exceed births and the natural increase component of population has had a negative value since 2006-07. However, net migration to the Province in 2008—2010 has been positive (Figure 3.1-7), the first time this has been the case since 1982-83; this has

helped offset natural losses and has been sufficient to generate the small overall increase. In 2010, for example, population growth was the result of positive net-migration of almost 2,000, which offset a natural population decline (NLDF 2010a).



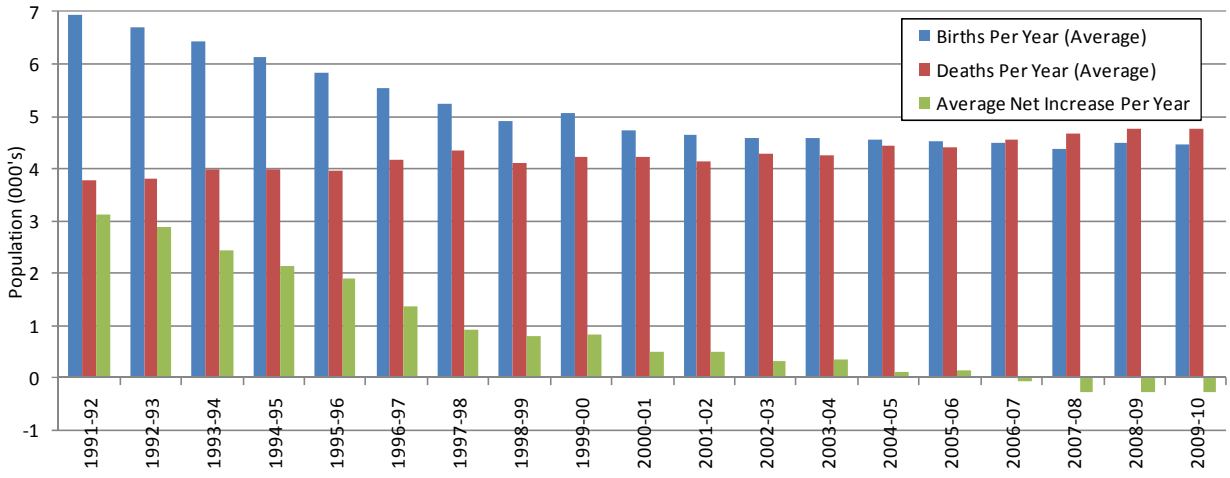
Note: *Some of the 2009 data are preliminary.*
Source: NLDF Website, 2010.

Figure 3.1-4: Selected Economic Indicators Newfoundland and Labrador, 1992—2009



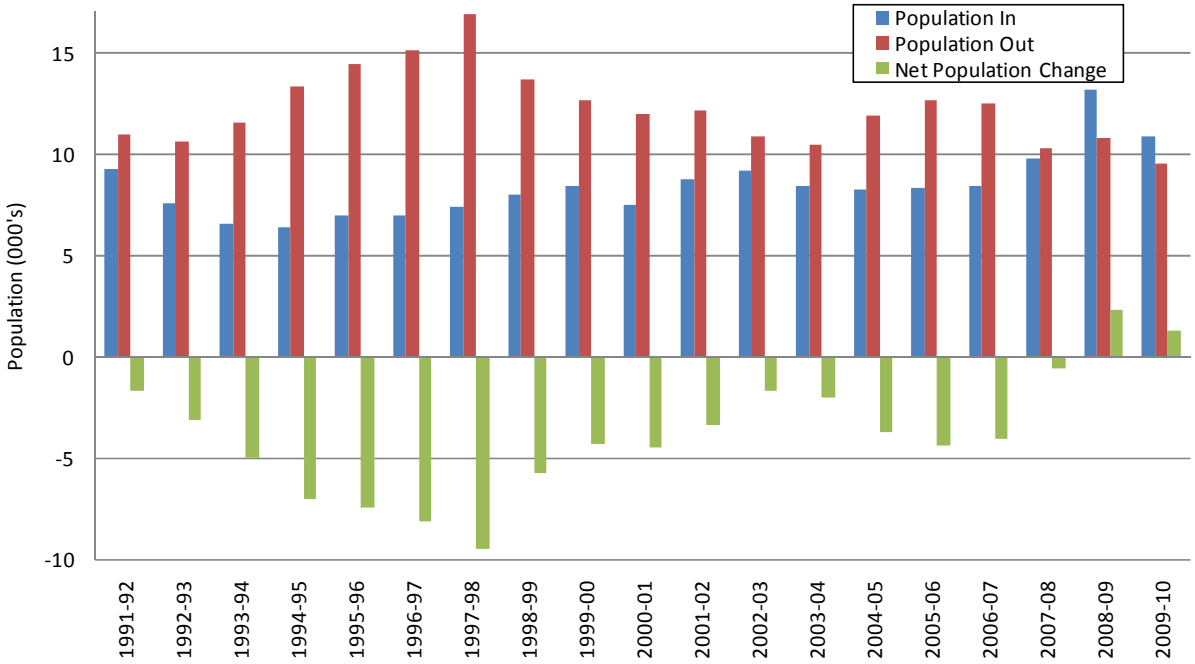
Source: Statistics Canada, 1991; 1996; 2001; 2006a; NLDF, 2010a.

Figure 3.1-5: Population of Newfoundland and Labrador, 1991 to 2010



Note: 2009-10 data as of October 2010.
Source: NLDF Website, 2011 and Statistics Canada, 2010a.

Figure 3.1-6: Natural Increase Components of Growth, Newfoundland and Labrador, 1991—2010

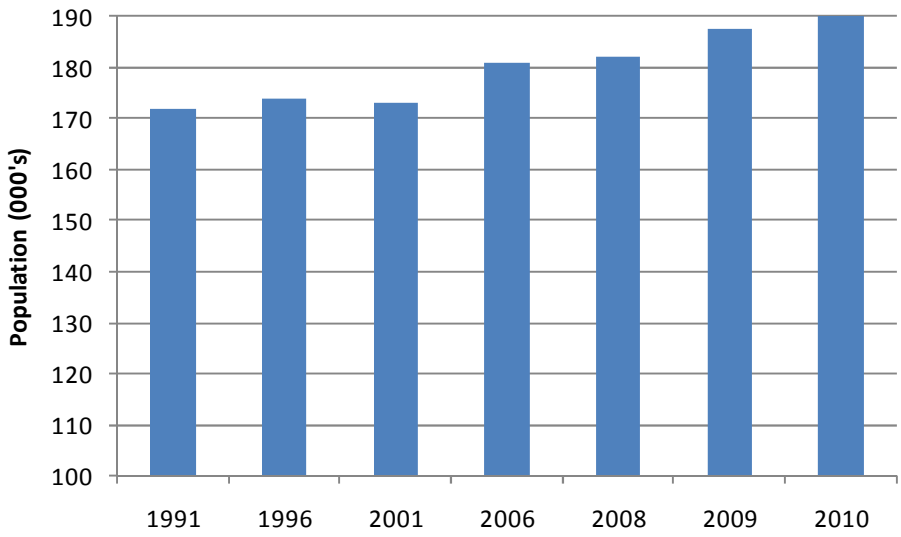


Note: Figure does not include International Migration, which has little impact on overall numbers. **2009-10 data as of October 2010.**
Source: NLDF Website, 2011 and **Statistics Canada, 2010a**.

Figure 3.1-7: Inter-provincial Migration, Newfoundland and Labrador, 1991 to 2010

3.2 St. John's Area

The St John's area economy has fared comparatively well by provincial standards over the past decade, and at the time of writing continues to enjoy a boom in economic growth and activity. Intercensal demographic changes in the St. John's area and the City of St. John's since 1991 are illustrated in Figure 3.2-1. Until the second half of the 1990s, the area as a whole had been growing, although at a declining rate. The total population grew by only 1.3% in the 1991 to 1996 period, with most of this occurring in Mount Pearl and Conception Bay South. In the 1996—2001 period, however, the St John's area experienced a small decrease in population of 0.7% (Statistics Canada, 1996; 2001). This changed in the 2001—2006 period when there was a significant population growth of 4.7%. This general trend has continued with further growth of 1.0% between 2006 and 2008. In 2009, the population of the St. John's area increased an additional 3.1% to 187,596 and again by 2.5% to 192,326 in 2010 (NLDF Website, 2011).



1 Intercensal Change.
Note: The 2010 population is based on a preliminary postcensal estimate.
Source: Statistics Canada, 1991; 1996; 2001; 2006a; NLDF Website, 2011.

Figure 3.2-1: Population and Intercensal Changes, St. John's CMA, 1991—2010

By contrast, the City of St. John's showed a decline between 1991 and 2001. Boundary changes have periodically increased the area and the total population of the City of St. John's, but based on analysis of comparable areas, the population has, until recently, continued to decrease. From 1991 to 1996, the decrease was 2.6% and from 1996—2001 there was a further 2.7% decrease. Between 2001 and 2006, however the pattern reversed and there was a 1.5% increase.

The City of Mount Pearl saw its population grow by 7.8% to 25,519 between 1991 and 1996 (Statistics Canada, 1991; 1996), but between 1996 and 2001, there was loss of population (-2.2%). Between 2001 and 2006, the population of Mount Pearl declined again from 24,964 to 24,671(Statistics Canada, 2001; 2006a).

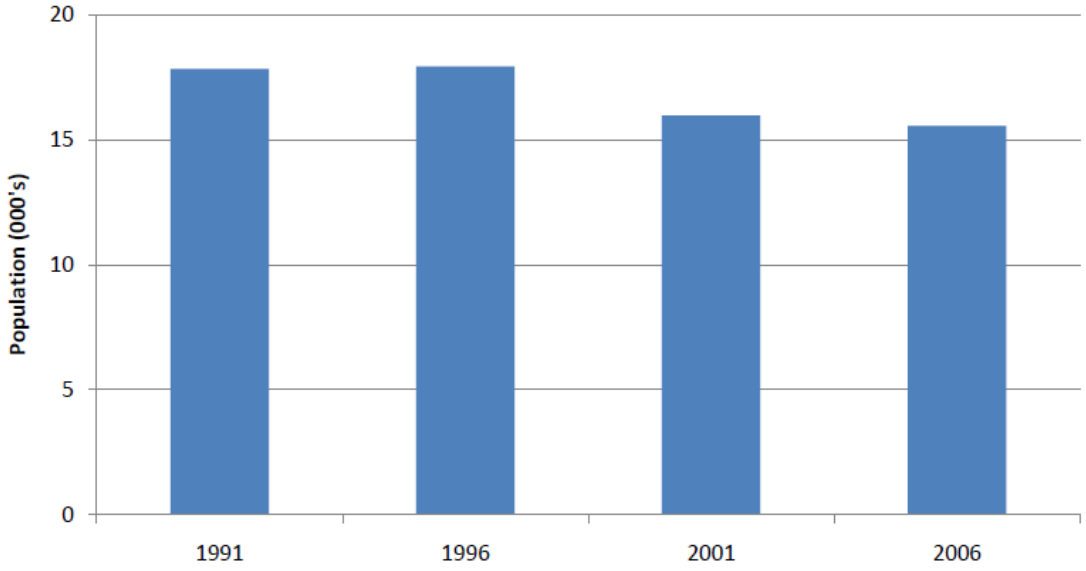
The St. John's area has experienced substantial economic growth in recent years. Projects completed in the last several years include the new Janeway Hospital, the civic centre and convention facility, The Rooms, the INCO Innovation Centre at Memorial University, and construction of the Outer Ring Road. The St. John's Airport also underwent a $48 million redevelopment, there was expansion and redevelopment at the St. John's Dockyard (NEWDOCK), the St. John's Port Authority completed a $13 million upgrade of Pier 17, the A. Harvey & Co. wharf (Piers 15 and 16) was upgraded and in 2005 the Bay Bulls Marine Terminal was completed. Other ongoing developments include the construction of a primary sewage treatment plant to serve St. John's, Mount Pearl and part of Paradise.

Recent developments in other sectors, particularly the technology sector, continue to contribute to local economic growth. For example, the National Research Council opened the Industrial Partnership Facility in October 2003. Located at the NRC Institute for Ocean Technology on the campus of Memorial University, this $5.7 million, 3,500 sq. m. facility is designed to help entrepreneurs develop, test and commercialize new ocean technologies (NRC, 2003). Between 2005 and 2007, the Institute invested a further $2.8 million for the improvement of petroleum industry-related infrastructure (PRAC, 2009).

The current recession did not affect the St. John's area economy as much as that of other jurisdictions in Canada. While the GDP in the St. John's area rises and falls with oil production, trends in other economic indicators are still performing well above those of most other Canadian CMAs. For example, the St. John's CMA ranked third in terms of employment growth among 27 Canadian CMAs in 2008 (NLDF, 2009). In 2009, while several private sector industries experienced real GDP declines, the CMA as a whole fared well relative to other regions of the province and the country (NLDF and the City of St. John's, 2010a). With an increase of 5.8%, St. John's saw the greatest growth in GDP of any Canadian census metropolitan area in 2010, due to gains in offshore oil production as well as growth in construction — particularly the start of work on the Long Harbour nickel processing plant (D. MacEachern, 2011).

3.3 Isthmus of Avalon Area

The economy of the Isthmus of Avalon area has not fared as well as that of the St. John's area, but its relatively diverse economy and the benefits of the offshore petroleum industry have sheltered it from much of the disruption experienced elsewhere in the Province. Population changes between 1991 and 2006 for the Isthmus of Avalon area are shown in Figure 3.3-1. The major change in the period was between 1996 and 2001 when there was an 11% decrease. For the period 2001—2006 the population decline continued, but at a slower rate.



1Population Change.
Source: Statistics Canada, 1991; 1996; 2001; 2006a.

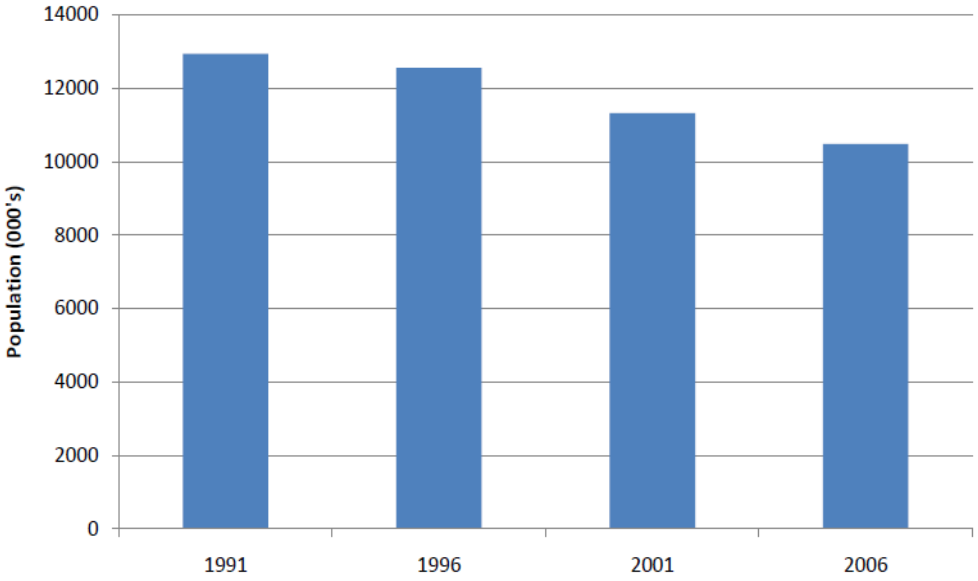
Figure 3.3-1: Population, Isthmus of Avalon Area, 1991 to 2006

Since 1990, the Isthmus area has seen the construction of the Bull Arm facility and its use for the Hibernia, Terra Nova and White Rose projects. The Isthmus has also seen the construction and subsequent expansion of the Newfoundland Transshipment Terminal, at Whiffen Head. Construction is now underway of the Vale nickel processing plant at Long Harbour which will provide several thousand jobs during construction and a permanent workforce of 450 during operations. Construction of the processing plant began in April 2009 and is expected to be completed in February 2013 (Vale Website, 2010).

3.4 Marystown Area

The population of the Marystown area declined in the 1991—1996 period by 3%, a further 9.8% in the 1996—2001 period, and by 7.4% between 2001 and 2006 (Figure 3.4-1). The economic fortunes of the area primarily reflect what has been happening in the fishery and at the shipyard. Hibernia-related work was of importance to the area between 1993 and 1995 as was subsequent work constructing tugs for the Newfoundland Transshipment Terminal. Terra Nova provided work for the shipyard in the 1990s and in 2005 the SeaRose FPSO was outfitted at the yard as part of the White Rose Project. In 2006 and 2007 the shipyard was involved in the refit of the Terra Nova FPSO and in repairing the Eirik Raude, a mobile offshore drilling unit. In June 2009 the shipyard was awarded a $50.5m contract by the Province to build two replacement vessels for the coastal ferry service. The first of these ferries is

expected to enter service in March 2011 and the second should be completed in April 2011(NLDTW, 2011).



1 Population Change.
Source: Statistics Canada, 1991; 1996; 2001; 2006a.

Figure 3.4-1: Population, Marystown Area, 1991—2006

4 BUSINESS AND EMPLOYMENT

As outlined in Chapter 2, employment and business activities are valued by individuals who may benefit directly or indirectly from such things as work in its own right, changes in incomes and standards of living, and development of skills and expertise.

A new project such as Hebron will be beneficial insofar as more people will be employed and successive rounds of employee and business expenditures will generate employment and income multiplier effects in the local and provincial economies. Readers of this SEIS are referred to the Hebron Project Canada-Newfoundland and Labrador Benefits Plan for a more detailed description of the benefits principles respecting business and employment which will influence these effects and which reflect commitments made in the Hebron Benefits Agreement signed between the Hebron Project Co-venturers and the Government of Newfoundland and Labrador in 2008. To emphasize the importance of employment and business issues in particular, this section provides an overview assessment of the effects of the Project on the business and employment VEC.

The assessment approach comprises the components described in Chapter 2, namely a discussion of existing socio-economic conditions, including:

- The particular environmental assessment boundaries relevant to employment and business;
- Existing conditions with respect to each of these components;
- Potential project—environment interactions;
- Socio-economic effects assessment, including a discussion of socio-economic effects, including cumulative effects;
- Integrated residual socio-economic effects, including:
  - A summary of socio-economic effects and management initiatives to address potential effects;
  - A summary of residual socio-economic effects significance by project phase; and
- Monitoring and follow-up initiatives.

4.1 Existing Socio-economic Conditions

The boundaries described in Chapter 2 provide the basis for the assessment of business and employment. In the case of the St. John's, Isthmus of Avalon and Marystown areas, the focus is on communities within an easy commute range of the main possible Project-related workplaces. While some workers

may travel considerably greater distances, this primary commuting zone is assumed to have an approximate 50-km radius. It is further assumed that indirect and induced business opportunities will also be concentrated within these zones. As a result, the assessment uses baseline data related to census subdivision units that approximate this zone, or in the case of the St. John's area, the CMA.

While the Province is divided into a number of economic divisions, including the regional economic development board zones, none of these approximate or influence the distribution of business and employment in ways that would make alternative boundaries more appropriate.

4.1.1 Newfoundland and Labrador

Newfoundland and Labrador has undergone strong economic growth during the past decade. In 2008, the real GDP grew by an estimated 1.8% due to strong consumer and government spending. However, a decline in real exports, particularly in oil and mineral shipments, lead to a real GDP decline of 8.9% in 2009. Strong gains in disposable income, coupled with increased employment and high levels of consumer confidence led to real increases in retail sales of 7.7% in 2008 and 2.6% in 2009 and contributed to house sales and rising house prices (NLDF, 2007; 2009; 2010b).

After enduring the impacts of the global recession in 2009, economic growth resumed in Newfoundland and Labrador in 2010. Real GDP was expected to increase 5.4%, primarily due to higher investment spending related to major project development and increased mineral and oil production. Economic growth in Newfoundland and Labrador was projected to be the highest in the country in 2010 (NLDF, 2010a).

In general, labour markets have experienced a period of sustained growth since the structural adjustments of the early 1990s. Spending from the petroleum industry has brought substantial income to the Province between 2005 and 2007, totalling over $1 billion each year. More than 75% of all expenditures were associated with production activity. In 2008, these expenditures declined. There was also a decrease of 6.9% in offshore oil production due to a decline in production at Hibernia and Terra Nova (NLDF, 2009; PRAC, 2009).

Between 1996 and 2008, employment grew by 9.5% primarily due to gains in construction, public administration and other service industries (Figure 4.1-1). Employment declined by 2.5% in 2009 as a result of low levels of employment in many resource-based industries in the Province. The labour force increased from 231,700 in 1996 to 254,200 in 2009. Between 1996 and 2006, the unemployment rate declined significantly, from 19.1% to 14.8%. In 2008, the rate continued to decline and fell to 13.2%. Though still well above the national rate this was the lowest unemployment rate for the Province in over 30 years. In 2009, because of the economic downturn, the

unemployment rate increased again to 15.5% but fell to 13.6% in 2010 (NLDF, 2009; 2010b; 2011b). Employment growth in the past year has been strong enough to recoup losses recorded in 2009, marking the shortest employment recovery from a recession since at least the 1970s (NLDF, 2010c).

After riding a crest of investment spending that was augmented by strong growth of energy revenues, the Newfoundland and Labrador economy experienced a setback following the 2008 recession, but less than that experienced in many other areas. Despite robust growth of capital spending—49.4% between 2008 and 2009—plunging energy prices plus declining petroleum production caused the value of the Province's energy exports to drop by 36% and total manufacturing exports to fall by 29% over this same period. However, capital spending was forecast to increase by 23% in 2010, reflecting increased major project expenditures and the continuation of the government's infrastructure strategy (NLDF, 2010c).

Economic growth is expected to continue in 2011, fuelled largely by major project development. Construction of Vale's nickel processing plant at Long Harbour is expected to peak and other major projects, such as the Hibernia South Extension, the White Rose expansion fields, and IOC expansion in Labrador will also contribute to growth in 2011. Approval of other projects, such as the Lower Churchill hydroelectric generation project and the associated Labrador-Island Transmission Line project, would further add to this growth.

Investment is expected to increase by 25% to reach $7.8 billion in 2011, an unprecedented level and real GDP is forecast to increase by 5.4%. Other economic indicators such as employment, income and retail sales are also expected to post further growth (NLDF, 2010a).

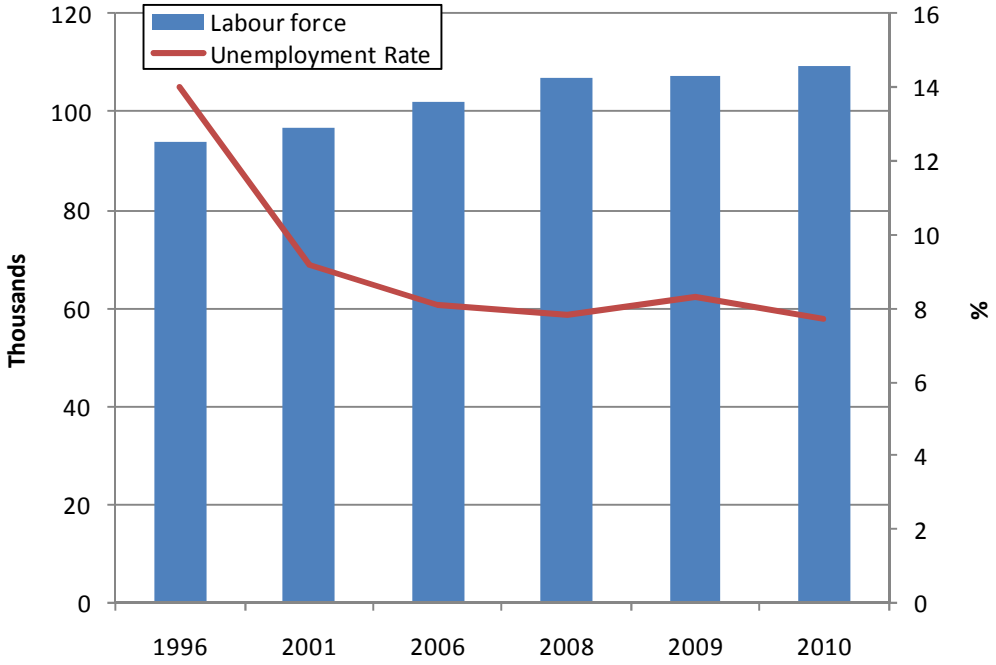
Source: NLDF, 2011b and NLDF Website, 2011

Figure 4.1-1: Labour Force, Newfoundland and Labrador 1991—2010

4.1.2 St. John's Area

The St John's area has both contributed to and benefited from the recent economic success enjoyed by the Province. From 2001 to 2006, the population in the St. John's CMA grew from 172,918 to 181,113, an increase of 4.7%. There has also been significant reduction in the area's unemployment rate. In 1996, the unemployment rate for the CMA was 14%. By 2001, the CMA unemployment rate had fallen to 9.2% and by 2006, it had dropped further to 8.1%. In 2009, the unemployment rate for the St. John's CMA rose slightly to 8.3% but in 2010, it fell again to 7.7% (NLDF Website, 2011).

In 1996, the labour force of the St. John's CMA was 93,700. By 2001, it had increased to 96,800 and by 2006 there had been an even more significant increase to 102,200 (Figure 4.1-2). The labour force again rose to 107,000 in 2008 and by 2010 it had increased to 109,300 (NLDF Website, 2011). These steep declines in the unemployment rate and increases in population and labour force reflect, in part, the important contribution the offshore petroleum industry has made to the St John's area economy.



Source: NLDF Website, 2011.

Figure 4.1-2: Labour Force, St. John's CMA 1991 to 2010

Since the late 1970s, St. John's has been the main location for the offshore petroleum industry's administrative, engineering, regulatory, training, supply base, air transportation and service activities. There has also been some fabrication work in St. John's. These activities are reflected in petroleum industry-related capital expenditures in the region. For example, a wide range of infrastructure has been built, including the Cougar helicopter terminal, the A. Harvey and Company offshore supply base, The Hibernia

Integrated Well Services shops and warehouse, the Hibernia training simulator, pipeyard and warehouse, the Halliburton Operations centre, the NEWDOCK offshore service, dockyard and fabrication centre, the Pennecon marine terminal at Bay Bulls and improvements at the St. John's International Airport.

In the education sector new oil-related infrastructure has included shop modernization at the College of the North Atlantic (CNA), upgrades to the Marine Institute's Centre for Marine Simulation and investments in new laboratory and testing facilities at Memorial University's Faculty of Engineering and Applied Science. The NRC's Institute for Ocean Technology has also added new research infrastructure (PRAC, 2003; 2005; 2009).

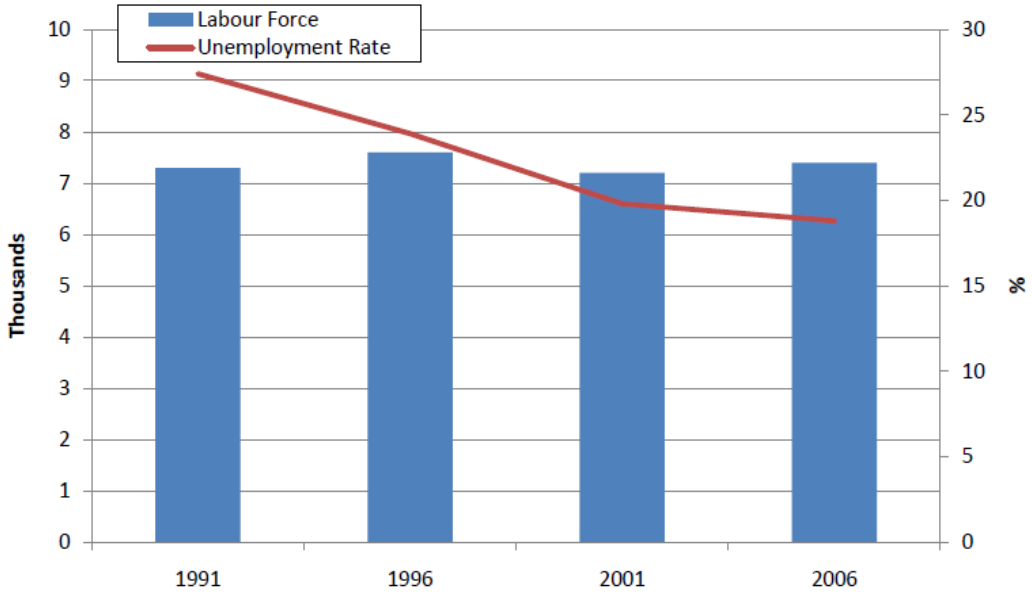
These facilities and other oil and gas related operations have benefited, and continue to benefit, a wide range of St John's area communities. They are major employers and generate significant business for companies that supply goods and services to them. They also make a significant contribution to the tax base of the municipalities within which they are located.

4.1.3 Isthmus of Avalon Area

The Isthmus of Avalon has had fluctuating economic fortunes over the years, in response to changing circumstances in the provincial economy particularly with respect to the fishery, and major industrial projects within and close-by the region. At the present time, the Come-by-Chance Refinery and the Newfoundland Transshipment Terminal are key contributors to the local economy.

A number of new projects have been proposed for the area, including a second refinery, an LNG Transshipment Terminal, a Nickel processing facility and an upgrade of the existing refinery. Of these, construction of the Vale facility to process Voisey's Bay nickel in Long Harbour is presently underway and repairs and some upgrading of the refinery have recently been completed. In 1991, the Isthmus area had a labour force of 7,350, of whom 2,017 (27.4%) were unemployed. By 1996, there had been an increase in the labour force to 7,615 and unemployment was down to 23.9%. By 2001, the labour force had decreased to 7,235 and the unemployment rate had declined to 19.8%. By 2006, the labour force had increased to 7,445 while the unemployment rate had further declined to 18.6% (Figure 4.1-3) (Statistics Canada, 1991; 1996; 2001; 2006a).

The Isthmus area has had a number of important involvements with the offshore petroleum industry over the last decade. It is the site of both the $470 million Bull Arm construction and fabrication facility and the $275 million Newfoundland Transshipment Terminal. Bull Arm saw most of the Newfoundland-based construction and fabrication activity on the Hibernia production platform, and employed, at peak, about 5,800 workers (HMDC, 1996).



Source: Statistics Canada, 1991; 1996; 2001; 2006a.

Figure 4.1-3: Labour Force, Isthmus of Avalon Area, 1991—2006

From 1999 to 2001 the facility was used for the fabrication and installation of many of the Terra Nova FPSO topsides components, and subsequently for the construction of two electrical room modules for the White Rose topsides. In 2005 the semi-submersible, Henry Goodrich, underwent a five-year fitness survey here and in 2006 an additional living quarters module for the Terra Nova FPSO was constructed at the site. In 2009, Bull Arm has also been used as a subsea test facility for White Rose, the refit location for the drill rig Grand Banks and the fabrication of the North Amethyst subsea manifold.

In August 2008, the transfer of the Bull Arm Fabrication Site to Nalcor Energy was announced. Nalcor is a provincial energy corporation that was created in 2007 following the publication of the government's long-term Energy Plan. The company has undertaken a due diligence review of the Bull Arm site to consider environmental remediation, site maintenance, and asset management. Nalcor is evaluating different operation models for the facility. The transfer of the company was completed in March 2009 (Nalcor Energy, 2008). Following an agreement signed in August 2008 the Project has the option to lease the Bull Arm site for construction of the GBS and other possible fabrication activities from 2011 to 2016.

The Newfoundland Transshipment Terminal is located on Placentia Bay, close to Arnold's Cove. The first two phases of the terminal, which provide sufficient capacity to handle Hibernia and Terra Nova production, cost approximately $300 million (excluding the construction of two tugs in Marystown). In 2002, a sixth tank was constructed. The Terminal itself currently employs 49 people and spends about $9.5 million annually on

goods, services and salaries from local companies and personnel (NOIA, 2009; G. Beresford, pers. comm.).

North Atlantic Refining, formerly a subsidiary of Harvest Energy which was sold to the Korea National Oil Corporation (KNOC) in December 2009, operates a 115,000 barrel per day refinery at Come-by-Chance. Completed in 1973, the refinery has undergone a series of upgrades at a cost of more than $850 million. These include the construction of a $23 million, 300,000-barrel butane storage facility and a $35 million diesel unit expansion, a $6 million gasoline unit upgrade, and a $15 million truck loading facility. The refinery employed 700 people in 2007. North Atlantic adds $160 million per year to the provincial economy, including $76 million in employee wages and benefits and $84 million in local business procurement (North Atlantic Refining Website, 2009). In January 2010 a fire resulted in the refinery being temporarily closed for repairs, but allowed maintenance programs and a turnaround scheduled for later in the year to be advanced.

Vale began construction of a $2 billion Hydromet Plant at Long Harbour to process nickel concentrate from its Voisey's Bay mine in April 2009. It is anticipated that 5,750 person-years of employment will be required for the construction phase. The commissioning and start-up are scheduled for 2013, with an expected permanent workforce of 450 (Vale Website, 2010).

4.1.4 Marystown Area

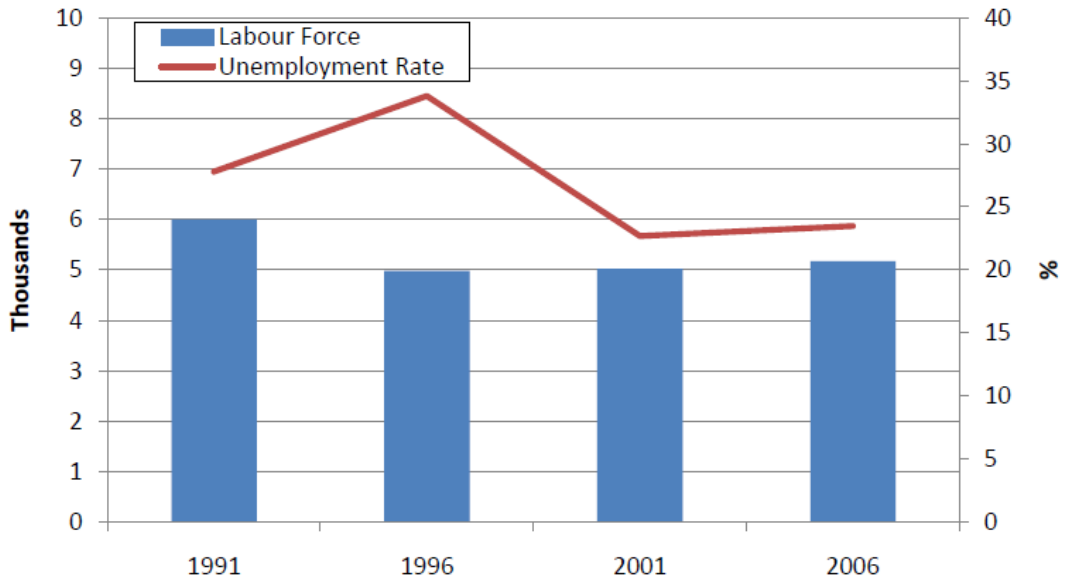
The Marystown area has also had fluctuating economic fortunes over the years. It has been highly dependent on fishing (including the trawler fishery), fish processing and the shipyard. The labour force in the area has fluctuated over time from 5,980 in 1991 to 4,980 in 1996 and back up to 5,170 in 2006. Unemployment rates have also been volatile and high, ranging from 23% in 1991 to 33.8% in 1996 and 23.5% in 2006 (Figure 4.1-4) (Statistics Canada, 1991; 1996; 2001; 2006a).

The Marystown Shipyard and Cow Head Fabrication Facility, now operated by Peter Kiewit Sons Co., is the largest shipbuilding and repair facility in the Province, and it has led to Marystown being involved in the Newfoundland and Labrador petroleum industry since its early years. The shipyard has long been the site of rig commissioning, decommissioning and maintenance activities. This led to the $40 million investment in the Cow Head Fabrication Facility in the early 1990s.

The shipyard, including the Cow Head facility, performed approximately $120 million worth of work on the Hibernia project between June 1993 and the end of 1995; this represented 80% to 85% of the company's throughput over the period. Specific projects included work on mooring pontoons, access systems and two supply vessels (HMDC, 1995). In the late 1990s the shipyard also constructed the tugs used by the Newfoundland Transshipment

Terminal and undertook fabrication tasks related to the Terra Nova development project.

In the spring of 2000 the yard undertook work on the Sedco 714 semi-submersible drilling rig and from 2002 to 2005 the shipyard and fabrication facility were the centre of the construction and installation of the $774 million White Rose FPSO topsides facilities (Kiewit Energy Canada website, n.d.). During that project peak employment reached 1,502 in August 2004.



Source: Statistics Canada, 1991; 1996; 2001; 2006a

Figure 4.1-4: Labour Force, Marystown Area, 1991—2006

In 2006 the shipyard was involved in the refit of the Terra Nova FPSO, with a 185-tonne turret cover fabricated at the site. In February 2007 the Eirik Raude semi-submersible underwent repairs at Marystown and in April of that year returned for its five-year re-certification.

In early 2009, there were 100 permanent employees at the two sites. Starting in the latter part of 2009, the provincial government contracted Kiewit to build two ferries at the Marystown facility. The construction should last for 15 months and both vessels should be complete in early 2011 (NLDTW, 2011). Construction of both projects will employ up to 400 people (G. Brenton pers. comm.; Power, 2010). In May 2010, the oil rig Henry Goodrich arrived at the Marystown Shipyard for its scheduled five-year refit.

In anticipation of the possible reactivation of the St Lawrence Fluorspar mine (see Section 4.3.1), the Town of Marystown and St. Lawrence are performing a study on the labour market in the Burin Peninsula. The aim of these studies is to assess whether or not there are enough qualified workers in the area to

fill the associated positions without disrupting the rest of the labour market [The Telegram, 2009; L. MacLeod, pers. comm.]. These research projects will highlight gaps in labour force for the Burin Peninsula area. The results will be useful input to the Project to help determine the availability of a local workforce and for local training institutions and recruiting agencies.

4.2 Project—Environment Interactions

The types of direct Project-business and employment Environment interactions that could be expected from the development of the Hebron oilfield are indicated in Table 4.2-1. Hebron will have a range of economic effects on Newfoundland and Labrador and Canada throughout the engineering, construction / installation and operations phases in particular, but also in terms of its cumulative effects in conjunction with other offshore and industrial projects. These effects will be felt in the Province as a whole[3], but will be concentrated in those areas that secure construction contracts, and the St John's area, which will be the base for operations.

Table 4.2-1: Project-environmental Effects Interaction Matrix: Business and Employment

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Engineering				
Design / Engineering of GBS	X			
Design / Engineering of Topsides	X			
Construction and Installation				
GBS Construction		X		
Topsides Fabrication / Outfitting	X	X	X	X
Fabrication of Other Components	X	X	X	X
Installation				
Operations				
Administration	X			
Supply Base / Warehousing	X			
Helicopter Transport	X			
Offshore Production / Marine Support	X			
Tanker Transport	X	X		
Decommissioning	X	X	X	
Past / Present / Future Projects				
Construction	X	X	X	X

[3] In addition to St. John's, the base of operations and those areas that secure specific construction contracts, EMCP has, for example, undertaken facility reviews of potential fabrication facilities elsewhere in the Province and has encouraged Vendor Registration from firms from throughout the Province as part of its approach to ensuring Project benefit opportunities to the province as a whole.

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Operations	X	X		X

Note:

[1] Newfoundland, excluding the St. John's, Isthmus and Marystown areas.

4.3 Socio-economic Effects

4.3.1 Labour Demand and Supply

Figure 4.3-1 illustrates the overall potential labour demand from the Project during the construction phase to 2017.

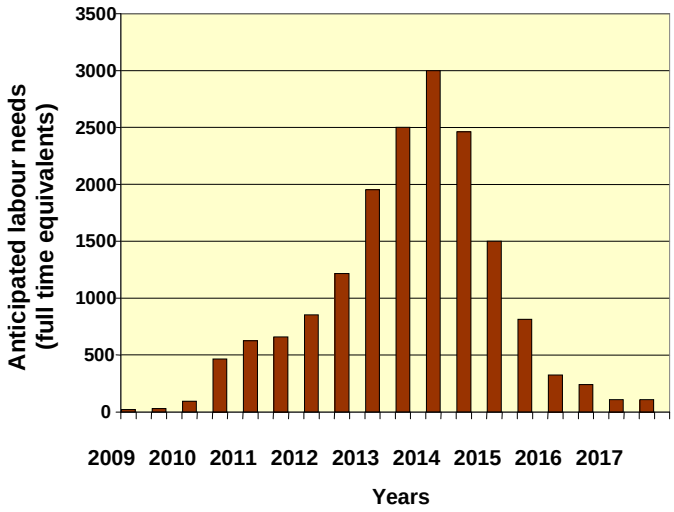


Figure 4.3-1: Anticipated Employment Requirements, Hebron Project, 2009—2017

Details of Project labour requirements are given in the Canada-Newfoundland and Labrador Benefits Plan, Section 4.2.5 and Appendix C. During construction the largest estimated trades labour requirements, in descending order are for:

- GBS concrete;
- Structural Trades;
- Project and Construction Management;
- Mechanical Trades;
- Piping Trades;
- Civil and Structural Engineering;
- Surface Protection; and
- Electricians.

In addition to these trades labour requirements project management will be required, including:

- Civil Management;
- General Management;
- Mechanical Management; and
- QA / QC Management.

The potential for Canadian and Newfoundland and Labrador involvement in Project construction and operations activity on a competitive basis is in part potentially constrained by labour availability. The provincial labour force is aging and the number of new entrants is declining primarily because of a declining birth rate. High levels of mobility and competition for labour from other projects both in the Province and elsewhere in Canada contribute to a level of uncertainty as to the availability of skilled trades personnel and engineers from Newfoundland and Labrador for the Project. Analysis of the labour supply (SCI 2010) for each of the key trades required for the project suggests that there could be shortages of labour at peak demand in the following trades:

- Mechanical;
- Construction Inspectors;
- HVAC;
- Instrumentation / Telecommunications; and
- Project and Construction Management.

In the engineering disciplines shortages at peak demand might be expected in:

- Piping Engineering;
- Civil and Structural Engineering;
- Mechanical Engineering; and
- Materials Engineering.

The business and employment effects of the Project will depend not only on the existing business capabilities and labour force and how they might be increased or enhanced, but also other, cumulative, demands on them. Thus, for example, other major construction projects may draw on the same industrial capacity and workers as will Hebron.

EMCP commissioned a study to evaluate, amongst other things, potential competing projects coinciding with Hebron. The main such projects included

the Vale Commercial Nickel Processing Facility, the Nalcor Lower Churchill Project, Aurora Energy's Labrador Uranium Mine, the KNOC Come by Chance Refinery Expansion, and Government Infrastructure Stimulus Programs (SCI 2010). To place other projects in temporal context, engineering work for Hebron was initiated in 2009 and will continue through 2012. Construction will begin in 2012 and peak in 2014. First oil is expected in late 2016 or 2017.

The potential interactions between each of these potential projects and Hebron are determined by the project characteristics including their timing:

- Lower Churchill Falls Hydroelectric Development: This $6-7 billion project originally involved the construction of hydroelectric generation facilities, reservoirs and dams at Gull Island and Muskrat Falls. Transmission lines of more than 260 km were planned to connect Gull Island, Muskrat Falls and Churchill Falls. The construction phase of the project was to occur over 10 years. It would employ, at peak in the sixth year of construction, an estimated 2,000 workers (SCI 2010). The construction phase would involve three types of activity: reservoir preparation, dam construction and installation of generation equipment. Dam construction will require concrete construction equipment and skills that could be similar to those required for Hebron. Likewise other work might draw on common industrial and labour capacity to that required for Hebron. In late 2010 plans for the project were revised. The Muskrat Falls component will be developed first, with the Gull Island component to follow at an as yet unspecified time. These changes notwithstanding, under the present schedule the construction phase of the two projects could overlap. The start of construction of Hebron is scheduled for 2012, with its peak occurring in 2014. If the Lower Churchill project were to start in 2011, peak employment would be expected in 2016.
- Vale Commercial Nickel Processing Facility: Vale commenced the construction of the $2 billion plant in June 2009. A total workforce of 5,750 person-years is expected to be required during the construction phase with a peak of over 2000 in mid-2011 (SCI 2010). Once commissioned the plant is expected to employ a permanent workforce of 450 (Vale Website, 2010). Project overlap is therefore expected to be minimal and the demand for permanent process workers is not expected to have a significant impact on labour demand for the Project. However, unless appropriate management strategies are adopted these two projects could place significant burdens on local infrastructure and services in the Isthmus area.
- KNOC Come-by-Chance Refinery Expansion: North Atlantic Refining began upgrading the Come-by-Chance refinery in May 2009. The former owners, Harvest Energy Trust, had planned a $2 billion expansion of the refinery to increase its capacity. The longer-term plans of the current

owner, KNOC, are unknown, but the company has indicated that it expects to spend $150 million at the refinery this year on capital projects to boost output, improve reliability and cut operating costs. Should additional upgrades or further expansion proceed, activity will need to be monitored as it could potentially impact on labour availability for Hebron if the two projects were to be in construction simultaneously.

- Hibernia Southern Extension: Development of the Hibernia Southern Extension, an estimated 223 million barrels of recoverable oil, was announced in June 2009. The oil will be extracted using subsea tie-backs connected to Hibernia's existing gravity base structure platform. The development of the Hibernia Southern Extension could expand the life of Hibernia to approximately 2033, contributing to $13 billion of revenues for the province (APEC, 2010; Brautigam, 2009). Based on the current project schedule there should be no impact on the Project (SCI 2010).
- Aurora Energy—The Michelin Project: This is a uranium project in coastal Labrador to mine the Michelin and Jacques Lake deposits and construct a mill. If it were to proceed it would take 3-4 years for construction and generate 10,700 person years of employment. In 2008 the Nunatsiavut Government established a three-year moratorium on uranium mining on Labrador Inuit lands. If the moratorium was to be lifted and the project sanctioned, activity would occur on the same timeline as the Project (SCI 2010).
- St. Lawrence Fluorspar Mine Reactivation: Canada Fluorspar Inc., through its subsidiary Canada Fluorspar (NL) Inc. is seeking to reactivate the St. Lawrence fluorspar mine located on the southern tip of the Burin Peninsula. If the project proceeds, the mine would be expected to be in full operation within a year. The project is expected to generate 300 jobs during construction and 178 jobs during operations. If the mine reactivation were to commence in 2011 it would mean that there should be no conflict with the Project (SCI 2010).
- Iron Ore Company of Canada (IOC) mine expansion: In May 2010 IOC announced that it would be restarting its expansion plan at its facilities in Labrador. The expansion was originally announced in 2007 but postponed in 2008 because of the global recession. Since then markets for iron ore in Europe and Asia have rebounded. The plan potentially involves three phases to increase production from 18 million tones per annum (mtpa) to 26 mtpa. So far only the first phase has been approved that will increase production to 22 mtpa. Project cost is estimated at $539 million and construction will run from 2010 to 2013. Demand for labour for this phase of the mine expansion project will be declining as that for Hebron is increasing, however, decisions about additional expansion could increase labour demand conflict with the Project (APEC 2010).

- Government Fiscal Stimulus: In February 2009, in response to the global economic crisis, the Government of Newfoundland and Labrador announced that it would increase infrastructure spending to approximately $800 million in 2009-2010 and in excess of $4 billion over the next several years. Spending is being directed towards transportation, education, healthcare, municipal, public housing and justice infrastructure. From a timing perspective, most, if not all of these projects will be completed before the onset of labour requirements for the Project (SCI 2010).

Much of the anticipated investment in major projects in Atlantic Canada in the 2010—2014 period is expected to occur in Newfoundland and Labrador. The Atlantic Provinces Economic Council Major Projects Inventory suggests that 47% of total major project spending in 2011 is expected to occur in this province (APEC, 2010). Higher spending on the $3-billion Vale nickel processing facility, the Hibernia Southern Extension and an increase in mining investment will push annual major project investment to over $4 billion in 2011. Over the next several years much of the potential regional competition for labour could therefore come from other projects in the Province, however, other projects in the Maritimes that require the same labour skill sets and services at the same time as Hebron could provide additional competition.

Oil sands projects can also affect labour availability in Newfoundland and Labrador as many provincial residents have either migrated to Alberta or commute there for work. The aging of the construction work force across Canada means that the national supply of trade workers is declining as workers retire. New training programs, continuation in the workforce of older workers, hiring of temporary foreign workers and other similar measures may help to address future labour supply issues, but as the economy rebounds from the 2008 recession and new projects come on stream there is likely to be increased national competition for the available labour which could also affect the supply of labour for projects within Newfoundland and Labrador.

4.3.2 Canada—Newfoundland and Labrador Benefits Planning

The Project will have a range of positive economic effects throughout all of its activity phases from the comparatively short-term initial design activity, through construction and field development through the longer-term operations phase. (For further details concerning benefits to the Province see the Hebron Project Canada-Newfoundland and Labrador Benefits Plan.)

Benefits planning for the Project is based on:

- Legislative requirements set out under the *Atlantic Accord Implementation Acts* (C-NAAIA 1987; C-NLAAINLA 1990) and the C-NLOPB Benefits Plan Guidelines (C-NLOPB, 2006b);

- A *Benefits Agreement* made between the Hebron Project owners and the Government of Newfoundland and Labrador (Government of Newfoundland and Labrador et al. 2008); and
- ExxonMobil policies, principles, processes and programs, including those described in ExxonMobil's *Upstream National Content—Guidelines, Strategies and Best Practices* (ExxonMobil 2008).

Both the Atlantic Accord Implementation Acts and the Benefits Agreement are premised on the objective of ensuring that the development of Hebron will make a lasting contribution to the sustainable development of Canada and particularly the Province of Newfoundland and Labrador. This objective is one of EMCP's business drivers and is a significant component of corporate citizenship efforts.

The benefits commitments are focused in the areas of ensuring full and fair opportunity to Canadian companies for provision of goods and services, employment and training opportunities for Canadian workers with first consideration for Newfoundland and Labrador residents and businesses, research and development, gender equity and diversity. Both the Accord Acts and the Benefits Agreement require specific commitments to efforts that will enhance local participation in the Project.

The Canada-Newfoundland and Labrador Benefits Plan is a joint federal / provincial statutory requirement administered by the C-NLOPB. The Benefits Plan does not mandate specific work commitments but requires estimates of local and Canadian content. The Benefits Plan must also address Research and Development plans and expenditures.

The Benefits Agreement (Government of Newfoundland and Labrador et al. 2008) is a commercial agreement between the Hebron Project owners and the Province of Newfoundland and Labrador. The Agreement specifies work commitments within the province and requires establishment of Gender Equity and Diversity Plans and a commitment to research and development.

The benefits strategy for the Project is based on the following benefits principles:

- Meeting local benefits commitments while maintaining the highest levels of safety, environmental performance, efficiency and integrity of Hebron operations;
- Selecting contractors and suppliers that work diligently with EMCP to deliver benefits to the people of the Province;
- Promoting the development of local skills and industry capability that leaves a lasting legacy for the communities in which the Project operates and for the Province;

- Delivering execution certainty so that the Project delivers best-in-class return on investment for stakeholders, including the Province of Newfoundland and Labrador; and
- Working collaboratively with industry, government, academic and training institutions, community and other stakeholder groups for the effective delivery of benefits.

The Benefits Plan will ensure that the Project meets its commitments under the Benefits Agreement. Meeting the commitments under the Benefits Agreement and the Atlantic Accord Acts is a key goal for the Hebron Project (Section 8.2).

4.3.3 Regional Socio-economic Effects

4.3.3.1 Canada

The Project will bring benefits to Newfoundlanders, Labradorians and other Canadians. While first consideration is given to goods manufactured in and services provided from within the Province that are competitive in terms of fair market price, quality and delivery, the benefits plan also seeks to ensure that companies in other parts of Canada have full and fair opportunity to compete for Hebron work. While certain of the required goods and services are anticipated to be available from within Newfoundland and Labrador, the majority of the requirements will be manufactured outside Canada (see also the discussion in the benefits plan, Section 4.2). This includes power generation, utility, process and drilling equipment, and bulk materials. While many of these requirements may also be sourced outside Canada, the Project will nevertheless present other Canadian firms with manufacturing, and supply and service opportunities, the actual level of provincial and Canadian involvement in the procurement of goods and service depending on the bidding competitiveness of the local and national industry.

Similarly, while Newfoundlanders and Labradorians will receive first consideration for training and employment on the Project, not all positions may be filled by residents of the Province which will offer opportunities to other Canadians.

As discussed above in Section 4.3.1, there are expected to be shortages of labour in a number of trades and engineering categories at peak demand during the Project construction phase. While the benefits plan will seek to facilitate the delivery of training programs to Newfoundlanders and Labradorians, it may not be possible to meet Project staffing needs locally, in which case there will be employment opportunities for other Canadians.

Canada will also benefit from the Project in a variety of other ways. For example:

- Through capital spending and employment the Project will provide direct and indirect benefits to the Canadian economy;
- The export of petroleum has a positive effect on Canada's balance of trade which helps to offset spending on imports;
- Experience and expertise gained by Canadian companies and individuals from the Project will contribute to making Canada a leader in the international petroleum industry; and
- The federal government will benefit from taxes on property, sales, corporate and personal incomes.

4.3.3.2 Newfoundland and Labrador

Based on the principles, policies and procedures of the benefits plan the Province will be the principal beneficiary of the Project in terms of its economic, employment and business effects. Potential employment effects in terms of estimated required person-hours by trade or engineering discipline for the construction phase are outlined in Section 4.3.1 and the Canada-Newfoundland and Labrador Benefits Plan, Section 4.2.5.

There will also be other demands on infrastructure and labour required for operations. Labour will be required on the platform, on tankers, support vessels and onshore in various support activities. There will be approximately 230 offshore operations positions, requiring approximately 460 personnel based on the offshore rotation requirements. Requirements for tanker crew and onshore and support workers have not yet been finalized, but based on direct employment on the three existing offshore projects (C-NLOPB, 2010a), between 72 and 150 tanker crew and 479-531 onshore and support workers may be required. Based on experience with these other offshore projects, it is anticipated that the great majority of labour requirements for the Project will be met using Newfoundland and Labrador residents.

There is a high level of awareness, within the federal government, provincial government, industry, and training institutions of the need to plan and prepare for future labour requirements for all Project phases. To this end a number of training related reports have been prepared including, the Strategic Human Resources Study of the Upstream Petroleum Industry: The Decade Ahead (Petroleum Human Resources Council of Canada, 2003) and more recently the Atlantic Canada Offshore Petroleum Industry Standard Practice for the Training and Qualifications of Personnel (CAPP, 2008).

In response to these requirements, Memorial University of Newfoundland, the Marine Institute, the College of the North Atlantic and private training institutions offer a range of professional and technical training programs. These include some new, industry-specific programs, while other existing programs have benefited from increased enrolment as people prepare for

possible industry-related employment. These are discussed in more detail in Section 5.1.3.

The Benefits Agreement signed by the Hebron Project owners and the Government of Newfoundland and Labrador identifies specific and significant commitments for Project work in the province. Subject to certain capacity considerations, Hebron Project business opportunities in the Province are primarily associated with:

- Front-end engineering and design (FEED) and other detailed design requirements;
- GBS construction;
- Fabrication, assembly and integration of the drilling support module, drilling equipment set, living quarters module, helideck, flare boom and lifeboat structures; assembly of the offshore loading system; and
- Hook-up, commissioning, mating and offshore installation.

As discussed in Section 4.3.2, and as part of the benefits plan, first consideration will be given to Newfoundland and Labrador companies to produce these components.

Indirect benefits will also be generated through the supply of goods and services to the Project. For example, Hebron, together with any potential field developments, may share shore base facilities and related industrial support. Such demand provides long-term opportunities, justifying investments in both infrastructure and training. In terms of infrastructure, for example, both the St. John's Port Authority and St. John's International Airport Authority have recently expanded facilities in advance of new oil-related demand, there are new supply and service base options in Bay Bulls, and St. John's, Mount Pearl and Paradise are actively responding to potential further demand for industrial space. (These issues are considered in greater detail in Chapter 6.)

In addition, there could be important tertiary, or induced multiplier effects. A number of petroleum industry impacts reports (PRAC, 2003; 2005; 2009) have demonstrated that the industry as a whole has made an important contribution to the provincial economy. Over the 1999 to 2007 period, for example, the petroleum sector represented a minimum estimated annual 4.0% of total provincial personal incomes, 4.0% of total disposable income, 4.0% of total retail sales and 3.6% of housing starts (PRAC, 2009). Data from earlier studies (PRAC, 2003; 2005) indicate similar contributions through the current decade.

A 1996 survey of personal expenditures (Community Resource Services 1996) of a sample (n=287) of Hibernia project workers indicated that of a total of $8.5 million spent since the respondents had started work on the project, $7.5 million had been on major items such as a house, a cabin or land, cars

or trucks, recreational vehicles, household furnishings and equipment or tools.

In the 12 months prior to the survey, of a total expenditure of $3.6 million by the respondents, $1.2 million was invested in registered retirement and savings programs, $0.9 million on automobile expenses, $0.5 million on clothing purchases, and $0.3 million on each of tourism and recreational activities (skiing, fishing and golf in particular).

Weekly expenditures for the sample group totalled approximately $40,000 of which $27,600 was spent on food and drink at local restaurants and bars. While the sampling methodology and sample size do not allow these expenditures to be projected to the total workforce level, the survey results indicate the types of expenditures made and their potential importance of these project spin-off effects on the provincial and local economies. While the labour force required for Hebron will be significantly fewer in number than that for Hibernia, similar types of expenditures might be expected with similar benefits to local businesses.

There has been very little data compiled recently to measure the local effects of the industry, but in 2003, 18 of the larger petroleum-related companies occupied premises in St. John's with a combined assessed value of $50.8 million which yielded $1.85 million or 6% of the City's total business realty and occupation tax revenue. In the same year there were 95 petroleum-related businesses in Mount Pearl with an assessed value of $40 million which generated $1.3 million (7%) of that city's business taxes. Likewise there were 14 businesses in the same sector in Paradise which generated $155,000 (3%) of that community's business and property taxes (PRAC, 2003). While there are no data to demonstrate changes in recent years, the industry presence in the St. John's area has continued to increase and total tax revenues generated are likely to be higher than in 2003.

The petroleum sector is also having a transformative effect to which the Project will further contribute. New company capabilities and ambitions being created by offshore oil activity are not just applicable to the offshore petroleum industry or limited only to Newfoundland and Labrador or Canada. Similarly, large numbers of Newfoundlanders and Labradorians have developed skills and capabilities that broaden their prospects and horizons. These projects have made these firms and individuals highly competitive and enabled them to win other oil work and employment on projects in other industries, locally, nationally or internationally. Greater competitiveness, experience, increased entrepreneurship, increased confidence in local abilities, and similar changes all contribute to a 'snowball' process of cumulative economic growth and development that will help grow and diversify the local economy. As such, the industry is effecting changes beyond (and which will outlast) the current offshore projects.

Similarly, the availability of new petroleum industry-related industrial infrastructure is increasing the likelihood of additional Newfoundland and Labrador benefits from subsequent offshore petroleum projects. The new petroleum industry-related research, development, education and training infrastructure is also creating a centre of excellence and learning in this Province in a range of marine and engineering-related areas. Again, while put in place to support local oil activity, these facilities are increasingly being used to undertake work for clients outside of Newfoundland and Labrador and outside the petroleum industry, further developing and diversifying the provincial economy.

The Project will further contribute to this growing and increasingly internationally competitive industry, and hence, to the future development and diversification and sustainability of the Newfoundland and Labrador economy.

The Project does have the potential to conflict with commercial fishing activity, particularly in the event of an oil spill. These issues are considered in further detail in the Hebron Comprehensive Study Report (EMCP, 2010). The findings in the CSR indicate that with the proposed mitigation measures in place, the predicted residual adverse socio-economic effects from all Project phases are not significant. An accidental spill could temporarily limit access to fishing grounds, cause damage to fishing gear or result in a negative effect on the marketability of fish products and to address these matters a gear compensation program and fisheries compensation plan will be developed. Companies drilling in Canada's offshore areas are responsible for preventing, mitigating and managing oil spills from their operations, including third party losses or damages.

To reduce the potential of cumulative environmental effects on commercial fisheries, EMCP supports a comprehensive and cooperative inter-industry approach for the management of all vessel traffic within the Jeanne d'Arc Basin area. One of the prime objectives would be to improve and enhance the offshore operating environment for both industries. EMCP will commit resources to this process, and will work with *One Ocean* to encourage and secure the participation of all relevant industry stakeholders and agencies. With these protocols in place for current and future petroleum projects in the region, potential adverse economic effects can be minimized and any anticipated adverse cumulative environmental effects will be not significant.

4.3.3.3 St. John's Area

During the development phase of the Project, the St John's area will see administrative, engineering, training, regulatory, and supply and service activity and their associated multiplier effects. This work will have a wide range of positive economic effects, similar to those experienced during development phases of Hibernia, Terra Nova and White Rose. The Project will provide considerable opportunities for local businesses. There may also

be some fabrication activity. For example, St. John's could be the location of work on facility assemblies such as pilings and offshore loading system components, depending on the success of local companies in bidding for such work.

During the estimated 30 plus years of the operational life of the field, St. John's will continue to be the administrative, engineering, training, regulatory and supply and service centre for the Project. The economic effects will, like those associated with other offshore projects, be wide-ranging, comparable in scale and almost entirely beneficial.

Project development and production activity, and associated indirect and induced business and employment effects, will have an important beneficial effect on the St John's area economy and add to the contribution that Hibernia, Terra Nova, White Rose and the petroleum industry generally, is already making to the region. Any cumulative business and employment effects arising are viewed as positive.

4.3.3.4 Isthmus of Avalon Area

The Bull Arm site in Trinity Bay was originally developed as the construction and fabrication facility for the Hibernia project. Since then it has been used for fabrication of topside modules and components for the Terra Nova and White Rose projects, and it was the location of hook-up and commissioning activity for Terra Nova. The site will be used for the construction of the GBS and a variety of topsides related construction, fabrication, assembly and hook-up activities, similar in nature to that for Hibernia. Given the proposed design of the Project, employment requirements (estimated peak of about 3,000) would be significantly less than Hibernia (5,700), but larger than Terra Nova (1,850).

There may also be local business and employment benefits as a result of Project operations.

4.3.3.5 Marystown Area

The Marystown Shipyard has a long history of work in the offshore petroleum industry: it had a major role in the White Rose FPSO project (2003—2005). It has built a number of components for other offshore development projects, and has worked on rigs involved in exploration and production drilling since the 1980s. The Project could also positively affect the area. The amount of Hebron-related work, and hence the local business and employment effects, is dependent on the shipyard's success in competitively bidding for Project work. Any such work will provide direct and spin-off benefits to the local economy and reinforce the shipyard's position as an important offshore petroleum industry facility.

Any cumulative effects will depend on other work that may be ongoing at the same time. The shipyard and Cow Head facility capacity is well understood,

and should other projects be planned concurrent with any potential Hebron-related work, the available capacity will be considered. From the perspective of the shipyard's owner, local workers, and the local community, any likely cumulative effects would be beneficial rather than adverse.

4.4 Integrated Residual Socio-economic Effects

The types of potential effects by Project phase, the types of effects management actions that are appropriate, and potential outcomes against the criteria discussed in Chapter 2 are summarized in Table 4.5-1. For those Project activities and other events where substantial levels of business activity and new employment can be expected, the outcomes will be positive for the economy as a whole, the specific regions, and the workers and businesses involved. No adverse effects associated with Project employment are anticipated and no mitigative measures to counter any potential adverse effects are considered necessary. Rather, EMCP's Canada-Newfoundland and Labrador Benefits approach should enhance employment and business benefits.

As discussed in Section 4.3 and in the Canada-Newfoundland and Labrador Benefits Plan efforts will be made to facilitate Project benefits opportunities to the Province, including providing first consideration to Newfoundlanders and Labradorians for employment. In the event that qualified workers are not available because of their employment on other projects, and training for particular trades and positions is not feasible, then some labour would have to be accessed from elsewhere.

Cumulative socio-economic effects (after any mitigation and based on the criteria outlined in Chapter 2) are summarized in Table 4.5-2. The Project is expected to add further business and employment benefits to all regions and the Province as a whole. No significant adverse effects are predicted.

4.5 Monitoring and Follow-up

EMCP will undertake monitoring and reporting of Canada-Newfoundland and Labrador benefits commitments as per the monitoring requirements of the C-NLOPB. To achieve that, the effects of the Project on business and employment will be monitored for the duration of the Project. Further details about the monitoring and reporting of procurement decisions and expenditure and employment levels are provided in the Canada-Newfoundland and Labrador Benefits Plan. As Project and associated business and employment are of particular interest to Project Area communities the information will be summarized and provided to the communities.

During consultations with communities in 2009, as input to the development of the SEIS, community members strongly encouraged EMCP to continue to actively engage with them, providing information on Project plans and

activities as early as possible. Early engagement will enable communities to work with EMCP to identify benefits opportunities and to manage any potential adverse effects. Building a sustainable relationship with the community is a commitment of EMCP's, stated consistently in public presentations and in the SEIS, Chapter 7—Sustainable Development. EMCP will continue to integrate the community's perspectives into the Project throughout its lifetime.

Table 4.5-1: Valued Environmental Component: Business and Employment

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Reversibility	Socio-economic Context
Engineering							
Design / Engineering of GBS	Increased business and employment (P)	Implementation of C-N Benefits Plan	2-3	2	1 / 1	R	2
Design / Engineering of Topsides	Increased business and employment (P)	Implementation of C-N Benefits Plan	2-3	2	1 / 1	R	2
Construction							
Construction / Project Management of GBS	Increased business and employment (P)	Implementation of C-N Benefits Plan	2	2-3	1 / 1	R	2
Fabrication of Topsides components	Increased business and employment (P)	Implementation of C-N Benefits Plan	2	2-3	1 / 1	R	2
Operations							
Offshore production / Support / service	Increased business and employment (P)	Implementation of C-N Benefits Plan	1	2	3 / 3	R	2
Decommissioning							
Offshore decommissioning / support	Loss / Increase in business and employment (A / P)	Exit strategy / Implementation of C-N Benefits Plan	1	2	4 / 1	R	2
Past / Present / Future Projects							
Construction	Increased business and employment (P)	Implementation of C-N Benefits Plan	3	2-3	1 / 2	R	2
Operations	Increased business and employment (P)	Implementation of C-N Benefits Plan	1	2-3	3 / 3	R	2

Key:

Magnitude:
1 = Low: within current capacity, standard or threshold
2 = Medium: approaches current capacity
3 = High: exceeds current capacity

Duration:
1 = Construction only
2 = Operations only
3 = Life of project
4 = Decommissioning only

Socio-economic Context:
1 = Area has no previous experience with offshore development
2 = Area has previous experience with offshore development

Geographic Extent:
1 = Individual Community
2 = Regional Study Area
3 = Province
N / A = Not Applicable

Frequency:
1 = Single occurrence
2 = Occasional occurrence
3 = Continuous

Reversibility:
R = Reversible
I = Irreversible

N B: Assessment criteria are defined in Section 2.2.8; All Development Drilling is included in Operations

Table 4.5-2: Residual Socio-economic Effects Summary Matrix: Business and Employment

Valued Environmental Component: Employment and Business				
Phase	**Residual Environmental Effects Rating, Including Cumulative Socio-economic Effects[1]**	**Level of Confidence**	**Likelihood**	
			Probability of Occurrence	**Scientific Certainty**
Engineering	P	3	3	3
Construction	P	3	3	3
Operations	P	3	3	3
Decommissioning	P / S	3	3	3
Project Overall	P	3	3	3

Key:

Residual Socio-economic Effects Rating:

S = Significant Adverse Effect

NS = Not-significant Adverse Effect

P = Positive Effect

Level of Confidence:

1 = Low level of confidence

2 = Medium level of confidence

3 = High level of confidence

Probability of Occurrence: (based on professional judgement)

1 = Low probability of occurrence

2 = Medium probability of occurrence

3 = High probability of occurrence

N / A = Not Applicable

Scientific Certainty: (based on scientific information, statistical analysis or professional judgement)

1 = Low level of confidence

2 = Medium level of confidence

3 = High level of confidence

[1] As determined in consideration of established residual socio-economic effects rating criteria

5 COMMUNITY SOCIAL INFRASTRUCTURE AND SERVICES

Community infrastructure and services are valued by residents in that they contribute to their standard of living and quality of life. This section addresses the potential effects of the Project on community social infrastructure and services, focusing on education, health, security (policing and fire protection) and recreation.

In this chapter, system capacity is adopted as the benchmark against which Project-related changes are evaluated to determine whether they are significant. The Project will generate jobs and business activity that, in turn, will create additional income and taxes. At the same time, it may create increased demands for some services and on some infrastructure. While in some cases increased demands will have positive effects, for example, by generating increased user-pay for underused services and facilities, in other cases they may be adverse, increasing demand on limited resources.

The implications of these changes are largely a function of the existing supply-demand situation for particular services and infrastructure at particular locations. If the supply cannot meet current demands, in terms of the quantity and quality of service that have come to be expected, then any incremental effect attributable to the Project will only exacerbate the situation. If a Project-related change results in current system capacity being exceeded (implying that additional capacity or other system changes are required in order to maintain current levels of service), then the effect is considered adverse and significant. Alternatively, if there is unused or underused capacity associated with a service or facility, and the incremental change resulting from the Project does not exceed that capacity, then the Project will have no significant effect.

Experience with the Hibernia GBS project (and other offshore projects) has shown that platform construction and component fabrication, and offshore installation activities and associated employment are relatively short-term events, while offshore operations create long-term employment. Projects to date have not had any significant effects on community social infrastructure and services (Storey, 1995) or local values (Jones, 1998).

For each infrastructure / service component, this section describes and analyzes the existing socio-economic environment, including:

- The particular environmental assessment boundaries relevant to the social infrastructure and services components discussed and;
- Existing conditions with respect to each of these social infrastructure and services components;
- Project—environment interactions;

- Socio-economic effects, including a discussion of socio-economic effects, and any cumulative effects, and a summary of socio-economic management initiatives to address potential effects;
- Integrated residual socio-economic effects, including a summary of residual socio-economic effects significance by project phase; and
- Monitoring and follow-up initiatives for the VEC.

5.1 Education and Training

5.1.1 Existing Socio-economic Conditions

In 2004, Newfoundland and Labrador's school boards were consolidated due to declining student enrolment. As a result, the Burin, Vista, Avalon West and Avalon East school boards were merged to form the Eastern School District, which now provides primary and secondary education in the study areas (NLDE, 2004). This District includes communities in the region east of Clarenville, including the Burin, Bonavista and Avalon peninsulas. Other schooling options in St John's area include the *Conseil scolaire francophone provincial de Terre-Neuve et du Labrador*, which has one school in St. John's. Lakecrest Independent School, First Baptist Academy and St. Bonaventure Academy are private schools, and the Brother T. I. Murphy Centre and the School for the Deaf serve students with particular needs (NLDE, 2009a).

The Eastern School District is currently the largest one in the Province, with approximately 41,000 students and over 3,000 teachers in 121 schools (NLDE, 2010a).

Funding for school infrastructure has increased by 500 per cent from $14.7 million in 2004-05 to $88.8 million in 2009. This includes an allocation of approximately $47.5 million for 450 air quality-related projects. In addition, the provincial government has provided a $4.2 million annual investment to increase repairs and maintenance funding to school districts (NLDE, 2009b). The 2010 provincial budget allocated $183.6 million for new and continued infrastructure projects, which includes $34.3 million for repairs and maintenance throughout the education system (NLDE, 2010b).

5.1.1.1 Newfoundland and Labrador

Childcare facilities and services are both an important contributor to pre-school education and important in facilitating opportunities for parents to participate in the workforce. Provincial Legislation through the 1998 Newfoundland and Labrador House of Assembly Child Care Services Act, amended in 1999 and 2001, and the Newfoundland and Labrador House of Assembly Child Care Services Regulation 37 / 99, revised March 2007, govern regulated Child Care Services in the Province.

In March 2008 there were 128 full-day, 28 part-day and 22 after-school centres, plus 67 family child care facilities providing a total of 5,972 regulated child care places in the Province. The majority of these places (86%) were occupied by pre-school children (24 months to school entry age) (Beach et al. 2009). This represented a 41% increase in the number of spaces since 2001 (Friendly et al. 2002). As of April 2010 the number of child care centres in the Province had further increased to 170, of which 120 offered full-time, 27 had part-time and 23 provided after-school spaces. The number of regulated family child care facilities remained constant at 67 and offered 410 spaces (H. Sinclair, pers. comm.).

In recent years, Newfoundland and Labrador has seen a decline in the number of schools, students and full-time teachers, and in the student-teacher ratio. The total of 279 schools in 2009—2010 was 66 fewer than in 1999—2000 and 221 fewer than 1993—94. The number of full-time primary and secondary school children in 1993—94 was 118,892. This had fallen to 93,957 by 1999—2000, a decline of 21%, and to 70,631 in 2008—2009, a further decrease of 25%. By 2009, the number of full-time students in grades kindergarten to 12 had fallen a further 5% to 67,312 (NLDE, 2010a).

The full-time teaching force declined from 7,699 positions in 1993—94 to 6,453 in 1998—99 (16% decline) and to 5,443 in 2006—2007, which represented a further decline of 16%. However, since 2006—2007, the number of teachers increased by 6%, to 5,572 teachers in 2008-09, but dropped slightly again to 5,569 in 2009—2010. Overall, enrolments continue to decline slightly faster than the number of teachers, hence, the overall student-to-teacher ratio continues to decrease, albeit at a much slower rate. For example, in 2009—2010 the ratio was 1:12.1, compared to 1:14.7 in 1993—94 (NLDE, 1994; 1999; 2006; 2010a).

Post-secondary education and training in the Province is provided primarily through Memorial University, which has its main campus and a Fisheries and Marine Institute (Marine Institute) in St. John's, and Sir Wilfred Grenfell College in Corner Brook. In addition, there is the College of the North Atlantic (CNA), which has 17 campuses throughout the Province. There are also 27 registered private training institutions, some of which are trade union sponsored, the greatest number of which is located in the St. John's area. The private colleges primarily offer vocational training (NLDE, 2009c).

5.1.1.2 St. John's Area

In 2009, there were 65 certified child care facilities in the City of St. John's, nine in Mount Pearl, seven in Paradise, six in Conception Bay South and three in the Goulds (NLDHCS, 2009).

In 1998—99, there were 81 schools in the Avalon East School Board district, 74 of them within the St John's area study boundary. By 1999—2000, this had decreased to 68 schools. In 2005-06, as a result of the consolidation

process, there were 124 schools in the Eastern School District, including 50 in the St John's area. In 2006-07, the number of schools in the District declined to 121 and it has remained constant until the present (NLDE, 1994; 1999; 2006; 2009b, 2010a). Data on school physical capacity are not available.

Post-secondary education and training in the St John's area is provided through Memorial University, three campuses of the CNA, and 11 private training institutions. Memorial University undergraduate enrolments fell from 15,491 in 1992, to 13,628 in 2005. In 2008, the number of students enrolled increased to 14,447 and again to 14,705 in 2009. Overall, graduate enrolment at the St. John's campus grew from 1,179 in 1992 to 2,187 in 2004, an increase of 85%. It has since continued to increase and in 2008 and 2009, respectively, 2,415 and 2,673 graduate students were enrolled (MUN, 1999; 2004; 2008; 2009a).

Three CNA campuses are located in the St John's area: Prince Philip Parkway, Ridge Road and Seal Cove. From 1992—93 to 1994—95, the number of students on those campuses increased from 4,281 to 4,874, after which there was a significant decline to 2,800 in October 1995 (Petro-Canada, 1995). In the fall of 1999 enrolment was approximately 3,000 and by the fall of 2005-06, the number of full-time and part-time students had reached 3,520. Since then enrolment has remained fairly constant. In 2007-08, there were 3,495 students enrolled at these three campuses (I. Pye, pers. comm.)

5.1.1.3 Isthmus of Avalon Area

There is only one certified childcare facility in the Isthmus area and it is located in Clarenville (NLDHCS, 2009). It currently operates at full capacity with 23 children and there is a waiting list of 75 people. There is a high demand for daycare services in the area but regulations associated with the establishment of new centres are seen as barriers to the entry of potential new service providers (L. Peddle, pers. comm.).

In 2008-09, there were nine primary and secondary schools in the Isthmus Area, compared with 12 in 1998—99 and 14 in 1993—94. The number of students in Grades K-12 fell from 2,719 in 1998—99 to 2,068 in 2008-09, a decrease of 23.9% (NLDE, 1994; 1999; 2009b). Post-secondary education and training is available through CNA, which has a campus in Clarenville. Approximately 250 full-time, 50 part-time and 400 Continuing Education students register at this campus each year (CNA Website, 2010).

5.1.1.4 Marystown Area

There are two certified childcare facilities in the Marystown area (NLDHCS, 2009). One has the capacity for 56 children and the increase in demand has motivated the operators to expand their facilities. In the fall 2009, they were able to accept an additional 22 children (A. Murphy, pers. comm.). The other

certified daycare in the area, which is only open during the school year, has the capacity for 39 children, divided into three programs: daycare, pre-school and after school. In the fall 2009, there were 36 children attending the daycare (D. Rogers, pers. comm.).

In 1998—99, there were six primary and secondary schools in the Marystown Area, compared with 10 in 1993—94. In 2009, there were only four schools in the area: two in Marystown, one in Burin and one in Salt Pond. The total student enrolment in 2008-09 was approximately 1,517, compared with 3,067 in 1993—94, a decrease of 50.5% (NLDE, 1994; 2009b).

The CNA has a campus in Burin that offers a range of construction-related courses and programs. Full-time credit course registration at this campus is approximately 400 students per semester, with another 75 registered part-time. More than 500 students participate in Continuing Education evening courses (CNA Website, 2010).

5.1.2 Project—Environment Interactions

Potential direct project—environment interactions are examined by Project activity phase and by area. Within each area, effects are considered in terms of their direct demand implications, which are those derived from the Project itself. The major potential interactions are summarized in Table 5.1-1.

5.1.3 Socio-economic Effects

5.1.3.1 Newfoundland and Labrador

The direct effects of the Project on education and training at the provincial level will be primarily experienced at the post-secondary training level. The labour requirements for the Project are discussed in Section 4.3 and in further detail in the Canada-Newfoundland and Labrador Benefits Plan. There is already a substantial pool of trained and experienced labour though, as discussed, there are projected shortfalls at peak demand periods for the Project in some trades and engineering disciplines. As part of the strategy to meet labour demands from Hebron and other projects training of new entrants to the industry and upgrading of those already in the industry will continue through such programs as CNA's Petroleum Engineering Technology Program in St. John's or its contract training programs at Seal Cove and elsewhere in the Province. EMCP is in ongoing discussions with CNA and Memorial University with respect to training and education requirements.

Table 5.1-1: Project-environmental Effects Interaction Matrix Community: Education and Training

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Engineering				
Design / Engineering GBS	X			
Design / Engineering Topsides	X			
Construction and Installation				
GBS Construction	X	X	X	X
Topsides Fabrication / Outfitting	X	X	X	X
Fabrication of Other Components	X	X	X	X
Installation	X			
Operations				
Administration	X			
Supply Base / Warehousing	X			
Helicopter Transport	X			
Offshore Production / Marine Support	X			
Tanker Transport	X			
Decommissioning	N / A	N / A	N / A	N / A
Past / Present / Future Projects				
Construction	X	X	X	X
Operations	X	X	X	X

Note:

[1]Newfoundland and Labrador, excluding the St. John's, Isthmus and Marystown areas.

As previously noted, demands from the Project, in terms of number of workers, are expected to be less than those from Hibernia, but somewhat greater than those for Terra Nova. In both cases, Project-related training demands were accommodated without problem. Other Engineering Technology (ET) programs at CNA in St. John's, particularly Mechanical ET and Geomatics ET, and to a lesser extent Electrical, Electronics, Civil, and Architectural ET, have also been important for petroleum industry employment (Husky Energy, 2007).

There are not expected to be any cumulative effects with other offshore development projects, given the Hebron schedule. Other major projects, such as the Vale nickel processing plant and the Lower Churchill hydroelectric generation project may occur at the same time as Hebron given current expected schedules, but, at this time, no problems are anticipated to arise from the Project itself, or from cumulative activity, to which provincial post-secondary institutions could not respond.

5.1.3.2 St. John's Area

Local institutions have responded to the new needs and opportunities presented by the industry, in particular those associated with the production projects at Hibernia, Terra Nova and White Rose. Development of Newfoundland and Labrador's upstream oil and gas industry has been accompanied by the development or enhancement of a range of education, training, and research and development facilities at St. John's region higher education institutions.

For example, Memorial University has added a number of new programs related to the oil and gas industry. In anticipation of industry requirements to support processing infrastructure, the Faculty of Engineering and Applied Sciences implemented a new undergraduate degree in process engineering. The Faculty also built upon its undergraduate option in oil and gas by adding a Masters degree to the program (PRAC, 2009).

The Marine Institute has likewise added several programs targeting anticipated growth in key areas of the oil and gas industry. For example, in September 2006, a new four-year program in Ocean Instrumentation was launched to target career opportunities for instrumentation technologists on board offshore oil and gas exploration and production facilities. Also, in anticipation of an estimated 40% growth in global remotely operated vehicle (ROV) activity over the following five years, a new program was launched in 2007 to train ROV operators (PRAC, 2009).

These and other changes in the post-secondary programs offered have made a major contribution to petroleum-related and other education and training and research and development. At Memorial University, for example, this includes:

- Undergraduate and / or Graduate Degree programs, including:
  - Engineering (Civil, Electrical, Computer, Mechanical, Ocean and Naval Architectural, and Offshore Oil and Gas);
  - Earth Sciences;
  - Oil and Gas Studies;
  - Physics and Physical Oceanography;
  - Marine Biology;
  - Maritime Studies;
  - Technology;
- Research facilities and training units including:
  - Centre for Earth Resources Research;

- Centre for Cold Ocean Resources Engineering (C-CORE);
- Ocean Engineering Research Centre;
- Oil and Gas Development Partnership and associated facilities;
- Computer-Aided Design Facility, Engineering;
- C-CORE Geotechnical Modeling Centrifuge Facility;
- Centre for Offshore and Remote Medicine and Telemedicine;
- Institute for Ocean Technology Wave Generating System;
- Fisheries and Marine Institute Centre for Marine Simulation;
- Fisheries and Marine Institute Offshore Safety and Survival Centre (Conception Bay South);
- Fisheries and Marine Institute Southside Marine Base;

♦ Diploma Programs at the Marine Institute include:

- Technology Programs (e.g., Nautical Science, Naval Architecture, Marine Engineering Systems Design, and Marine Environmental);
- Trades Programs (e.g., Marine Diesel Mechanic, Offshore Structural Steel / Plate Fitter, Deckhand); and
- Training Courses (e.g., Safety and Survival Training, Radio Operators, Firefighting and Recruitment, Marine First-Aid).

Other programs, though not petroleum-specific, such as those offered by the Faculty of Business at Memorial University have both contributed to and benefited from the presence of the industry in the Province.

Work term programs are an important component of petroleum-related programs at Memorial University, the Marine Institute and the CNA. In each of 2005, 2006 and 2007, the oil and gas industry provided work terms to over 300 students from Memorial's Faculty of Engineering and Applied Science. In 2006, 223 students from petroleum-related programs at the CNA received work term placements while in 2007, 199 students from related programs received work terms (PRAC, 2009).

Another example of the contribution from the petroleum industry to the education system is the $2.5 million contract from Maersk Contractors Newfoundland Limited for the Marine Institute to manage and execute the training program for White Rose FPSO operations personnel. Seventy-eight crew began training in the fall of 2003 and continued until 2005 in such areas as marine safety, vessel operations, process simulation, and maintenance and process operations. The training was held at all three campuses of the Fisheries and Marine Institute and required approximately 6,800 training days

combining classroom demonstrations, in-water exercises and simulation scenarios.

In 2009, the Government of Newfoundland and Labrador announced the investment of $2.4 million in the Marine Institute. This budget will be used to improve the equipment and develop a new four-year Bachelor of Technology program in Marine Geomatics / Sea-mapping Technology (MUN, 2009b).

In 2006 and 2007, with the increase in demand of graduates from the petroleum sector, the CNA doubled enrolment in its Petroleum Engineering Technology program. In April 2006, the provincial government initiated the Oil and Gas Technology Fund, providing annual funding of $1 million for the development of two new technology programs at the College and for enhancing program capacities and capabilities targeted at the oil and gas sector (PRAC, 2009).

Enrolment in the CNA's Petroleum Engineering Technology Program was originally designated at 25, but it has increased significantly, with 139 students registered in the program in 2007-08. There has also been an increase in applicants for the Mechanical Engineering Technology Program, with over 150 students registered in 2007-08, from which many graduates have gone on to employment in the petroleum industry (I. Pye, pers. comm.).

CNA contract training programs at the College's Seal Cove campus train over 100 students annually in programs such as Well Control Certification, Safe Practices in Offshore Rigging, International Well Control Forum Certification, and Pre-Employment Floorhand training. A drill camp and other short-term training programs are also offered for engineering technology students at the St. John's campus (I. Pye, pers. comm.)

Several other new programs related to the petroleum sector have been implemented at CNA since 2005. These include:

- International Business Management;
- Safety Engineering Technology;
- Electronics Engineering Technology (Computers & IT);
- Petroleum Eng. Tech.—Revised;
- Environmental Health (Occupational Health & Safety); and
- Chemical Process Eng. Tech. (Co-op) (I. Pye, pers. comm.).

In addition to these new programs, the Women in Resource Development Committee and CNA have been offering the Orientation to Trades and Technology (OTT) program. The main objective of the OTT program is to encourage the participation of women in trades and technology occupations in the natural resource-based industries (CNA, 2009). The College continues

to monitor industry needs and develops and delivers programs as required (I. Pye, pers. comm.).

Experience to date with previous offshore projects suggests that Hebron should not pose any difficulties for the delivery of appropriate programs. As well, EMCP has met on several occasions with representatives of the training and education facilities in the province to ensure effective communication regarding Project needs at the various stages of the Project.

When all four projects are in operation, there will be a large workforce located in the St John's area but any increased cumulative demand on the primary and secondary education system is unlikely to be problematic as the changing demographics of the area continue to lead to a reduced or, at best, stable demands for education services and infrastructure.

5.1.3.3 Isthmus of Avalon Area

The Hibernia SEIS (Mobil, 1985) forecast that the project would result in a small increase in the school-age population of the Isthmus Area, but that the existing system would be able to accommodate it. In the April-June 1994 quarterly report of the Hibernia Construction Sites Environmental Management Committee, it was estimated that in-migrant children made up only 1% of the 1993—94 enrolment (HCSEMC, 1994).

Effects were not, however, experienced uniformly throughout the region. Balbo Elementary in Shoal Harbour experienced the greatest effect, with between 40 and 60 Norwegian children, mostly in the kindergarten age group, attending the school in the 1991 to 1995 period. This required an extra half-time teaching unit for this age group and the provision of Norwegian teachers to provide Norwegian language instruction. With the completion of the project, these demands ceased.

The Terra Nova project did not have the same effects. Peak employment at Bull Arm was in the order of 950. Workers either commuted daily from their home locations or found temporary accommodations locally. There was no significant in-migration of foreign workers and their families and consequently, no direct effects on local education services and infrastructure.

This is further illustrated by data from Balbo Elementary. For the 1999—2000 school year, enrolment at this school was predicted to be 392 children, but the actual enrolment was only 373 (NLDE, 2003). With the arrival of the Terra Nova FPSO at Bull Arm in late May 2000, the associated increase in employment brought few workers to the area. In the following years, the enrolment in the school remained fairly constant, with 371 students in 2009 (NLDE, 2009b). Many of the specific tasks resulted in only short-term employment, with the result that there was little in-migration of workers and families and no effect on schools in the area.

The Project could result in a peak employment demand in the order of about 3,000 workers during construction of the GBS. Past experience suggests that with advance notice from EMCP in respect to labour force demands, labour sourcing and accommodation arrangements, local education and training authorities should be able to plan to meet any short-term demands on education and training services that might arise.

5.1.3.4 Marystown Area

No data are available on the effects of the Hibernia or Terra Nova projects on the education and training systems of the Marystown Area. However, efforts to promote the involvement of women in the skilled trades are showing some success, as 50% of those currently enrolled at the Burin Campus of CNA are women (D. Riggs, pers. comm.). Local employment associated with the White Rose project was much greater than that of the earlier projects, with some staff bringing their families to Marystown. Most were non-Canadian senior project personnel who had originally come to St. John's and then transferred to Marystown. As a result, the elementary school had to handle an influx of about 50 extra students and it was necessary to hire an English as a second language teacher. However, this was done without difficulty, and, as was the case on the Isthmus, the in-migrant families reportedly integrated well into the community (PRAC, 2009).

Hebron is not expected to generate any demands significantly different from these previous projects and none that the existing system could not accommodate. Furthermore, continued declining enrolments in the Marystown Area have left some additional capacity in the school system (K. Lundrigan, pers. comm.). No significant cumulative effects associated with any other projects are anticipated. It was indicated in Project consultations that, with sufficient advance information (about Project numbers and timing), the local education and training authorities should be able to accommodate demand (K. Lundrigan, pers. comm.).

5.1.4 Integrated Residual Socio-economic Effects

EMCP will actively promote the employment and training of Newfoundlanders and Labradorians. The overall approaches, policies and initiatives are described in the Project's Canada-Newfoundland and Labrador Benefits Plan and are summarized in Section 4.3.

Experience with the Hibernia, Terra Nova and White Rose projects and discussions during Hebron consultations suggest that there will not be significant adverse effects on the primary and secondary elements of the education system. This experience has also demonstrated that local institutions can provide much of the required training.

Insofar as such training will affect the post-secondary components of the provincial system, the outcomes should be beneficial both for those trained and for the individuals / institutions providing the training.

Discussions by EMCP with training and education institutions have indicated an interest in meeting the Project needs for training. EMCP was encouraged to provide early and ongoing communication: early engagement with the training and education sector will facilitate timely response by the sector.

The types of effects anticipated by Project activity phase, types of management strategies, and potential outcomes against the criteria discussed in Chapter 2 are summarized in Table 5.2-1.

The assessment of potential effects on education and training is summarized in Table 5.2-1 and the residual socio-economic effects are presented in Table 5.2-2. The assessment has predicted that no significant adverse effects on education and training infrastructure or services are expected as a result of the Project. With the proposed management strategies in place, any effects on education and training should be positive in that more programs will be developed and more local students will receive training.

5.2 Health and Community Services and Infrastructure

5.2.1 Existing Socio-economic Conditions

The provincial Department of Health and Community Services administers health and community services in Newfoundland and Labrador. In 2004, the provincial government announced the transition of 14 health boards into four Regional Integrated Health Authorities (Eastern, Central, Western and Labrador-Grenfell) to provide better coordination for the health needs of regions (NLDHCS, 2005). In addition there is a regional Nursing Home Board in St. John's.

The Eastern Regional Integrated Health Authority is responsible for providing health services to all communities on the Avalon, Burin and Bonavista peninsulas. Eastern Health operates 27 health service facilities with a total of 2,692 beds (Eastern Health, 2010). The geographic areas administered by the Regional Integrated Health Authorities differ from the areas used in this SEIS. To maintain maximum comparability, primary attention is given to those facilities and services located within the study areas wherever possible; however, in many cases they are sub-units of larger administrative areas. For institutional health services the administrative units are:

- Newfoundland—the Province as a whole;
- St. John's area—area served by Eastern Health and the St. John's Nursing Home Board;
- Isthmus of Avalon Area—served by Eastern Health; and

- Marystown Area—served by Eastern Health.

Table 5.2-1: Valued Environmental Component: Education and Training

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Rever–sibility	Socio-economic Context
Engineering							
Design / Engineering of GBS	Training of provincial workforce (P)	Post-secondary institutions plan to meet industry needs*	1	2	1 / 1	R	2
Design / Engineering of Topsides	Training of provincial workforce (P)	Post-secondary institutions plan to meet industry needs*	1	2	1 / 1	R	2
Construction							
Construction / Project Management of GBS	Training of provincial workforce (P)	Post-secondary institutions plan to meet industry needs*	1	2	1 / 1	R	2
Fabrication of Topsides components	Training of provincial workforce (P)	Post-secondary institutions plan to meet industry needs*	1	2-3	1 / 1	R	2
Operations							
Offshore production / Support / service	Training of provincial workforce (P)	Post-secondary institutions plan to meet industry needs*	1	2	3 / 3	R	2
Decommissioning							
Offshore decommissioning / support	Training of provincial workforce (P)	Post-secondary institutions plan to meet industry needs*	1	2-3	4 / 1	R	2
Past / Present / Future Projects							
Construction	Training of provincial workforce (P)	Post-secondary institutions plan to meet industry needs*	1	2-3	1 / 2	R	2
Operations	Training of provincial workforce (P)	Post-secondary institutions plan to meet industry needs*	1	2-3	3 / 3	R	2

Key:

Magnitude:
1 = Low: within current capacity, standard or threshold
2 = Medium: approaches current capacity
3 = High: exceeds current capacity

Duration:
1 = Construction only
2 = Operations only
3 = Life of project
4 = Decommissioning only

Socio-economic Context:
1 = Area has no previous experience with offshore development
2 = Area has previous experience with offshore development

Geographic Extent:
1 = Individual community
2 = Regional study area
3 = Province

Frequency:
1 = Single occurrence
2 = Occasional occurrence
3 = Continuous

Reversibility:
R = Reversible
I = Irreversible

Note:

N / A = Not Applicable

N B: Assessment criteria are defined in Section 2.2.8; All Development Drilling is included in Operations

* See Benefits Plan

Table 5.2-2: Residual Socio-economic Effects Summary Matrix: Education and Training

Valued Environmental Component: Education				
Phase	**Residual Socio-economic Effects Rating, Including Cumulative Socio-economic Effects**	**Level of Confidence**	**Likelihood**	
			Probability of Occurrence	**Scientific Certainty**
Engineering	P	3	2	3
Construction	P	3	2	3
Operations	P	3	3	3
Decommissioning	P	3	3	3
Project Overall	P	3	3	3

Key:

Residual Socio-economic Effects Rating:
S = Significant adverse effect
NS = Not-significant adverse effect
P = Positive effect

Level of Confidence:
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

Probability of Occurrence: (based on professional judgement)
1 = Low probability of occurrence
2 = Medium probability of occurrence
3 = High probability of occurrence

Scientific Certainty: (based on scientific information, statistical analysis or professional judgement)
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

N / A = Not Applicable

[1] As determined in consideration of established residual socio-economic effects rating criteria

5.2.1.1 Newfoundland and Labrador

Annual total health care expenditure in the Province increased from $1,305 million in 1997 to $2,335 million in 2006, an increase of 78.9% in less than a decade. In 2007, 8.7% of the GDP was allocated to health expenditures, which compared to 10.5% for Canada as a whole (CIHI, 2010a). In 2010, Newfoundland and Labrador's health care spending had increased to 10.5% of GDP, reaching $3,100 million, while Canada's health care spending reached an estimated $191.6 billion in 2010, accounting for 11.7% of GDP (CIHI, 2010b).

In 2002, there were 35 hospitals and health care centres, 21 nursing homes, three community clinics and 13 nursing stations in the Province, which provided a total of 1,681 acute-care beds and 2,839 long-term care beds (NLDHCS, 2002). By 2007-08, the number of hospitals and health care centres had declined to 34. The number of long-term care homes had increased to 22 and there were 14 community clinics. These facilities provided a total of 1,626 acute bed care and 2,747 long-term care beds (NLDHCS, 2008). In 2008-09, however, the number of hospitals and health care centres had increased to 37, the number of long-term care homes had

fallen to 19 and the number of community clinics remained the same. That year, there were 1,594 acute care beds and 2,779 long-term care beds, including 52 beds funded by the Department of Veterans Affairs (NLDCHS, 2009b). The level of service, as defined by the number of nurses and doctors per capita, is comparable to other provinces in Canada.

The number of physicians in the Province declined over the 1989 to 2002 period and then increased between 2003 and 2007. This growth, from 975 in 2003 to 1,048 in 2007, represented a 7.5% increase while over the same time period, the population in Newfoundland and Labrador declined by 2.0%, thus increasing the total physician-to-population ratio from 1.88 to 2.06 physicians per 1,000 population. In 2008, the number of physicians increased again to 1,110 giving a ratio of physician-to-population ratio of 2.19 per 1,000 population (CIHI, 2009). In 2009, the number of physicians increased by 6.3% to 1,117, but the physician-to-population ratio remained the same as the previous year, (CIHI, 2010c).

The ratios for both general / family practitioners and specialists have also increased. That for general / family practitioners was .99 per 1000 in 2004, increasing to 1.07 by 2007. While the ratio for specialists increased from .93 to .99 over the same period. In 2007 the overall ratio and those for general / family and specialist physicians for the Province was greater than for Canada as a whole, where the respective ratios were 1.92, .98 and .94 (CIHI, 2008a). Between 2007 and 2008 the number of family practitioners and specialists increased again by 7.4% and 4.4%, respectively. The 2008 ratio of family practitioners per 1,000 population was 1.15 and that of specialists per 1,000 population was 1.04 (CIHI, 2009). While the number of family practitioners increased the following year by 2.7%, the number of specialists decreased by 1.7%, resulting in fewer specialists in the Province in 2009 than there were in 2008 (CIHI, 2010c).

The number of registered nurses peaked in 1992 at 5,372 and then subsequently declined. By 1998, however, numbers had almost returned to 1992 levels. The registered nurse-to-population ratio increased from 9.15 (per 1000) to 9.79 between 1991 and 1998. By 2004—2005 the ratio had increased to 10.5 but by 2007 was back to 9.83. In 2008, the number of registered nurses in the Province was 5,724 giving a nurse per 1,000 population of 11.3 (NLDF, 2000; NLDHCS, 2006; CIHI, 2008b; 2010d). The nurse-to-population ratio increased slightly in 2009 to 11.4 as the number of registered nurses in the Province reached 5,825 (CIHI, 2010e).

The challenges facing medical care in Canada and the Province are of considerable public concern. In Newfoundland and Labrador, concern has been expressed about the limited number of nurses, and of physicians in some specialty areas. Also the availability of nurses and family physicians in rural areas has been seen as problematic as it may limit patient access to,

and potentially reduce the quality of, medical services. The issue of the availability of nurses in rural areas is in part being addressed through the nurse-practitioner program, which was established in 1997. By 2005, there were 72 nurse practitioners working in the Province (NLDHCS, 2006) and by 2008-09, the number had increased to 104 (ARNNL Website, 2010a). However, in 2009-10, the number of nurse practitioners decreased by almost 4% to 100 (ARNNL, 2010b).The need for physicians, nurses and other health professionals in any area is strongly related to its demographic characteristics and as such requires periodic review. In 1999, the Newfoundland and Labrador Health and Community Services Human Resources Planning Steering Committee was established to review this and related human resource issues. Its final report, released in July 2003, confirmed that the Province faced challenges in maintaining health services given the rural nature of the population. The report forecast shortages of registered nurses and allied health professionals, which would require "special attention" in rural areas (NLHBA, 2003).

In March 2008, Eastern Health began a needs assessment process for the different regions under its jurisdiction. These assessments are aimed to support a regional health services plan by enhancing the understanding of health issues facing residents of the Eastern Health region. The community needs assessment includes a public participation component that will help to identify the major issues of concern regarding the health system in the regions. Specific recommendations will be designed to answer those concerns. These reports will help Eastern Health to anticipate future needs of community and identify innovative strategies to meet their needs. As of March 2011, assessments had been completed for Bell Island, Burin Peninsula, the Southern Avalon, the Northeast Avalon and the Clarenville / Bonavista Peninsula. The Trinity-Conception needs assessment is now underway (Eastern Health, 2008, 2010; L. Browne, pers. comm.; G. Janes, pers. comm.). Any concerns arising from the presence of the petroleum industry will be identified and addressed in these assessments.

The nursing shortage remains a pressing issue, one that will be exacerbated by retirements if new entrants are not recruited. By 2015, 25% of Newfoundland and Labrador nurses will be eligible for retirement (NLNU, 2009). Fewer nurses can adversely affect patient care through bed and unit closures and surgery cancellation, while overtime payments to offset staff shortages are costly and excessive overtime can contribute to burnout of staff.

5.2.1.2 St. John's Area

Eastern Health operates six long-term care facilities, four hospitals and a hostel in the St John's area. In March 2009, Eastern Health provided 667 acute care beds in five facilities. This was a decline from 909 in 1994—95 and the number and location of beds continues to change with the

consolidation of facilities within the area and the reorganization of the health care system (Eastern Health, 2009).

The long-term care facilities in the St John's area provide 1,056 beds; 44 in a hospital and 1,012 in six nursing homes. This compares with 1,337 beds in 2000. The only health care centre in the area is the Dr. Walter Templeman Centre on Bell Island, which provided seven acute-care and 13 long-term beds as of March 2009. St. John's also has one psychiatric institution, the Waterford Hospital, which has 65 acute-care and 104 long-term care beds. Other hospitals provide some psychiatric care (NLDHCS, 2000; Eastern Health, 2006; 2009).

5.2.1.3 Isthmus of Avalon Area

The Dr. G. B. Cross Memorial Hospital in Clarenville serves the Isthmus Area. In 2009, it had 47 acute care and 15 long-term care beds compared to 51 acute care and 14 long-term beds in 2000 and 48 acute-care and 9 long-term care beds in 1995. It provides a range of medical specialty services to the area. There is no psychiatric institution in the area. While the Cross Memorial Hospital does not provide formal psychiatric in-patient services, patients can be admitted to the medical-surgical service. In June 2007, there were eight family physicians practicing in Clarenville and two in Arnold's Cove (Eastern Health, 2008). Eastern Health recognizes that there is a shortage of family physicians in the area and that many are close to retirement. In August 2009, there were seven family physicians practicing in Clarenville, along with one nurse practitioner. There was one family physician in Come-By-Chance and one in Arnold's Cove (L. Browne, pers. comm.).

As part of the 2007 environmental assessment of the proposed refinery at Southern Head, Placentia Bay, the Health Research Unit of the Faculty of Medicine, Memorial University conducted a health profile of the study area for that project, a study area that is comparable to that for the Project. The study concluded that the area did not show any significant differences from the Eastern Health Region or with the Province as a whole (NLRC 2007).

5.2.1.4 Marystown Area

The Marystown Area has one acute-care facility, the Burin Peninsula Health Care Centre, which has 41 acute care beds. The number of acute care beds is down from 70 in 1994—95. There are no long-term care beds in the area. Specialty psychiatric institutions and services are not available at the Centre; however, patients with psychiatric disorders are admitted to the medical-surgical service when necessary. In August 2009, there were three family physicians in Marystown and four in Burin (B. Mayo, pers. comm.). The Town of Burin is currently expanding the industrial space near the hospital to allow for the development of clinics and laboratories (K. Lundrigan, pers. comm.).

5.2.2 Project—Environment Interactions

Potential project—environment interactions with respect to medical services and infrastructure are summarized in Table 5.2-3. Project activities will result in an increased workforce in the Province and the study areas, although some of this will result from increased labour force participation rather than population growth. Some members of the Project workforce and their families will, at times, require medical treatment and other services. Where the workers and their families are in-migrants to the Province, this will represent an increase in demands on the provincial system as a whole. Where in-migrants move from elsewhere within the Province, overall demand will remain the same, but will shift geographically. At the same time, migration to

the Province will add to the tax-base and indirectly help to offset increased costs.

Table 5.2-3: Project-environmental Effects Interaction Matrix Community: Medical Services and Infrastructure

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Engineering				
Design / Engineering of GBS	X			
Design / Engineering of Topsides	X			
Construction and Installation				
GBS Construction		X		
Topsides Fabrication / Outfitting	X	X	X	X
Fabrication of Other Components	X	X	X	X
Installation	X			
Operations				
Administration	X			
Supply Base / Warehousing	X			
Helicopter Transport	X			
Offshore Production / Marine Support	X			
Tanker Transport		X		
Decommissioning	N / A	N / A	N / A	N / A
Past / Present / Future Projects				
Construction	X	X	X	X
Operations	X	X		X

Note:

[1] Newfoundland and Labrador, excluding the St. John's, Isthmus and Marystown areas.

Project demands associated with the construction and installation workforce will be short-term and limited to that phase, while the smaller numbers engaged in operations will place long-term demands. Most demands will be associated directly with the Project, but there will be some cumulative effects associated with the operations phase of Hibernia, Terra Nova and White Rose, together with other non-oil projects.

Offshore development to date has not resulted in the rapid lifestyle changes that some originally anticipated, and there appears to have been no associated increase in demands for example, for services related to mental health, addictions or sexually transmitted diseases.

5.2.3 Socio-economic Effects

5.2.3.1 St. John's Area

While there have been no specific studies of the issue, there is no evidence that the Hibernia, Terra Nova or White Rose projects resulted in substantial new demands for health care services in the St John's area. Generally

speaking, incoming workers and their families have been relatively young and healthy and placed few demands on medical facilities and services; if anything, those working are very likely net contributors to the system in terms of taxes paid relative to services used. Overall, the Project or combined projects will only have small, incremental effects during both the construction and operations phases on the demand for St John's area medical services.

The offshore petroleum industry has prompted new research and infrastructure associated with offshore health and safety. The Centre for Offshore and Remote Medicine (MEDICOR) was established in 1982 at Memorial University to carry out research and development projects related to all health aspects of offshore oil, marine, diving and space industries, as well as other industries involved with remote operations, environmental stresses or hazards. As part of the Centre a hyperbaric unit was established. Ownership of this unit has recently been transferred from the University to Eastern Health (Gray 2009).

5.2.3.2 Isthmus of Avalon Area

The Hibernia construction project had few effects on the demand for medical services in the Isthmus Area. The Bull Arm site had its own medical centre, with ambulances, a doctor and nursing staff. The scale of Terra Nova and White Rose project construction work was much smaller and did not result in a substantial population increase in the area and, consequently, did not substantially affect the demand for services such as those for family physicians. The Project will provide some medical services at the Bull Arm site. With these services in place Hebron is not expected to place high levels of demand on the local health and community services system. Given that similar arrangements have been proposed for the Vale project construction phase, no cumulative effects are anticipated during the respective construction periods.

5.2.3.3 Marystown Area

There is no evidence that White Rose construction work had effects on the demand for medical services in the Marystown Area. Hebron activity is similarly not expected to place substantial demands on the system, given that the scale of activity here will likely be smaller than that of White Rose.

5.2.4 Integrated Residual Socio-economic Effects

The types of effects anticipated by Project activity phase, the types of management strategies, and potential outcomes against the criteria discussed in Chapter 2 are summarized in Table 5.3-1.

EMCP has a strong workplace health and safety focus that will be implemented at all Project sites. At Bull Arm, the primary construction and fabrication site, it is anticipated that EMCP will establish onsite medical facilities and confirm, through site inspection, the adequacy of health and

safety provisions at other sites. These actions will ensure that demands on local health services and infrastructure will be minimized. There will be some cumulative effects during the operations phase in particular, but the demands from the offshore-related workforce overall are again expected to be small and within the capacity capabilities of the current system.

On the positive side, the Project and associated direct and spin-off business and employment will contribute to government revenues through resource rents and business and personal taxes and thus indirectly help to support the Province's health care system. Anticipated residual effects are summarized in Table 5.3-2.

5.3 Security and Safety: Policing and Fire Protection

The Royal Newfoundland Constabulary (RNC) and the Royal Canadian Mounted Police (RCMP) are active within Newfoundland and Labrador. Within the study areas, the RNC has jurisdiction over the St John's area, while the RCMP polices the Isthmus of Avalon and the Marystown areas.

Both full-time and volunteer fire fighters serve the Province. While detachment and fire department administrative and data boundaries do not coincide with the study area boundaries, this is not anticipated to affect the findings from the following analysis.

5.3.1 Existing Socio-economic Conditions

5.3.1.1 Newfoundland and Labrador

Newfoundland and Labrador has the lowest requirement level for policing in Canada, reflecting the Province's relatively low crime rates. In 1999, the overall officer-to-population ratio was 1:704, compared to a national average of 1:552. The number of police officers in the Province grew to 799 in 2006, 331 RNC and 468 RCMP, an increase of 4%. The 2006 officer-to-population ratio was 1:641 compared to the national average of 1:521 (Statistics Canada, 2006b). By 2008, the number of police officers in the Province had grown to 864, with 369 RNC and 515 RCMP, an increase of 8.1% since 2006.The 2008 officer-to-population ratio also increased to 1:574, compared to the national average of 1:510. In 2009, the total number of police officers in the Province increased again by 3.5% to 383 RNC and 534 RCMP officers (Statistics Canada, 2008; 2009). The total number of police officers in the Province increased 2.1% in 2010, with the number of RNC and RCMP officers rising to 384 and 555, respectively (Statistics Canada, 2010b).

In 2009, 301 fire departments served the Province, down from 312 in 1993 (W. Porter, pers. comm.).

The provincial government also has in place the Emergency Measures Organization (EMO) to assist in dealing with any large-scale emergency or disaster occurring in the Province. This agency has the authority to control

and coordinate the activities of all police, fire, health, social services and other services in the affected area (NLDMA, 2009a).

Table 5.3-1: Valued Environmental Component: Medical Services and Infrastructure

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Reversibility	Socio-economic Context
Engineering							
Design / Engineering of GBS	Increased demand for medical services (A)	Ongoing needs assessment by Eastern Health will assist Institutions to respond as appropriate / feasible	1	1 / 2		R	2
Design / Engineering of Topsides	Increased demand for medical services (A)	Ongoing needs assessment by Eastern Health will assist Institutions to respond as appropriate / feasible	1	1 / 2		R	2
Construction							
Construction / Project management of GBS	Increased demand for medical services (A)	Onsite medical clinic. Institutions respond as appropriate / feasible	1	2	1 / 2	R	2
Fabrication of Topsides components	Increased demand for medical services (A)	Ongoing needs assessment by Eastern Health will assist Institutions to respond as appropriate / feasible	1	2	1 / 2	R	2
Operations							
Offshore production / Support / service	Increased demand for medical services (A)	Ongoing needs assessment by Eastern Health will assist Institutions to respond as appropriate / feasible	1	2	3 / 3	R	2
Decommissioning							
Offshore decommissioning / support	Decreased demand for medical services (P)	Institutional strategies appropriate to conditions at the time to be determined	1	2	4 / 2	R	2
Past / Present / Future Projects							
Construction	Increased demand for medical services (A)	Ongoing needs assessment by Eastern Health will assist Institutions to respond as appropriate / feasible	1	2	1 / 2	R	2
Operations	Increased demand for medical services (A)	Institutions respond as appropriate / feasible	1	2	3 / 3	R	2

Key:

Magnitude:
1 = Low: within current capacity, standard or threshold
2 = Medium: approaches current capacity
3 = High: exceeds current capacity

Geographic Extent:
1 = Individual Community

Duration:
1 = Construction only
2 = Operations only
3 = Life of project
4 = Decommissioning only

Frequency:
1 = single occurrence

Reversibility:
R = Reversible
I = Irreversible

Socio-economic Context:
1 = Area has no previous experience with offshore

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Reversibility	Socio-economic Context
2 = Regional Study Area 3 = Province N / A = Not Applicable N B: Assessment criteria are defined in Section 2.2.8; All Development Drilling is included in Operations		2 = occasional occurrence 3 = continuous\			development 2 = Area has previous experience with offshore development		

Table 5.3-2: Residual Socio-economic Effects Summary Matrix: Medical Services and Infrastructure

Valued Environmental Component: Medical Services and Infrastructure				
Phase	Residual Socio-economic Effects Rating, Including Cumulative Socio-economic Effects[1]	Level of Confidence	Likelihood	
			Probability of Occurrence	Scientific Certainty
Engineering	NS	3	3	3
Construction	NS	3	3	3
Operations	NS	3	3	3
Decommissioning	NS / P	3	3	3
Project Overall	NS	3	3	3

Key:

Residual Socio-economic Effects Rating:
S = Significant adverse effect
NS = Not-significant adverse effect
P = Positive Effect

Level of Confidence:
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

Probability of Occurrence: (based on professional judgement)
1 = Low probability of occurrence
2 = Medium probability of occurrence
3 = High probability of occurrence

Scientific Certainty: (based on scientific information, statistical analysis or professional judgement)
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

N / A = Not Applicable

[1] As determined in consideration of established residual socio-economic effects rating criteria

5.3.1.2 St. John's Area

In 2009, 327 Royal Newfoundland Constabulary (RNC) personnel served the St John's area. This is an increase of 28% over 1995 when there were 256 (Petro-Canada, 1995; Statistics Canada, 2009). In 2010, this number dropped by 0.6% to 325 officers (Statistics Canada, 2010b)). Since 2004,

Memorial University and the RNC have offered a one year Diploma Program in Police Studies. This program trains RNC recruits and has been shown very successful in attracting new, better-qualified RNC officers, and in contributing to the retention of those officers (MUN, 2009c; R. Johnston, pers. comm.).

Fire protection services are provided by the St. John's Regional Fire Department, which currently employs 164 full time staff to service the six fire stations that provide 24-hour response. There are also two composite (partially paid) fire departments in the Goulds and Conception Bay South, and volunteer fire departments serve Pouch Cove, Torbay, Bell Island, Portugal Cove / St. Phillips and Outer Cove / Logy Bay / Middle Cove (St. John's Regional Fire Department, 2007, 2010; D. Hamlyn, pers. comm.).

5.3.1.3 Isthmus of Avalon Area

In 2009, 22 uniformed RCMP officers and three District Assistants served Clarenville and the surrounding area, including most of the study area. This represents an officer-to-population ratio of approximately 1:1,227 (J. Little, pers. comm.). Notwithstanding the presence of the Hibernia and Terra Nova projects at Bull Arm, there have not been any substantial changes in policing requirements in the area in the last two decades.

The Isthmus of Avalon Area is served by 16 volunteer fire departments with an average of approximately 23 firefighters (W. Porter, pers. comm.). The Fire Department in Clarenville has a total of 36 volunteer firefighters (W. Porter, pers. comm.; Clarenville Fire Department Website, 2010).

5.3.1.4 Marystown Area

The 2009 Marystown Regular Member complement is 15 officers. This does not including Highway Patrol or other Specialized Unit Members who are available to the District when their services are required. There are 23 officers serving the Burin Peninsula with an additional four district assistant positions (W. Edgecombe, pers. comm.)

Fire protection in the Marystown Area is provided by volunteer departments in Burin, Lewin's Cove, Winterland, Frenchman's Cove and Garnish, and by a composite fire department in Marystown. There are currently 30 volunteer-firefighters at the station in Marystown (Town of Marystown Volunteer Fire Department Website, 2010).

5.3.2 Project—Environment Interactions

The potential project—environment interactions with respect to security and safety-related issues by Project phase are indicated in Table 5.3-3. As with any other industrial or commercial activity, there is a potential for Project-related activities to require policing or fire protection services. Construction-related demands could occur in the St. John's, Isthmus or Marystown areas if

the infrastructure in these areas is used for the Project. During the operations phase, St. John's will be the primary area affected. Malfunctions, accidents or unplanned events might involve both the police and fire service, depending on the nature and location of the event. Any cumulative effects are likely to be associated with ongoing operations in the St John's area.

5.3.3 Socio-economic Effects

5.3.3.1 Newfoundland and Labrador

During the public consultation process for the Hibernia project, concerns were expressed that it might lead to increases in organized and white-collar crime, drug trafficking and prostitution in Newfoundland and Labrador. While any increase in economic activity will result in some adverse effects of these types, their anticipation allowed for appropriate actions to be taken. The RNC and RCMP reported that neither the type nor the rate of criminal activity increased substantially more than expected over the life of the project and any changes in policing requirements were able to manage such increases. From the public perspective in the case of the Isthmus, the only area for which data are available, the concerns disappeared over the life of the project (Jones, 1998). Similarly, the project had no effect on fire protection at the provincial level. The Terra Nova SEIS (Petro-Canada, 1995) and White Rose SEIS (Husky Oil Operations, 2000) forecast that these much smaller projects would also not have significant effects, and this has proven to be the case thus far. The same is expected to be the case with Hebron (Table 5.3-3).

Table 5.3-3: Project-environmental Effects Interaction Matrix: Policing and Fire Protection Matrix

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Engineering				
Design / Engineering of GBS	X			
Design / Engineering of Topsides	X			
Construction and Installation				
GBS Construction		X		
Topsides Fabrication / Outfitting	X	X	X	X
Fabrication of Other Components	X	X	X	X
Installation	X			
Operations				
Administration	X			
Supply Base / Warehousing	X			
Helicopter Support	X			
Offshore Production / Marine Support	X			
Tanker Transport		X		
Decommissioning	X			
Past / Present / Future Projects				
Construction	X	X	X	X
Operations	X	X		X

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Note: [1] Newfoundland and Labrador, excluding the St. John's, Isthmus and Marystown areas.				

5.3.3.2 St. John's Area

Economic growth, and associated increases in wealth and disposable income, among other factors, has the potential to attract criminal activity and changes in the type of criminal activity. Increases in disposable income may, for example, lead to more drug-related activity. Reports of arrests and laying of criminal charges while helping to maintain public safety also serve to draw attention to such activity. To date there has been no suggestion or evidence that the previous offshore projects have substantially affected the nature or level of crime, or the demands for policing services or fire protection, in the area. Indeed St. John's has continuously had overall crime rates lower than the national average (22% lower based on 2007 data) and the City ranks 46th out of 100 in terms of the most dangerous cities in Canada (Maclean's 2009). Hebron, even when the cumulative effects of multiple project operations are considered, is not expected to change this.

5.3.3.3 Isthmus of Avalon Area

The potential effect on crime was an Isthmus Area community concern when Hibernia construction activities were first proposed in the mid-1980s and when construction began in 1990. It was thought that an influx of construction workers might increase prostitution, drug-related disturbances, rape and sexual harassment. The work camp and security arrangements at the Bull Arm site were intended, in part, to address these concerns. The RCMP reported that Hibernia activity did lead to increases in property crime, personal offenses and traffic incidents, especially impaired driving. However, those increases were in keeping with the increased level of activity in the area and the police force was able to adapt to the situation and manage it. For example, during the Hibernia project, Clarenville had five officers on highway duty, while at present there are only two (R. Baker, pers. comm.; L. Holmes, pers. comm.). The adoption of a work camp strategy for the Hibernia project was seen as instrumental in helping to contain much of the criminal activity that did occur.

Subsequent offshore petroleum construction projects also used the Bull Arm site, albeit without a work camp. The number of employees was much smaller; workers either commuted daily from their homes or found accommodations in the area, and there were no substantial effects on either crime or policing. Consultations indicated that Hebron is not expected to have any different effects. That said the RCMP undertakes its own assessment of the potential implications of the Project on its areas of

responsibility in the region in order to request additional resources if these are believed to be necessary. EMCP will have ongoing liaison with the RCMP on the Isthmus and other Project areas to ensure that appropriate information is available to help the RCMP address any policing issues that arise.

Recognizing that traffic offenses, including impaired driving, have occurred in the past, EMCP will explore the possibility of providing bus services for workers to and from major centers. This could help reduce traffic volumes on the Trans Canada Highway (TCH) and the Burin Peninsula Highway and reduce the risk of accidents.

There are some areas on the highways, particularly the Burin Peninsula Highway, where cell phone coverage is poor to non-existent (an issue that was highlighted at the meeting with key stakeholders in Marystown). To reduce risks to local travelers, EMCP, along with cellular phone system providers, will explore improvements to cell phone services in the area.

The Bull Arm site has fire-fighting capacity and is not solely dependent on community services, though they could respond if called upon to assist, and vice versa. Past projects have not had any effects on local fire services, and it is anticipated that this will remain the case with Hebron.

5.3.3.4 Marystown Area

There were some additional policing requirements related to the construction of Hibernia GBS and White Rose project activity, associated with theft, vandalism, drug problems and increased smuggling from St. Pierre, but the RCMP has reported that this was nothing out of the ordinary for such projects. Similarly, the increased criminal and highway enforcement activity was seen as proportional to the increase in population and traffic and within the enforcement capability (Husky Energy, 2007; W. Edgecombe, pers. comm.).

The RCMP in the area has already been proactive regarding the potential impact of the Project on security. The detachment has submitted an Environmental Scan Report to senior RCMP management regarding the anticipated impacts of the proposed project in the region and on their staffing levels. The report concludes that there are enough policing resources on the Burin Peninsula to deal with the Project (Smith, G., pers. comm.).

The Marystown construction facilities have their own fire-fighting capacity and are not solely dependent on community services. Past activity, including the White Rose construction phase, has not had any negative effects on these services.

Given past experience and the smaller scale of the Project, it is not expected to have significant adverse effects on police or fire infrastructure and services.

5.3.4 Integrated Residual Socio-economic Effects

The types of effect anticipated by Project phases, planned management strategies, and potential outcomes against the criteria discussed in Chapter 2 are summarized in Table 5.4-1. None of these Project-related or cumulative predicted outcomes are considered likely to have any significant residual adverse effects (Table 5.4-2). The RCMP has undertaken its own assessment to prepare for the Project. EMCP will have ongoing liaison with the RCMP to ensure that any activities that have the potential to generate additional resources needs are communicated as early as possible.

5.4 Recreation Services and Facilities

Recreation implies refreshment of the individual, both mentally and physically, through relaxation and enjoyment. How people achieve this end varies greatly and the range of possibilities is too large to assess in any comprehensive manner. The focus here is limited to recreation activities with a sports focus, not because it is believed that this is necessarily the most important type of recreation, but because it does involve a broad spectrum of the population in terms of age, gender, and income levels, and can be illustrative of the potential effects that offshore development could have other types of recreational activity.

It should be noted that there is little information concerning the full gamut of recreation-related effects of offshore development. Many large corporations support local arts and cultural activities that provide a source of recreation for residents. For example, EMCP supports the International Women's Film Festival, the Newfoundland Folk Festival and the Resource Centre for the Arts. The Hibernia Management and Development Company Is a sponsor of the Newfoundland Symphony Orchestra, while Petro-Canada (now Suncor) has made a major contribution to the Memorial University School of Music. Husky Energy also sponsors the Newfoundland Symphony and the Visual Artists of Newfoundland and Labrador. In addition, some newcomers contribute as performers and participants in various activities that may enrich the experience for everyone involved.

Responsibility for sports-related recreational services and facilities lies with both the public and private sectors. The cities of St. John's and Mount Pearl and many towns within the study areas have their own recreation departments and facilities. Private organizations and operators offer team sports, golf, personal fitness and other sporting activities. For illustrative purposes, this analysis assesses municipal facilities and services in the study areas. In the Isthmus of Avalon area, most of the larger public recreational facilities are in the Clarenville area, while in the Marystown area, they are in Marystown itself.

Table 5.4-1: Valued Environmental Component: Policing and Fire Protection

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Rever–sibility	Socio-economic Context
Engineering							
Design / Engineering of GBS	Increased demands for services (A)	Monitoring / action by responsible authorities	1	2	1 / 2	R	2
Design / Engineering of Topsides	Increased demands for services (A)	Monitoring / action by responsible authorities	1	2	1 / 2	R	2
Construction							
Construction / Project management of GBS	Increased demands for services (A)	Monitoring / action by responsible authorities	1	2	1 / 2	R	2
Fabrication of topsides components	Increased demands for services (A)	Monitoring / action by responsible authorities	1	2	1 / 2	R	2
Operations							
Offshore production / Support / Service	Increased demands for services (A)	Monitoring / action by responsible authorities	1	2	3 / 3	R	2
Decommissioning							
Offshore decommissioning / Support	Increased demands for services (A)	Monitoring / action by responsible authorities	1	2	4 / 2	R	2
Past / Present / Future Projects							
Construction	Increased demands for services (A)	Monitoring / action by responsible authorities	1	2	1 / 2	R	2
Operations	Increased demands for services (A)	Monitoring / action by responsible authorities	1	2	3 / 3	R	2

Key:

Magnitude:
1 = Low: within current capacity, standard or threshold
2 = Medium: approaches current capacity
3 = High: exceeds current capacity

Duration:
1 = Construction only
2 = Operations only
3 = Life of project
4 = Decommissioning only

Socio-economic Context:
1 = Area has no previous experience with offshore development
2 = Area has previous experience with offshore development

Geographic Extent:
1 = Individual Community
2 = Regional Study Area
3 = Province
N / A = Not Applicable

Frequency:
1 = Single occurrence
2 = Occasional occurrence
3 = Continuous

Reversibility:
R = Reversible
I = Irreversible

N B: Assessment criteria are defined in Section 2.2.8; All Development Drilling is included in Operations

Table 5.4-2: Residual Socio-economic Effects Summary Matrix: Policing and Fire Protection

Valued Environmental Component: Policing and Fire Protection				
Phase	**Residual Socio-economic Effects Rating, Including Cumulative Socio-economic Effects[1]**	**Level of Confidence**	**Likelihood**	
			Probability of Occurrence	**Scientific Certainty**
Engineering	NS	3	3	3
Construction	NS	3	3	3
Operations	NS	3	3	3
Decommissioning	NS	3	3	3
Project Overall	NS	3	3	3

Key:

Residual Socio-economic Effects Rating:
S = Significant adverse effect
NS = Not-significant adverse effect
P = Positive effect

Level of Confidence:
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

Probability of Occurrence: (based on professional judgement)
1 = Low probability of occurrence
2 = Medium probability of occurrence
3 = High probability of occurrence
N / A = Not Applicable

Scientific Certainty: (based on scientific information, statistical analysis or professional judgement)
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

[1] As determined in consideration of established residual socio-economic effects rating criteria

5.4.1 Existing Socio-economic Conditions

5.4.1.1 St. John's Area

The St. John's area has numerous recreation and leisure facilities facilitating a wide range of activities. In the City of St. John's, indoor activities can be accommodated at, for example, The Works at Memorial University, the H.G.R. Mews Community Centre, the St. John's Recreation Centre at Buckmaster Circle and the Wedgewood Park and Goulds Recreation Centres. There are three indoor public swimming locations at The Works, the H.G.R. Mews Centre and Wedgewood Park. There is the Mile One Centre, a multi-purpose sports and entertainment facility, and there are winter and summer facilities and programs at Rotary, Bannerman, Bowring and Victoria Parks. Cross-country skiing trails as well as an extensive network of walking trails can be found at Pippy Park, Bowring Park and Rotary Sunshine Park. In addition, the City has numerous soccer, softball, baseball, tennis and playground facilities. The YMCA-YWCA is now building a new facility to replace the existing building in St. John's. It will include a daycare, community space and a swimming pool and is expected to open in late spring 2011 (NLDEC, 2010).

Mount Pearl also has a range of facilities, including the Glacier arena, the Smallwood Drive RecPlex, the Pearlgate Track and Field complex, the St. David's Tennis Complex, the Smallwood Pool, the Reid Community Centre, the Kenmount Park Neighbourhood Centre, a golf driving range and a number of parks, playgrounds and tennis courts. As in St. John's, there is an extensive walking trail system.

Conception Bay South (CBS) and Paradise have both experienced significant population growth in recent years and increased demand for new kinds of recreation for young families, teens and seniors. CBS has a stadium (hockey, skating, etc.), a recreation complex (swimming pool, squash courts and fitness programs), tennis courts, playing fields (soccer, softball, and rugby), a skateboard park and outdoor recreation programs (Town of Conception Bay South Website, 2009). Since 2005, CBS has further developed its outdoor recreation facilities by constructing seven new parks and in 2008 the Town of Paradise built a Community Centre, which contains an indoor gymnasium, a fitness centre and a youth centre (J. Collins, pers. comm.). Both communities have extensive networks of walking trails (Town of Conception Bay South Website, 2009; J. Collins, pers. comm.).

In 2009 a $13.1 million arena opened in Torbay. The Jack Byrne Arena is owned and operated by the municipalities of Torbay, Logy Bay-Middle Cove-Outer Cove, Pouch Cove and Flatrock. The facility includes an ice rink, an indoor walking track and community rooms for special events (NLDMA, 2009b).

Demographic and lifestyle changes are changing the demand for some types of facilities and programs. In Mount Pearl, for example, the proportion of families with young children is falling, and demand is beginning to shift away from the younger person-oriented team sports. Mount Pearl has strong youth programming, but recognizes that there is a need for more varied and flexible activities to get more youth involved in fitness. The older population and lifestyle changes have, for example, contributed to the increased use of the walking trail system and demand for personal fitness activities.

After publishing its Parks and Recreation Master Plan in 2005, the City of Mount Pearl has developed and is planning for a number of new facilities. In 2009, the City installed an international standard synthetic turf field in the Province. This field, located at the Team Gushue Sport Complex, represents a $1.8 million investment. In December 2010, there are plans to add an additional ice pad at the Mount Pearl Glacier. Finally, the City of Mount Pearl is planning to build a new Multiplex, which is expected to be completed in the spring of 2013. This recreational complex would include a leisure pool, a fitness centre, a youth centre and a theatre. The Glacier expansion and the Multiplex project represent investments of $38 million by the City of Mount Pearl in new recreation facilities (R. Osmond, pers. comm.; City of Mount Pearl Website, 2010).

5.4.1.2 Isthmus of Avalon Area

The Isthmus Area contains a range of recreational facilities, many of the larger ones in the Clarenville-Shoal Harbour area. These include a stadium, softball fields, a sports complex, a community centre, gymnasium, tennis courts, a bowling alley, ski facilities, golf facilities and playground areas. There are also a number of hiking trails in the area, including the 5-km Rotary Trail, and the Bear Mountain Hiking Trail. The Clarenville Stadium was approaching the end of its useful life and the Town and the provincial government has invested $15 million to build a new Events Centre. The Centre, which officially opened in January 2010, includes a theatre, an ice rink, indoor walking tracks, curling sheets and community meeting rooms to host conferences and conventions. An outdoor track and a soccer field are also being built next to the Event Centre. (Town of Clarenville Website, 2006; G. Gosse, pers. comm.; The Packet, 2010).

The Town of Arnold's Cove has a Sportplex area, which includes a regulation-size ball field, outdoor skating rink and a playground. The Sportplex also includes a recreational building for youth entertainment. There are also two main hiking trails (W. Slade, pers. comm.).

5.4.1.3 Marystown Area

There are various recreational facilities in the Marystown area, supporting such activities as soccer, softball, ice sports, tennis, swimming, basketball and floor hockey. Marystown and Burin have the widest range of facilities and service a number of the smaller communities.

Year-round recreation facilities in the Marystown area are limited. The Marystown Arena is open year-round and serves the Burin Peninsula from Terrenceville to St. Lawrence. The Ville Marie Swimming Pool operates on a seasonal basis, offering Red Cross and lifesaving swimming lessons, swims and a variety of water fitness and recreation programs. The Marystown Track and Field complex offers a variety of sport and recreational facilities, as well as outdoor play areas. The Town is currently leading a feasibility study to examine options for renovating Marystown Arena and the construction of a new year-round swimming pool. (Town of Marystown Website, no date, D. Kelly, pers. comm.).

5.4.2 Project—Environment Interactions

Key potential project—environment interactions are indicated in Table 5.4-3. While many Hibernia workers used recreation facilities in the Isthmus area during the project, the smaller number of workers and shorter construction period involved with Terra Nova and White Rose did not have the same effect. Any Hebron construction activity is anticipated to be of a scale more comparable to the latter projects, and any potential effects are expected to be limited to the construction phase.

Effects on recreation systems may be both adverse and positive and will be activity and location specific. Where additional demand exceeds the capacity of a particular facility or program, access may be reduced for all or, because of overcrowding or similar factors, the level of enjoyment of the activity may be reduced. At the same time, participation of newcomers may extend the use of currently seasonal facilities and thereby make activities and facilities more viable, and the introduction of more or new people may enhance the enjoyment of the activity for all.

5.4.3 Socio-economic Effects

5.4.3.1 St. John's Area

The Hibernia, Terra Nova and White Rose SEISs predicted that project-related demographic changes would not result in substantial increases in demand on recreational services and facilities. There has been no evidence to contradict this. While the population of the area has grown in the last decade, there have also been increases in the provision of recreation services and facilities, and any Project-related demands should be easily absorbed. In this regard, in recent years, there has been greater attention to the assessment and provision of needs at the regional level rather than solely the local level.

Table 5.4-3: Project-environmental Effects Interaction Matrix: Recreation

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Engineering				
Design / Engineering of GBS	X			
Design / Engineering of Topsides	X			
Construction and Installation				
GBS Construction		X		
Topsides Fabrication / Outfitting	X	X	X	X
Fabrication of Other Components	X	X	X	X
Installation	X			
Operations				
Administration	X			
Supply Base / Warehousing	X			
Helicopter Transport	X			
Offshore Production / Marine Support	X			
Tanker Transport		X		
Decommissioning	X			
Past / Present / Future Projects				
Construction	X	X	X	X
Operations	X	X		X

Note:

[1] Newfoundland and Labrador, excluding the St. John's, Isthmus and Marystown areas.

5.4.3.2 Isthmus of Avalon Area

The use of local area recreational facilities by Bull Arm workers during the Hibernia construction project was regarded as beneficial because it did not over-extend the facilities or reduce their availability to local residents, but generated revenue. The SEISs for the smaller Terra Nova and White Rose construction projects forecast that it would have even fewer such effects, and this proved to be the case. The same is likely to be so for Hebron.

The construction and operations of the Vale smelter together with Hebron construction could have some short-term cumulative effects. However, both projects intend to use on-site camps to accommodate workers and some on-site recreation will be provided. This will help to minimize any demands on local community facilities.

5.4.3.3 Marystown Area

Past projects have not resulted in problems related to the availability of recreation facilities. In the case of White Rose, workers used the high school gymnasium two nights a week, in exchange for a financial contribution that helped contribute to the viability of the facility (Husky Energy, 2007). As part of a post-White Rose Assessment Survey, local residents indicated that they wanted access to a year round swimming pool facility, with organized water programs (Town of Marystown Website, 2006). As noted earlier, the Town is currently exploring the feasibility of developing this and other recreation infrastructure. Hebron activity is not expected to place any significant additional demands on recreation infrastructure and services and no cumulative effects are expected.

5.4.4 Integrated Residual Socio-economic Effects

The types of potential effects by Project phase, the management strategies, and the evaluation of potential outcomes against the criteria discussed in Chapter 2 are summarized in Table 5.5-1.

The Project will result in some in-migration and increased demand for access to recreation facilities and programs, during the construction phase, and in the operations phase particularly in the St John's area. The magnitude of these effects is expected to be small and existing facilities and programs are expected to be able to cope with them. Indeed, for some programs additional involvement may be positive, in terms of program viability and participant enjoyment.

In the past, municipal authorities have coped with larger population increases than have been experienced in the last few years or are anticipated in the near future. Even with any cumulative effects of population growth associated with the direct and indirect employment in four major offshore oil developments, the effects on recreation are not expected to be significant.

These conclusions are summarized in Table 5.5-2, based on the criteria outlined in Chapter 2.

5.5 Monitoring and Follow-up

Monitoring and follow-up of Project effects on community social infrastructure and services will be carried out during all phases of the Project in conjunction with local communities and regional agencies.

School boards will continue to monitor education system effects as part of the process for estimating school enrolment levels. For the post-secondary institutions, tracking and anticipating demand for existing and potential offshore-related courses and programs will be done by the relevant institutions with input from EMCP on employment, and by extension, training needs for the Project.

Monitoring for health and community services and infrastructure is a provincial responsibility and one that is ongoing at the Health Care Board, departmental and committee levels. EMCP will monitor health and safety on site at the Bull Arm facility and other Project sites and will hold annual safety forums.

Data on events and needs related to security and safety are collected on a regular basis by the relevant policing and fire-protection authorities as part of their normal mandate and planning activities. EMCP will liaise with these authorities through the Project phases.

The authorities responsible for recreation facilities and services have mechanisms to assess and forecast demand for services. As with other social infrastructure and services, issues and concerns related to recreation facilities will be communicated to EMCP and options for action determined.

Table 5.5-1: Valued Environmental Component: Recreation

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Rever–sibility	Socio-economic Context
Engineering							
Design / Engineering of GBS	Increased use of facilities / demand for services (P / A)	Monitoring / action by service providers	1	2	1 / 2	R	2
Design / Engineering of Topsides	Increased use of facilities / demand for services (P / A)	Monitoring / action by service providers	1	2	1 / 2	R	2
Construction							
Construction / Project management of GBS	Increased use of facilities / demand for services (P / A)	Monitoring / action by service providers	1	2	1 / 2	R	2
Fabrication of Topsides components	Increased use of facilities / demand for services (P / A)	Monitoring / action by service providers	1	2	1 / 2	R	2
Operations							
Offshore production / Support / service	Increased use of facilities / demand for services (P / A)	Monitoring / action by service providers	1	2	3 / 3	R	2
Decommissioning							
Offshore decommissioning / support	Increased then decreased use of facilities / demand for services (P / A)	Monitoring / action by service providers	1	2	4 / 2	R	2
Past / Present / Future Projects							
Construction	Increased use of facilities / demand for services (P / A)	Monitoring / action by service providers	1	2	1 / 2	R	2
Operations	Increased use of facilities / demand for services (P / A)	Monitoring / action by service providers	1	2	3 / 3	R	2

Key:

Magnitude:
1 = Low: within current capacity, standard or threshold
2 = Medium: approaches current capacity
3 = High: exceeds current capacity

Duration:
1 = Construction only
2 = Operations only
3 = Life of project
4 = Decommissioning only

Socio-economic Context:
1 = Area has no previous experience with offshore development
2 = Area has previous experience with offshore development

Geographic Extent:
1 = Individual Community
2 = Regional Study Area
3 = Province
N / A = Not Applicable

Frequency:
1 = Single occurrence
2 = Occasional occurrence
3 = Continuous

Reversibility:
R = Reversible
I = Irreversible

N B: Assessment criteria are defined in Section 2.2.8; All Development Drilling is included in Operations

Table 5.5-2: Residual Socio-economic Effects Summary Matrix

Valued Environmental Component: Recreation				
Phase	**Residual Socio-economic Effects Rating, Including Cumulative Socio-economic Effects[1]**	**Level of Confidence**	**Likelihood**	
			Probability of Occurrence	**Scientific Certainty**
Engineering	P / NS	3	3	3
Construction	P / NS	3	3	3
Operations	P / NS	3	3	3
Decommissioning	NS / P	3	3	3
Project Overall	P / NS	3	3	3

Key:

Residual Socio-economic Effects Rating:

S = Significant adverse effect

NS = Not-significant adverse effect

P = Positive effect

Probability of Occurrence: (based on professional judgement)

1 = Low probability of occurrence

2 = Medium probability of occurrence

3 = High probability of occurrence

N / A = Not Applicable

Level of Confidence:

1 = Low level of confidence

2 = Medium level of confidence

3 = High level of confidence

Scientific Certainty: (based on scientific information, statistical analysis or professional judgement)

1 = Low level of confidence

2 = Medium level of confidence

3 = High level of confidence

[1] As determined in consideration of established residual socio-economic effects rating criteria

6 COMMUNITY PHYSICAL INFRASTRUCTURE AND SERVICES

Community infrastructure is valued by local residents, businesses and industry insofar as its quantity and quality contribute to functioning of the local economy and society and hence, the overall standard of living and quality of life. This chapter addresses the potential effects of the Project on community physical infrastructure and services, and focuses in particular on housing, industrial and commercial land, warehousing and office space, ports, and airports.

The Project will generate employment and business activity that will increase demands on local infrastructure and services. The effects of these changes are largely a function of the supply-demand relationships in respect to particular infrastructure at particular locations. If the supply cannot meet current demands, in terms of the availability or quality of infrastructure or service that has come to be expected, any incremental effect attributable to the Project will exacerbate the situation. Alternatively, if there is unused capacity, and the incremental change resulting from the Project does not exceed that capacity, the Project will have no significant adverse effect.

Component fabrication and offshore installation employment is relatively short-term and the potential effects on services and infrastructure are expected to be similar to those experienced with the Hibernia, Terra Nova and White Rose projects, which proved to be largely unproblematic with appropriate management as necessary.

Offshore production and operations and associated transportation and direct onshore support, will result in long-term employment for between 1,000 and 1,200 workers. Once again, there is no evidence that earlier projects have had adverse effects on community infrastructure and services. Whether cumulatively these projects and other activities have had any important effects is examined for each infrastructure or service component in this section.

For each physical infrastructure or service component, this section describes and analyzes the existing socio-economic environment, including:

- The particular environmental assessment boundaries relevant to the infrastructure component discussed and existing conditions with respect to each of these infrastructure components;
- An overview of project—environment interactions;
- Socio-economic effects assessment, including:
  - A discussion of socio-economic effects, including cumulative effects;

  - A summary of socio-economic management initiatives to address potential effects;

- Integrated residual socio-economic effects, including a summary of residual socio-economic effects significance by Project phase; and
- A summary of monitoring and follow-up initiatives for the VEC.

6.1 Housing

The study area boundaries for this discussion of housing conform to those described in Chapter 2. Information on housing is drawn from the Census (Statistics Canada, 1991; 1996; 2001; 2006a) and from data compiled by the Canada Mortgage and Housing Corporation (CMHC) and the Newfoundland and Labrador Housing Corporation (NLHC). While detailed data are available for the St John's area, less information is available for smaller urban areas, including Clarenville and Marystown. Data for rural areas are even less readily available and are often aggregated on a regional basis.

6.1.1 Existing Socio-economic Conditions

6.1.1.1 Newfoundland and Labrador

In terms of supply, there were 197,245 occupied private dwellings in Newfoundland and Labrador in 2006, an increase of 4.3% from 2001. There are no data available for 2006 regarding the number of owner-occupied dwellings but in 2001, 78% of the 189,040 occupied dwellings were owned by the occupants. The average value of a home in the Province in 2001 was $76,283 and the average rent was $513. In 2006, the average value of a home had increased to $111,711 and the average rent to $551 (Statistics Canada, 2001; 2006a).

The annual number of housing starts in the Province generally declined during the 1990s; in 1990, it was 3,245; by 1999, it was 1,371 (CMHC, 2000a). The majority of units constructed have been single-detached, though periodically, the number of row and apartment units has increased to meet demand. By 2006, however, the number of housing starts in the Province had increased to 1,493, the majority of them single-detached units (CMHC, 2007a).

In 2009, housing starts in the Province totalled 3,057 units. Although this was down 6.3% compared to 3,261 in 2008, this level was relatively high in a historical context and performance was much better than nationally, where housing starts decreased by 29.4% (NLDF, 2010b). In 2010, the number of housing starts in Newfoundland and Labrador increased by 18% to 3,606 (Statistics Canada, 2011).

Information on the specific effects of the offshore petroleum industry on the housing market has always been limited and cause-effect attribution difficult.

Analysis of the impacts of Hibernia operations for 1998 indicated that the total (that is, direct, indirect and induced) effects on the Province's economy in that year included 35 additional housing starts, representing 2.4% of the total (HMDC, 1999). An assessment of the impacts of the industry as a whole concluded that, for the 1999—2002 period, there was an average annual increase of 85 housing starts, representing 5.1% of the Province's annual total (PRAC, 2003).

In 2004, a similar macroeconomic analysis indicated that the presence of the industry led to a total of 119 housing starts (PRAC, 2005). In 2005, the number of housing starts attributable to the petroleum industry declined to 117. In 2006—2007, the housing starts related to industry were 93 and 94 respectively, representing 4.2% and 3.6% of the Province's annual total (PRAC, 2009). In general terms therefore, through the employment and income that the petroleum industry generates it has had some impact on the provincial housing market. However, that impact is relatively small and the sector contribution only one of a set of factors that can influence housing demand, supply and prices.

The current surge in house prices since 2008, according to the CMHC, can be attributed to historically low interest rates combined with overall economic strength which has led to high overall market demand (CMHC, 2010a). As discussed in Section 3.0, in recent years the Province has experienced a net population increase, a growth in household formation, increased employment and a growing labour force. All of these factors, combined with a strong inventory of capital projects and high consumer confidence, have had implications for the housing market.

Between 1997 and 2007, the New Housing Price Index (NHPI) for Newfoundland and Labrador increased 36.3%, or an average of 3.6% per year. However, since 2007 new home prices in Newfoundland and Labrador increased by 33.3%, with a 19.6% increase in 2008 followed by an 11.5% increase in 2009, when the residential MLS average price was $206,374.

This increase in housing prices was the largest cumulative increase observed in Canada (NLDF, 2010b). During the first ten months of 2010 the average MLS residential price was $233,912. According to CMHC, prices appear to have stabilized around the $235,000 level in the Province and while housing prices continue to be strong in Newfoundland and Labrador, continued weakness in sales combined with an increase in active listings may slow further upward price movement and create a more balanced market (NLDF, 2010a).

While the impact of the oil and gas industry can be credited with having some impact on the Provincial housing market, CMHC has determined that the ongoing growth "will be reinforced by favourable trends in demographic and economic fundamentals, as well as on-going economic momentum fuelled by a lengthy list of major capital projects" (Canada News Wire, 2010). As

demonstrated in Table 6.1-1, Newfoundland and Labrador has shown improvement in several key economic indicators, notwithstanding some decline in 2009 due to the global economic downturn.

Table 6.1-1: Key Economic Indicators, Newfoundland and Labrador 2004—2010

Indicator / Year	2004	2005	2006	2007	2008	2009	2010
Employment ('000)	214.3	214.1	215.7	217.1	220.3	214.9	221.0
Labour Force ('000)	254.3	252.5	253.1	251.2	253.8	254.2	255.8
Unemployment (%)	15.7	15.2	14.8	13.6	13.2	15.5	13.6
Personal Income ($ Millions)	12,855.0	13,249.0	13,942.0	14,780.0	15,641.0	16,257.0	17,083
Interest Rates[1]	na	5.06	6.28	6.90	6.70	4.02	3.49

Note:

[1] Chartered bank conventional one year mortgage rate

Source: NLDF, 2010b; NLDF Website, 2011; Statistics Canada, 2010c

In addition to the petroleum industry, and as discussed in Section 3.1, some other industries have also experienced substantial growth. For example, between 2001 and 2008 the value of mineral shipments from the Province increased from $755 million to $4,652 million (NLDF, 2010b).

6.1.1.2 St. John's Area

There has been a steady growth in the St John's area housing stock and the number of occupied dwellings increased by 9% between 2001 and 2006, from 64,830 to 70,663. In 2006, 58.8% of occupied dwellings were in the City of St. John's, which represents an increase of 2,228 units over 2001, the greatest increase in the region (Statistics Canada, 2001; 2006a).

Annual housing starts in the area have fluctuated over the last two decades. In 1990, 1,434 units were started, but in 1999, there were only 807 starts (CMHC, 2000a). The number of housing starts increased to 1,480 in 2007 and to 1,863 in 2008. In 2009, the number of housing starts decreased 8.6% to 1,703 units but remained at high levels in a historical context (CMHC, 2009a; NLDF and City of St. John's, 2010a; 2010b).

The role that the offshore petroleum industry has had on the St John's area housing market has long been a matter for speculation. Attributing market changes to offshore development was first seen in the early 1980s following the discovery of Hibernia and more recently the development of the North Amethyst Satellite Tie-back. The prospect of the Hebron Project at a time when housing prices have been increasing has again led some to view the offshore industry as being a key influence on price increases.

While national housing prices have been stable or declining since 2008, prices in Newfoundland, especially in St. John's, continue to increase.

According to the CMHC, this increase is in part related to the petroleum industry and more specifically to the anticipation of the Project. The announcement of a formal agreement between the Government of Newfoundland and Labrador and the Hebron Project Co-venturers in August 2008 did appear to have an impact on the St. John's housing market resulting in some speculation on housing prices. At the end of 2007, the average house value in the Eastern Region was $157,000 and by the end of 2008, it reached $187,000. By August 2009, the average house value had reached $224,000 (C. Janes, pers. comm.). During the first two months of 2010 average residential prices continued rising, but, as noted earlier, these increases were not limited to the St. John's area. Residential prices in both the Province and the St. John's CMA were up between 17% and 18% over the same period in 2009 (NLDF, 2010b).

These increases have continued in 2010. In 2010 the average MLS residential price in the St. John's area reached $239,390, while in March 2010 the number of sales increased by 25% over the previous quarter. CMHC had forecast average housing prices in the St. John's area to continue to increase and to reach $255,000 in 2011 (CMHC, 2010a; NLDF, 2010a). However, the increase in sales in early 2010 was quickly offset by an increase in new and active listings throughout the summer months. From an overall historical perspective, the outlook for the St. John's area housing market is strong, but the recent record housing market activity in 2010 will likely not be matched in 2011 (CMHC, 2010b).

Price increases have not, however, been limited to the St. John's area. While the magnitude of the price increases has been greatest in the St. John's CMA, there have also been large increases in Central and Western Newfoundland. Prices in the Gander and Grand Falls areas, for example, increased by 7-8%, notwithstanding the economic distress associated with the closing of the paper mill in Grand Falls, while Corner Brook has experienced an 18% increase (CBC July 8, 2010). This suggests that price increases are not solely or simply related to offshore petroleum activity.

Apartment vacancy rates for the St John's area have fluctuated widely over the past fifteen years. A period of high vacancy rates from 1995 to 1998 coincided with the completion of the Hibernia project and the out-migration of personnel involved in the engineering and design phase of the project (CMHC, 2000b). From 2003 to 2006, vacancy rates increased from 3.1% to 5.2%, the highest rate since 1999. This increase has been attributed to record home buying activity, which has in part been characterized by the movement of renter households to homeownership. Since 2006, the vacancy rate has declined and is projected to remain low, although the average rent has been increasing. In 2007, the vacancy rate declined to 2.6% and in 2008, it reached a low of 0.8% (CMHC, 2006; 2009a). During 2009, vacancy rates

in the St. John's CMA had risen slightly to 0.9% and again to 1.1% in 2010 (NLDF, 2010a; NLDF, 2010b).

In the 1990s, a decline in rents accompanied high vacancy rates. While three bedroom units had seen the highest rate increases in the 1987 to 1995 period, renting for an average of $593 per month in 1995, they have shown the largest decrease since, renting for an average of $535 per month in 1999. In the current decade rents have risen. In 2006, the average rent for a three-bedroom unit was $655 per month and by 2008 it had risen to $672. In 2009, average rents for all bedroom types increased throughout the St. John's CMA; two bedroom and three bedroom rents were up 4.9% and 5.4%, respectively (CMHC, 2000b; 2006; 2008, 2009b).

Investment in new multi-unit apartment developments is expected in the St. John's area and will begin to increase the supply of apartments in 2011. However, before a significant increase in large-scale developments can occur in the local market, average rents will need to rise in order to offset the costs of development and construction. Accordingly, the vacancy rate for surveyed structures containing three or more rental units (two-apartment homes excluded) is forecast to rise marginally to 1.3 per cent in 2011. With the vacancy rate remaining very low, demand is expected to push surveyed average two-bedroom monthly rents to $775 in 2011(CMHC, 2010b).

As the cost of building new houses has increased, the trend for building homes with apartments is declining. The cost of a home, which includes an apartment, is currently over $300,000 and the income generated by renting it is not considered enough to make it profitable. However, with rising rental prices and the low vacancy rate in the City, there appears to be an opportunity for the construction of new apartment buildings as it becomes cost-efficient to build a multi-apartment complex when the average cost of rent for a two bedroom apartment is over $850 per month (C. Janes, pers. comm.).

Social housing in the St John's area is provided by the City of St. John's and NLHC. The City administers the Urban Living non-profit housing program. Initiated in 1982, there were 424 units available in 2009, a number that has not changed for several years. Two types of housing are provided, low set-rent units (268) and rent-geared-to-income units (156). All of the latter units are currently occupied, while there is a three to 7% vacancy rate in the former depending on the time of year. The Non-Profit Housing Division of the City of St. John's is planning to build additional units in the future (H. Handrigan, pers. comm.).

6.1.1.3 Isthmus of Avalon Area

Between 1996 and 2006, the number of occupied dwellings in the Isthmus of Avalon increased by 7.7% (Statistics Canada, 1996; 2001, 2006a). Most of the change was in Clarenville-Shoal Harbour.

House values have increased over time and vary considerably from one community to another. In 2001, the average value of a home in Come-by-Chance was $48,946; by 2006 it had increased to $59,725 (+22%). In Clarenville, the average house value was $96,714 in 2001 and $126,492 in 2006 (+31%) (Statistics Canada, 2001; 2006a).

More recent data for Clarenville show that by December 2009, average sale prices had increased to $135,020 (NLAR, 2010) further illustrating that price increases are not solely related to oil-related development or limited to the St. John's area. By October 2010, 80 new dwelling permits were issued in Clarenville, doubling the number of permits issued the previous year (M. Clarkson, 2010).

Average monthly rents in the area also vary considerably over time and among communities. The general trend has been one of decreases between 1996 and 2006. The average gross monthly rent in Clarenville-Shoal Harbour was $590 in 1996 but only $500 in 2006. In Arnold's Cove, average gross monthly rent was $440 in 1996 and $351 in 2006 (Statistics Canada, 1996; 2001; 2006a). With the commencement of the Vale smelter project demand for rental accommodation and rents are expected to rise.

In 2009, the Newfoundland and Labrador Housing Corporation (NLHC) had 30 non-profit rental units and eight rental subsidies in Clarenville. Arnold's Cove has 11 non-profit rental units and two rental subsidies. There are four non-profit rental units in each of Come-by-Chance and Goobies. At the time of this study, there were seven individuals on the waiting list for Newfoundland and Labrador Housing in Clarenville (Walsh and Holloway, 2009).

6.1.1.4 Marystown Area

The Marystown area housing market is affected by the seasonal and annual fluctuations in employment provided by the main employers in the area, the Marystown Shipyard and the fish plants. Increased activity at one or more of these contributes to greater housing market activity, while layoffs have negative repercussions for the housing market.

Between 2001 and 2006, the number of occupied dwellings in the area remained fairly stable, with just a slight decrease from 4,070 to 4,044 (Statistics Canada, 2006a). As elsewhere in the Province, most houses in the area are owner-occupied. There are no data available for 2006 regarding the number of owner-occupied dwellings, but in 2001 almost 80% of homes were owner-occupied (Statistics Canada, 1996; 2001) and this is not expected to

have changed significantly. Average gross rents in the area are highly variable both over time and place. In Marystown, the average monthly rent was $474 in 2001 and $551 in 2006. The community of Lewin's Cove has seen rents increase more significantly. The 2001 average was $333 and $498 in 2006, an increase of 50% (Statistics Canada, 2001; 2006a).

In 2009, The NLHC had 305 social housing units on the Burin Peninsula, 145 of which are in Marystown. The Corporation reports that there are approximately 60 vacant units in Marystown and throughout the area, although most of these require repairs and upgrading. The NLHC has not noticed any significant change in the demand for social housing in the Marystown Area in the past few years (J. Bowring, pers.com.).

6.1.2 Project—Environment Interactions

The potential direct interactions between the Project and the housing market in each of the study areas are indicated in Table 6.1-2. There is the potential for increased demands for housing during the construction and operations phases. Construction activity effects could occur in any of the study areas, but effects from operations are only expected to be experienced in the St John's area. Some cumulative effects may also occur here associated with multiple field development, the growth of the offshore service sector and general economic growth and in the Isthmus Area associated with the Vale nickel processing smelter project. There is also potential for indirect spin off effects related to the Project associated with successive rounds of spending of business and individual incomes.

6.1.3 Socio-economic Effects

6.1.3.1 St. John's Area

The Hibernia project had a minor effect on the St John's area housing market (Storey et al., 1996) and mainly as related to leased accommodations. Generally speaking, Hibernia personnel helped to absorb some of the higher priced houses and condominium units on the market. As indicated in Section 6.1.1, with the completion of the Hibernia project, a number of rental units were freed up and vacancy rates were high from 1995 to 1998. The situation then changed with vacancy rates declining, particularly for middle- to higher-quality accommodations, in part associated with demands from personnel associated with the Terra Nova and White Rose projects. The completion of the design work once again freed up some rental units.

Table 6.1-2: Project-environmental Effects Interaction Matrix: Housing

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Engineering				
Design / Engineering of GBS	X			
Design / Engineering of Topsides	X			
Construction and Installation				
GBS Construction		X		
Topsides Fabrication / Outfitting	X	X	X	X
Fabrication of Other Components	X	X	X	X
Installation	X			
Operations				
Administration	X			
Supply Base / Warehousing	X			
Helicopter Transport	X			
Offshore Production / Marine Support	X			
Tanker Transport		X		
Decommissioning	N / A	N / A	N / A	N / A
Past / Present / Future Projects				
Construction	X	X	X	X
Operations	X	X		X

Note:

[1]Newfoundland and Labrador excluding the St. John's, Isthmus and Marystown areas.

None of the previous offshore projects required any specific provisions for more units or building lots during the construction phase. During operations, employment on the Hibernia project initially reached approximately 800 and has since decreased slightly. However, as was noted above, macroeconomic analysis suggests that Hibernia operations in 1998 generated only 35 additional housing starts Province-wide (HMDC, 1999). Onshore managerial, administrative and support personnel need to live within easy access of their workplace, and most are believed to live in the St. John's area. Offshore personnel, on the other hand, may not need not live in the area, though many do, and some of those employed on the project already lived within the area and did not need to purchase or rent accommodation. The net result is that the local housing market was able to meet the needs of Hibernia employees without difficulty. Coming several years after, when the market had absorbed the initial Hibernia demand, the somewhat smaller demands of the Terra Nova and White Rose projects did not have a critical effect on the St John's area housing market.

Hebron requirements will occur several years after White Rose and the housing market has had time to adjust to any petroleum sector-generated effects. However Hebron comes at a time when house prices have been rising significantly. In the absence of other factors that would dampen market

activity, such as rising interest rates, further increases in prices will likely be fuelled by the Project and other economic activity in the region.

In spite of the 2008 recession the experience in St. John's has been considerably different from the rest of the country. Housing demand has remained robust between 2008 and the present. As noted in Section 6.1.1, this pattern is expected to continue through 2011 and beyond as employment associated with Hebron, the Vale Long Harbour nickel processing project and other projects continues to grow.

Such growth brings economic benefits, but it may have negative consequences for some. While the housing market is generally segmented according to price, the take-up and renovation of lower value properties, particularly in the downtown core of St. John's, and their renovation may have indirect or inflationary effects and place a burden on those on low incomes who are not homeowners.

The cumulative effects of offshore projects and other developments on the downtown housing market were raised at White Rose public consultation sessions. Since then property sales and prices have increased in this area. In this respect the downtown community is changing, as fewer low-income people may now be able to afford to live there.

As discussed in Section 6.1.1 it is difficult to separate the cause and effect relationships contributing to these changes. Change is attributable to economic growth and more general demographic and lifestyle changes. The appeal of living downtown now appears to be greater for young professionals and older couples, and the increase in the number of condominiums in the area is attracting a wider age and income spectrum. Some of those moving into the downtown are involved with the petroleum industry, but many are not. Growth in the petroleum sector will have some contributory effect to housing demand and house prices, but at the present time this is only one component of a complex set of factors that are driving demand and prices.

6.1.3.2 Isthmus of Avalon Area

Pre-Project concerns about the ability of the Isthmus area communities to accommodate Hibernia construction workers were largely resolved through the provision of onsite work camp accommodations. Some of the workforce did occupy housing in the area, most of it leased. However, based on CHMC House Price Surveys and resident surveys, it has been concluded that Hibernia-related demand had little effect on overall demand or house prices, and that any increases experienced were short-term (Jones, 1998).

Terra Nova and White Rose construction activity at Bull Arm was at a much smaller scale. Workers either commuted from their homes or found temporary local accommodations. The projects consequently had little or no effect on the local housing market.

Use of a work camp proved an effective means of minimizing community disruption during Hibernia construction, particularly given that the workforce proved to be more than twice that originally forecast (Storey et al., 1996; Jones, 1998). The rationale for a camp for Hibernia was in part driven by community concerns that demands for worker accommodations would far exceed the local capacity to meet them. The experience with offshore North Sea and other construction projects indicated that when this happened rents skyrocketed, sub-standard accommodation was offered and used, and conflict between incomers and locals was fuelled by the inadequacy of both housing and other local services. A camp was seen as away to avoid these potential negative outcomes and recognized as such by the Hibernia Environmental Assessment Panel (HEAP, 1986).

Though the estimate of the required construction workforce for Hebron at approximately 3,000 is smaller than that required for Hibernia, this same rationale is applied to the Project and a work camp will be used. Some labour will be drawn from the Isthmus area and may commute on a daily basis. For those beyond a daily commute range there is limited rental accommodation in the area even without any major project activity, and the overlap of construction activity and subsequent operation of the Vale nickel processing smelter at Long Harbour with the Project is expected to mean that there will be insufficient accommodation available during Project construction to accommodate the Project workforce. Any changes to the Project that might result in increased demand for labour will only exacerbate the demand for accommodation. A camp therefore, is seen as the best way to avoid the problem of insufficient available accommodation and its associated potential adverse effects on the community. Both EMCP and Vale have recognized this as a potential issue and both have chosen to construct accommodations for their construction workforces.

At the same time, the use of a camp during Hibernia construction meant that a number of potential community economic benefits were foregone; this may help explain why some local area residents at the White Rose public consultation sessions indicated that they would prefer to see workers housed within the community rather than at a camp.

To try to ensure opportunities for potential positive effects, EMCP will continue to work with the community and local businesses to monitor and evaluate its management strategies throughout the construction phase.

6.1.3.3 Marystown Area

Past changes in activity levels in Marystown have had significant impacts on housing demand. In 1994, for example, an upswing in activity at the shipyard and at the fish plant had a large effect on rents. Compared with the Isthmus area, there is a greater supply of rental accommodation in the Marystown

area and considerable experience with fluctuating demand for it with changing activity levels.

The Terra Nova project had little effect on Marystown. Participants in the public consultation process for White Rose drew attention to the fact that there was, at that time, a large excess of infrastructure capacity, including housing. However, the White Rose project did result in housing problems that lasted about a year. There was no difficulty finding accommodations for in-migrant workers, but this had secondary effects on the rental market

Workers received a living allowance that was to include their housing costs and most had no problems finding accommodations, sometimes with the aid of a list of units maintained by Aker Maritime Kiewit Contracting (AMKC). In addition, AMKC leased 37 renovated former NLHC units for the use of project engineers transferred from St. John's. These were used on a double occupancy basis. In addition, some senior staff stayed in hotel accommodations on a long-term basis.

The effect of this new demand on the rental housing market was significant, with the rent of a typical two-bedroom unit rising from $350 / 450 to $600 / 900. As a consequence some low-income households experienced affordability problems (L. MacLeod, pers. comm.). This was a short-term effect and was addressed through adjustments such as the construction of a new hotel, the renovation of basement apartments, and by people moving into their summer cottages so as to rent their homes to project workers (Town of Marystown, 2006; Husky Energy, 2007).

In the opinion of the Executive Director of the Schooner Regional Economic Development Board, even these short-term problems could have been prevented, and the positive effects enhanced, had there been a greater awareness of, and communication around, potential impacts. Furthermore, there were positive effects for some locals who owned rental units, and for some other local residents with White Rose employment who were able to buy a home and thereby stop renting accommodations or living with other family members (Husky Energy, 2007).

The post-White Rose Assessment Survey (2006) suggested that the Town of Marystown communicate on a regular basis with NLHC regarding the implications of any given project on social housing. Ongoing communication should reduce the social housing displacement issue observed during the White Rose project (Town of Marystown, 2006). Given this experience, including the opportunity to learn from it, together with housing vacancies resulting from continued out-migration, only minor short-term Project effects are expected. No cumulative effects are anticipated.

6.1.4 Integrated Residual Socio-economic Effects

The types of potential effects by Project phase, management strategies, and potential outcomes according to the criteria discussed in Chapter 2 are summarized in Table 6.2-1. No significant effects on housing are expected as a result of the Project. The market is believed to be capable of responding to demand as it has in the past. The effects of increases in demand resulting from the Project will, in an overall sense, have positive economic effects.

Not all individuals will benefit from economic growth associated with the Project. First-home buyers and those on low and fixed incomes may find that the cumulative effects of general economic growth and demographic and consumer demand changes will adversely affect them if house prices and rental accommodation costs increase. This is an indirect effect over which the EMCP has little influence. Overall, however, Project residual effects are considered to be primarily positive and not significantly adverse. These conclusions are summarized in Table 6.2-2.

6.2 Ports and Airports

The focus of the analysis in this section is St. John's because it has the main port and airport in the regional study areas and because these are also the facilities most likely to be used directly for Project activity.

6.2.1 Existing Socio-economic Conditions

The St. John's Port Authority, a crown agency, administers port-related activity in the City. Since 1999, the Port has undergone extensive modifications, as the result of a multi-million dollar capital investment strategy. It is now the primary offshore oil supply and service centre on Canada's east coast, the largest fish-handling port in Newfoundland and Labrador, a popular international cruise ship destination and the Province's primary container terminal (St. John's Port Authority Website, 2007).

Table 6.2-1: Valued Environmental Component: Housing

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Rever–sibility	Socio-economic Context
Engineering							
Design / Engineering of GBS	Increased demands for housing (P / A)	Monitoring / action by responsible authorities	2	2	1 / 2	R	2
Design / Engineering of Topsides	Increased demands for housing (P / A)	Monitoring / action by responsible authorities	2	2	1 / 2	R	2
Construction							
Construction / Project Management of GBS	Increased demands for housing (P / A)	Monitoring / action by responsible authorities	1	2	1 / 2	R	2
Fabrication of Topsides components	Increased demands for housing (P / A)	Monitoring / action by responsible authorities	1	2	1 / 2	R	2
Operations							
Offshore production / Support / service	Increased demands for housing (P / A)	Monitoring / action by responsible authorities	1	2	3 / 3	R	2
Decommissioning							
Offshore decommissioning / support	Increased demands or housing (P / A)	Monitoring / action by responsible authorities	1	2	4 / 2	R	2
Past / Present / Future Projects							
Construction	Increased demands for housing (P / A)	Monitoring / action by responsible authorities	1	2	1 / 2	R	2
Operations	Increased demands for housing (P / A)	Monitoring / action by responsible authorities	1	2	3 / 3	R	2

Key:

Magnitude:
1 = Low: within current capacity, standard or threshold
2 = Medium: approaches current capacity
3 = High: exceeds current capacity

Duration:
1 = Construction only
2 = Operations only
3 = Life of project
4 = Decommissioning only

Socio-economic Context:
1 = Area has no previous experience with offshore development
2 = Area has previous experience with offshore development

Geographic Extent:
1 = Individual Community
2 = Regional Study Area
3 = Province
N / A = Not Applicable

Frequency:
1 = Single occurrence
2 = Occasional occurrence
3 = Continuous

Reversibility:
R = Reversible
I = Irreversible

N B: Assessment criteria are defined in Section 2.2.8; All Development Drilling is included in Operations

Table 6.2-2: Residual Socio-economic Effects Summary Matrix: Housing

Valued Environmental Component: Housing				
Phase	**Residual Socio-economic Effects Rating, Including Cumulative Socio-economic Effects[1]**	**Level of Confidence**	**Likelihood**	
			Probability of Occurrence	**Scientific Certainty**
Engineering	P / NS	3	3	3
Construction	P / NS	3	3	3
Operations	P / NS	3	3	3
Decommissioning	NS / P	3	3	3
Project Overall	P / NS	3	3	3

Key:

Residual Socio-economic Effects Rating:
S = Significant adverse effect
NS = Not-significant adverse effect
P = Positive effect

Level of Confidence:
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

Probability of Occurrence: (based on professional judgement)
1 = Low probability of occurrence
2 = Medium probability of occurrence
3 = High probability of occurrence
N / A = Not Applicable

Scientific Certainty: (based on scientific information, statistical analysis or professional judgement)
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

[1] As determined in consideration of established residual socio-economic effects rating criteria

There is a total of approximately 5 km of dockface available, 51% of which is owned by the Port Authority. This includes the container and roll-on / roll-off (RoRo) terminal, which handles approximately half of the cargo entering the Province. Of the remaining dockage, 32% is privately owned and 17% directly or indirectly owned by government departments and agencies.

The St. John's Dockyard (NEWDOCK), at the western end of the Port of St. John's, includes a graving dock, a marine elevator, transfer and repair berths, mobile cranes, fabrication shops, warehousing and laydown areas. NEWDOCK's capabilities include provision of marine services (ship repair, etc.) and offshore services (component fabrication, testing, etc.) (St. John's Dockyard Limited website, no date). The dockyard changed ownership in 2010, but no changes in operational or capital expenditures are anticipated at this time (The Telegram, 2010).

In 2008, the Port recorded its highest gross revenue. Gross revenue increased by 14% to $5.137 million, from to $4.482 million in 2005. General cargo volumes increased 0.5% between 2004 and 2005 and have increased by nearly 20% since 1998. A record 1,250 vessels, 512 of which were petroleum industry-related, entered the Port in 2005. In 2008, while overall

Port activity slightly declined with 1,053 vessels coming into the Port, the number of petroleum industry-related vessels entering in the Port increased to 538. In 2005, the Port hosted 11,904 cruise ship passengers, a 50% increase over 2004. The number of cruise vessels has remained fairly constant, with 17 cruise ships visiting the Port in 2006, 14 in 2007 and 17 again in 2008. In 2009, 17 cruise ships had planned to visit the Port, but only 10 actually docked. Seven ships were not able to get into the Port due to weather related issues (St. John's Port Authority Website, 2007; B. McCarthy, pers. comm.).

Liquid fuels are imported to serve domestic and industrial needs, marine traffic and the airport. Irving Oil and Imperial Oil tankers pump from dockside terminals into storage tanks at the Irving facility on the south side of the Port; Maersk vessels receive their primary fuel supply from the Irving facility as well. Pier 18 and associated tankage is leased to Petro-Canada to service the offshore industry. Fishing vessels use the small boat basin on the south side of the Port near Fort Amherst and dockface space at the northwestern end.

The A. Harvey & Co. wharf (Piers 12, 14 [east and west], 15 and 16), at the northeastern end of the Port, has been the base for all offshore petroleum shore-based marine services since 1997. The company has had long-term agreements to service offshore drilling activity for Hibernia, Terra Nova and White Rose. In 1993, the company invested $7 million to build two docks to accommodate Hibernia operations. Subsequently, to address further growth of the offshore petroleum industry, the company invested $10 million for the construction of three new docks, completed in 2004 and investment of $2.5 million for the purchase of a second crane is planned. The company has currently five operational docks. Within five years from now, the company is planning to invest $4.5 million to redevelop Pier 12, which is now out of service. These investments will increase the capacity of the company to accommodate future projects like Hebron. The facilities were used by Chevron during both exploration and the delineation of the Hebron field. With current average utilization of the facilities at 30%, the company has the capacity to service additional projects (G. Cunningham, pers. comm.).

In 2003, in anticipation of further offshore development, the St. John's Port Authority completed a $10 million reconstruction of Pier 17 to create a 150,000 sq. ft. (13,935 m^2) multi-use facility to service the petroleum industry and for general marine usage. The facility now has improved lift capabilities, in-deck utilidors and new fluid management systems (St. John's Port Authority, 2003).

Since then there have been other major investments in Port improvements. In 2004, a $3.8 million community and tourism complex was built on Pier 7. A second, $2 million, Ro / Ro ramp was constructed at Pier 2 to improve loading and unloading of automobiles, trailers and containers (St. John's Port Authority Website, 2007), and in 2008-09 the St. John's Port Authority

invested $1.5 million to add six acres to the container shipping yard. This development will improve storage capacity and access to containers (St. John's Port Authority, 2009). The Port Authority is now concentrating on repair and maintenance of existing facilities and no major capital projects are budgeted for the near future (B. Smart, pers.com.).

Bay Bulls Marine Terminal (BBMT) manages and operates an ISPS certified Marine Terminal facility located approximately 32 km south of St. John's. The facility was completed in 2005. It is the closest ice-free, deepwater port to the Grand Banks oilfields. The Terminal is also in proximity to highway linkages to St. John's and surrounding industrial parks.

The terminal has 12.5 acres of waterfront space suitable for light and heavy marine industrial activity, for loading and discharging vessels and for repairing and upgrading drill rigs. BBMT has two wharves: a 361 feet long concrete quay structure and a 295 feet long sheet piled quay. There is also a launching ramp and a haul up slipway. The terminal has over 14 acres of lay-down area without load restriction and storage facilities adapted for bulk, pumping and tubular handling. Fabrication, office space as well as 8,500 square feet of warehouse space are also available on site (Bay Bulls Marine Terminal Website, 2007).

BBMT has been involved in various offshore projects such as offshore pipeline burial and the installation of deepwater oil well drilling systems. At the time of writing the terminal was being used for construction associated with the North Amethyst extension for the White Rose oilfield (D. Elliot, pers.com.).

The St. John's International Airport (SJIA) is the busiest commercial airport in the Province. The St. John's International Airport Authority Inc., a not-for-profit corporation, assumed control in December 1998. The Airport is characterized as an "end of the line" airport in the national context, but it serves as a hub for traffic within the Province, The main terminal serves scheduled national and international passenger aircraft, most charter flights and air cargo traffic. Carriers include Air Canada, Provincial Airlines, WestJet, Porter Airlines, Air Transat, Continental Airlines and Air Saint-Pierre.

General aviation activities take place on the east side of the airport in an area that includes several hangars, with associated office and service buildings. The general aviation area supports corporate aviation, government and military operations, charter services, flight training, search and rescue) including Canadian Helicopters and eleven cargo and courier services.

Helicopters and some military and private aircraft use the multi-purpose Cougar Helicopters Inc. facility, adjacent to the main terminal, on the west side. Universal Helicopters Ltd. has its terminal building and landing area, under the control of the airport control tower, but outside Airport property, on Major's Path.

Between 2002 and 2005, passenger volumes increased by 35%, and by a further 8% in 2010 over 2009; an increase that was twice the national average growth rate. In 2010 the SJIA was used by approximately 1.3 million passengers (SJIA website, 2011).

In 2008, the Airport's operations injected $365 million into the economy and contributed to $75 million in tax revenue to all levels of government. In addition, it provided employment to 1,500 people (SJIA, 2011). Offshore petroleum activity has been shown to have been important in the growth of the St. John's International Airport. Between 2005 and 2007, over $22 million was spent in infrastructure upgrades and general capital improvements to the airport (PRAC, 2009). The SJIA recently announced a $150 million expansion plan to accommodate growing passenger traffic. The first phase of the ten-year plan will focus on expanding the east wing of the airport (CBC News, 2011).

Air cargo has declined from a peak in 1984, but has been increasing steadily in recent years. Current facilities can handle present volumes, but a site has been set aside to accommodate increased traffic when needed. There are plans for an extension of the cargo / baggage handling area.

The SJAA has a capital projects plan which will direct $38 million towards runway resurfacing and expansion, construction of a multi-use facility to be used for de-icing and aircraft storage, an expansion to the terminal, an expansion to the visitor information centre and the purchase of an additional passenger loading bridge (JWL, 2006). Over the last two years the SJAA has invested approximately $14 million to rehabilitate its secondary runway and to install low visibility taxiway lighting on its principal taxiways. The result is an improvement in the capability of the airfield to allow aircraft to taxi under low visibility conditions and an increase in airfield safety. The first phase of this project was completed in 2007 and included the introduction of a more energy-efficient approach lighting system to the 2,125m secondary runway (Runway 16 / 34). Phase two included a rehabilitation of the drainage systems, a resurfacing of its secondary runway, installation of a low visibility taxiway lighting system and installation of the infrastructure to support centerline lighting on its secondary runway. The major construction work was completed in 2008. In 2009, the taxiway lighting system was installed and made operational in early 2010 (SJIA website 2011).

6.2.2 Project—Environment Interactions

The direct Project—Environment interactions that might occur are indicated in Table 6.2-3. The port of St. John's will be used if topsides or other components are fabricated at the NEWDOCK yard. EMCP expects to use an existing marine supply base to support offshore production. The Port and airport may also be used in the event of accidents or other unplanned events.

Table 6.2-3: Project-environmental Effects Interaction Matrix: Port and Airport

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Engineering				
Design / Engineering of GBS	X			
Design / Engineering of Topsides	X			
Construction and Installation				
GBS Construction	X			
Topsides Fabrication / Outfitting	X			
Fabrication of Other Components	X			
Installation	X			
Operations				
Administration	X			
Supply Base / Warehousing	X			
Helicopter Transport	X			
Offshore Production / Marine Support	X			
Tanker Transport		X		
Decommissioning	N / A	N / A	N / A	N / A
Past / Present / Future Projects				
Construction	X			
Operations	X			

Note:

\1Newfoundland and Labrador, excluding the St. John's, Isthmus and Marystown areas.

6.2.3 Socio-economic Effects

Three operators are currently using the A. Harvey & Co. wharf and its capacity has been, and is projected to be, sufficient to support field development and ongoing operations. Other supply base capacity exists within the Port and in Bay Bulls.

St. John's has efficient trucking, pilotage, stevedoring, water supply, ship chandlering, repair and servicing shops, waste disposal, vessel traffic monitoring and other services. Increased activity is not expected to adversely affect other Port users, as there is adequate capacity to accommodate any currently anticipated cumulative effects of further field developments.

Cougar Helicopters Inc. has contracts to support all three offshore projects on the Grand Banks. The company operates from a purpose-built facility on the west side of the airport. The facility has 1,020 m^2 of hangar space and 650 m^2 for ancillary uses, and serves three Sikorsky S-92 helicopters (Cougar Website, 2009). Air (helicopter) support for the Hebron oilfield development will be determined through EMCP's procurement process.

As noted, airport traffic is increasing. Notwithstanding this, new facilities and the expansion program have increased capacity and will allow considerably

more traffic to be accommodated without difficulty and without adversely affecting existing users. Any cumulative effects will generate more revenue for the SJAA.

6.2.4 Integrated Residual Socio-economic Effects

The types of effects anticipated by Project phase, any mitigative measures necessary and potential outcomes against the significance criteria discussed in Chapter 2 are summarized in Table 6.2-4.

Table 6.2-4: Valued Environmental Component: Port and Airport

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Rever-sibility	Socio-economic Context
Engineering							
Design / Engineering of GBS	Increased use of Port and Airport (P)	Monitoring / action by service providers	1	2	1 / 2	R	2
Design / Engineering of Topsides	Increased use of Port and Airport (P)	Monitoring / action by service providers	1	2	1 / 2	R	2
Construction							
Construction / Project Management of GBS	Increased use of Port and Airport (P)	Monitoring / action by service providers	1	2	1 / 2	R	2
Fabrication of Topsides components	Increased use of Port and Airport (P)	Monitoring / action by service providers	1	1	1 / 2	R	2
Operations							
Offshore production / Support / service	Increased use of Port and Airport (P)	Monitoring / action by service providers	1	1	3 / 3	R	2
Decommissioning							
Offshore decommissioning / support	Increased then Decreased use of Port and Airport (P / A)	Monitoring / action by service providers	1	1	4 / 2	R	2
Past / Present / Future Projects							
Construction	Increased use of Port and Airport (P)	Monitoring / action by service providers	1	1	1 / 2	R	2
Operations	Increased use of Port and Airport (P)	Monitoring / action by service providers	1	1	3 / 3	R	2

Key:

Magnitude:
1 = Low: within current capacity, standard or threshold
2 = Medium: approaches current capacity
3 = High: exceeds current capacity

Duration:
1 = Construction only
2 = Operations only
3 = Life of project
4 = Decommissioning only

Socio-economic Context:
1 = Area has no previous experience with offshore development
2 = Area has previous experience with offshore development

Geographic Extent:
1 = Individual Community

Frequency:
1 = Single occurrence

Reversibility:
R = Reversible

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Rever-sibility	Socio-economic Context
2 = Regional Study Area		2 = Occasional occurrence			I = Irreversible		
3 = Province		3 = Continuous					
N / A = Not Applicable							
N B: Assessment criteria are defined in Section 2.2.8; All Development Drilling is included in Operations							

Effects of the Project on both the Port of St. John's and St. John's International Airport are expected to be significant and positive. Their greater use, from Project-related activities and cumulatively from other activities, will generate increased revenues for both administrative authorities, but should have no negative effects on other users. The residual effects for these infrastructure elements are summarized in Table 6.2-5.

Table 6.2-5: Residual Socio-economic Effects Summary Matrix: Port and Airport

Valued Environmental Component: Port and Airport				
Phase	Residual Socio-economic Effects Rating, Including Cumulative Socio-economic Effects[1]	Level of Confidence	Likelihood	
			Probability of Occurrence	Scientific Certainty
Engineering	P	3	3	3
Construction	P	3	3	3
Operations	P	3	3	3
Decommissioning	NS	3	3	3
Project Overall	P	3	3	3

Key:

Residual Socio-economic Effects Rating:
S = Significant Adverse Effect
NS = Not-significant Adverse Effect
P = Positive Effect

Level of Confidence:
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

Probability of Occurrence: (based on professional judgement)
1 = Low probability of occurrence
2 = Medium probability of occurrence
3 = High probability of occurrence

Scientific Certainty: (based on scientific information, statistical analysis or professional judgement)
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

N / A = Not Applicable

[1] As determined in consideration of established residual socio-economic effects rating criteria

6.3 Industrial and Commercial Land, Warehousing and Office Space

The demand for industrial land arising from the Project will depend on the nature of the work that is carried out in Newfoundland and Labrador. Part of EMCP's commitments are to attempt to create business and employment opportunities for companies and labour within a competitive framework and, given the technical similarities of the Project to Hibernia, the assumption made is that the same types, though not the same levels, of demands for industrial and commercial land, warehousing and office space will be generated by Hebron.

The requirements for industrial land will, therefore, likely include fabrication yards such as those at Bull Arm, Marystown, Argentia and St. John's, and light industrial land such as is found in industrial estates in Mount Pearl, Paradise and St. John's.

Primary attention in the assessment is given to those communities within the defined study areas that offer these types of infrastructure. Further description and discussion of industrial facilities and capabilities is included in the Canada-Newfoundland and Labrador Benefits Plan.

6.3.1 Existing Socio-economic Conditions

6.3.1.1 St. John's Area

The dockyard in St. John's (NEWDOCK) is the main site for marine-related industrial activity in the area. Operated by St. John's Dockyard Ltd., the yard covers approximately 7.5 ha (18.5 acres) at the western end of the Port of St. John's and includes four piers, a 174-metre graving dock, a marine elevator, three 100-metre transfer and repair berths, a subsea testing facility, mobile cranes, fabrication shops, warehousing and laydown areas. Approximately 2 ha (5 acres) of laydown area are available. NEWDOCK's capabilities include provision of marine services (ship repair, etc.) and offshore services (component fabrication, testing, etc.) NEWDOCK fabricated and assembled the subsea HOST Systems for Terra Nova (St. John's Dockyard Limited Website, n.d.).

Established industrial land in the area is now fully or close to fully taken up. However, there is a significant amount of industrial and commercially zoned land available for new development within the St John's area (T. Crosbie, pers. comm.; A. Janes, pers. comm.) including:

- Torbay Road North Commercial Area, which includes Harvey Industrial Park and Airport Industrial Area, has two major lots of 20 and 67 acres available. The proximity to the St. John's International Airport and the St. John's Port makes it a strategic location for the development of oil and gas related industries. At the time of writing there are no specific plans for

development of the Airport Industrial Area, but new commercial development is underway between Torbay Road, Stavanger Drive and the Harvey Industrial Estate;

- Mount Pearl, Donovan's Business Park is a light to medium general industrial area that has been significantly developed, there are now no available lots (Jerry Boyles, pers. comm.);
- Kelsey Drive Commercial Development Extension contains approximately 110 acres of vacant serviced land zoned as commercial. Light industrial activities could be developed in this area;
- Bremigens Pond Industrial area in Paradise is currently in the planning phase and could offer 50 acres of heavy industrial land. The land is currently unserviced, but its proximity to Octagon Industrial Park would facilitate the connection to water and sewer. This area is strategically located as it is close to the highway and it is far from any residential areas;
- Freshwater Bay Industrial Area has 200 acres of vacant land. The site is currently unserviced and connection to water and sewage is an issue that would have to be overcome. Further assessment would be required to determine the cost of servicing the area;
- Pippy Industrial Park extension contains 20 acres of land divided into two five-acre lots and ten one-acre lots;
- White Hills Industrial Park has been partially developed but there are approximately 30 acres of vacant land. However, development is constrained by nearby wetland areas;
- Kenmount Park has 13 acres of available land, with the largest area measuring 6 acres;
- Fowlers Industrial Area, in Conception Bay South near Fowlers Road and the TCH, would include 40 acres of easily serviced area (pending purchase of the land by the Town.);
- The Town of Paradise owns Octagon Pond Industrial Area in Paradise. It includes a training institute that offers programs in the millwright and construction fields and occupies a six-acre lot. The Town plans to develop the area and has recently built a collector road, McNamara Road, which connects the industrial area from Topsail Road to Kenmount Drive. Recently, a new road within the industrial area was built to facilitate development. In 2009, there were approximately 30 industrial installations on that section of the industrial area and further development is expected. For example, plans for the construction of a training centre for people in the petroleum industry are waiting to be approved by the Town of Paradise (G. Alton pers.com.). There are currently seven acres of vacant land divided into small pockets (T. Crosbie, pers.com.).

Highway access from these industrial lands to other key infrastructure elements such as the Port of St. John's and the St. John's Airport is generally good. East-west access has been improved with the development of the Outer Ring Road. Highway improvements have facilitated access for port traffic coming from the west, but access to the port for large vehicles coming from the east is still constrained by grades.

Office space for administrative and development- and operations-phase activities (other than that for industrial, warehousing or similar support activities), is mainly found in St. John's. Since 2000, vacancy rates have declined in all parts of the City. The greatest demand is for Class A space, all of which is in the downtown area. Within that segment, in the first quarter of 2010 there was a 0.8% vacancy rate and available space is at a premium (H. Mills-Snow, pers. comm.). Demands for new space present planning challenges in the downtown core in terms of balancing historical values and scale considerations with new development, but there is land available close to the downtown and designated for multi-story buildings in the Municipal Plan should this be required.

The City of St. John's Department of Municipal Affairs and 15 other municipalities are currently working towards the creation of a Northeast Avalon Regional (NEAR) Plan. It will build on the current regional plan and will respond to issues including population growth, development demand and the need for new economic opportunities and regional services. Land use planning will be addressed in this plan. As part of the process to prepare the new plan, public consultation sessions have been held in Northeast Avalon communities throughout 2009 and continued in 2010 (Northeast Avalon Regional Plan Website, n.d).

6.3.1.2 Isthmus of Avalon Area

The Bull Arm site represents the most significant industrial lands in the Isthmus Area that are relevant to the offshore petroleum industry. The site comprises three main areas: the dry dock site, the fabrication and assembly yard, and the construction camp / administration area. The dry dock site, which underwent some modifications in 1999 and 2005, encompasses 140,000 m^2 and the fabrication and assembly yard is a 120,000 m^2 area. In 2008 the site was transferred to Nalcor Energy.

During Hibernia construction, the workforce peaked at almost 5,800, of which 3,400 lived on site in a work camp. Since then, the camp has been closed and the accommodation units removed. In 2003, the fabrication and assembly yard was used to support the Terra Nova project, which had a peak workforce of 2,400. A portion of the site was used to fabricate work related to the White Rose project in 2003 and in 2004 the Main Electrical Room Module was completed there and deployed to Marystown for incorporation on the SeaRose FSPO. Since 2005, the site has been used, for example, to

fabricate components for the Voisey's Bay mine / mill, for subsea integration testing for White Rose, and to refit the semi-submersible drill rig, the Henry Goodrich (Bull Arm Site Corporation Website, no date).

In addition, North Eastern Constructors Ltd. worked on the North Amethyst subsea manifold fabrication project. This project, which lasted over two years, had a peak workforce of 300 and was completed in July 2009 (D. Chafe, pers. comm.). From May 2009 to December 2009, Pennecon Energy worked on a contract to upgrade the offshore drill rig Grand Banks owned by GlobalSantaFe. The peak workforce for this project was 600 (S. Clark, pers. comm.).

Other industrial and commercial lands in the area are concentrated in Clarenville and Arnold's Cove. Clarenville has recently acquired land near Shoal Harbour from NLHC for development as mainly commercial / light industrial with some residential. The Town invested $12.5 million in water, sewer and road development, which, opened up 55 ha of private and town commercial land and 19.7 ha of town industrial land for development. The project has been undertaken in anticipation of continuing economic growth in the Clarenville area (R. Hiscock, pers.com).

The Town of Arnold's Cove purchased all of the designated commercial and residential land in the community from NLHC in 1999. In 2009, the Town had 7.6 acres of serviced industrial lands and 100 acres of unserviced land. However, as there has been little growth in the economy of the region no significant development has occurred in the past few years (W. Slade, pers. comm.).

6.3.1.3 Marystown Area

The Town of Marystown has developed a 20 ha Marine Industrial Park Development, which was completed on June 30, 2010. Fifteen large industrial size lots have been fully developed with water and sewer services, a paved access road, and a three-phase electrical power development. The next phase is the development of the lay down area, which will be followed by construction of the proposed marginal wharf (D. Kelly, pers. comm.). The project is expected to "enhance the business infrastructure in [the] region by building on and complementing […] existing oil and gas and marine services capabilities" (ACOA, 2009).

Kiewit Offshore Services, a division of Peter Kiewit Sons' Co. Ltd., owns and operates the Marystown Shipyard and the Cow Head Offshore Fabrication Facility. The shipyard has a syncrolift platform dock with hoists accompanied by a side transfer system to accommodate multiple vessels at one time. This combination includes a 3,000 tonne platform measuring 76 x 19 m. The facility also has an in-house fabrication area of 9,358 m^2, with 300 m of water frontage. The yard handles boat construction and repair, refitting, conversion and maintenance for fishing fleet and offshore-related vessels, as well as rig

component construction and outfitting. The oil rig Henry Goodrich arrived at the Marystown Shipyard in May 2010 for its scheduled five-year refit. This round of maintenance, inspections and certifications requires approximately two and a half months and approximately 350 people (CBC News, May 5, 2010; The Southern Gazette, 2010).

The Cow Head location occupies an area of 81,000 m^2, of which 14,000 m^2 is covered fabrication space. This location is equipped with a finger pier, with a 15 m water depth at lowest low tide, which can accommodate structures such as offshore vessels and semi-submersible rigs (Kiewit Offshore Services Website, 2004).

6.3.2 Project—Environment Interactions

Potential Project—Environment interactions are illustrated in Table 6.3-1. During the construction / installation phase, depending on where contracts are awarded, there will be a demand for industrial and commercial land, warehousing and office space. During operations, there will mainly be a demand for industrial lay-down space, light industry space, and office and warehouse space. During this phase, the demand will be in the St John's area. Depending on what other activities are ongoing at the time of the construction phase for Hebron, there could be some cumulative demands from various projects for land, office space, etc. During the operations phase, the four offshore projects and any other developments will have a cumulative effect on the St John's area.

Table 6.3-1: Project-environmental Effects Interaction Matrix: Industrial and Commercial Land, Warehousing and Office Space

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Engineering				
Design / Engineering of GBS	X			
Design / Engineering of Topsides	X			
Construction and Installation				
GBS Construction		X		
Topsides Fabrication / Outfitting	X	X	X	X
Fabrication of Other Components	X	X	X	X
Installation	X			
Operations				
Administration	X			
Supply Base / Warehousing	X			
Helicopter Transport	X			
Offshore Production / Marine Support	X			
Tanker Transport	X			
Decommissioning	X			
Past / Present / Future Projects				
Construction	X	X	X	X

Project Activities and Physical Works	St. John's Area	Isthmus Area	Marystown Area	Other Newfoundland and Labrador[1]
Operations	X	X		X

Note:

[1] Newfoundland and Labrador, excluding the St. John's, Isthmus and Marystown areas.

6.3.3 Socio-economic Effects

6.3.3.1 St. John's Area

The offshore operators, industry suppliers and contractors have taken up and will continue to take up warehouse and office space in the St John's area. They are primarily located in St. John's, Mount Pearl and Paradise. Such developments are beneficial to the local economy in terms of the direct and business employment and income effects that they generate, together with the indirect and induced effects on firms providing equipment, business services, restaurant and hotel services, for example, all of which add to the tax bases of municipal and other authorities.

As indicated in Section 6.3.1, the supply of land in the major industrial parks in the St. John's region is tightening. While there remains some room for expansion in serviced areas such as Kelsey Drive Industrial Area, much of the remaining available land is unserviced. Bremigens Pond Industrial Area in Paradise would be an option for heavy industry developments and servicing is readily available. Larger development opportunities such as Torbay Road North Commercial Area and Freshwater Bay Industrial Area will require significant investment to bring them on stream. That said, unless there is significant demand from unexpected economic growth, there is currently sufficient industrial and commercial space of all types to meet demands from Hebron and from any cumulative growth associated with the offshore industry and other sectoral activity within the region. In the case of Class A office space, however, the choice may be limited.

6.3.3.2 Isthmus of Avalon Area

The Hibernia platform was constructed and assembled at the Bull Arm site. The capacity of the site also met all requirements placed upon it by the Terra Nova and White Rose projects and no difference is anticipated were the site to be used for Hebron. The use of the site for Hibernia, Terra Nova and White Rose has been beneficial to the local as well as provincial economies and any use made of it for Hebron would continue these benefits. No demand for additional industrial land is expected in Clarenville, Arnold's Cove or other Isthmus area communities.

6.3.3.3 Marystown Area

The Marystown Shipyard and the Cow Head facility are capable of accommodating any demands placed upon them by the Project. In addition to refits of mobile offshore drilling units, the yard has, for example, built two tugs for the oil-transshipment facility at Whiffen Head, and 14 steel bridge support jackets for the Phase II expansion of that facility. The Cow Head facility built topside drilling modules and pipe racks for the Hibernia project. Additional work on the Project or from other activities would be welcomed and generate benefits for the area.

6.3.4 Integrated Residual Socio-economic Effects

The types of effects anticipated by Project phase, management strategies and potential outcomes against the significance criteria previously identified are summarized in Table 6.4-1.

Potential effects of the Project on industrial and commercial lands, warehousing and office space are considered likely to be positive. The capacity to accommodate most requirements is already in place. Land is available for additional development, should it be required. Increased activity will generate direct and indirect employment and income benefits both from the Project itself and cumulatively with developments in other sectors.

The residual effects with respect to these infrastructure components are summarized in Table 6.4-2. As indicated, the outcomes, including any cumulative effects, are predicted to be positive, with no significant adverse effects.

6.4 Monitoring and Follow-up

Monitoring of demand for housing support is part of the mandate of the provincial Department of Human Resources and Employment. In the past it has responded by increasing financial support when rents have increased substantially. Support of those in need, through the provision of social housing, has also been a mitigative strategy, but one that has been primarily dependent on federal funding. Any changes in such funding are typically related to national programs and policies and are unlikely to be in response to purely local changes in demand. Through ongoing discussion with the communities and regional agencies, EMCP will monitor any housing concerns and make representation to the relevant authorities to encourage appropriate action. As recommended to Project personnel by councillors or town officials during consultations for the SEIS, providing project information early usually enables appropriate action to be taken to avoid or mitigate potential negative effects.

The St. John's Port and Airport Authorities monitor activities on an ongoing basis and can be expected to respond to any customer needs as they

emerge. EMCP will liaise with these authorities during the life of the Project to identify and resolve any issues regarding access and traffic in the port and airport.

Monitoring the occupancy of industrial and commercial land, warehousing and office space is carried out by municipal authorities and private land developers. Any further increases in demand for industrial and commercial land, warehousing or office space will be met by responses from the private sector. No monitoring activity on the part of EMCP is considered necessary.

Table 6.4-1: Valued Environmental Component: Industrial and Commercial Land, Warehousing and Office Space

Project Activity	Positive (P) or Adverse (A) Environmental Effect	Management Strategy	Criteria for Assessing Effects				
			Magnitude	Geographic Extent	Duration / Frequency	Rever–sibility	Socio-economic Context
Engineering							
Design / Engineering of GBS	Increased demands for land, office space, etc. (P / A)	Monitoring / action by responsible authorities / private sector	1	1	1 / 3	R	2
Design / Engineering of Topsides	Increased demands for land, office space, etc. (P / A)	Monitoring / action by responsible authorities / private sector	1	1	1 / 3	R	2
Construction							
Construction / Project Management of GBS	Increased demands for land, office space, etc. (P / A)	Monitoring / action by responsible authorities / private sector	1	1	1 / 3	R	2
Fabrication of Topsides components	Increased demands for land, office space, etc. (P / A)	Monitoring / action by responsible authorities / private sector	1	1	1 / 3	R	2
Operations							
Offshore production / Support / service	Increased demands for land, office space, etc. (P / A)	Monitoring / action by responsible authorities / private sector	1	1	3 / 3	R	2
Decommissioning							
Offshore decommissioning / support	Increased then decreased demands for land, office space, etc. (P / A)	Monitoring / action by responsible authorities / private sector	1	1	4 / 3	R	2
Past / Present / Future Projects							
Construction	Increased demands for land, office space, etc. (P / A)	Monitoring / action by responsible authorities / private sector	1	1	1 / 3	R	2
Operations	Increased demands for land, office space, etc. (P / A)	Monitoring / action by responsible authorities / private sector	1	1	3 / 3	R	2

Key:

Magnitude:
1 = Low: within current capacity, standard or threshold
2 = Medium: approaches current capacity
3 = High: exceeds current capacity

Duration:
1 = Construction only
2 = Operations only
3 = Life of project
4 = Decommissioning only

Socio-economic Context:
1 = Area has no previous experience with offshore development
2 = Area has previous experience with offshore development

Geographic Extent:
1 = Individual Community
2 = Regional Study Area
3 = Province
N / A = Not Applicable

Frequency:
1 = Single occurrence
2 = Occasional occurrence
3 = Continuous

Reversibility:
R = Reversible
I = Irreversible

N B: Assessment criteria are defined in Section 2.2.8; All Development Drilling is included in Operations

Table 6.4-2: Residual Socio-economic Effects Summary Matrix: Industrial and Commercial Land, Warehousing and Office Space

Valued Environmental Component: Industrial and Commercial Land, Warehousing and Office Space				
Phase	**Residual Socio-economic Effects Rating, Including Cumulative Socio-economic Effects[1]**	**Level of Confidence**	**Likelihood**	
			Probability of Occurrence	**Scientific Certainty**
Engineering	P / NS	3	3	3
Construction	P / NS	3	3	3
Operations	P / NS	3	3	3
Decommissioning	NS	3	3	3
Project Overall	P / NS	3	3	3

Key:

Residual Socio-economic Effects Rating:
S = Significant Adverse Effect
NS = Not-significant Adverse Effect
P = Positive Effect

Level of Confidence:
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

Probability of Occurrence: (based on professional judgement)
1 = Low probability of occurrence
2 = Medium probability of occurrence
3 = High probability of occurrence

Scientific Certainty: (based on scientific information, statistical analysis or professional judgement)
1 = Low level of confidence
2 = Medium level of confidence
3 = High level of confidence

N / A = Not Applicable

[1] As determined in consideration of established residual socio-economic effects rating criteria

7 SUSTAINABLE DEVELOPMENT

The petroleum industry contributes to the well being of the population by supplying energy for industries and homes, fuel for transportation, and raw materials for the manufacture of goods. The sector is a significant contributor to the Canadian economy.

The industry's contribution to Newfoundland and Labrador is more than economic: it includes the research and development and experience invested into creating safe facilities and sustainable living and working conditions in a harsh environment; understanding and protecting the marine life on the Grand Banks; improving operational practices in cold climates; adding infrastructure; and stimulating growth and expansion in training and education opportunities in the Province's institutions.

However, the petroleum industry's extractive nature raises concerns among some of the population in regards to the sustainability of the industry. It has become important for the industry to respond to stakeholders' concerns by developing ways to balance the considerable social and economic benefits while minimizing any potential environmental effects.

Sustainable Development has been defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission 1987).

ExxonMobil's approach to environmental protection echoes this principle and is stated simply as *Protect Tomorrow. Today*. EMCP conducts business in a manner that is compatible with the balanced environmental and economic needs of the communities in which it operates.

The C-NLOPB Development Plan Guidelines (2006a) point out that the intent of legislation governing the Canadian offshore petroleum industry is that offshore oil and gas developments be implemented and managed in a manner that creates a lasting economic legacy for the people of the province.

The C-NLOPB Guidelines require that a socioeconomic impact assessment address sustainability. The resulting Socio-economic Impact Statement and Sustainable Development Report are to include consideration of measures that will be taken by EMCP to ensure no long-term adverse environmental consequences and to ensure a lasting contribution to Newfoundland and Labrador society.

Construction of the Province's first offshore development project's production facilities, the Hibernia GBS platform, was initiated in 1990 and offshore oil and gas has continued to be an important part of the provincial economy and society ever since. The provincial Energy Plan reflects this and energy developments are viewed as an opportunity to improve the economic future of

the people of Newfoundland and Labrador (Newfoundland and Labrador, 2007a).

The Government of Newfoundland and Labrador intends to proclaim a Sustainable Development Act and has prepared a Sustainable Development Discussion Document for public consultation on the proposed Act (Newfoundland and Labrador 2007b). The Discussion Document provides examples of successes in "integrating the concept of sustainability into economic development". One of the examples is the offshore petroleum industry:

"The development of the petroleum industry has had tremendous socio-economic impacts for Newfoundland and Labrador. In addition to the value of oil production, numerous direct and indirect benefits from exploration and development have diversified our economy. The requirement for state-of-the-art infrastructure, education, training and research has enhanced economic activity in other goods and services sectors and positioned oil related businesses within the province to compete nationally and internationally. This creates long-term employment and wealth for Newfoundland and Labrador (page 17)."

The offshore oil and gas industry has enabled growth and development in business, education, training, research and development in the Province as well as being a major employer for residents throughout the Province and generating significant revenue for the Province.

While the Province determines how to best use the revenues for the betterment of the provincial economy and citizens, the Project can make its own specific contribution to sustainability through its policies, procedures and practices.

ExxonMobil, as a corporation, supports sustainability by balancing economic growth, social development and environmental protection to ensure that future generations are not compromised by actions taken today.

Within this overall framework, EMCP has already taken actions and committed to others that will enable important contributions to sustainability. The sections below outline ExxonMobil's corporate commitment and approach to development and present the Project's framework for contributing to sustainable development within the Province.

7.1 Corporate Commitment

The Project will be designed, built and operated within the ExxonMobil policy of environmental responsibility. The corporate environmental policy is to:

- Comply with all applicable environmental laws and regulations and apply responsible standards where laws or regulations do not exist;

- Encourage concern and respect for the environment, emphasize every employee's responsibility in environmental performance, and foster appropriate operating practices and training;
- Work with government and industry groups to foster timely development of effective environmental laws and regulations based on sound science and considering risks, costs, and benefits including effects on energy and product supply;
- Manage its business with the goal of preventing incidents and of controlling emissions and wastes to below harmful levels; design, operate and maintain facilities to this end;
- Respond quickly and effectively to incidents resulting from operations, in cooperation with industry organizations and authorized government agencies;
- Conduct and support research to improve understanding of the impact of its business on the environment, to improve methods of environmental protection, and to enhance its capability to make operations and products compatible with the environment;
- Communicate with the public on environmental matters and share its experience with others to facilitate improvements in industry performance; and
- Undertake appropriate reviews and evaluations of its operations to measure progress and to foster compliance with this policy.

7.2 Meeting the Commitment

The Project Team's commitment is to plan and execute the Project as an environmentally responsible development consistent with ExxonMobil's vision of *Protect Tomorrow. Today*, and one that successfully balances environmental and economic needs.

The Team will achieve its goal through:

- Demonstrating management commitment and leadership;
- Identifying and mitigating environmental impact;
- Integrating environmental business planning into overall Project planning;
- Implementing operations integrity management system (OIMS) effectively; and
- Considering community concerns in planning.

7.2.1 Management Commitment and Leadership

The Project Management Team has ensured that environment, benefits and diversity expertise have been integral to the project planning from the earliest stages. This commitment is demonstrated in the Benefits Agreement signed with the Province in 2008.

The Project Management Team has consistently asserted the safety, security, health and environmental context in which the Project will be developed and operated—both internally and publicly. A key point has been that the Project is a thirty year plus endeavour and will become an integral part of the community and economic landscape throughout its life.

7.2.2 Environmental Assessment

Environmental and socio-economic assessment is standard practice in project planning within ExxonMobil's Operations Integrity Management System.

For the Project, both an environmental assessment and a socioeconomic assessment have been prepared. The Comprehensive Study Report addresses the environmental factors identified by federal agencies under the Canadian Environmental Assessment Act and the Socioeconomic Impact Statement and Sustainable Development report, an ancillary document to the Development Plan and the Benefits Plan, addresses the C-NLOPB guidelines. Both of these assessments are made available for review to the public and to regulatory agencies.

7.2.3 Environmental Business Planning

Environmental Business Planning integrates long-range environmental strategies and improvement plans into business plans, strategic thinking and consideration of hard-to-quantify benefits.

In addition to the traditional considerations of cost / benefit analysis and adherence to science-based principles, Environmental Business Planning adds criteria such as community relationships, biodiversity implications and non-science based expectations to the planning and decision-making process.

Strategies to prevent or mitigate negative effects or to enhance benefits are built on sound technical and economic foundations and are comprehensive, covering all aspects of environment—air, water, land, natural resources, biodiversity and communities.

Environmental Business Planning is linked with OIMS and ensures that environmental aspects of a project or operation are identified and considered on an ongoing basis.

7.2.4 Operations Integrity Management System (OIMS)

The Operations Integrity Management System provides a framework for project environmental and socioeconomic management that is integrated with business planning and ongoing stewardship.

OIMS ensures that environmental, socioeconomic and health aspects of a proposed project are identified and considered. EMCP will comply with applicable ExxonMobil Upstream Environmental Standards to eliminate adverse impacts. In all cases, compliance with all applicable Canadian regulatory requirements takes priority; adherence to the Upstream Environmental Standards provides an additional layer of protection to ensure that EMCP operates in an environmentally responsible manner.

Using the Environmental Management Plan required by OIMS, a project's environmental, socioeconomic and health parameters are monitored, reviewed and re-evaluated to ensure acceptable levels of effects (as well as enhancement of any beneficial effects) and consistency with environmental, socioeconomic and health performance objectives and stewardship goals.

7.2.5 Integrating Community Concerns

EMCP's approach to socio-economic assessment includes consultation with potentially affected communities. As well, the environmental assessment process in Canada ensures that there are opportunities for the public to learn about and comment on a proposed project. In addition, the Development Application process implemented by the C-NLOPB includes a public review phase and encourages consultation between the operator and the public as well as relevant regulatory bodies.

EMCP has engaged the public in several ways to ensure that the interests, concerns and information held by the public are integrated into the assessment and project planning. Meetings to introduce and discuss the ramifications of all phases of the project have been held with individuals, interest groups, health and education / training institutions, community economic planning groups, business associations and the research and development sector.

In response to suggestions and encouragement from a number of individuals and groups during consultations, EMCP developed and implemented a 'schools program' in the fall of 2009 whereby the upcoming generation can learn about opportunities associated with the Project and the oil and gas industry and use this information in decisions about further training and education.

All members of the senior Project Management Team participated in the autumn 2009 public Open Houses in order to ensure an opportunity for members of the public to ask questions about the Project and offer information that may otherwise have not been available to Project planning.

The senior management team has also hosted several Contractor Information Forums within the province as well as a well-attended Contractor Safety Forum.

7.3 Approach to Responsible Development

EMCP is planning and conducting the Project using the guidance of internal policies, regulatory and other government agencies, and the project area communities.

The Project is subject to both internal and external approval processes. Internal processes address EMCP project approval requirements as well as the approval requirements of commercial agreements amongst the Project Co-venturers.

7.3.1 Internal Approval Process

In order to proceed with the Project, EMCP must meet the requirements of the ExxonMobil Capital Project Management System process and submit documentation demonstrating that the basis of project design has incorporated environmental considerations; environmental, health and socioeconomic effects associated with the Project have been carefully identified and considered; and a preliminary environmental management plan meeting the requirements of OIMS is in place.

ExxonMobil has developed a series of environmental standards to guide operations worldwide and ensure that responsible environmental protection and management can be achieved in all countries, including those countries where there is little to no established environmental planning. Standards address traditional environmental aspects as well as socioeconomic management. Standards and the associated implementation processes are the basis of the Operations Integrity Management System, OIMS. Compliance with a host country's legislation and regulations is addressed within OIMS.

7.3.2 External Approval Processes

In order to gain the external approvals to proceed with the Project, EMCP must prepare and submit a Development Application to the C-NLOPB for approval. The Development Application has two parts, a Development Plan and a Benefits Plan.

The Development Plan sets out a general approach to developing the Hebron field, describing the reservoir, drilling and production strategies and the proposed production platform itself. Design, construction and operations for the Project will incorporate the regulations, codes and standards set out by government legislation and policy.

The C-NLOPB has required EMCP to prepare an environmental assessment and a socioeconomic assessment as ancillary documents to support the Development Plan. The environmental and socioeconomic assessments for the Project have been developed according to legislative requirements and / or well-established guidelines and practices in Canada.

The Benefits Plan describes in detail how EMCP will meet the Accord Acts' requirements for management, employment, training, business community participation, diversity programs and research and development in the Province and other parts of Canada. The socio-economic assessment referenced above is also an ancillary document to the benefits plan.

In addition to detailed scrutiny and review by the C-NLOPB staff, the documents are made available to the public for their review and comment.

The Newfoundland and Labrador Department of Environment and Conservation's approval of an Environmental Protection Plan (EPP) for the Bull Arm fabrication and construction site is another external approval required. Implementation of an EPP for the site will ensure that the site remains in environmentally acceptable condition for future uses so that it can continue to provide a source of employment and business opportunities.

7.3.2.1 Environmental Assessment

The environmental assessment required for the Project by the C-NLOPB follows the CEAA process and has been prepared to meet the level and scope of assessment as determined through CEAA. The objective of a CEAA environmental assessment is to determine specifically the potential for significant adverse environmental effect.

However, the environmental assessment process is also a means of considering sustainable development. A CEAA assessment includes consideration of several factors that affect sustainability: an assessment must address the need and rationale for a project; its cumulative effects; and the capacity of renewable resources that are likely to be significantly affected by the project to meet the needs of the present and those of the future.

Both under the C-NLOPB's project approval process and the CEAA assessment process, a proposed project, such as the Hebron Project, is clearly identified to the public to solicit their opinions and views on the project and help determine the nature and scope of the assessment.

In order to make assessments practical to prepare and review, it is the practice to focus the assessment on selected Valued Environmental Components (VECs) that reflect social, economic, environmental or traditional importance to stakeholders.

VECs are selected based on a number of criteria, including input provided by project area residents, interest groups, regulators, and the scientific literature as well as experience and professional judgment. This range of input can

ensure that the VECs for any given project are those that have an over-arching role in the community and region and can be considered to reflect community values important to the quality of life, continuance of livelihood and important for economic development or stability.

VECs selected using the above inputs form the basis for both the Project's Comprehensive Study Report and the Socioeconomic Impact Statement: Sustainable Development report.

The VECs determined for the environmental assessment presented in the Comprehensive Study Report include species at risk, fish and fish habitat, the commercial fisheries, climate change factors, seabirds, whales and marine mammals. These VECs represent facets of sustainability, i.e. biodiversity, traditional and future livelihoods, healthy ecosystems.

The VECs for the socio-economic assessment are: Employment and Business; Social Infrastructure and Services (health, education, training, recreation, police and fire protection); and Physical Infrastructure and Services—all aspects of quality of life now and in the future for residents and communities.

7.4 Environmental Protection Tools

The following sections describe the role of OIMS and key regulatory requirements in addressing sustainable development as part of the Project's design, construction and operation.

7.4.1 Environmental Management Plan

Environmental management is one of the earliest considerations in a new project such as Hebron. An acceptable in-house Environmental Management Plan must be in place before ExxonMobil endorses a project. The commitments in the plan are also required of project contractors.

7.4.2 Air Emissions

The Project will be designed, operated and monitored in accordance with pertinent regulations, guidelines and OIMS.

The Offshore Waste Treatment Guidelines (OWTG) (NEB et al. 2002) require Greenhouse Gas control plans and an estimate of annual emissions as part of the Development Application. No emissions limits are specified in the OWTG.

OIMS requires that new projects use a standard evaluation methodology for optimizing energy use and / or reducing related Greenhouse Gas (GHG) emissions.

The present Canadian standard for NO_X is 60 ug/m^3 NO_2 annual average emissions limit. However, more stringent NO_X emissions limits are anticipated both in Canada and internationally.

Flaring and venting are highly scrutinized and regulated by C-NLOPB. A gas management plan is part of the Hebron field depletion strategy.

7.4.3 Water Management

EMCP seeks to reduce impacts to surface waters (intake and discharge) and prevent the excessive use of valued water resources, both surface and groundwater.

Water management will be addressed at the Bull Arm fabrication and construction location, including on-land freshwater and at the deepwater site in Bull Arm itself, through the Environmental Protection Plan and regulatory compliance. Operations at the offshore production site will comply with federal requirements, including the OWTG.

7.4.4 Land Use

EMCP's objective is to reduce land use related impacts through such actions as the use or re-use of previously disturbed land. The Project will use existing fabrication and industrial sites for construction of the Hebron platform and does not require new land.

The primary construction and fabrication site for the Project is Bull Arm, Trinity Bay. The Bull Arm site was originally developed in the early 1990s expressly for construction of a GBS platform and was constructed, operated and decommissioned following careful environmental protection planning. The Project will refurbish where necessary and use existing operations access and infrastructure to the extent possible.

7.4.5 Fish Habitat Compensation

The Minister of the federal DFO must authorize any significant alteration, disturbance or destruction of fish habitat as a means to address the policy of no net loss of fish habitat. The Project team is working with DFO staff to provide the information for determination of habitat alteration, disturbance and destruction at both the Bull Arm location and the offshore production location and will develop an appropriate fish habitat compensation plan in consultation with key stakeholders.

7.4.6 Commercial Fisheries

EMCP is familiar with the commercial fisheries on the Grand Banks and in the Bull Arm area of Trinity Bay through work with the fish harvesters and the Fishermen Food and Allied Workers (FFAW) union, and through participation in One Ocean over the past several years.

In the Bull Arm area, considerable effort was made by both the project personnel and the area fish harvesters to ensure that the onshore fishery could continue safely and effectively during the construction and operation of the site to build the Hibernia GBS platform from 1990 through 1998. In the ensuing years, key notification and safety measures and procedures have remained in place. The Project team has been working with the Bull Arm fishing representatives to ensure the appropriate operational procedures are identified and established for use during the Project's construction phase that will leave the area unaffected for traditional fishing.

The Hebron offshore location is in the same general area as the existing three production operations at Hibernia, Terra Nova and White Rose. Each platform and loading facility has a safety zone. Although this particular area of the Grand Banks is not heavily fished, the FFAW has shared its concerns with the Project Team about the increasing loss of availability of fishing grounds.

One Ocean is a petroleum industry / fishing industry organization established as a neutral forum to address issues of interest to the two industries. EMCP has been a member of One Ocean since its inception and will continue to participate in this useful forum.

7.4.7 Spill Prevention and Response Preparedness

Prevention and response preparedness for potential on-land spills and a spill at the deepwater site are addressed in the Bull Arm Site EPP. The EPP is reviewed and approved by the Newfoundland and Labrador Department of Environment and Conservation in consultation with relevant federal agencies. The spill prevention and preparedness plan for offshore operations is approved by the C-NLOPB, again in consultation with relevant federal agencies.

Oil spill response plans consider the specific environment in which operations are taking place and in which a spill could occur in order to pre-plan specific protection and management measures, such as for sensitive areas. In the event of an actual spill, the Regional Environmental Emergencies Team provides advice, a multi-agency, multi-party advisory committee chaired by Environment Canada provides advice.

In order to be positioned to understand the effects of any spill, both immediate and longer term, monitoring of environmental effects is also part of a spill preparedness and response plan. In the event of a spill during Hebron construction or operations, immediate actions would be taken to alert and monitor any active commercial fisheries and observe concentrations of seabirds and other wildlife that may be affected by the spill's anticipated trajectory.

7.4.8 Waste Management

The Project's waste management philosophy is that wastes generated by the Project shall not create a hazard to safety, health or to the environment.

Waste management at both the construction and operations sites will observe the following hierarchy:

- Generation of waste should be prevented or reduced at the source;
- Wastes that cannot be prevented should be reused or recycled in an environmentally responsible manner;
- Wastes that cannot be prevented or reused / recycled should be treated / processed in an environmentally responsible manner prior to disposal;
- Disposal or other release of waste into the environment should be utilized as a last option and when employed, the release or disposal activities should be carried out in an environmentally responsible manner.

The goals of the Province of Newfoundland and Labrador's Waste Management Strategy include diverting 50% of the materials currently going to disposal through increased waste diversion and, on the Island, establishing three large, regional waste management centers.

Opportunities for partnering with communities to establish long-term regional commercial composting and Construction and Demolition Debris sites will be investigated with the Bull Arm and / or other construction or fabrication site owners and area communities.

Any such facilities and operations will be part of the overall Eastern Waste Management system, which manages the waste for the area of the Burin and Bonavista Peninsulas, the Isthmus and the Avalon Peninsula. This area contains well over 60% of the Province's population.

Waste management associated with offshore operations will meet the requirements of the Offshore Waste Treatment Guidelines and follow the Offshore Chemical Selection Guidelines for Drilling and Production Activities on Frontier Lands (NEB et al. 2009). Onshore treatment and disposal of offshore-generated wastes will comply with the requirements of the Eastern Waste Management system.

7.4.9 Biodiversity

EMCP recognizes the protection of the variety and complexity of life—biodiversity—as an important conservation issue that presents broad challenges to society. Protecting biodiversity is a fundamental part of the environmental management system and is considered during business planning, and across all aspects of operations.

To support ExxonMobil's principle of *Protect Tomorrow. Today*, there is a Biodiversity Working Group within the Corporate Environmental Network. The objective of the working group is to institutionalize systems and processes for implementation of biodiversity conservation principles.

ExxonMobil participates in an industry biodiversity working group. The key principles of the working group are to:

- Operate responsibly in sensitive areas with scientific, practical and sustainable solutions;
- Protect biodiversity as a fundamental part of our environmental management system; and
- Focus efforts on project-driven, science-based opportunities and partnerships.

Drawing on personnel from within its worldwide operations, ExxonMobil is actively engaged in a number of biodiversity initiatives during project design, construction, operations and rehabilitation. While no specific initiatives have yet been identified in association with the Project specifically, potential effects of the Project on species at risk are being considered in the environmental assessment.

7.5 Social and Economic Benefits

Hebron is the fourth, stand-alone offshore petroleum production project for the Grand Banks and the second to use a built-at-Bull-Arm GBS platform. The offshore oil and gas industry has been active with continuous exploration and development off the province since the mid 1970s, with platform construction since 1990 and production since first oil at the Hibernia field in late 1997.

Three reviews of the socio-economic effects of the offshore oil and gas industry in the province have been prepared and issued by Petroleum Research Atlantic Canada (PRAC), in 2003, 2005 and 2009: this last report considered the time period 2005 through 2007. The reviews have focused on the direct expenditures and direct, indirect and induced economic benefits to the province from upstream activities (exploration, development, production) and effects on infrastructure, education, training, research and development.

The finding of the reviews is that offshore petroleum industry has contributed significantly to the economic and social well being of the province.

Based on the three PRAC sponsored reviews, total annual petroleum capital expenditures in the province have ranged between $1,375 million (1999) and $808 million (2007). Annual operating expenditures have varied between $136 million in 2001 and $621 million in 2006: these expenditures have created a total maximum of 3,872 person years of employment (in 2004).

The C-NLOPB (2008 Project Benefits, www.cnlopb.nl.ca) indicates that the offshore oil and gas industry continues to contribute with the annual operating expenditure for 2008 of $1,580 million and total direct onshore and offshore employment of 1,705 and 1,538 people respectively.

EMCP's intent, plans and policies to ensure an enduring positive contribution to the communities and residents of the Province are presented in the SEIS, the Benefits Plan and a Project Benefits Agreement between the Project Co-venturers and the Province. These plans and policies have been developed in consultation with a wide range of individuals, associations, and agencies and are summarized below.

EMCP's overall intent is to enhance economic development within the province and Canada through workforce development; supplier development; and strategic community investments to build capability and capacity. Effective measures within these groupings will contribute to job creation, sustainable industrial and business growth, government revenues and improved quality of life.

7.5.1 Revenue and Income in the Province

In 2008, the petroleum sector accounted for 36% of the Province's real Gross Domestic Product (C-NLOPB Annual report, 2008—2009). The sector also accounted for more than $800 million in capital expenditures, which represents 23% of total private capital investment in the Province and annual operating expenditures of approximately $1.5 billion in 2008.

The Project started contributing to the provincial economy almost immediately after concluding an agreement with the Province, through local employment and local contracting in late 2008, increasing in 2009. The Hebron workforce and the associated demands will continue to expand in the province.

The Project will contribute significantly to the provincial economy during the approximately five or six year construction period (with much of the construction activity in the Province) and the thirty plus years of production operations offshore.

7.5.2 Employment

The oil and gas sector has resulted in considerable direct and indirect / induced employment over the past three decades with work onshore and offshore. In 2008, direct employment in the oil and gas sector was 3,455 persons and, with the inclusion of indirect employment, accounted for 5% of total employment in the province. The Project will add to these overall levels of employment, beginning with construction related activities in 2011 and production in 2017.

Hebron anticipates a peak of approximately 3,000 jobs during construction, experience that will increase long term trades and engineering capacity in the

Province. In addition it will add a production operations workforce similar to other Grand Banks operators for another thirty years, comprising offshore, tanker and onshore support personnel. The C-NLOPB 2008—2009 Annual Report indicates that the first GBS production system operating on the Grand Banks employed 995 people in 2008 in platform operations, tanker operations and onshore support.

7.5.3 Diversity

It is the responsibility of EMCP to develop and oversee the implementation and ongoing execution of a Diversity Plan to meet the regulatory and contractual requirements of the Project. The Diversity Plan has been developed to fully meet the above noted requirements, and also responds to internal benefits and diversity drivers.

The C-NLOPB Benefits Plan Guidelines stipulate that designated groups include women, visible minorities, Aboriginal peoples, and persons with disabilities. The C-NLOPB expects the Operator to "address the participation of these [designated]... groups for employment and for corporations or cooperatives owned by them to supply goods and services for the project".

Under the terms of the Hebron Benefits Agreement, EMCP is required to develop and implement a Gender Equity and Diversity Program. The Program calls for EMCP to address employment and business access for the four designated groups as defined by the C-NLOPB Guidelines (women, visible minorities, Aboriginal peoples, and persons with disabilities) and details the required provisions.

The regulatory and contractual diversity requirements applicable to Hebron complement EMCP's philosophy and approach to diversity. Valuing diversity is already a business imperative for EMCP, both within its organization and in its dealings with others. EMCP has a number of directives that articulate its position on diversity. The Canadian Equal Employment Opportunity Policy and the Harassment in the Workplace Policy, established in 1990, are among the company's foundation policies. The Valuing Diversity statement, created in 1999, outlines its position on broader aspects of diversity.

The structure of the Plan is intended to provide a clear and concise outline of EMCP's planning process and approach to regulatory and contractual requirements, and corporate drivers. There are a number of specific guidelines and obligations that must be met, and it is the goal of the plan to address all of these, while identifying opportunities for continuous improvement.

Diversity data will be collected, compiled and reported by the Project in a manner that both permits EMCP to assess and manage internal diversity planning and is consistent with legislative and contractual requirements.

Successful implementation of the Diversity Plan's components will require a full commitment not only from EMCP but also its main contractors, creating a diversity culture that is cascaded through companies working on the Project. Third party contractors' compliance will be facilitated through the commercial terms of their contracts with EMCP. Procedures will be put into place to deliver and effectively monitor compliance with the standards set.

7.5.4 Training and Education

ExxonMobil, including EMCP, is committed to hiring and developing employees from the communities in which it operates. The key to maximizing utilization of the local workforce is to understand the relationship between labour needs, labour supply and training and education options, and to ensure appropriate programs are in place as early as possible in the Project.

Training and education is an important component of EMCP's approach to benefits planning. Human resources planning for the Project was initiated in 2005 and will continue to be developed and refined over the life of the Project.

Key elements of this planning process outlined in the Benefits Plan include:

- Early identification of staffing demands and supply through development of human resources plans and labour gap analyses;
- Communication and consultation with education and training institutions and organizations;
- Skills development through community investments such as promotion of oil and gas careers to students at junior high and high school levels, and scholarship and support programs;
- Recruitment and selection of qualified candidates that emphasize equity and fairness; and
- Career development and competency assessment to allow all personnel the knowledge and skills (competencies) required to design, build, operate and maintain the facilities in a safe, effective and efficient manner.

The facilities construction / fabrication phase of the Project is expected to begin in 2011 with peak activity in 2013—2014. This phase will offer training (and employment) opportunities in both engineering and construction / fabrication. The local workforce gained considerable experience during the building of the first GBS platform at the Bull Arm site, from 1991 through 1997. While the workforce has scattered during the intervening years, it is anticipated that some will return. However, it is recognized that the construction workforce in Canada as well as the Province, will greatly decrease due to retirements over the next few years, hence the importance of human resource planning and labour gap analysis.

The offshore production operations at Hebron are anticipated to extend over thirty years. Offshore production has been active off the coast of the Province since 1997 and exploration much earlier. These activities have ensured that training needs are understood and programs in place in a number of public and private institutions.

Project staff has been working with institutions, government, industry and unions in the Province to ensure a good understanding of the Project's schedule and needs and will continue to work actively with these groups.

The Province's two public secondary education institutions, Memorial University and the College of the North Atlantic, have both added new programs at both the graduate and post-graduate level and facilities to address the needs of the petroleum industry.

The PRAC (2009) review that looked at the effects of the offshore petroleum industry during the period 2005—2007, reported that Memorial University had 345 graduates from new, petroleum related academic programs. The Marine Institute initiated two new programs to support the offshore oil and gas industry, instrumentation and remotely operated vehicle (ROV) operation. The CNA doubled capacity for enrolment in petroleum engineering technology and developed new programs and training capabilities focused on the offshore petroleum industry.

Several of the key programs at both the college and university level require work terms. Oil companies have been active participants in the provision of work terms for students and Hebron is already offering work term opportunities. In each of 2005, 2006 and 2007, the offshore oil and gas companies operating in the Province provided work terms to 300 MUN Engineering and Applied Sciences students as well as close to 200 work term positions for CNA students in 2006 and 2007.

EMCP has also initiated a series of on-site visits to engineering and fabrication companies in the province. Following the review, the inspection group provides immediate feedback to the operator with the focus on what is needed in order to qualify to bid on Project work. The value of these site visits to companies is indicated in the following comment received from one of the companies:

"The feedback I received from your group at the end of our session gave me some guidance and understanding on where our business has to be to pre-qualify for ExxonMobil project work. I have already contracted consulting specialists in safety, quality and project management to give us the guidance and leadership we need to get to the level that ExxonMobil requires.....We see it as a great opportunity for our Company (M. Gregory, pers. comm.)."

EMCP has also held several forums in which students from Memorial, CNA and high schools participated in 2009. At the suggestion of participants in

these Hebron working sessions and open houses, the Project implemented a program of school visits in the fall of 2009, visiting high schools and CNA campuses.

7.5.5 Business Development

The PRAC reviews of the socioeconomic impacts of the offshore petroleum industry in Newfoundland and Labrador (2003; 2005; 2009) consistently report positive, wide-ranging and long-term benefits and that the industry has had a transformative effect on business and industry in the province.

Through responding to the challenges and opportunities offered by a strong offshore oil and gas industry over the past 25 or more years, Newfoundland and Labrador based companies (and workforce) have developed not only new capabilities but new ambitions and confidence that has enabled successful entry into other industries, regions and countries. The Project will augment this capacity and capability.

It is a policy of ExxonMobil companies to develop and integrate a strong local component into new projects in terms of suppliers, the workforce, training and succession planning. EMCP has made a number of specific commitments to perform a wide range of work in the province, from engineering to construction, and to enhance the capability and opportunities for residents of the province as well as the supplier community. Project senior management team presented initial information about the Project and the procurement process to the business community very early in the Project planning, in April 2009, hosting forums at four different locations.

Increased competitiveness, experience, entrepreneurship and confidence in local abilities and similar changes all contribute to a process of cumulative economic growth and development that will grow and diversify the economy well beyond the Project.

7.5.6 Health and Safety

Health and safety are the key priorities for EMCP and are an integral part of Project planning, design and implementation at all stages of the Project. While prevention is a focus, emergency planning and preparedness are essential to ensure that, in the event of an incident, all necessary actions are taken for the protection of the public, the environment and company personnel and assets.

Project personnel met with health and safety agencies in all of the study areas in key informant sessions during development of the SEIS, Open Houses and during site visits.

EMCP hosted Safety Forums in 2009 and 2010. The 2009 Forum focused primarily on safety matters relating to contractors, while the 2010 event focused primarily on worker safety. Speakers at the events included EMCP

senior managers from within the Province, the Newfoundland and Labrador Workplace Health Safety and Compensation Commission, the RCMP, One Ocean, the Canadian Association of Petroleum Producers and the Building Trades Council.

Presentations and discussion at the Contractor Safety Forum highlighted progress in building a safety culture in the province. The Province, working primarily through the Workplace Health, Safety and Compensation Commission, has made significant strides in improving focus and emphasis on safety in the workplace.

EMCP is committed to supporting a step-change improvement in the safety culture in the Province. The Project will work proactively with the provincial government, C-NLOPB, WHSCC, Co-Venturers, the Building Trades Council and its contactors to implement and sustain a safety culture that will deliver this improvement and meet ExxonMobil's determination that 'Nobody Gets Hurt'.

A Concept Safety Analysis is a part of the Project Development Application and will focus on the thirty plus year operations phase. Safety and emergency preparedness plans will be put in place for both construction and operations. The operations phase plan will be reviewed and approved by C-NLOPB prior to initiation of offshore operations.

7.5.7 Research and Development

The 2009 PRAC review of the socioeconomic benefits from petroleum industry development in the province provides several examples of the effectiveness of collaboration among educational institutions, research institutes and the industry in Newfoundland and Labrador.

Memorial University and some of its associated centers such as the Marine Institute and C-CORE, the College of the North Atlantic and the federal research Institute for Ocean Technology as well as some private research and development companies have benefited from support from the industry to address a wide range of research and development challenges.

Important expertise and experience is being gained in association with offshore-related research and Newfoundland and Labrador is becoming increasingly recognized as a center of excellence in cold oceans issues from socioeconomic through marine science to engineering and design.

The Project has made a specific $120 million commitment for Research and Development in association with the Project. In order to pursue the identification, implementation and successful completion of effective R&D initiatives, EMCP will establish processes to:

- Raise consciousness of the R&D requirement and opportunity, identify potential R&D and education and training projects, and give priority where competitive and qualified to undertaking R&D in the Province;
- Determine specific focuses for its R&D activity; and
- Allow for the submission and review of R&D proposals.

7.5.8 Community Engagement

Presentations by members of Project senior management team continually refer to EMCP's intent to be an involved member of the community during the thirty plus year lifetime of the Project. This will be accomplished through both corporate and individual efforts and participation.

EMCP has already shown the strong commitment to safety that will pervade all aspects of planning and operations, including community involvement. Safety moments start essentially every meeting, whether internal or external. One of the earliest public forums hosted by the Project was a Safety Forum and the same safety message has been taken to schools, open houses and fabrication facility assessments.

EMCP's primary area of community involvement will be in the general areas of math and science education, safety and environment. Women continue to be under-represented in non-traditional occupations such as trades, technology and some areas of science and the Project will encourage and facilitate changes toward a more sustainable use of the human resources in our communities. EMCP has been an active participant in established programs in the province encouraging young women to consider careers in trades and sciences such as Techsploration and, as part of both the Benefits Plan and the Benefits Agreement, has developed a comprehensive Diversity Plan.

The Project has already benefited from spending time in communities and with community organizations, including gaining a better understanding of lifestyle, values, interests, local economics, and community organization. It is the intent of the Project management team to continue to have effective liaison and communication with Project area communities throughout the Project involving the main contractors for both the GBS and the Topsides work.

Information from community visits and meetings with stakeholder groups has been used to prepare the SEIS, the Benefits Plan and the environmental assessment, the CSR. The Project team will continue to engage the community in the development of environmental, fisheries and community benefits monitoring programs for the Project.

8 CONCLUSIONS AND COMMITMENTS

8.1 Conclusions

This assessment of the socio-economic effects of the Hebron oilfield development project indicates that it will have a number of significant positive consequences for Newfoundland and Labrador and its citizens, families and communities. Any potential adverse effects are minor and non-significant and will be addressed through the management strategies identified and ongoing communication with communities and other stakeholders. EMCP will work with Project area(s) communities to establish practical and effective mechanisms for information exchange and discussion. Maintaining active and ongoing communication was strongly encouraged during Project consultations.

The main positive effects from the Project will be on the economy. As discussed in this SEIS, (and as described in greater detail in the Canada-Newfoundland and Labrador Benefits Plan) the Hebron Project will create significant employment and business benefits in the Province during all phases of activity. This, in turn, will create spin-off employment and business, as well as create new revenues for government through personal, business and property taxes. Municipal government will also benefit through increased user pay for the use of recreational and other infrastructure and services, and the Government of Newfoundland and Labrador will benefit from increased revenues.

Hebron will be Newfoundland and Labrador's fourth major offshore oilfield development project. As such, it will build on, and further contribute to, the development of a multi-phase offshore petroleum industry in the Province. The development of this industry both reduces industry costs in Newfoundland and Labrador, thereby encouraging additional projects and local benefits, and contributes to the likelihood of the Province's individuals and companies being successful in the international petroleum industry. In particular, Hebron will see Newfoundland and Labrador continue to expand its industrial capabilities. Expertise and industrial capability are often highly transportable and can provide major export opportunities for Newfoundlanders and Labradorians and for local companies.

This SEIS also examines the social effects of Hebron on local people, families and communities. While these are issues that caused considerable concern in the 1980s, subsequent experience shows that, given appropriate management initiatives, these effects are for the most part minor and largely positive. Economic growth can bring with it a variety of costs as well as benefits, and one such concern was the potential for increased crime. More disposable income in the community, for example, offers opportunities to both legitimate and illegitimate businesses. That said, there has been no evidence

that previous offshore projects have resulted in substantial increases in criminal activity and as indicated in Section 5.3.3, the St John's area continues to have an overall crime rate which is significantly lower than the Canadian average.

Overall, experience with the Hibernia, Terra Nova and White Rose construction and production activities has led most people and agencies to be generally comfortable with the social effects on individuals, families and communities; projects such as Hebron will bring changes, but they are generally acceptable and where they are not, they are manageable. EMCP will maintain ongoing communication with Project stakeholders to ensure that key effects are addressed and managed.

Some thirty years have now elapsed since the first commercial offshore discovery in the Province, almost twenty-five years since the first project was approved, and thirteen years since the first offshore field came into production. Over time and with experience much of the 'mystery' of offshore development, construction and operations has been removed.

As such, Hebron will be 'another' petroleum industry project in the Province. It will use existing industrial and commercial facilities and infrastructure and is unlikely to present any unexpected new challenges for local residents, communities, businesses or institutions. At the same time experience with past projects allows for a realistic interpretation of the potential outcomes of this project. The benefits of the Project to Newfoundland and Labrador should be significant over the thirty plus years of its life and contribute to the sustained development of the Province.

8.2 Commitments

EMCP has consistently presented its four underlying commitments for the Project; both internally and to the public through presentations to a wide range of audiences and at the September 2009 Open Houses. The Project's commitments will contribute to community and economic sustainability within the Province and, to an extent, Canada.

Highest Levels of Safety, Health, Environment and Security Performance

EMCP is committed to the highest levels of safety, health, environment and security performance throughout all phases of the Project. It is the goal of the Project to establish a strong safety and health culture within the province through its employees, contractors, and project area communities.

Meeting Commitments under the Atlantic Accord Acts and Benefits Agreement

EMCP will meet the commitments established under the Atlantic Accord Acts and in the Benefits Agreement signed with the Province in 2008. These

commitments for training, employment, supplier development, diversity programs, and research and development will continue to build the provincial capability and capacity in engineering design, project management, skilled trades, construction and fabrication, and all aspects of offshore petroleum operations.

Delivering Execution Certainty and World Class Execution

EMCP will leverage lessons learned from ExxonMobil's global management experience and success with mega-projects to deliver world class project execution in terms project management, business practices, quality and execution certainty.

Building Sustainable Relationships with the Community

EMCP will work to build sustainable relationships with the community. The Project will last more than thirty years. During this time, the Project will be an involved member of the communities in which it operates through both corporate and individual efforts, initiatives and participation. Through community investment and involvement, the Project and its employees will make long term contributions to community life in Newfoundland and Labrador.

9 REFERENCES

9.1 Literature Cited

ACOA (Atlantic Canada Opportunities Agency). Town of Marystown Gets Government of Canada Support for a Marine Industrial Park. Press Release. 2009. Available at URL: http://mediaroom.acoa-apeca.gc.ca.

APEC (Atlantic Provinces Economic Council). *APEC's Major Projects Inventory 2010: Detailed Project List*. Halifax, Nova Scotia: Atlantic Provinces Economic Council, 2010.

Barnes, J. and L. Davey. 1999. "A practical approach to integrated cumulative effects assessment to meet the requirements of the Canadian Environmental Assessment Act." *Presentation, International Association for Impact Assessment,* 19th Annual Meeting, June 1999.

Beach, J., M. Friendly, C. Ferns, N. Prabhu and B. Forer. *Early Childhood Education and Care in Canada 2008*. Childcare Resource and Research Unit, Toronto, ON, 2009. Available at URL: http://www.childcarecanada.org/ECEC2008/index.html

Beanlands, Gordon E. and Peter N. Duinker. "An Ecological Framework for Environmental Impact Assessment in Canada." Institute for Resource and Environmental Studies, Dalhousie University and Federal Environmental Assessment Review Office, 1983.

Brautigam, Tara. *Hibernia South Deal Expected: Deal Would Reap $13.5 Million for Canada, NL, William Says.* The Canadian Press. St. John's, Newfoundland and Labrador: Brautigan, 2009.

Bruntland Commission. *Our Common Future*. Report of the Bruntland Commission, Oxford University Press, 1987.

CAPP (Canadian Association of Petroleum Producers). *Atlantic Canada Offshore Petroleum Industry Standard Practice for the Training and Qualifications of Personnel*. St. John's, Newfoundland and Labrador, Canadian Association of Petroleum Producers, 2008.

CEAA (Canadian Environmental Assessment Agency). 1994. *Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects.* Ottawa, Ontario: Canadian Environmental Assessment Agency, 1994.

CEAA (Canadian Environmental Assessment Agency). *Report of the Terra Nova Development Project Environmental Assessment Panel.* Hull, Quebec: Canadian Environmental Assessment Agency, 1997.

CEAA (Canadian Environmental Assessment Agency). Guide to the Preparation of a Comprehensive Study under the Canadian Environmental Assessment Act for Proponents and Responsible Authorities. Hull, Quebec: Canadian Environmental Assessment Agency, 1998.

CIHI (Canadian Institute for Health Information). *Supply, Distribution and Migration of Canadian Physicians, 2007*. Ottawa, Ontario: Canadian Institute for Health Information, 2008a.

CIHI (Canadian Institute for Health Information). *Regulated Nurses Trends 2003—2007*. Ottawa, Ontario: Canadian Institute for Health Information, 2008b.

CIHI (Canadian Institute for Health Information). *Supply, Distribution and Migration of Canadian Physicians, 2008*. Ottawa, Ontario: Canadian Institute for Health Information, 2009.

CIHI (Canadian Institute for Health Information). *Health Indicators 2010.* Ottawa, Ontario: Canadian Institute for Health Information, 2010a.

CIHI (Canadian Institute for Health Information). *National Health Expenditure Trends, 1975-2010.* Ottawa, Ontario: Canadian Institute for Health Information, 2010b.

CIHI (Canadian Institute for Health Information). *Supply, Distribution and Migration of Canadian Physicians, 2009.* Ottawa, Ontario: Canadian Institute for Health Information, 2010c.

CIHI (Canadian Institute for Health Information). *Regulated Nurses: Canadian Trends, 2004—2008*. Ottawa, Ontario: Canadian Institute for Health Information, 2010d.

CIHI (Canadian Institute for Health Information). Regulated Nurses: Canadian Trends 2005-2009. Ottawa, Ontario: Canadian Institute for Health Information, 2010e

Clinkard, John. “Following a hiatus, Newfoundland’s economy should be reinvigorated in 2010.” *Journal of Commerce,* July 15, 2009.

CMHC (Canada Mortgage and Housing Corporation). *Historical Housing Statistics Newfoundland, St. John’s, NL*. St. John’s, Newfoundland and Labrador: Canada Mortgage and Housing Corporation, 2000a.

CMHC (Canada Mortgage and Housing Corporation). *Apartment Vacancy Rates and Average Rents, St. John’s, NL.* St. John’s, Newfoundland and Labrador: Canada Mortgage and Housing Corporation, 2000b.

CMHC (Canada Mortgage and Housing Corporation). *Rental Market Report, St. John’s CMA. St. John’s, NL.* St. John’s, Newfoundland and Labrador: Canada Mortgage and Housing Corporation, 2006.

CMHC (Canada Mortgage and Housing Corporation). *Preliminary Housing Start Data. St. John’s, NL.* St. John’s, Newfoundland and Labrador: Canada Mortgage and Housing Corporation, 2007.

CMHC (Canadian Mortgage and Housing Corporation). *CHS—Rental Market Survey 2008.* St. John’s, Newfoundland and Labrador: Canada Mortgage and Housing Corporation, 2008.

CMHC (Canadian Mortgage and Housing Corporation). *Housing Market Outlook, St. John’s CMA*. St. John’s, Newfoundland and Labrador: Canada Mortgage and Housing Corporation, 2009a.

CMHC (Canadian Mortgage and Housing Corporation). *Rental Market Report, St. John's CMA*. St. John's, Newfoundland and Labrador: Canada Mortgage and Housing Corporation, 2009b.

CMHC (Canadian Mortgage and Housing Corporation). *June 2010. Housing Now: St. John's CMA.* St. John's, Newfoundland and Labrador: Canada Mortgage and Housing Corporation, 2010a.

CMHC (Canadian Mortgage and Housing Corporation). *Housing Market Outlook St. John's CMA.* St. John's, Newfoundland and Labrador: Canada Mortgage and Housing Corporation, 2010b.

CNA (College of the North Atlantic). *Orientation to Trades and Technology Program.* St. John's, Newfoundland and Labrador. College of the North Atlantic, 2009.

C-NAAIA (Canada-Newfoundland Atlantic Accord Implementation Act). 1987, SC C.3.

C-NLAAINLA (Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act). 1990. RSNL Chapter C-2.

C-NLOPB (Canada-Newfoundland & Labrador Offshore Petroleum Board). *Development Plan Guidelines*. St. John's, Newfoundland and Labrador: Canada-Newfoundland & Labrador Offshore Petroleum Board, 2006a.

C-NLOPB (Canada-Newfoundland & Labrador Offshore Petroleum Board). *Benefits Plan Guidelines*. St. John's, Newfoundland and Labrador: Canada-Newfoundland & Labrador Offshore Petroleum Board, 2006b.

C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). *Decision Report 2008.03 North Amethyst Development Plan Application*. St. John's, Newfoundland and Labrador: Canada-Newfoundland and Labrador Offshore Petroleum Board, 2008a.

C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). *Staff Analysis of the North Amethyst Satellite Tie-Back Project*. St. John's, Newfoundland and Labrador: Canada-Newfoundland and Labrador Offshore Petroleum Board, 2008b.

C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). *2008-2009 Annual Report*. St. John's, Newfoundland and Labrador: Canada-Newfoundland and Labrador Offshore Petroleum Board, 2009.

C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). *2009—2010 Annual Report*. St. John's, Newfoundland and Labrador: Canada-Newfoundland and Labrador Offshore Petroleum Board, 2010a.

C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). *Offshore Area Historical Program Expenditures.* St. John's, Newfoundland and Labrador: Canada-Newfoundland and Labrador Offshore Petroleum Board, 2010b.

C-NOPB (Canada-Newfoundland Offshore Petroleum Board). *Decision 86.01 Application for Approval Hibernia Canada-Newfoundland Benefits Plan, Hibernia Development Plan*. St. John's, Newfoundland and Labrador: Canada-Newfoundland Offshore Petroleum Board, 1986.

C-NOPB (Canada-Newfoundland Offshore Petroleum Board). *Development Application Guidelines: Newfoundland Offshore Area*, St. John's, Newfoundland and Labrador: Canada-Newfoundland Offshore Petroleum Board, 1988.

C-NOPB (Canada-Newfoundland Offshore Petroleum Board). *Decision 97.02 Application for Approval Terra Nova Canada-Newfoundland Benefits Plan, Terra Nova Development Plan*. St. John's, Newfoundland and Labrador: Canada-Newfoundland Offshore Petroleum Board, 1997.

C-NOPB (Canada-Newfoundland Offshore Petroleum Board). *Decision 2001.01 Application for Approval White Rose Canada-Newfoundland Benefits Plan, White Rose Development Plan*. St. John's, Newfoundland and Labrador: Canada-Newfoundland Offshore Petroleum Board, St. John's NL. 2001.

Community Resource Services Ltd. Socio-economic Impacts of the Hibernia Construction Project: Personal Expenditures Study. Report prepared for the Hibernia Management and Development Company, St. John's, NL, 1996.

Eastern Health. *Annual Performance Report 2005-06, Eastern Regional Health Authority.* St. John's, Newfoundland and Labrador: Eastern Health, 2006.

Eastern Health. *Annual Performance Report 2007-08, Eastern Regional Health Authority*. St. John's, Newfoundland and Labrador: Eastern Health, 2008.

Eastern Health. *Annual Performance Report 2008-09, Eastern Regional Health Authority*. St. John's, Newfoundland and Labrador: Eastern Health, 2009.

Eastern Health. *Quick Facts*, St. John's, Newfoundland and Labrador: Eastern Health, 2010.

EMCP (ExxonMobil Canada Properties). *Hebron Project Description.* St. John's, Newfoundland and Labrador: ExxonMobil Canada Properties, 2009.

EMCP (ExxonMobil Canada Properties). 2010. *Hebron Project Comprehensive Study Report*.

Friendly, M, J. Beach and M. Turiano. Early Childhood Education and Care in Canada 2001, Childcare Resource and Research Unit, Toronto, ON, December 2002.

Government of Newfoundland and Labrador, Chevron Canada Limited, ExxonMobil Properties, ExxonMobil Canada Ltd., StatoilHydro Canada Ltd., Petro-Canada and the Oil and Gas Corporation of Newfoundland and Labrador Inc. *Hebron Benefits Agreement*. 2008. St. John's, NL.

HCSEMC (Hibernia Construction Sites Environmental Management Committee). *Socio-economic Review Hibernia Development Project April June 1994*. St. John's, Newfoundland and Labrador: Hibernia Construction Sites Environmental Management Committee, 1994.

HEAP (Hibernia Environmental Assessment Panel). *Hibernia Development Project Report of the Environmental Assessment Panel.* Ottawa, Ontario: Hibernia Environmental Assessment Panel, Report Prepared for Ministry of Supply and Services Canada, 1986.

HMDC (Hibernia Management and Development Company). *Economic Benefits Case Studies*. St. John's, Newfoundland and Labrador: Hibernia Management and Development Company, Report Prepared by Community Resource Services Ltd., 1995.

HMDC (Hibernia Management and Development Company). Economic Benefits from the Hibernia Construction Project: Summary. St. John's, Newfoundland and Labrador: Hibernia Management and Development Company, Report Prepared by Community Resource Services Ltd., 1996.

HMDC (Hibernia Management and Development Company). *Socio-economic Benefits from Hibernia Operations in 1998*. St. John's, Newfoundland and Labrador: Hibernia Management and Development Company, Report Prepared by Community Resource Services Ltd., 1999.

Husky Energy. *North Amethyst Satellite Tie-back Socio-economic Impact Statement*. St. John's, Newfoundland and Labrador: Husky Energy, Report Prepared by Jacques Whitford, 2007.

Husky Oil Operations. *White Rose Development Application—Socio-economic Impact Statement*. St. John's, Newfoundland and Labrador: Husky Oil Operations Limited, 2000.

Jones, P. Offshore Oil Development and Community Impacts: Changes in Attitudes and Perceptions in Communities Affected by Onshore Activities. St. John's, Newfoundland and Labrador: Unpublished MA Thesis, Department of Geography, Memorial University, 1998.

JWL (Jacques Whitford Limited). *Draft Report, Long Harbour Hydromet Facility, 2006 Socio-economic Component Study*. St. John's, Newfoundland and Labrador: Jacques Whitford Limited, 2006.

Mobil. Hibernia Development Project Environmental Impact Statement, Volume IV—*Socio-economic Assessment*. St. John's, Newfoundland and Labrador: Mobil Oil Canada Ltd.: 1985.

MUN (Memorial University of Newfoundland). *Fact Book 1999*. St. John's, Newfoundland and Labrador: Memorial University, 1999.

MUN (Memorial University of Newfoundland). *Fact Book 2004*. St. John's, Newfoundland and Labrador: Memorial University, 2004.

MUN (Memorial University of Newfoundland). *Fact Book 2008*. St. John's, Newfoundland and Labrador: Memorial University, 2008.

MUN (Memorial University of Newfoundland). *Fact Book 2009*. St. John's, Newfoundland and Labrador: Memorial University, 2009a.

MUN (Memorial University of Newfoundland). *Budget 2009 Advances Marine Institute as Ocean Technology Leader*. St. John's, Newfoundland and Labrador: Memorial University, Marine Institute, 2009b.

MUN (Memorial University of Newfoundland). *Diploma in Police Studies*. St. John's, Newfoundland and Labrador: Memorial University of Newfoundland, 2009c.

Nalcor Energy. *2008 Business and Financial Report*. St. John's, Newfoundland and Labrador: Nalcor Energy, 2008.

NEB, C-NOPB and C-NSOPB. *Offshore Waste Treatment Guidelines.* National Energy Board, Canada-Newfoundland Offshore Petroleum Board and Canada-Nova Scotia Offshore Petroleum Board. 2002.

NEB, C-NLOPB, and C-NSOPB. *Offshore Chemical Selection Guidelines for Drilling and Production Activities on Frontier Lands*. National Energy Board, Canada-Newfoundland Offshore Petroleum Board and Canada-Nova Scotia Offshore Petroleum Board, 2009.

Newfoundland and Labrador. *Focusing our Energy. Newfoundland and Labrador Energy Plan*. Government of Newfoundland and Labrador*,* St. John's, 2007a.

Newfoundland and Labrador. Sustainable Development Act, SNL2007 Chapter S-34, Government of Newfoundland and Labrador*,* St. John's, 2007b.

NLDE (Newfoundland and Labrador Department of Education). *Education Statistics: 1993—1994 Elementary Secondary*. St. John's, Newfoundland and Labrador: Department of Education, 1994.

NLDE (Newfoundland and Labrador Department of Education). *Education Statistics: 1998—1999 Elementary-Secondary.* St. John's, Newfoundland and Labrador: Department of Education, 1999.

NLDE (Newfoundland and Labrador Department of Education). *Education Statistics: 2002—2003 Elementary-Secondary*. St. John's, Newfoundland and Labrador: Department of Education, 2003.

NLDE (Newfoundland and Labrador Department of Education). *School Board Consolidation, Press Release March 30, 2004*. St. John's, Newfoundland and Labrador: Department of Education, 2004.

NLDE (Newfoundland and Labrador Department of Education). *Education Statistics: 2005—2006 Elementary-Secondary*. St. John's, Newfoundland and Labrador: Department of Education, 2006.

NLDE (Newfoundland and Labrador Department of Education). *School Directory*. St. John's, Newfoundland and Labrador: Department of Education, 2009a.

NLDE (Newfoundland and Labrador Department of Education). *Minister Outlines Actions and Continuing Commitment to Improved School Infrastructure*. St. John's, Newfoundland and Labrador: Department of Education, 2009b.

NLDE (Newfoundland and Labrador Department of Education). *Post-Secondary Education Fast Facts*. St. John's, Newfoundland and Labrador: Department of Education, 2009c.

NLDE (Newfoundland and Labrador Department of Education). *Education Statistics: 2009—2010 Elementary-Secondary*. St. John's, Newfoundland and Labrador: Department of Education, 2010a.

NLDE (Newfoundland and Labrador Department of Education). *Strengthening the Economy for a Prosperous Future: $1 Billion Slated for Infrastructure Spending in Budget 2010.* St. John's, Newfoundland and Labrador: Department of Education, 2010b.

NLDEC (Newfoundland and Labrador Department of Environment and Conservation). YMCA-YWCA Goes Green in St. John's. News Release, August 20, 2010. St. John's, Newfoundland and Labrador: Department of environment and Conservation, 2010.

NLDF (Newfoundland and Labrador Department of Finance). Economics and Statistics Branch*. Number of Physicians and Registered Nurses Newfoundland and Labrador.* St. John's, Newfoundland and Labrador: Department of Finance, 2000.

NLDF (Newfoundland and Labrador Department of Finance). *The Economic Review 2007*. St. John's, Newfoundland and Labrador: Department of Finance, 2007.

NLDF (Newfoundland and Labrador Department of Finance). *The Economy 2008*. St. John's, Newfoundland and Labrador: Department of Finance, 2008.

NLDF (Newfoundland and Labrador Department of Finance). *The Economy 2009*. St. John's, Newfoundland and Labrador: Department of Finance, 2009.

NLDF (Newfoundland and Labrador Department of Finance) *The Economic Review 2010.* St. John's, Newfoundland and Labrador: Department of Finance,2010a.

NLDF (Newfoundland and Labrador Department of Finance). *The Economy 2010*. St. John's, Newfoundland and Labrador: Department of Finance, 2010b.

NLDF (Newfoundland and Labrador Department of Finance). *Fall Update 2010-11.* St. John's, Newfoundland and Labrador: Department of Finance, 2010c.

NLDF (Newfoundland and Labrador Department of Finance). *Oil Production Up 3.1% in 2010.* St. John's, Newfoundland and Labrador: Department of Finance, 2011a.

NLDF (Newfoundland and Labrador Department of Finance). *Employment Increased 5.0% in December 2010.* St. John's, Newfoundland and Labrador: Department of Finance, 2011b.

NLDF and the City of St. John's. *Economic Review 2009, St. John's Metropolitan Area.* St. John's, Newfoundland and Labrador: Department of Economic Development, Tourism & Culture, 2010a.

NLDF and the City of St. John's. 2010. *Economic Outlook 2010 St. John's Metropolitan Area.* St. John's, Newfoundland and Labrador: Department of Economic Development, Tourism & Culture, 2010b.

NLHBA (Newfoundland and Labrador Health Boards Association). *Final Report Newfoundland and Labrador Health and Community Services Human Resources Planning Steering Committee*. St. John's, Newfoundland and Labrador, Newfoundland and Labrador Health Boards Association. 2003.

NLDHCS (Newfoundland and Labrador Department of Health and Community Services). *Bed Profile by Region and Facility March 2000*. St. John's, Newfoundland and Labrador: Department of Health and Community Services, 2000.

NLDHCS (Newfoundland and Labrador Department of Health and Community Services). Policy Development Division. *Reaching Consensus and Planning Ahead: Health Forum 2001. Provincial Profile: Health and Community Services.* St. John's, Newfoundland and Labrador: Department of Health and Community Services, 2002.

NLDHCS (Newfoundland and Labrador Department of Health and Community Services). *Annual Report 2004-05*. St. John's, Newfoundland and Labrador: Department of Health and Community Services, 2005.

NLDHCS (Newfoundland and Labrador Department of Health and Community Services). Human Resource Planning Unit. *Registered Nurse Supply Report 2004-05, Newfoundland and Labrador*. St. John's, Newfoundland and Labrador: Department of Health and Community Services, 2006.

NLDHCS (Newfoundland and Labrador Department of Health and Community Services). *Annual Performance Report 2007—2008.* St. John's, Newfoundland and Labrador: Department of Health and Community Services, 2008.

NLDHCS (Newfoundland and Labrador Department of Health and Community Services). Child Care Centres, 2009 Facilities. St. John's, Newfoundland and Labrador: Newfoundland and Labrador Department of Health and Community Services, 2009.

NLDMA (Newfoundland and Labrador Department of Municipal Affairs). Emergency Measures Organization. St. John's, Newfoundland and Labrador. Department of Municipal Affairs, 2009a.

NLDMA (Newfoundland and Labrador Department of Municipal Affairs). *Grand Opening and Dedication of the Jack Byrne Arena.* St. John's, Newfoundland and Labrador: Department of Municipal Affairs, News Release, March 2009b.

NLDTW (Newfoundland and Labrador Department of Transportation and Works). *New Ferries to Honour Provincial Political Pioneers.* News Release, February 8, 2011. St.

John's, Newfoundland and Labrador: Department of Transportation and Works, 2011.

NLNU (Newfoundland and Labrador Nurse's Union). *Nursing Shortage: Situation Critical*. St. John's, Newfoundland and Labrador: Nurse's Union, 2009.

NLRC (Newfoundland and Labrador Refining Corporation). Newfoundland and Labrador Refinery Project. Volume 4, Socio-economic Volume 1. Newfoundland and Labrador Refining Corporation 2007.

NOIA (Newfoundland Oceans Industries Association). *Regional Infrastructure*. St. John's, Newfoundland and Labrador: Newfoundland Oceans Industries Association, 2009.

NRC (National Research Council). *NRC Officially Opens Industry Partnership Facility in St. John's*. Ottawa, Ontario: National Research Council, Press Release, October 2003.

Petro-Canada. Development Application—Terra Nova Development: Socio-economic Impact Statement. St. John's, Newfoundland and Labrador: Petro-Canada, 1995.

Petroleum Human Resources Council of Canada. *Strategic Human Resources Study of the Upstream Petroleum Industry: The Decade Ahead*. Calgary, Alberta: Petroleum Human Resources Council of Canada, 2003.

PRAC (Petroleum Research Atlantic Canada). *Socio-economic Benefits From Petroleum Industry Activity in Newfoundland and Labrador, 1999—2002.* Report prepared by Community Resource Services Ltd. St. John's, Newfoundland and Labrador: Petroleum Research Atlantic Canada, 2003.

PRAC (Petroleum Research Atlantic Canada). *Socio-economic Benefits From Petroleum Industry Activity in Newfoundland and Labrador, 2003 and 2004.* Report prepared by Jacques Whitford Ltd., St. John's, Newfoundland and Labrador: Petroleum Research Atlantic Canada, 2005.

PRAC (Petroleum Research Atlantic Canada). *Socio-economic Benefits From Petroleum Industry Activity in Newfoundland and Labrador, 2005—2007.* Report prepared by Stantec Consulting, Economic Research and Analysis Division. St. John's, Newfoundland and Labrador: Petroleum Research Atlantic Canada, 2009.

Public Review Commission. *Report of the Public Review Commissioner for the White Rose Development Application.* Report Prepared for the Canada-Newfoundland Offshore Petroleum Board. St. John's, Newfoundland and Labrador: Public Review Commission, 2001.

SCI (Strategic Concepts Inc.). *Effective labour Capacity for the Hebron Project.* Report to Exxon Mobil.St. John's, NL, 2010.

SJIA (St. John's International Airport). *2008 Annual Report: Soaring Together*. St. John's, Newfoundland and Labrador: St. John's International Airport, 2009.

Statistics Canada. *1991 Census of Canada, Newfoundland*. Ottawa, Ontario: Statistics Canada, 1991.

Statistics Canada. *1996 Census of Canada, Newfoundland*. Ottawa, Ontario: Statistics Canada, 1996.

Statistics Canada. *2001 Census of Canada, Newfoundland*. Ottawa, Ontario: Statistics Canada, 2001.

Statistics Canada. *2006 Census of Canada, Newfoundland*. Ottawa, Ontario: Statistics Canada, 2006a.

Statistics Canada. *Police Resources in Canada*. Ottawa, Ontario: Statistics Canada, 2006b.

Statistics Canada. *Police Resources in Canada—2008*. Ottawa, Ontario: Statistics Canada, 2008.

Statistics Canada. *Police Resources in Canada—2009*. Ottawa, Ontario: Statistics Canada, 2009.

Statistics Canada. *Annual Estimates of Demographic Components Provincial Perspective – Newfoundland and Labrador.* Ottawa, Ontario: Statistics Canada, 2010a.

Statistics Canada. *Police Resources in Canada - 2010.* Ottawa, Ontario: Statistics Canada, 2010b.

Statistics Canada. *Exchange Rates, Interest Rates, Money Supply and Stock Prices, 2006-2010.* Ottawa, Ontario: Statistics Canada, 2010c.

Statistics Canada. *Housing Starts by Province*. Ottawa, Ontario: Statistics Canada, 2011.

St. John's Port Authority. *The Next Wave of Renewal: Corporate Profile*. St. John's, Newfoundland and Labrador: St. John's Port Authority, 2003.

St. John's Port Authority. *Port Profile 2008*. St. John's, Newfoundland and Labrador: St. John's Port Authority, 2009.

St. John's Regional Fire Department. *Overview and Recruitment Process*. St. John's, Newfoundland and Labrador: St. John's Regional Fire Department, 2007.

Storey, K. "Managing the Impacts of Hibernia: A Mid-Term Report". In: B. Mitchell (ed.). *Resource and Environmental Management in Canada: Addressing Conflict and Uncertainty*: 310-334. Toronto, Ontario, 1995.

Storey, K., M. Shrimpton and L. Grattan. *Hibernia: An Interim Audit of Socio-economic Impacts*. Richardson, Texas: Society of Petroleum Engineers International Conference on Health, Safety and Environment, 1996.

The Packet. *Clarenville Events Centre Officially Opened*. January 31, 2010. Clarenville, Newfoundland and Labrador: The Packet, 2010.

The Southern Gazette, *Henry Goodrich Arrives in Marystown for Refit*, May 11, 2010. Available at: http://www.southerngazette.ca/ index.cfm?sid=338574&sc=382.

The Telegram. *Towns Studying Peninsula's Labour Market*. Thursday July 30, 2009. Business, D2. St. John's, Newfoundland and Labrador: The Telegram, 2009.

The Telegram. *Antle has no plans for changes at the dockyard.* Tuesday March 2 2010. Business. St. John's, Newfoundland and Labrador: The Telegram, 2010.

Town of Marystown. *Post White Rose Assessment Survey*. Report created by Barry Sheppard Consulting. Marystown, Newfoundland and Labrador: Town of Marystown, 2006.

Walsh, Michelle and Colin Holloway. *Clarenville—Bonavista Region: Community Action Plan on Affordable Housing and Homelessness*. Clarenville, Newfoundland and Labrador: Canada Homelessness Partnering Strategy, 2009.

9.2 Personal Communication

Alton, Glenn. Director of Planning and Protective Services, Town of Paradise, NL.

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Murphy, Amanda. Explore & Discover Child Care Center, Marystown, NL.

Osmond, Ray. Director of Parks and Community Services, City of Mount Pearl, NL.

Peddle, Lori. Toddler's Corner Day Care, Clarenville, NL.

Porter, Wendy. Office of the Fire Commissioner, Deer Lake, NL.

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Rogers, Debbie. New Beginnings Daycare, Marystown, NL.

Sinclair, Helen. NL Department of Child, Youth and Family Services, St. John's, NL.

Slade, Wayne. Manager, Town of Arnold's Cove, NL.

Smart, Brian. VP Operations, St. John's Port Authority, NL.

Smith, Grant. Royal Canadian Mounted Police, Marystown, NL.

9.3 Internet Sites

Bay Bulls Marine Terminal Website. St. John's, Newfoundland and Labrador: Bay Bulls Marine Terminal Inc., 2007. Available at URL: http://www.baybullsmarineterminal.ca.

Bull Arm Site Corporation Website. St. John's, Newfoundland and Labrador, No Date. Available at URL: http://www.bullarm.com.

ARNNL (Association of Registered Nurses of Newfoundland and Labrador) Website. *Provincial Nursing Data*. St. John's, Newfoundland and Labrador, Association of Registered Nurses of Newfoundland and Labrador, 2010a. Available at URL: http://www.arnnl.nf.ca/menu/ Statistics.shtml.

ARNNL (Association of Registered Nurses of Newfoundland and Labrador) Website.. *Annual Report 2009-10*. St. John's, Newfoundland and Labrador, Association of Registered Nurses of Newfoundland and Labrador, 2010b. Available at: http://ww.arnnl.nf.ca/documents/pages/ARNNL%20Annual%20Report%202009-2010.pdf.

CBC News, *Marystown Busy With Oil Industry Spinoff,* May 5, 2010*.* Available at: http://www.cbc.ca/canada/newfoundland-labrador/story/2010/05/05/nl-marystown-boom-505.html.

CBC News. *N.L. Houses Price up Since 2009.* July 8, 2010. Available at: http://www.cbc.ca/canada/newfoundland-labrador/story/2010/ 07/08/nl-house-prices-708.html.

CBC News. *$150 Million Plan to Expand St. John's Airport.* February 2, 2011. Available at: http://www.cbc.ca/news/canada/newfoundland-labrador/story/2011/02/02/nl-stjohns-airport-202.html

Canada News Wire. *Continued Growth in St. John's Housing Market.* May 19, 2010. Available at: http://www.newswire.ca/en/releases/archive/May2010/19/c4783.html.

City of Mount Pearl Website. Mount Pearl, Newfoundland and Labrador. 2010. Available at URL: http://mountpearl.ca/.

M. Clarkson. "Building Momentum." Article in *The Packet*, November 10, 2010. Available at: http://www.thepacket.ca/News/2010-11-10/article-1947518/Building-momentum/1

Clarenville Fire Department Website. Clarenville, Newfoundland and Labrador: Clarenville Fire Department, 2010. Available at URL: http://www.clarenville.net/firedepartment.

CNA (College of the North Atlantic) Website. Newfoundland and Labrador. College of the North Atlantic, 2010. Available at URL: http://www.cna.nl.ca/default.asp.

Cougar Website. St. John's, Newfoundland and Labrador: Cougar Helicopters Inc, 2009. Available at URL: http://www.cougar.ca/

ExxonMobil. Upstream National Content—Guidelines, Strategies and Best Practices, 2008. Summary available at URL: http://www.exxonmobil.com/Corporate/Files/ news_pub_nc.pdf.

Gray, S. "Ownership of hyperbaric equipment transferred to Eastern Health." News at Medicine, Memorial University, November 18, 2009 http://www.med.mun.ca/ Medicine/NewsMedicine/November—2009/Ownership-of-hyperbaric-equipment-transferred-to-E.aspx.

Herridge, P. "Town of Marystown readies for next phase of marine industrial park". Article in the Southern Gazette, February 15, 2011. Available at: The http://www.southerngazette.ca/News/2011-02-15/article-2239126/Town-of-Marystown-readies-for-next-phase-of-marine-industrial-park/1

Kiewit Offshore Services Website. St. John's, Newfoundland and Labrador: Kiewit Offshore Services, 2004. Available at URL: http://www.kiewit.com.

D. MacEachern. "St. John's Topped GDP List in 2010". Article in The Evening Telegram, February 23, 2011. Available at: http://www.thetelegram.com/Business/2011-02-23/article-2269858/-St.-John%26rsquo%3Bs-topped-GDP-list-in-2010/1

Maclean's 2009. "The most dangerous cities in Canada. Overall crime score—by rank." Maclean's National Crime Rankings. http://www2.macleans.ca/2009/03/04/the-most-dangerous-cities-in-canada-overall-crime-score—by-rank/.

Marystown Volunteer Fire Department. http://www.marystownvolunteerfiredepartment.webs.com/

NLAR. "Second Best May on Record for Home Sales." Newfoundland and Labrador Association of Realtors, 2010. Available at URL: http://creastats.crea.ca/stjo/.

NLDF (Newfoundland and Labrador Department of Finance) Website. Economics & Statistics Branch. St. John's, Newfoundland and Labrador: Department of Finance, 2010. Available at URL: http://www.stats.gov.nl.ca/Statistics/Population/ Default.aspx.

NLDF (Newfoundland and Labrador Department of Finance) Website. Economics & Statistics Branch. St. John's, Newfoundland and Labrador: Department of Finance, 2011. Available at: http://www.stats.gov.nl.ca/Statistics/Labour/

North Atlantic Refining Website. Come-by-Chance, Newfoundland and Labrador: North Atlantic Refining, 2009. Available at URL: http://northatlantic.ca/.

Northeast Avalon Regional Plan Website, No Date. St. John's, Newfoundland and Labrador: Northeast Avalon Regional Plan. Available at URL: http://www.nearplan.ca/.

Power, B. *Busy Year for Kiewit Offshore-Marystown*. Ocean Resources Online. Available at URL: http://www.ocean-resources.com/ articles. asp?articleid=669.

SJIA (St. John's International Airport) Website. St. John's, Newfoundland and Labrador: St. John's International Airport, 2011. Available at URL: http://www.stjohnsairport.com/.

St. John's Dockyard Limited Website. St. John's, Newfoundland and Labrador: St. John's Dockyard Limited, No Date. Available at URL: http://www.newdock.nf.ca.

St. John's Port Authority Website. St. John's, Newfoundland and Labrador: St. John's Port Authority, 2007. Available at URL: http://www.sjpa.com/.

St. John's Regional Fire Department. http://www.sjrfd.ca/

Town of Clarenville Website. Clarenville, Newfoundland and Labrador: Town of Clarenville, 2006. Available at URL: http://www.clarenville.net.

Town of Conception Bay South Website. Conception Bay South, Newfoundland and Labrador: Town of Conception Bay South, 2009. Available at URL: http://www.conceptionbaysouth.ca/.

Town of Marystown Volunteer Fire Department Website. Marystown, Newfoundland and Labrador: Town of Marystown Volunteer Fire Department, 2009. Available at URL: http://www.marystownvolunteer firedept.com.

Town of Marystown Website. Marystown, Newfoundland and Labrador: Town of Marystown, No date. Available at URL: http://www.townof marystown.ca.

Vale Website. Toronto, Ontario: Vale, 2010. Available at URL: http://www.vbnc.com/ Processing.asp.

10 LIST OF ACRONYMS

Acronym	Description
ACOA	Atlantic Canada Opportunities Agency
AMKC	Aker Maritime Kiewit Contractors
APEC	Atlantic Provinces Economic Council
BBMT	Bay Bulls Marine Terminal
CBC	Canadian Broadcasting Corporation
CBS	Conception Bay South
C-CORE	Centre for Cold Ocean Resources Engineering
CCSD	Consolidated Census Sub-division
CEAA	Canadian Environmental Assessment Agency
CIHI	Canadian Institute for Health Information
CMA	Census Metropolitan Area
CMHC	Canada Mortgage and Housing Corporation
C-NAAIA	Canada-Newfoundland Atlantic Accord Implementation Act
C-NLAAINLA	Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
C-NOPB	Canada-Newfoundland Offshore Petroleum Board
CNA	College of the North Atlantic
DA	Development Application
EMCP	ExxonMobil Canada Properties
EMO	Emergency Measures Organization
EPP	Environmental Protection Plan
FEED	Front-End Engineering and Design
FFAW	Fish, Food and Allied Workers
FPI	Fishery Products International
FPSO	Floating production storage and offloading—floating vessel used by the offshore industry for the processing and storage of oil and gas
GBS	Gravity base structure—the base of an offshore drilling and production platform, usually made of concrete, that is held securely on the ocean bottom without the need for piling or anchors
GDP	Gross Domestic Product
GHG	Greenhouse Gas
HCSEMC	Hibernia Construction Sites Environmental Management Committee
HEAP	Hibernia Environmental Assessment Panel
HMDC	Hibernia Management and Development Company
IT	Information Technology
JWL	Jacques Whitford Limited
KNOC	Korea National Oil Corporation
LTIR	Lost time Incident Rates
MEDICOR	The Centre for Offshore and Remote Medicine
MLS	Multiple Listing Service
MODU	Mobile offshore drilling unit
MUN	Memorial University of Newfoundland
NEAR	Northeast Avalon Regional Plan

Acronym	Description
NEB	National Energy Board
NHPI	New Housing Price Index
NLAR	Newfoundland and Labrador Association of Realtors
NLDE	Newfoundland and Labrador Department of Education
NLDF	Newfoundland and Labrador Department of Finance
NLDHCS	Newfoundland and Labrador Department of Health and Community Services
NLDMA	Newfoundland and Labrador Department of Municipal Affairs
NLHBA	Newfoundland and Labrador Health Boards Association
NLHC	Newfoundland and Labrador Housing Corporation
NLNU	Newfoundland and Labrador Nurse's Union
NOIA	Newfoundland and Labrador Oil and Gas Industries Association
NRC	National Research Council
OIMS	Operations Integrity Management System
OLS	Offshore loading system—crude oil loading facilities
OWTG	Offshore Waste Treatment Guidelines
PRAC	Petroleum Research Atlantic Canada
R&D	Research and development
RCMP	Royal Canadian Mounted Police
RNC	Royal Newfoundland Constabulary
Ro/Ro	Roll-on/roll-off
ROV	Remotely operated vehicle
SCI	Strategic Concepts Inc.
SDL	Significant Discovery License
SEIS	Socio-economic Impact Statement
SJIA	St. John's International Airport
SJIAA	St. John's International Airport Authority
TCH	Trans-Canada Highway
TRIR	Total Recordable Incident Rate
VEC	Valued Environmental Component
WHSCC	Workplace Health, Safety and Compensation Commission

11 GLOSSARY

Term	Description
Acts	When capitalized in this document, refers to the Canada-Newfoundland Atlantic Accord Implementation Act and the Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act
Benefits Agreement	The Agreement reached between EMCP, the Project and the Province in 2008 which requires that certain expenditures and activities associated with the Project occur in the Province, and specifies plans, processes and mechanisms for delivering these benefits.
Benefits Principles	Principles that underlie the Benefits Plan and will govern all of its benefits-related activities
Compliance	Observance of official requirements
Co-venturers	Hebron asset owners that are sharing in the predevelopment costs and that have authorized EMCP to prepare a Development Application in its capacity as Operator
Cumulative Effects	Occur when impacts on the natural and social environments take place so frequently in time, or so densely in space, that the effects of the individual events cannot be differentiated; or when the impacts of one activity combine with those of another in either an additive or synergistic manner
Demographics	The characteristics of human populations, such as size, growth, density, distribution, and vital statistics.
Diversity Plan	Plan to deliver increased employment and business opportunities to women, visible minorities, Aboriginal people, and persons with disabilities and companies they own or operate.
Duration	How long and a project activity or socio-economic effect will occur
Expenditures	Money paid out; an amount spent
Frequency	How often a project activity or socio-economic effect will occur
Geographic Extent	The area affected by the Project
Geographic Scope	The areas that will be affected by the Project
Infrastructure	Facilities, services, and installations needed for the functioning of a community or society, such as transportation and communications systems, water and power lines, and public institutions
Issues Scoping	The process used to focus the assessment on issues and concerns identified by the public, technical experts and regulatory agencies
Magnitude	The nature and scale of the socio-economic effect for each activity
Mitigation	The elimination, reduction or control of the adverse environmental effects of a project. This includes restitution of any damages to the environment caused by a project though replacement, restoration, compensation or other means
Operator	When capitalized in this document, refers to ExxonMobil Canada Properties
Procurement	The purchasing of something usually for a company, government or other organization
Project	When capitalized in this document, refers to Hebron Offshore Oilfield Project
Proponent	A person or organization that proposes carrying out an activity that may have an effect on the environment
Province	When capitalized in this document, refers to Newfoundland and Labrador
Residual Effects	Those effects remaining after enhancement and mitigative measures have been applied
Reversibility	Whether the VEC can, or likely will, return to an equal or improved condition at the end of the activity or project lifecycle
Socio-economic Context	The status of the area affected by the project in terms of existing environmental conditions and effects
Stakeholder	A party that affects or can be affected by the Hebron Project
St John's area	St. John's Census Metropolitan Area
Sustainable	Capable of being continued with minimal long-term effect on the environment
Topsides	The oil and gas producing and support equipment located on top of an offshore structure

Appendix A
Comprehensive List of Comments

Consultation

The consultation program involved the following stakeholder consultation and public consultation events:

- Three Key Informant Workshops (one each in Clarenville, Marystown, and St. John's);
- One Inshore Fisher Workshop (Bellevue);
- One Offshore Fisher Workshop (St. John's);
- One workshop with Environmental Non-Governmental Organizations (ENGOs) (St. John's);
- One Safety, Security, Health and Environment information session for contractors (St. John's);
- Four Procurement Information Sessions for business owners (one each in Clarenville, Marystown, St. John's and Corner Brook);
- Meetings with community, women's, and business groups (Clarenville, Arnold's Cove, Marystown, St. John's, and Corner Brook);
- Meetings with municipal leaders (Clarenville, Arnold's Cove, Marystown, St. John's, and Corner Brook);
- High School and College Workshops (Clarenville, Marystown); and
- Eight open houses (two in each Clarenville, Marystown, Arnold's Cove, and St. John's).

The following tools were used to provide information to the public and to obtain input:

- Project Description as submitted to the C-NLOPB;
- Overview presentations given at each of the workshops, which provided an overview of the Project including information on the Project description, overview of ExxonMobil, Project schedule, and Benefits Agreement;
- Display boards and take-home booklets of the display boards;
- Comment forms;
- Project website;
- Media briefings; and
- Stakeholder Consultation.

The stakeholder consultation program includes a number of workshops and meetings organized to obtain the input of a variety of stakeholders. Fisher workshops, key informant workshops, ENGO workshops, contractor forums, community meetings and meetings with government departments and agencies were held.

Fisher Workshops

As an introduction to the Project, EMCP participated in a fishers conference held by One Ocean. EMCP representatives presented an overview of the Project. Some concerns were raised at this conference regarding potential impacts that the Project could have on commercial fishers.

Following the Once Ocean Conference, two Commercial Fisher Workshops were held to provide additional information on the Project and to record the issues and concerns of commercial fishers who work in the Bull Arm Project Area and the Offshore Study Area.

The Inshore Commercial Fisher Workshop was held in Bellevue in August 2009, with the goal of providing information to local fishers and gaining knowledge of their experiences with previous large construction projects in Bull Arm. A total of seven commercial inshore fishers from local Bull Arm communities and representatives from the Fish, Food and Allied Workers Union and One Ocean attended the Workshop. Three members of the EMCP team, including environmental, regulatory and engineering representatives, were present to provide information on the Project design, activities and schedule and provided copies of the Project Description report to all attendees. Attendees were encouraged to ask questions and provide comment throughout the presentation and all concerns were recorded. The discussion focused on local fisheries (historic, current and future), past experience with construction projects in the region, waste management, types of activity at the site before and during construction, and concern that the knowledge of local fishers be incorporated and used by the Project team.

The Offshore Commercial Fisher Workshop was held in St. John's in December 2009. Committee chairs representing the offshore fisheries, members of the FFAW and One Ocean met with EMCP representatives in St. John's. EMCP provided an outline of the proposed Hebron Project and invited questions and comment from the fishers.

The offshore fish harvesters indicated that they are becoming increasingly concerned about the vessel traffic associated with offshore oil and gas activities, supply and standby vessels, offloading tankers, seismic operations and ice management operations. Platforms themselves direct fishing vessels to stay certain distance from the platform. The fishers spoke about their difficulties with the increasing interference with all aspects of their operations from travel to and from their fishing grounds, gear damage and loss and interruption of fishing operations.

One Ocean had been aware of this concern and described ongoing efforts to address it, primarily through improved at sea communications between the operators and the fish harvesters. The FFAW pointed out the usefulness of Fisheries Liaison Officers on board petroleum industry vessels to assist with immediate communication between industries and avoidance of any conflict. The Hebron Project is planning a geohazards survey in June this year near the Hebron site and a Fisheries Liaison Officer will be on board the survey vessel throughout the survey.

Key Informant Workshops

Three Key Informant Workshops were held in Clarenville, Marystown and St. John's in August 2009 to ensure that community issues and concerns were identified and to learn about past experience with other large industrial construction Projects such as Hibernia and White Rose. Attendance at these workshops was by invitation to key informants to ensure that a wide range of local interests were represented, that people with an appropriate level of experience with past projects were present, and so that the group size was conducive to an open discussion. A total of 39 people participated in the three workshops representing a range of community sectors and interests including local business and development associations, municipal and provincial government, housing, education, recreation, and public safety. Three representatives from EMCP attended each workshop.

Each workshop involved a PowerPoint presentation given by an EMCP representative providing an overview of the Project design, activities, and schedule. This was followed by an informal, facilitated discussion of issues and concerns. The main concerns voiced by participants related housing and rent costs, a need to consult with the youth and encourage appropriate training, highway safety, the definition of 'local benefits' and the need for the communities adjacent to Bull Arm to benefit, and the need for further, timely, communication about Project activities.

Environmental Organizations Workshops

The Workshops with Environmental Non-Governmental Organizations (ENGO) was held on September 2009 in St. John's. Three members of the ENGO representatives participated. The following ENGOs were represented: Sierra Club, Natural History Society, Newfoundland and Labrador Environmental Association, Northeast Avalon Atlantic Coastal Action Program, Alder Institute, Canada Parks and Wilderness Society (CPAWS), Whale Release and Stranding, and Newfoundland and Labrador Environmental Network.

The purpose of the Workshop was to provide Project information to the ENGO representatives, answer any questions, and to document their concerns regarding the Project directly to the EMCP team. An EMCP representative gave a PowerPoint presentation on the Project design, activities, and schedule, and copies of the Project Description report were provided to attendees. Discussion was encouraged throughout the presentation. Participants at the workshop acknowledged that many of the issues and concerns raised in previous assessments of offshore petroleum projects had been addressed by industry but indicated that the following remain of interest: small / chronic oil spills and their effects on sea birds, marine tanker traffic and responsibility for vessels and their discharges, access to and transparency of monitoring data, produced water re-injection, and ice management.

Contractor Forums

Two types of forums for potential contractors were organized by EMCP in 2009: Procurement Information Sessions, and a Contractor Safety, Security, Health and Environment (SSH&E) Forum.

A series of Procurement Information Sessions were held in St. John's, Clarenville, Marystown, and Corner Brook in April 2009. The purpose of these sessions was to provide information to local businesses regarding the contracting strategies to be employed by EMCP for the Hebron Project and enable local companies to prepare for upcoming opportunities.

The Contractor SSH&E Forum was held in July 2009 in St. John's. The purpose of the Forum was to promote and share best practices in safety, security, health and environment.

Community Meetings

EMCP representatives have held meetings with municipal leaders and regional business groups between April and September 2009. Meetings were held with representatives from the towns of Arnold's Cove, Come By Chance, Clarenville, Burin, St. Lawrence, Marystown, St. John's, and Corner Brook, as well as chamber of commerce representatives in the Isthmus and Marystown regions. At each of these meetings, EMCP gave brief presentations about the Project and addressed questions posed by participants. Discussions were focused primarily on economic benefits and development.

EMCP gave a Project overview presentation at the annual oil and gas industry conference hosted by Newfoundland Ocean Industries Association in June 2009. After the brief presentation there was an opportunity for questions, which included questions on concept selection.

A presentation has also been held to the membership of the Association of Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL).

Meetings with Government Departments and Agencies

Since the Project was first proposed, key government officials and regulators (municipal, provincial, and federal) have been consulted, both formally and informally, on an ongoing basis. The objective of these consultations was to provide information and updates on the Project and the environmental assessment, and also to receive input and guidance as appropriate. The C-NLOPB and following Federal Authorities (FAs) have been regularly consulted both before and since filing of the Project Description:

- Major Projects Management Office (MPMO);
- CEA Agency;
- Transport Canada;
- DFO;
- Environment Canada; and
- Industry Canada.

There have also been on-going meetings with provincial Minister of Natural Resources and deputy ministers (DM) and assistant deputy ministers, to keep them apprised of Project developments.

These consultations have involved one-on-one meetings (locally and in Ottawa), telephone conversations, and e-mail correspondence.

High School and College Workshops

In response to suggestions highlighted during the key informant workshops and Project open houses, presentations and discussions with high school and CNA students in Clarenville and Marystown were held in October. The main objective was to reach out directly and explicitly to young people. Visits were organized through the school principals and each school determined how to invite students, publicize the opportunity and choose the type of venue. The sessions were held in an informal manner, using PowerPoint presentation as a basis for information. For engaging the participants into discussions, the facilitators provided examples from their own experience and encouraged questions from the participants. Hebron Project personnel involved in the high school and college workshops were all women from various groups such as business, engineering, environmental and regulatory, and public affairs.

Table A-1 highlights the main comments received from the various Stakeholder Workshops facilitated by representatives from the Hebron Project.

Table A-1: Comments received from Participants at the Stakeholder Workshops

Issue	Comment	Response
Business	Need to maximize benefits to local businesses, contractors and suppliers.	Addressed in the Hebron Project Benefits Agreement and Benefits Plan
	Accommodation of employees during construction—construction camp vs. living / renting in adjacent communities	Accommodation options and preferred strategy discussed in SEIS Section 6.1.3,
Commercial Fisheries	Need to time blasting to prevent impact on migrating fish populations.	Will be addressed in the Environmental Protection Plan
	Concerns regarding local crab populations near the deepwater mooring site if any dredging or dumping were to take place.	No dredging or dumping will occur unless a part of an authorized fish habitat compensation plan
Economy and Economic Benefits	Compensation for fishers who are displaced from their usual fishing grounds due to the Project.	Addressed in Comprehensive Study report (CSR) Section 8.5.1.1 Access to Fishing Grounds
	Need to maximize benefits to communities adjacent to the construction site(s), including employment and business opportunities.	Addressed in the Hebron Project Benefits Agreement and Benefits Plan
	Need to maximize employment of Newfoundlanders and Labradorians.	Addressed in the Hebron Project Benefits Agreement and Benefits Plan
Education and Training	Need to work with schools and youth (especially girls) to encourage participation in trades programs.	Discussed In SEIS Appendix—Stakeholder Consultation
	Need to encourage school-age girls to enter non-traditional careers.	Discussed In SEIS Appendix—Stakeholder Consultation
Employment	Where will the 3,000 qualified workers for construction come from?	Discussed in SEIS Section 4.3
	Need to work with unions to maximize employment opportunities for qualified individuals from communities adjacent to construction site.	Addressed in the Benefits Plan
	Need to provide timely information regarding employment to Newfoundlanders and Labradorians working in western Canada who may want to return to the Province.	Addressed in the Benefits Plan
	Need to work with unions to develop hiring practices to encourage hiring of members of diversity groups (women, aboriginal persons, persons with disabilities, and visible minorities).	Addressed in the Benefits Plan
	Need to work with education and training institutions to ensure there are enough people to meet Project requirements during both Construction and Operations.	Addressed in the Benefits Plan
Environmental Management	Local fishers should be consulted in regard to monitoring programs for fish and fish habitat.	Will be accomplished through the Environmental Protection Plan
Fish and Fish Habitat	Local fishers should be engaged to document the presence of fish species throughout the year in Bull Arm.	Will be addressed in the Environmental Protection Plan
	Impacts of chronic small oil / chemical spills on marine life.	Will be addressed in the Environmental Protection Plan
Health and Safety	Road safety, especially on highways, during winter months.	Discussed in SEIS Section 5.3.3
	Lack of cell phone coverage on the Burin Peninsula highway.	Discussed in SEIS Section 5.3.3
Monitoring	Provide public access to 24-hour monitoring raw data for produced water and other waste streams.	CSR Section 2.9 Table 2-10 describes all platform discharges including produced water: discharges are monitored and reported to C-NLOPB as per the Offshore Waste Treatment Guidelines
	Provide public access to EEM raw data.	CSR Section 15.0 describes the commitment to EEM: EEM reports are provided to C-NLOPB and published on the C-NLOPB website.

Issue	Comment	Response
Public Involvement	Need to consult with small communities adjacent to the Bull Arm site which are serviced by Local Service Councils.	Discussed in SEIS Section 7.5.8
	A Community Liaison Committee with communities adjacent to Bull Arm should be set up to facilitate communication between EMCP and community leaders.	SEIS, Section 8.2 Commitments, affirms EMCP's commitment to continue working with communities.
	Direct communication between EMCP and the public needs to be on going.	Discussed in SEIS Section 7.5.8
Research and Development	The oil industry needs to fund fish / fishery research as they are displacing the fishing industry.	The Benefits Plan discusses R&D: at this point in the Project, no decisions have been made re research and development funding
Services and Infrastructure	Capacity of local communities to house in-migrants and the effect on housing / rent prices.	Discussed in SEIS Section 6.1
	Health and social service requirements resulting from the Project.	Discussed In SEIS Section 5.2
	Traffic concerns on Trans Canada Highway due to Project-related commuting of people and materials, especially during winter months.	Discussed in SEIS Section 5.3.3
	Concern that local infrastructure (roads, wharves) are not adequate to accommodate industrial use without incurring damage.	Addressed through early, ongoing and effective communication between the Project and communities.
	Concerns regarding women's employment and access to childcare.	Discussed in The Benefits Plan and SEIS Section 5.1
Waste Management	Concern regarding floating debris / waste from the deepwater construction site.	CSR, Section 8.5.1.1: there will be a project agreement between the fishers and the Project and a full-time fisheries liaison will be based at the Bull Arm site. There will be a Site Environmental Protections Plan and Site Waste Management Plan.
	Waste from the construction sites may exceed capacity of local waste management sites.	Discussed in SEIS Section 7.4.8

Public Consultation

The public consultation program includes open houses, which were in different communities to provide Project information to the general public and listen to the comments from community members.

Open Houses

A series of eight open houses were held in September 2009, with two sessions held in each of Clarenville, Marystown, St. John's, and Corner Brook. Attendance was open to all members of the public with 222 people attending. The sessions were held from 2 to 4 pm and from 7 to 9 pm in each community, allowing people to attend at their convenience. The open houses provided an opportunity for the general public to speak directly with the senior Hebron Project Management Team to voice their interests or concerns. At least 10 EMCP representatives were present at each open house to answer any questions and document issues raised, including engineering representatives and coordinators of the Development Application, including CSR, SEIS and Benefits Plan.

Advertisements for the open houses were placed in regional weekly newspapers, in The Telegram and Western Star (daily publications), on the

Project website, and broadcast on local radio stations. The advertisements listed the location, date, time and location for each event.

Each open house began with a brief presentation on ExxonMobil's corporate structure, experience with large projects, introduction of the EMCP team, and gave an overview of the Project design, schedule, and Benefits Agreement with the Province. The presentation was followed by a question and answer session with the Senior Project Management Team. Display boards were set up in the room describing ExxonMobil, the Project, regulatory requirements, benefits and procurement / contracting. A booklet containing small versions of the display boards were provided to all attendees. After the question and answer session people were given the opportunity to discuss concerns and pose questions one-on-one to members of the EMCP team who were stationed near their respective display boards.

Comment forms were provided to attendees upon sign-in. In addition to providing feedback, these forms were used to draw for door prizes at each open house. The main topics of concern raised by participants in those forms were related to employment, localization, education and training, health and safety, diversity, and research and development.

The primary discussion at the open houses was related to benefits, including ensuring economic and employment benefits will be delivered at the local community level, the role of unions in construction, how individuals can find information on employment during construction, diversity, how the Benefits Agreement will influence Project contracting, and skill requirements and training opportunities. Other items noted were use of tankers and the Newfoundland Transshipment Terminal by the Project, the need to engage youth, Research and Development spending, and the need for information regarding the construction camp at Bull Arm. Comments received are summarized in Table A-2.

Table A-2: Comments Received from Participants Attending the Open Houses

Issue	Comment	Find Related Information
Business	Will there be business opportunities in western Newfoundland?	Canada-Newfoundland and Labrador Benefits Plan (Benefits Plan); SEIS, Section 2.1 indicates that the locations of fabrication and construction have not yet been determined as contracts have not been awarded and states that the assessment focuses on areas with historical experience with comparable projects.
	Need to maximize benefits to local businesses, contractors and suppliers.	Hebron Project Benefits Agreement (Benefits Agreement) and Benefits Plan
Employment	Project employment during Operations?	SEIS Figure 4-5
	Will there be employment opportunities for non-union trades people?	Benefits Plan and Benefits Agreement; no specifics available at time of question
	Aside from Bull Arm, where will construction work be completed?	Benefits Agreement specifies work commitments in the Province and the SEIS, Section 4.0 anticipates project related work in St. John's and area, the Isthmus area, the Marystown area and other areas of the province
	What forms of training will EMCP provide?	SEIS Section 7.5.4 re Training and Education; the Benefits Agreement; and the Benefits Plan
Environmental Assessment / Development Application	Inclusion of tanker traffic associated with the Project in the assessment.	Comprehensive Study Report (CSR), Section 2.9.5 Shipping and Transportation: tankers are included in the assessment in association with off-loading operations at the facility
	Incorporate comments from previous offshore assessments	SEIS, Appendix A, Environmental Organizations Workshops: participants at the September meeting noted that many of the issues raised during earlier assessments (of previous offshore projects) had been addressed.
Public Involvement	Need to engage youth.	SEIS, Appendix A, High School and College Workshops: ECMP initiated a schools and college series of presentations
	Important to communicate the results of the CSR and SEIS to the public.	The CSR and the SEIS are made available for review by the public through C-NLOPB
Research & Development	What percentage of the $120 million committed to R&D will be spent on basic and applied research?	Benefits Plan and Benefits Agreement: no determination of specifics at this point in time.
Services and Infrastructure	Accommodation of employees during construction—construction camp vs. living / renting in adjacent communities	Accommodation options and preferred strategy discussed in SEIS Section 6.1.3,
Technical / Project Description	Will the GBS have an ice wall? Will the GBS be built to withstand impact from an ice berg?	CSR, Section 2.5 Preferred Concept and Section 2.6 Hebron Project Design Criteria describe the GBS including the ice wall.
	Will there be underwater blasting for creation of the berm at Bull Arm?	CSR, Chapter 2.0, Section 2.8: Hebron Project: Construction and Installation
	What is the size of the dry dock in Bull Arm?	CSR, Section 2.8: Hebron Project: Construction and Installation
	Will the production platform be able to produce natural gas in addition to oil?	CSR, Section 2.6 Hebron Project: Design Criteria
	Could the Project office be located in Clarenville?	Project offices tend to be located near the hub of technical expertise and near an airport, which at this point in the project is St. John's (from the response at the Open House in Clarenville, Sept 14 2009)
	Quantify amount of flaring.	CSR, Section 2.6 Hebron Project: Design Criteria and Section 6.0 Air Quality
	Does the Project include pre-drilling of wells offshore?	CSR, Section 2.4 Alternative Means of Carrying out the Project: Concept Selection